A Study of Communication Methods for Teagasc to Engage with Agricultural College Graduates from Graduation to Farm Ownership

A thesis submitted to University College Dublin in fulfilment for the degree of Master of Agricultural Science

By

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<th>Full Form</th>
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<td>ACA</td>
<td>Advanced Certificate in Agriculture</td>
</tr>
<tr>
<td>ACOT</td>
<td>An Comhairle Oilliuna Talmhaiochta</td>
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<tr>
<td>ADAS</td>
<td>Agricultural Development and Advisory Services</td>
</tr>
<tr>
<td>ADE</td>
<td>Analysis of Economic Decisions</td>
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<td>AE&amp;T</td>
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<td>AgITO’s</td>
<td>Agricultural Industry and Training Organisations</td>
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<td>BMW</td>
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<td>National Federation of Young Farmers Clubs</td>
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<td>NI</td>
<td>Northern Ireland</td>
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<td>Quality Qualifications Ireland</td>
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<td>R&amp;D</td>
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<td>RTE</td>
<td>Raidio Teilifís Eireann</td>
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<td>SAC</td>
<td>Scottish Agricultural College</td>
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<td>SE</td>
<td>South and Eastern Region</td>
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<td>SEARS</td>
<td>Scotland’s Environmental and Rural services</td>
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<td>Short Message Service</td>
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<td>Veterinary Advisory Services</td>
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Declaration

I hereby certify that the submitted work is my own work, was completed while registered as a candidate for the degree of Research Masters, and I have not obtained a degree elsewhere on the basis of the research presented in this submitted work.

__________________________________________

John W. Kelly
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Abstract

The overall aim of this study was to successfully develop a useful method for Teagasc advisors to engage and keep in contact with agricultural college graduates. Graduates from Ballyhaise Agricultural College were surveyed in order to identify if they wanted future contact with Teagasc and if so what methods they would like to use. In addition existing contact between students and a Teagasc advisor was evaluated. A number of international extension and education organisations were contacted to investigate if they were using any methods to retain contact with their graduates. The early phase of the study formulated ideas for the development of a number of innovative methods for Teagasc to retain contact with graduates; these included the use of the social media website Facebook, publication of an agricultural college newsletter and SMS text alert services to graduates.

The key findings from the study were that graduates want to keep in contact with Teagasc and due to the good experience they had in agricultural college they would like to receive regular information and participate in Teagasc discussion groups. They also would like to have regular contact with an advisor while in college. Existing students found the introduction to an advisor via a farm walk and guest lecture to be very beneficial. Social media was found to be the most engaging and interactive method of contact with graduates. The Ballyhaise Agricultural College newsletter was found to be an excellent source of technical information and SMS text messaging was the most effective method of communicating short messages.

The study recommends that Teagasc implement these methods on a national basis across its agricultural colleges and local advisory offices.
Chapter 1 Introduction

The purpose of this study is to identify, develop and pilot a number of practical methods that can be used by agricultural advisors as a tool for Teagasc to maintain contact with agricultural college graduates until they assume ownership of a farm. The study was completed in Teagasc Ballyhaise Agricultural College, Ballyhaise, Co. Cavan, Ireland. To date very little in-depth research has been carried out investigating the relationship between agricultural advisors and agricultural college graduates. The only existing communications are with those who entered farm ownership immediately after completion of an agricultural college course. The graduates who are in such a position are very few. Currently there is a significant investment in educating and developing students within the Teagasc education programmes, but there is very little focus on their continued education and technology adoption after graduation.

The importance of this study stems from the current rapidly ageing population of farmers in Ireland as recorded in CSO (2010). It is important to promote the development of young people’s interest in farming by bridging the current gap between the education and accessing advisory services for young farmers. There is an increased demand for places in agricultural courses in universities, institutes of technology and agricultural colleges. The rise in demand for these courses is partly due to the current economic difficulties being experienced in Ireland which led to the collapse of the construction industry, as a result, many young people see opportunities in agriculture. The number of graduates from these courses need to be encouraged to develop their career ambitions in order to ensure a thriving future for the agricultural industry. Teagasc as the national body for providing integrated research, advisory and training services to the agriculture and food industry, has a significant role to play in achieving this. It has an integrated knowledge transfer service which encompasses the education of young and adult farmers as well as providing extension services to farmer operators. This study will aid in the retention of graduate’s interests in agriculture by developing a model for them to keep in contact with Teagasc and continue their lifelong learning through their interaction with its advisory service.
1.1 Background to Teagasc

Teagasc (in the Irish Gaelic language, “instruction” or “doctrine”), or the Agriculture and
Food Development Authority, operates a “three-legged stool” of Research, Extension
(Advice) and Education for its “Stakeholders” (Boyle, 2012).

The Teagasc Board of Management is appointed by the Minister for Agriculture, Food and
the Marine, and has representatives from the farming organisations and rural youth
organisation, the food industry, universities, the Department of Agriculture, Food and the
Marine, and Teagasc staff. The organisation has an annual operating budget in excess of
€160 million. Around 75% of the Teagasc yearly budget comes from the Irish exchequer and
EU funding, with the balance generated from earned income (Prager and Thomson, 2014).
Some 40% of the budget is devoted to research, with the remainder split half and half
between advisory and education services (Prager and Thomson, 2014). They operate in
partnership with all sectors of the agriculture and food industry and with rural development
agencies.

Teagasc is a client-based organisation employing approximately 1,200 staff at 51 locations
throughout Ireland. The staff includes 216 research scientists, 51 specialists and specialist
advisors and 116 research technicians and technologists, 171 support staff and
approximately 175 PhD students at six dedicated centres. There are over 250 advisors based
at 51 county and local offices (Prager and Thomson, 2014). Teagasc had 41,986 farmer
clients in 2015 and 43,000 in 2014. Teagasc student enrolments for 2013 were 1,609, 1,583

The Teagasc mission is: “to support science-based innovation in the agri-food sector and the
wider bio-economy so as to underpin profitability, competitiveness and sustainability”, and
its four aims are:

1. Improve the competitiveness of agriculture, food and the wider bio-economy.
2. Support sustainable farming and the environment.
3. Encourage diversification of the rural economy and enhance the quality of life in rural
   areas.
4. Deliver value for public money.
1.2 Background to the Study

The number of farmers in Ireland has declined, and also has an ageing population with only 6.2% under 35 years of age and more than half of all farmers greater than 55 years of age (CSO, 2010). It is obvious that this statistic will place strain on the future of Ireland’s agricultural industry. The current Minister for Agriculture Simon Coveney addressed the issue by saying that one of the major challenges facing the agricultural sector is its age profile (DAFM, 2014). In short, it continues to rise in a way that is very worrying for the sector. In order to achieve more efficiency and higher levels of production as set out in the Food Harvest 2020, there needs to be young ambitious famers ready to take on the targets set for Irish agriculture. The Teagasc objective of generating and applying new knowledge for the sustainable development of agriculture and the food industry is less likely to progress with an increasing age profile of farmers. Older farmers are less likely than the younger generation to embrace new technology or to invest in their farms (DAFM, 2014). The Irish minister of agriculture stated that the prospects of achieving the Food Harvest 2020 targets, and indeed of securing the future development and prosperity of the agricultural sector, would greatly improve if we could attract more young, qualified people into farming (DAFM, 2014). Young farmers starting out often find it difficult; most will have inherited land from a family member, but those who are not fortunate enough to inherit a farm holding face the problem of acquiring agricultural land while they are still young (White, 2012). In a recent study on land mobility and succession in Ireland, it was found that the average age of successors to Irish farms is 25 and 95% of successors were children of the land owners (Bogue, 2013a). There are many reasons why the numbers of farmers are declining and young people do not see a future in agriculture due to current low levels of profitability as reported in the Teagasc National Farm Survey (Hennessy and Moran, 2014). The average farm income in 2014 was €26,974 (Hennessy and Moran, 2014). The Irish government are making attempts to stop the decline of farmers and lower the average age of by introducing incentives for the transfer of lands to young farmers. The introduction of farm supports under CAP reform 2015 in the Basic Payment Scheme, young trained farmers under 35 can receive up to €314 per hectare of land farmed in direct payments under the Young Farmers scheme and the National Reserve (DAFM, 2015). They have priority into all farm modernisation schemes and the introduction of stamp duty exemption on land purchases.
and transfers to young trained farmers under 35. All these incentives have the objective of encouraging the old generation to step aside and make way for the new. These incentives have seen a huge demand in the number of people wishing to become young trained farmers with 5,000 people on a waiting list to complete Teagasc agricultural courses with on average 200 people applying per week (Irish Farmers Journal, 2015).

With so many potential future graduates Teagasc are anxious to keep in contact. It is important to Teagasc to retain these graduates as clients in order to support them in the period after takeover of the farm; Teagasc and Teagasc advisors are crucial in this period (Prager and Thomson, 2014). These graduates will be the future clients of Teagasc and in order communicate with them new innovative means can be used. The social media website, Facebook, provided interactive communication with people whilst allowing the user to post photos and videos on the website it can contact young farmers regardless of their geographical location. The use of traditional mass media communication methods cannot be overlooked and this study has used print media as an aid to the distribution of information to graduates. The use of SMS text messaging as a means of organising events is commonly used by Teagasc and can be used for contact with graduates. Use of attractive methods of contact i.e. Facebook, with graduates will aid in their integration into modern knowledge transfer methods such as discussion groups. This study aims to give young agricultural college graduates the opportunity to advance their skillset after graduation. The transfer of new innovative agricultural practices from agricultural advisors to young future farmers it is hoped will lead to an improved agricultural industry. The involvement of an agricultural advisor will facilitate the development of a young enthusiastic farmer and equip them with the knowledge and skills required to manage a farm. The results of this study will be beneficial to not only Teagasc but to agricultural extension and education services internationally.
1.3 Study Problem

There has been very little research in the subject area; extension organisations in other countries have not previously considered the issue in detail or conducted any formal programmes to develop a successful tool to bridge the gap between education and extension services. There is currently no existing formal method of communication between Teagasc and its agricultural graduates. There is little focus on seamlessly continuing the education and technology adoption of graduates once they have left the education system. Once a student graduates from an agricultural course there is no means of contact between them and the organisation that educated them. It is unknown how many of the graduates are engaged in agriculture or how many are still living in the country. It is clear that there is a weak link between the education and extension services in Teagasc. Teagasc may only be in contact with graduates who are in farm ownership and are availing of Teagasc client services from its agricultural advisory branch. The numbers of graduates who are in a farm ownership position soon after graduation are in the minority. Most people will return to their home farm where often they will not be in a farm management position; this role is held by their parents. The time interval from graduation to obtaining farm ownership can vary. If the graduate has not assumed a farm management role then, it is essential that Teagasc are in contact with them after graduation so they can provide assistance when they assume management of their home farms. This study aims to equip Teagasc with the opportunity to further advance the skillset of young ambitious farmers.
1.4 Study Aim and Research Questions

The overall aim of this study is to develop a useful method for Teagasc advisors to engage and maintain contact with agricultural college graduates. In order to achieve this aim the following research questions need to be addressed.

- What method of contact do graduates want with Teagasc?
- What practical methods are useful in maintaining this relationship?
- What is currently being done in other integrated extension and education organisations internationally to maintain contact with agricultural graduates?
- Can the methods of other integrated international extension and education organisations be applied to the development of this research?

1.5 Research Objectives

To conduct this study the following research objectives have been outlined:

1. Identify what communication methods agricultural graduates would like from an extension organisation.

2. Assess and identify the characteristics of recent agricultural college graduates and their experience of agricultural college.

3. Develop and evaluate methods of communication for agricultural advisors to engage with agricultural college graduates.

4. Evaluate contact between a Teagasc advisor and existing agricultural college students.

5. Identify the current practices employed by international extension organisations to retain contact with agricultural college graduates.
1.6 Methodology

The study was conducted at Teagasc Ballyhaise Agricultural College. This college was chosen for the study as it is one of the largest and oldest agricultural colleges in Ireland with a catchment area of the entire North West and North East of the country. It was also the workbase for the duration of this study. A mixed method approach of data collection was used with both qualitative and quantitative methods. Data was collected by a number of means;

1) Interviews with staff in agricultural colleges internationally and nationally via telephone

2) A postal survey

3) Electronically via the developed methods of communication (Facebook and text message).

4) Evaluations of contact between students and advisors.

5) Review of the current body of literature and existing information held by Teagasc on the subject.

Primary sources of data:

- Recent agricultural college graduates from Ballyhaise Agricultural College from the years 2008-2013.
- Staff from agricultural colleges and extension organisations internationally.

Secondary sources of data included

- The current body of literature on agricultural extension and education.
- The records that Teagasc have on each graduate’s education.
Data Collection Methods

- Graduates from Ballyhaise Agricultural College from 2008 – 2013 were selected as recent graduates for the purposes of the research sample. They were all graduates with a Level 6 award in Agriculture.

- The early stages of the research began by addressing research objective one; a snowballing method of sampling key informants in international organisations providing both education and extension services. Over nine extension/education organisations were contacted and all but The Scottish Agricultural College and CAFRE (College of Agriculture and Rural Environment) in Northern Ireland responded negatively. Their findings aided in the shortlisting of potential methods for Teagasc agricultural college graduates to engage with Teagasc advisors.

- A postal survey was administered in mid April 2014 to 464 graduates of Ballyhaise Agricultural College since 2008. There was no email addresses available for the graduates at the time. The aim of the survey was to identify how many graduates were in a career in agriculture who wanted to keep in contact with Teagasc and what methods they would like to use. The response rate was 36% with 166 returned surveys. The data collected from this allowed for the creation of a list of interested graduates that would be core to the research project. Three methods were identified for graduates and Teagasc advisors to keep in contact.

- Current interaction between Teagasc advisors and agricultural students was evaluated, a farm walk and discussion group that was facilitated by a Teagasc advisor with final year agriculture students. Their opinions and ideas for future hosting of similar events were measured in this survey.

- A review of relevant literature aided the development of the graduate survey which had the objective of obtaining information about the graduates and what specific methods they wanted to use to keep in contact with Teagasc.

- The three methods that were developed and piloted to communicate with recent graduates were 1) newsletter via email, 2) a Facebook page and 3) a weekly text message system. The reason these methods were chosen was due to the preferences of the graduates for each method.
A final survey was developed and distributed via post to n=50 graduates who were in receipt of all the piloted methods in late November 2014 in order. The objective of the survey was to obtain information about the success of each method.

Analysis of Data

The data collected from the graduate surveys was analysed and reviewed in order to answer the research questions and objectives. The survey provided information on how the graduates themselves wanted to communicate with Teagasc and what they wanted to achieve from it in terms of development of their existing skills and knowledge of agriculture. The results formed an essential basis and justification for making recommendations and conclusions on the research. Statistical analysis software such as SPSS was used to present the findings from the two surveys in a graphic format by using frequency and cross tabulation tests. The data analysis from the Newsletter, text message and Facebook was largely analysed using SPSS through the data collected in the main surveys. While a proportion of the data analysis was conducted by measuring the popularity of the three methods through social media circles on Facebook and the Teagasc website. The Facebook page provided a large element of its own data based on the page visits and interactions. The information sourced provided recommendations and conclusions on the research to Teagasc on what methods should be used on a more permanent basis as part of a tailored young graduate advisory service.
1.7 Utility of the Study

This research project aims to give the opportunity to further advance the skillset of young ambitious farmers that will form the basis of the future of agriculture. The development of the project can assist in providing ways for graduates to add to their existing knowledge of best agricultural practice and improve the level of technology adoption at farm level. It is hoped that the findings of this research will also be relevant to international extension organisations. This research could be used by Teagasc as a template for the development of a tailored advisory programme for young graduates that would improve its education and advisory services. It will allow Teagasc knowledge transfer personnel to build on the knowledge already imparted to young farmers who have come through the educational system. These graduates should be increasingly open and have the basic knowledge of the latest technologies. The knowledge already instilled in these graduates can be leveraged by Teagasc to assist in improving “peer-to-peer” knowledge transfer through its discussion group network. A number of methods of engaging with graduates have been tried and tested in this research and the methods that have been most effective are outlined in the recommendations of this thesis. Teagasc will be able to use this research to develop its advisory services to cater for the needs of future farmers that will in turn strengthen the Teagasc brand identity.
Chapter 2 Literature Review

2.1 Introduction

The purpose of this chapter is to review relevant literature which will provide a suitable background to the aims and objectives of the study to develop ways for Teagasc to engage with recent agricultural college graduates from graduation to farm ownership. The chapter is broken into four sections. The first section focuses on Agriculture in Ireland highlighting its importance to the economy and its future targets for growth. The second section reviews the structure of agricultural education and extension both in Ireland and internationally. The third section reviews the importance of youth in modern agriculture, the age structure of Irish farmers, the role of young farmer organisations and any existing linkages between young people and agricultural extension services. The fourth section reviews the communication methods that currently exist between agricultural extension and farmers with a focus on the use of technology as a communication aid. The last section concludes this chapter with a summary of the main conclusions from the literature which will aid in the analysis of the research.

2.2 Irish Agriculture

The Agri-food sector is one of Ireland’s most important indigenous industries, employing in the region of 50,000 people, as well as providing the primary outlet for the produce of 128,000 family farms. These jobs are dispersed throughout all regions of Ireland, especially rural areas. The sector accounts for half of purchased Irish goods and services by the manufacturing industry and just over half of exports by indigenous manufacturing industries (DAFM, 2013). The value of Irish agriculture to the economy is €24 billion and the sector accounts for 10% of national employment (Teagasc, 2013). Ireland is self-sufficient in food production in that it produces more than is domestically required. Bord Bia estimated that in 2011 Ireland exported more than €8.8 billion in agri-sector exports as a result of Ireland’s high level of self-sufficiency in many products (DAFM, 2012 a). Exports were worth over €9 billion in 2012 according to the Department of Agriculture Food and the Marine’s annual report (DAFM, 2012). Based on the above figures, agriculture is an industry that needs to be
sustained and its future to be ensured. Young potential farmers need to be encouraged to develop their careers in agriculture.

Land Use and Area

There are over 4.6 million hectares of agricultural land in Ireland with 82% of it comprising of grassland, with Ireland being unique in being able to produce a high quality product from a grass based agricultural enterprise. In the Census of Agriculture 2010, results showed that 44% of the country’s productive agricultural land was located in the BMW (Border Midlands and West) region. There are 437,000 hectares of rough grazing, 274,000 hectares devoted to cereals and the remaining 80,000 hectares approximately used for other crops, fruit and horticulture (CSO, 2010).

Farms Size and Type

In 2010, there were 139,860 farms in Ireland. While in 2000 there were 141,527 farms, showing a continuing decline. Fifty three per cent of the farms were located in the Border, Midland and Western (BMW) region and 47% in the Southern and Eastern (SE) region in 2010. The average farm size was 32.7 hectares, a slight increase on 2000 when the average farm size was 31.4 hectares. Over 42% of farms (59,055) consisted of less than 20 hectares while just over 3% of farms (4,695) consisted of 100 hectares or more. The BMW region had the smallest average farm size of 27.3 hectares, the average farm size in the SE region was 38.6 hectares, while the Mid-East region had the largest average farm size of all the other regions at 43 hectares (CSO, 2010).

Beef farming in Ireland continues to be the most dominant type of farming with over 55% of farms having a beef enterprise. Just over 11% of farms were dairying and a further 11% were mixed grazing and livestock, while 13,600 farms were identified as sheep farms. The scale of beef farming is shown in its exports where there were approximately 495,000 tonnes of beef produced in Ireland in 2012. The value of meat and livestock exports was almost €3 billion in 2012, of which beef exports accounted for €1.9 billion, while 50,000 cattle were also exported live from Ireland (Bord Bia, 2013).
Age structure of Irish Farmers

Of the 139,860 farms in Ireland in 2010, 99.8% were classified as family farms. With over 300 farms identified as commercial holdings. The results showed that 88% of family farm holders were male. The number of family farms owned by females in 2010 remained relatively low at 12.4% (CSO, 2010).

More than half (51.4%) of all farm holders in 2010 were aged 55 years or older. In 2000, just 39.5% of farm holders were aged 55 or older and more than a quarter of all farm holders were aged over 65 years. The majority of female farm holders were 65 years and older at 36.3% of all female farm holders. The average age of male holders was 54 years while the average age of female holders was 58 years. The number of holders aged less than 35 years more than halved in the ten year period between 2000 and 2010 from 18,382 to 8,683 holders, representing just 6.2% of all holders in 2010 (CSO, 2010). This is a stark statistic and is showing a rapid decline which needs to be addressed. It is imperative that young people are retained in agriculture. This research aims to provide recommendations on how Teagasc retain contact with young people which would hopefully result in arresting the decline in young people in farming.

2.3 The Structure of Agricultural Education and Extension

The structure of education and extension services to the farming communities both nationally and internationally are examined in this section of the review of literature. The material is presented in two separate themes;

1. Agricultural Education
2. Agricultural Extension
2.3.1 History of Agricultural Education in Ireland

Agricultural education in Ireland has a prominent role in ensuring the productivity of Irish agriculture. The future of Irish agricultural industry is dependent on the education provided by agricultural colleges to young farmers to ensure they are equipped with the skillset they need for their businesses. Agricultural education has always been a significant factor in the sustainability and development of human society (Frick et al., 1995).

Agricultural education has been a necessary component of educational policy in Ireland since British rule. Research in improvements of agricultural practices had been conducted through Universities in England and Trinity College Dublin which was founded in 1592 (Curran, 1992). A society was founded in Trinity College which was the fore runner to the Royal Dublin Society as we know it today. The society had established links with Royal London Society and had issued 159 scientific papers across all disciplines (Curran, 1992). The Royal Dublin Society remained the core hub for agricultural science and education until the notion of combining literary education with training in agriculture and the processing of agricultural produce had become an established practice in the Charter Schools in Ireland in the eighteenth century. The chartered schools were schools to educate the protestant poor in Ireland (Milne, 1974). The first chartered school opened in 1733 in Castledermot, this was to be the foundation for the agricultural colleges as we know today (Curran, 1992). Practical agricultural education was in the main taught at primary school level until the late 1800’s when formal agricultural education in Ireland leading to a degree in agricultural science became available in 1867, when a Faculty of Agriculture, under the direction of Professor Davy, M.D., was constituted in the old College of Science in St. Stephen's Green (Senior, 1952). The first college to provide Agricultural Education to people wishing to learn the skills for practical farming was the Franciscan Brothers Agricultural College in Mountbellew Co. Galway which was established in 1904, this privately owned college was state aided by the Department of Agriculture and Technical Instruction (Mountbellew Agricultural College, 2015). In 1905 the agricultural stations at Ballyhaise, Athenry and Clonakilty were acquired to serve as centres from which farmers could obtain stock sires, new varieties of seeds and general information, they also provided facilities for the training of farm apprentices (Curran, 1992). The Department of Agriculture took over the responsibility for technical instruction
of agricultural science in 1919. To train Irish farmers in best agricultural practices, the Department of Agriculture funded colleges and also counties to provide local advisors, and encouraged basic agricultural training in the schools. Agricultural instructors were employed by the County Committees of Agriculture. The duties of the instructor were delivering lectures of a practical nature to suit local needs, visiting farms and dealing with requests for advice and carrying out field experiments and demonstrations.

In 1980 a new semi-state organisation, the national advisory and training body (ACOT or An Comhairle Oiliúna Talmhaiochta), was set up to provide training and advisory services for all farmers. It took over the functions and personnel of the five state colleges, and also the state funding of the 10 private colleges (Prager and Thomson, 2014). In 1981 ACOT completed a review of its agriculture courses and as a result a new training programme was created called the Certificate in Farming, (Teagasc, undated). In 1988, Teagasc was established as the national agency with overall responsibility for the provision of research, training and advisory services to the agriculture industry. It subsumed the training functions of ACOT, so that benefit could be derived from the co-ordination and integration of the training service with the research and advisory services (Kirley, 2008). In the 1990’s enrolment numbers fell to an all-time low which through to the 2000’s saw the closure of one Teagasc college in Mellows Campus Athenry and three private colleges (Browne, 2011). The period of economic growth in the early 2000’s resulted in many young people seeking a career in areas other than agriculture (Browne, 2011). However when this economic growth collapsed in 2008 agriculture became popular again and as a result the numbers seeking courses in agriculture soared. Agricultural education has now evolved since then into the seven colleges now present in Ireland today that offer courses in agricultural science (Browne, 2011).
2.3.2 Modern Agricultural Education in Ireland

Agricultural education in Ireland today has evolved into a third level platform with education ranging from a PhD degree to certificate in agriculture. The basic principles of Agricultural science are still delivered as a subject in second level schools as part of a Leaving Certificate examination programme. The higher level institutions are responsible for offering agricultural education to degree level and the practical agricultural education is in the responsibility of Teagasc, the Irish agriculture and food development authority of Ireland. Teagasc is the main provider of further education in agriculture, food, horticulture, forestry and equine studies. Education to an honours degree level (Level 8) is a 4 year course with an ordinary degree being 3 years in duration (Level 7). Teagasc provide education up to Level 6 award, which is known as an advanced certificate, this award takes two years to complete and a certificate at Level 5 is a one year course.

2.3.2.1 Full time and Part time Education

Entrant requirements are that applicants for the full-time programme must have completed the senior cycle of a second level school or be 17 years old. Courses are also held on a part time basis and will take two years to complete; these courses take place during out of hours work times to cater for older students. The applicants need to be over 23 years of age. The Certificate in Agriculture involves theoretical learning and a practical learning period which takes place on nominated farms. (Teagasc, undated 2).

‘Andragogy’ is a term used to define methods or techniques used to teach adults (Merriam, 2001). According to Wise and Ezell (2003) adult learners bring life experiences to the learning process. There is now exceptional demand arising for courses offered on a part time basis, the distance education learning course caters for those who are over 23 years of age and hold a Level 6 award in a discipline other than agriculture. This course is 15 – 18 months in duration (Teagasc, undated 2). The age group of the participants leans the structure towards an adult education format.
2.3.2.2 Higher level Awards

Teagasc is involved with six Institutes of Technology, UCD and DCU in the joint delivery of 12 higher level programmes right up to Level 8 Honours Degree (Browne, 2011). The further education courses are accredited by QQI (Quality Qualifications Ireland) and higher level courses are accredited by HETAC which means that graduates have a qualification which is recognised internationally (Teagasc, undated 2).

People aspiring to be farmers need a good practical education and according to Browne (2011), agricultural education policy needs to look at lifelong learning for all farmers and should examine what skill sets new entrants to agriculture need now and in future and should equip these students with those skills. Downey and Purvis (2011) also had similar views to Brown by stating that a key determinant of a sustainably-competitive agriculture and rural economies in the immediate years ahead is the education of agriculturists and farmers, as well as providers of associated rural businesses and services.

2.3.3 Importance of Agricultural Education

The common aim of all systems of agricultural education, research and advisory services, is to bring to an increasing number of those working the land, a full knowledge of methods and practices through the adoption of which profitable production can be brought to a maximum (Senior, 1952). As farm inputs and equipment have become more sophisticated, it has become increasingly important for farmers to understand the proper applications, limitations and management of those inputs and tools (Nelson and Trede, 2004). With the growing global demand for food it is more important now than ever that agriculture is kept a priority for government. The changing nature of global agriculture, from a market perspective increasingly requires farm families to have a strong basic education in order to adopt new technologies and integrate them into the farm business (Huffman and Orazam, 2004). Heanue and O’Donoghue (2014) conducted a study on the value of formal agricultural education and it was stated that the benefits of formal agricultural education are clear: agricultural education improves a farmer’s technical efficiency and allocative
efficiency. They outlined three main reasons why formal agricultural education improves technical and allocative efficiency.

1) Education by helping farmers make better use of information and find solutions to problems makes them better managers allocating their resources more efficiently.

2) Not only does education help farmers use existing information more competently but they also have better access to required information.

3) Educated farmers are more likely to adopt new technologies or products early because of their access to information and their ability to better distinguish between promising and unpromising innovations.

Kilpatrick (1997) conducted research that found a positive relationship exists between education, training and farm profitability. He also discovered that businesses with managers with higher levels of education were more likely to have higher business profits than those with lesser levels of education. Honigsberger (2011) said that education and training should improve student’s level of business management, marketing and entrepreneurship and establish closer relations with the realities of the professional world. The research of Heanue and O’ Donoghue (2014) found that formally educated farmers have higher average gross margins per hectare: typically, average gross margins per hectare were between 1.3 and 1.7 times higher than those farmers with no formal agricultural education. In similar research by Leavy (1987) on the impact of formal agricultural education found that farms where the managers or family members had an agricultural education were larger, invested one third more money per acre and were 20% more intensive with greater gross margins as a result of their efforts. Uaiene, Ardnt, and Masters (2009) found a similar relationship as Leavy (1987) with the findings that; education gives farmers the ability to perceive, interpret and respond to new information faster than their counterparts without education.

The Department of Agriculture, Food and Marine (DAFM) Food Harvest 2020 report sets out a road map for growing the agri-food and fisheries sector over the next decade and sets ambitious targets for many sectors of the wider industry (DAFM, 2014). In order to meet Food Harvest 2020 targets there is a need to bring new blood into Ireland’s already ageing population of farmers. There is currently an on-going decline in the number of young
farmers in comparison to the increasing number of farmers over 65 years of age. The number of farm holders aged less than 35 years, more than halved in the ten year period between 2000 and 2010 from 18,382 to 8,683 holders, representing just 6.2% of all holders in 2010 (CSO, 2010).

In order to ensure the future of the country’s farmers the demand for agricultural education is stronger now than ever. Central Applications Office (CAO) data released on student applications for third level courses showed a 10% rise in the number of students whose first preference in 2014 was a level 6, 7 or 8 course in agriculture. The number opting for agriculture courses is now 2.5 times higher than the low points requirement in 2007 (CAO 2014). With this demand taken into account, it is important that the educational support that is provided to aspiring future farmers is maintained and is of relevance to the needs of the sector. Within Food Harvest 2020 significant potential for the industry is set out and people want to be part of this growth. The challenge for the agricultural colleges is to educate the students, giving them the skills and knowledge to maximise their potential within the industry (Kelly, 2013).

2.3.4 Agricultural Extension in Ireland

Extension involves the conscious use of communication of information to help people form sound opinions and make good decisions, (Van Den Ban and Hawkins, 1996). Thus extension services provide the delivery of information inputs to farmers (Anderson and Feder, 2004). Agriculture is an industry that, in order to generate a viable future, farmers require high standards of education and an extension service that can aid the future farmer in making key decisions. Van Den Ban and Hawkins (1988) stated that agricultural extension is especially important when new opportunities are created as a result of new markets and returns on investments in infrastructure can be enhanced substantially if a small proportion is invested in it. The rapid increase in the quantity of knowledge available to farmers is another reason for having an agricultural extension service. Without extension assistance it becomes impossible for a farmer to learn what’s required to farm efficiently and to cope with rapid changes in our society such as in markets to which farmers must adjust (Van Den Ban and
Hawkins, 1988). Farmers have to form their own conclusions on subject material that is provided to them from the extension service. The concept of diffusion is where information is targeted at a core group of farmers and is then diffused extensively through farmer to farmer discussion, this is known to be a cost effective method of information transfer (Feder et al., 2004).

The Republic of Ireland is unique in having a substantial component of its Agricultural Knowledge and Innovation Systems (AKIS) within a single organisation, Teagasc, the Agriculture and Food Development Authority (Prager and Thomson, 2014). Teagasc activities are complemented by private agricultural consultants and veterinarians, private research entities, universities and Institutes of technology, government departments, various public agencies and numerous other actors (Prager and Thomson, 2014).

Figure 1-Linkage Between the Irish AKIS

Source: Boyle (2012)
Ireland has a largely publicly funded advisory service based on a model of recovering 33 per cent of its cost from farmers. There is a recognition that Government no longer needs to provide the sole source of finance for all of the services offered by a public advisory service, but it does need to support the provision of public goods which otherwise would not be provided due to market failures (Prager and Thomson, 2014).

Until about 1980, the Irish extension service was mainly operated by agricultural colleges and by county committees of agriculture. The Department of Agriculture funded the provision of teachers and advisors to colleges and county committees respectively. With this structure, it was difficult to ensure consistent and high-quality advice aligned to national policies throughout Ireland (Prager and Thomson, 2014). The idea of a state-supported agency to ensure the adoption of new methods by farmers was widely accepted (Keenan, 1965).

Farrington (1995) outlined five criteria justifying why the public sector is needed in agricultural extension.

1. Public provision of information is a way of reducing considerable risk that can attach itself to agriculture and it can enhance the stability of production.

2. Information that is relevant to technological innovation is public good in character.

3. The institutional and physical infrastructure for information provision is often poorer in areas beyond the immediate radius of administrative and commercial centres.

4. Public action is needed to enhance the incomes of civil society to ensure a regional balance.

5. In the cases where seeds and agrochemicals are used in agricultural production, public provision of information allied with the application of technical standards is needed to ensure safe and correct use.

Garforth (2002) said that government need to influence farmer’s land use and land management decisions in order to achieve policy objectives relating to agriculture,
environmental quality, food safety and rural development. In 1987, ACOT decided to operate a basic charge for a standard annual advisory contract, prior to this all advice was previously free (Prager and Thomson, 2014). Teagasc derive their current income for fee-paying clients accounts for 30% of the overall cost of the advisory service. It is believed that charging has led to a more business-like relationship between farmer client and advisor, and to the development of services that are focused on the needs of the client (Prager and Thomson, 2014). Kelly (2009) noted several benefits of fee-based services for Ireland, including that such services focused on client needs, increased advisor confidence, involved more business-like relationship, and achieved cost recovery for specific services thus avoiding unfair competition claims from private sector and an improved status of the service. According to Marsh and Parnell (2000) the economic rationale for farmers to pay for extension services is generally clear, and the practice is well established in high income countries. However, in research by Phelan (1995) it was noted that the introduction of charges resulted in a concentration on farmers who could pay; namely, the more commercially oriented farmers.

Figure 2-The Teagasc Agricultural Knowledge and Innovation System (AKIS)

Source: Boyle (2012)
Teagasc client services are organised around club packages, advice on technology through farm visits, facilitation of business and technology discussion groups and environment protection schemes (Prager and Thomson, 2014). The extension approach has evolved hugely over recent years from an exclusive emphasis on the imparting of knowledge to farmers to a focus on implementation support (Boyle 2012). With a client base of over 40,000 farmers, out of a possible 130,000 throughout the Republic of Ireland, Teagasc has been considered a ‘leading light’ in the provision of technical farming advice (Phelan, 1998).

2.3.4.1 The Role of Advisors in Agricultural Extension

An advisor must form a close working relationship with his/her clients and interact with the farm household, (Watson, 2012). Agricultural advisors assist farmers in the adoption of new technologies and give farmers the confidence to proceed in new practices. Botha et al (2008) emphasised the critical role being played by consultants in addressing productivity and economic issues related to agricultural production, while Watson (2012) said that a critical part of the role of advisors is to provide effective responses to clients’ individualised requests. Meeting these requests is the foundation for a strong farmer/advisor relationship. An advisor needs to provide for a customised demand driven service. A major strength of the service Teagasc provides is the relationship they have with farmer clients. A significant part of the knowledge transfer process is facilitating farmers’ interpretation and use of public information in formats such as newsletters and other media sources. An advisor will typically communicate to a farmer client at local clinics, discussion groups, farm visits and one to one consultations.
2.3.5 International Agricultural Extension and Education

The following pages in this section will review the structure of international extension organisations. The selection of the following countries was based on two factors 1) The similarity of the countries public and private agricultural extension services and 2) The lack of literature on agricultural extension in other major developed countries.

2.3.5.1 Public Agricultural Extension

Agricultural extension has been evolving as an integral part of agricultural development over the past century (Qamar 2000), but was primarily developed for the production of export commodities (Picciotto and Anderson 1997). It evolved as a government policy instrument in the 1970s in response to the World Food Crisis when efforts were being made to boost staple food production through increased public spending in the agricultural sector, including provision of extension services (Benson and Tahseen, 2013). Public extension systems as recognised today came about prior to the 1950s, and fostered a colonial approach focusing on export crop production (Picciotto and Anderson 1997). Although informal variations of extension services have existed throughout history, they were only officially institutionalised as government bodies in the 1950s in many developing countries (Feder et al. 2001). This resulted in governments investing large budgets in agricultural extension; anticipating substantial rises in agricultural production (Feder et al., 2001).

The four countries in the UK have a common situation in that they involve a mix of public, private commercial and non-governmental actors, with stronger governmental intervention in the provision of advice in Scotland and Northern Ireland. Advice on the agri-environment and public goods is subsidised or fully funded by government, while general business advice, marketing and agronomic advice is paid for by farmers (Laurent et al., 2006). Currently the advisory system in the UK is characterised by diverse arrangements in the four UK countries, the implementation of European regulations for agricultural practice, education and training, rural development, and research is all controlled by separate agencies. In England, there has been an organisational evolution towards the privatisation and commercialisation of
knowledge production and transfer. Non-government organisations, public and private extension organisations compete for the provision of agricultural advice (Prager and Thomson, 2014b).

Scotland and Northern Ireland operate through a fully publicly-managed system (ADE Consultancy, 2009). Scotland’s Environment and Rural Services (SEARS) was launched in 2008. It is a partnership between eight public bodies aiming to improve the experience among land managers by working together to provide an efficient and effective service (SEARS, undated). The aim of this service is to reduce agricultural inspections and simplifying the forms and surveys that land managers need to complete. The Scottish Government provides a wide range of advice through its Public Good and Veterinary Advisory Services (VAS). These are delivered by the Scottish Agricultural College (SAC) on a generic free basis (Prager and Thomson, 2014b). Scotland has a structure similar to that in Ireland’s Teagasc. An organisation called the SRUC (Scotland’s Rural University College) was formed due to the merger of Barony, Elmwood and Oatridge Colleges and the SAC. They exist to deliver research, education and consultancy services (SRUC, undated).

In Northern Ireland, the Department of Agriculture and Rural Development (DARD) is the designated authority to ensure that a Farm Advisory System is provided. The farm advisory service is fully funded by DARD through the College of Agriculture Food and Rural Enterprise (CAFRE) which also provides agricultural education. The Farm advisory system is centrally co-ordinated by a group called ‘Helping Farmers Comply Forum’ (Prager and Thomson, 2014b). While Wales uses a strong public extension service supported by various private advisory networks. The Farming Connect in Wales subsidises 80% of the cost of advice. In addition to local advisors there are designated regional coordinators for the Farming Connect scheme (Welsh Assembly Government, 2010; Welsh Government, 2012).

Agricultural extension in Australia bears some historical similarities with the European and American experiences (Hunt et al., 2012). Extension was initially developed to deliver food security and economic potential for isolated British colonies in an environment not necessarily suited to European farming practices. Extension contributed to building wealth through creating agricultural export industries in a young nation state, and to the national and British imperial war efforts in two global wars. By the late twentieth century, agricultural
extension in Australia reached a high point of achievement in organisational scale, technical expertise, academic recognition and training in contemporary methodologies, but has since undergone major shifts triggered by reforms in national agricultural policy (Hunt et al., 2012). Agricultural extension has been characterised by a large and effective public sector with a strong emphasis on production based technology transfer (Cary, 1996). State departments of agriculture have historically been the major providers of agricultural extension services, although Australia has also had a strong private-sector involvement in the delivery of agricultural information. However, changes in government agencies in recent years, in response to the policy ideas outlined previously, have been substantial (Watson, 1996). The agricultural Research and Development Corporations (RDCs) are taking a more pro-active role in extension. RDCs are funded on a joint 50:50 basis by the Commonwealth government and producer levies and act as investors, co-ordinators and facilitators in contracting out research projects on behalf of their government and industry stakeholders (Marsh and Pannell, 1999). The RDC’s are co-ordinating technology transfer initiatives, such as crop monitoring and herd/flock performance measuring systems, (Marsh and Pannell, 1999). There is a trend towards increasing service delivery by the private sector with public or private-sector funding, (Marsh and Pannell, 1999).

2.3.5.2 Private Agricultural Extension

The structure of international extension organisations since the 1950’s were public organisations (Benson and Tahseen, 2013). However is has been said by Rivera (1997) that there is increasing pressure to reform public extension systems internationally due to the combination of competition from the private sector. This is now leading to the privatisation of many public extension bodies. Rivera et al. (2001) cites numerous examples of various types of reforms in place worldwide; namely, the privatisation of extension and the rise of cooperatives.

In Ireland small private consultancy companies have slowly emerged to provide direct whole-farm or technical advice. These small companies range from one-man units to associations of 3-5 advisors, and typically have a focus on rural environmental protection
The network of private advisors evolved when the Rural Environmental Protection Scheme (REPS) was introduced in 1994. The REPS created the need for specialised external support and attracted private advisors. The focus of these advisors now extends beyond REPS, and they now compete with but also complement advice provided by Teagasc (Prager and Thomson, 2014). As agriculture becomes more specialized and industrialized, public sector agricultural extension is thought to be less relevant since the private sector can more efficiently provide technical assistance. Highly specialised farmers are increasingly bypassing public sector extension and go directly to private sector consultants, universities, or research agencies to obtain farm information (Rivera, 2011). Rivera (2011) also noted that private sector companies are more frequently utilising the expertise of national government and extension services. In developed countries they consult government seed agencies when cultivating and naming seed varieties, utilise nationally gathered data when developing products, and seek to develop joint research/extension ventures in various sectors of crop and animal research. Research and technology-transfer linkages between the public and the private sector have been shown to be important in both developed and developing countries.

The UK had a state advisory service called ADAS (Agricultural Development and Advisory Services) and according to Curry et al. (2012) the privatisation of ADAS in 1997 was probably the most prominent event for many in the dismantling of this system as the AKIS became laissez-faire. England now has a fully private agricultural extension programme while Wales uses a strong public extension service supported by various private advisory networks, (ADE Consultancy, 2009).

New Zealand has been at the forefront of privatization of government services in general privatising its agricultural extension services in 1987 (Botha et al., 2006). The service was formed into a stand-alone business unit, MAF Agriculture New Zealand. Concerns have been raised about the potential fragmentation of RD&E as a result of privatization. Stone (2005) looked how consultants were working with farmers in Australia and how they engaged with the research and development (R&D) providers. He concluded that they worked differently depending on farm size and level of innovativeness and that they fell largely outside of the R&D sector. He suggested that there is a discontinuity between R&D providers and the frontline private consultants. Stone (2005) draws on work by Fulton et al. (2002) to indicate
that public extension was ‘retreating’ and that extension was largely being undertaken by private providers but that there was insufficient incentive for them to fully move into the gap between research and landholders. A key issue raised by Connelly (2004) was the need to explicitly consider the needs of the poor and smallholders that could be neglected under privatisation. Drawing from the UK study, Connelly (2004) also raised the issue of the problems that arose over environmental issues as a result of a privatised service. Research by (Botha et al., 2008) also supports the conclusions of Connelly (2004) and Laurent et al. (2006) that privatized extension can also result in discontinuities particularly in relation to the adoption of public and industry-funded R&D and in relation to addressing environmental issues.

2.3.5.3 International Agricultural Education

The United Kingdom

In agricultural education in the UK, a distinction is made between higher and further education (HE and FE), although the boundaries are becoming increasingly blurred (Winter 1995). In the higher education sector, agricultural and allied subjects are taught in universities and a few national colleges at Higher National Diploma or Certificate (HND/HNC), first degree and higher degree level, (Gasson, 1998). The minimum entry age is 17 and courses normally take a minimum of 3 years full-time study and are strongly science-based. Further education courses for agriculture are run in 34 county agricultural colleges in England, six in Wales, the Scottish Agricultural College and four local authority colleges in Scotland, and three colleges run by the Department of Agriculture in Northern Ireland. County agricultural colleges aim to provide education in practical husbandry and farm management for 16 to 18 year olds, (Gasson, 1998). Courses range from two year full-time or three-year national diploma courses, through one year national certificate to part-time day release courses (Winter 1995). One of the leading educational institutions of England is the Royal Agricultural College. The Royal Agricultural College (RAC), now the Royal Agricultural University (RAU), was the first agricultural college in the English speaking world (RAU, undated). It provides primary, undergraduate and postgraduate agricultural
education. Founded in 1842, the college has been one of the major educational institutions in the field of agriculture since 1845 when it was awarded as Royal Charter (Naidyonova, 2013).

**Australia**

In the first decades of the twentieth century agricultural faculties were created and fostered in Australian universities. Universities began to develop the intellectual capacity necessary for growing an emerging agricultural Research, Development and Extension sector (Williams, 1968; Black, 1976). The agricultural colleges were modelled on what was occurring in the USA under the Land Grant system, and were targeted at equipping the rural populace with skills to farm with modern knowledge, (Hunt et al., 2012). During the 1970s and 1980s, Australian higher education was organised under a ‘binary system’ consisting of the university and non-university sector made up primarily of Colleges of Advanced Education (CAE’s). The ‘binary system’ was described as having four distinctive groups including the larger, older universities, the smaller, younger universities, the institutes of technology and the colleges (Goedegebuure, Lysons, & Meek, 1993). A feature of the non-university sector is its capacity to facilitate student progression through the design of articulation pathways from vocational training to sub-degree level, and on to degree level. The college sector encourages entry from a broader range of school leaver backgrounds and mature-age applicants. At present, there is a significant undersupply of people with post-secondary qualifications in agriculture that, if not addressed, will limit the sector’s capacity for continued growth. According to (Hunt et al., 2012) the move towards privatisation of agricultural extension has led to the schools of agriculture diminishing in universities due to reduced public funding. This has placed a negative impact on the skill set of the Australian agriculture workers.
**New Zealand**

There are only two universities in New Zealand offering Agriculture courses - Massey in the North Island and Lincoln in the South Island. Around twenty-five polytechnics and several private training establishments complement the universities' role in tertiary AE&T. Telford Rural Polytechnic is the only specialist land-based polytechnic education facility in New Zealand and is based in Otago (Knowles, 2010). There are several private specialist land-based education organizations spread throughout NZ; these are with varying levels of partnership with University and polytechnic providers, primarily sub-contracted for training and service provision, for example; Agriculture New Zealand. New Zealand has a range of different Industry Training Organisations (ITO’s), including agriculture, (Knowles, 2010). The AgITO trains around 8000 students per year, while the students are in paid work, across a range of primary industries. The courses are a blend of practical and theory and cover a wide range of topics from wool harvesting to water industry services. Students attend classes mostly through contracted training providers, and have a local AgITO advisor who assists with keeping them informed and motivated, (Knowles, 2010). It was noted by Knowles (2010) that the New Zealand education system does not collaborate well and there is gap between extension research and education. Knowles (2010) suggested in a review of agricultural education in NZ that they should look overseas to model their structure on an organisation that combines all three sections of research education and extension. The organisations suggested were Teagasc in Ireland, Georgia University and the State Agricultural Colleges in the USA.
2.4 Youth in Agriculture

Rural youth are the future of food security. Yet around the world, few young people see a future for themselves in agriculture or rural areas (FAO, 2015). It is vitally important for agriculture that young people are entering the agricultural sector to continue the dissemination of agricultural practices. In Ireland just 6.2% of all farmers in 2010 were under 35 years of age (CSO, 2010). It is not just Ireland that it witnessing a poor uptake of agriculture from its rural youth but countries in Africa too are experiencing in fall in the number of youth participating in agriculture. In Nigeria the population of farmers is decreasing fast due to the sector being dominated by old men and women (Auta et al., 2010). While in Europe, The European Commission has identified a distressing shortage of new farmers, based on an assessment of statistical figures showing that the number of young farmers in the EU is declining and older farmers are not passing on their farms to the new generation at a sufficient replacement rate (Zagata and Sutherland, 2015). In the EU there has been a loss of 3 million farmers in recent years (Zagata and Sutherland, 2015).

In order to sustain and increase the current level of output from agriculture the next generation of farmers need to be in a strong position to face the challenges that may lie ahead. Developing a career in farming is not for the faint hearted and requires a large amount of capital to support the financial cost of start-up in terms of farm infrastructure, livestock and land costs. Young farmers starting out often find it difficult, most will have inherited land from a family member, but those who are not fortunate enough to inherit a farm holding face the problem of acquiring agricultural land while they are still young, (White, 2012). In a recent study on land mobility and succession in Ireland it was found that the average age of successors to Irish farms is 25 and 95% of them were children of the land owners (Bogue, 2013a).

The current Minister for Agriculture Simon Coveney recently addressed the issue of Ireland’s agricultural age structure by saying that one of the major challenges facing the agricultural sector is its age profile. In short, it continues to rise in a way that is very worrying for the sector. CSO data shows that the average age of farmers rose from 50 to 54 years between 2000 and 2010. More than half were aged 55 years or older in 2010 (up from 40% in 2000), while more than a quarter were aged over 65 years. At the other end of the scale, the
number of farmers under 35 years more than halved over the same period (DAFM, 2014). The Teagasc objective of generating and applying new knowledge for the sustainable development of agriculture and the food industry is less likely to progress with an increasing age profile of the country’s farmers, the new and innovative ideas needed to develop more efficient, competitive and sustainable methods of production is less likely to emerge. Older farmers are less likely than the younger generation to embrace new technology or to invest in their farms, (DAFM, 2014). Minister Coveney also stated that the prospects of achieving the Food Harvest 2020 targets, and indeed of securing the future development and prosperity of the agricultural sector, would greatly improve if we could attract more young, qualified people into farming (DAFM, 2014).

2.4.1 Developments for Young People in Agriculture

Over the years there have been numerous opportunities for young people to engage in agricultural activities. The formation of young farmers organisations has provided a club membership structure for young people interested in agriculture. They can meet other people of similar ages and interests to participate in community based activities and events. A young farmers organisation acts like a union so that young people can act as one voice. This proves to be a formidable strength when it comes to standing up for young people’s needs.

As governments have recognised that there is a falling number of young people entering into agriculture. An effort both nationally and at European level is being made to encourage land mobility from the ageing population of farmers to their identified young successors. This has led to the effort becoming an incentivised programme of land transfer whereby there is financial reward to be reaped from transferring land ownership to young people and their commencement of agricultural activity.
2.4.1.1 Incentives for Young Farmers

There are existing benefits for young trained farmers to commence farming in their own right; young trained farmers are those who are educated to a minimum Level 6 third level degree course in agriculture or equivalent. The tax relief benefits include; 100% stock relief, which enables them to offset any increase in the value of stock against their tax liability on book profits and stamp duty relief on land purchases and transfers which encourages land mobility, (Macra na Feirme, 2013). The Department of Finance is currently investigating how these tax measures can help to encourage young farmers and new entrants by making it easier to access land. Currently less than 0.5pc of farmland changes hands every year and there is a strong attachment to holding on to it, so the Department of Agriculture wants to see what measures work best to encourage more land mobility.

The abolition of the early retirement scheme in 2008 for farmers over 60 years of age had a negative impact on land mobility. The young farmer installation aid scheme was also abolished in the same year; it provided young trained farmers with a start-up grant of €15,000. The aim of it was to encourage young people to establish themselves in farming (Teagasc, 2007). Young farmers do not automatically get Single Farm Payment entitlements, in order to be allocated these payments they need to apply to the national reserve which is the number of entitlements that are unused each year. The cuts to the schemes that were a necessity to support the financial cost of start-up in farming are threatening the future for young farmers.

A number of schemes and incentives have been introduced by the Department of Agriculture under new Basic Payment Scheme in 2015 to address the ageing farming population.

1.) The National Reserve allocates entitlements to farmers with no or low value payments that commenced farming in 2010 or later. This payment is worth €254 per hectare and is payable to a maximum of 90 hectares of land (DAFM, 2015).

2.) The Young Farmers Scheme top up; adds an additional 25% of the national average entitlement value to young farmer’s payments, this equates to an addition €63 per hectare of land owned or leased up to a maximum of 50 hectares of land (DAFM, 2015).
4.) Young farmer capital investment scheme; the provision of grant aid to young farmers to a rate of 60% on farm building investments to the maximum value of €80,000.

3.) Tax free allowances to farmers over 40 years of age on long term land leases to promote land mobility.

• €40,000 where all the qualifying leases are for 15 years or more.
• €30,000 where all the qualifying leases are for 10 but less than 15 years.
• €22,500 where all the qualifying leases are for 7 but less than 10 years.
• €18,000 where all the qualifying leases are for 5 or 6 years.

(Revenue, 2015).

In order for young farmers to avail of the financial incentives available, a qualification of Level 6 or higher in agricultural science is required, as a result there has been a huge surge in the number of young people wishing to enrol in agricultural courses (Teagasc, 2014).

### 2.4.1.2 Young Farmer Organisations

There are young farmers organisations in many countries. In Ireland there is Macra na Feirme which is an organisation for young people between the ages of 17 and 35 who are interested in agriculture. Macra na Feirme was founded in 1944 by a group of 12 agricultural advisors, rural science teachers and farmers. Macra na Feirme has approximately 200 clubs in 31 regions around the country (Macra na Feirme, 2015). It is a social outlet for many young people to meet other with similar interests. Approximately one-third of Macra members are involved in farming, with males making up 60% of the membership and females 40%. They play a role in defending the rights of young farmers in Agricultural policy issues and their executive are involved in regular discussions with the Department of agriculture about young farmer issues. They have a strong organisational structure which has a national president who is elected for a term of two years, a national executive is elected every year and a national council is elected every two years. In addition there are
also three regional vice-presidents, a national chairman, a national treasurer and a national secretary. Each club in the 31 regions has a chairperson, secretary and treasurer.

There are similar organisations in England and Wales called the National Federation of Young Farmers’ Clubs (NFYFC) they have 624 clubs across England and Wales. Their function is to provide the 25,000 members aged 10 to 26 with a unique opportunity to develop skills, work with their local communities, travel abroad, take part in a varied competitions programme and enjoy a dynamic social life (NFYFC, 2015).

2.5 Methods Extension Organisations Use to Contact Clients

In order for extension services to contact clients they need to use many methods of communication. Telephone and postal letter where commonly used and still are today but there are now more innovative and far more advanced methods of communication available today. The evolution of the internet and online communication such as social media has brought about a social revolution. Students of agricultural colleges receive regular exposure to agricultural advice, however this then becomes strained after graduation. As students become graduates of agricultural college there are a number of ways for them to remain in contact with agricultural extension. Gasson (1998) said that agricultural colleges are only one source of new ideas and methods, ranking alongside the mass media, specialist farming publications, demonstrations, conferences and meetings, farm walks and discussion groups. Most changes to practice are influenced by interaction with and information from a number of sources, including print and electronic media, peers, experts and training activities. Farmers use a range of information sources and learning processes when managing their farm business (Ryan, 2004). The use of communication in the adoption of new technologies is very influential. Adoption is an individual process detailing the series of stages one undergoes from first hearing about a product or idea to finally adopting it (Rogers, 2003). Santucci (2005) said that mass media can plant an idea and the decision to adopt the new practice, group methods are needed such as meetings or in certain cases individual
consultations. Rogers (2003) identified five categories to describe people’s rate of adoption of new practices. In the first category, there are the ‘innovators’ who are venturesome, forward looking willing to take risks and try new ideas. The second category, the ‘early adopters’ are more cautious and they are widely accepted to have the greatest degree of opinion leadership in most social systems. They are the category most sought after by change agents as they are seen to speed up the adoption process. The third category the ‘early majority’ show deliberate willingness in adopting innovations but they will not lead. The ‘late majority’ category is very often sceptical about new ideas, but later come to realise the economic advantages and social necessity. The last category the ‘laggards’, tend to be bound by tradition and very conservative who hold huge suspicions of change and therefore they are the slowest to adopt new ideas. Santucci (2005) was cautious about the use of certain methods of communication and stated that the communication method should be chosen based on its suitability for the reason intended. The five categories of adoption have an influence on the communication method and ‘innovators’ for example with not require one to one communication and ‘laggards’ are those who may be somewhat resistant to change and will not attend open events.

This section will examine the current use of communication methods in agricultural extension and explore their effectiveness in the dissemination of agricultural knowledge.

2.5.1 Direct Communication Methods

Morrison (2012) stated five main methods are used for communicating agricultural advice:

1. One to one meetings between a farmer and advisor can be very beneficial as the focus is on the individual farmer and his/her specific situation. Also allows for confidential issues to be discussed.

2. Discussion group meeting - Farmers learn from each other’s experiences. This works best when held on a farm as practical issues can be seen and discussed.
3. Public agricultural events such as open day’s - this is a good method to demonstrate best practice which is usually done by the creators or ‘the experts’ so therefore the farmers are learning from the best in that area.

4. Agricultural publications- newspapers, newsletters, online articles etc.

5. General conversation between farmer’s - Discussing day to day practices, learning how different farmers are completing agricultural tasks. Peer to peer learning takes place in these situations (Morrison, 2012).

2.5.1.1 Discussion Groups

Discussion groups have been in operation in Ireland since the 1970’s. There is evidence of discussions groups being used in 1971 in Ballyhaise Agricultural College in Co. Cavan. A group was set up called the Ballyhaise Farmers Group in November 1971 consisting of 9 local farmers. Meetings were held monthly at the Agricultural College. The activities of the group involved farm visits to assess building layouts, designs, handling facilities milking facilities and paddock designs, (County Cavan Committee of Agriculture Annual Report, 1972).

Discussion groups mainly consist of 12 – 15 farmers who meet several times a year to share ideas and information among themselves (Hennessy and Heanue, 2012). Most groups are managed by the farmers themselves and they have their own committee including a chairperson and treasurer. The advisor facilitates the group meetings and occasionally guest speakers are invited e.g. vet or accountant. The farmers collaborate with the advisor on the topics they would like to discuss and usually there are three to four topics covered at each meeting. Those who participate in discussion groups are deemed to be innovative and accepting of technology adoption, (Hennessy and Heanue, 2012). Discussion groups offer a forum for members to share their ideas, a place to openly discuss farming issues and an opportunity to keep up with the latest technologies. Farmers sharing knowledge about farm practices can assure themselves that a new system or practice is profitable and workable (Ryan, 2004). The combination of farmers sharing their experiences and knowledge and the facilitator adding expert input makes a discussion group a great place for learning. The
facilitator gains much experience and information from facilitating other discussion groups and learns of the experiences of a wide circle of farmers. Therefore the facilitator is constantly learning and coming in contact with many problems and issues from all the other discussion group members (Hennessy and Heanue, 2012). By being a member of a discussion group it offers farmers support through the facility of social events as they get together monthly (Hennessy and Heanue, 2012). Discussion groups offer many advantages to both the extension organisation and the clients however Santucci (2005) stated that with some group methods of communication some people participate more than others and the potential feedback from group participants is limited. This will also be influenced by the quality of the facilitator.

Discussion groups are one of Teagasc’s main methods to disseminate information to farmer clients in dairy, beef, sheep and tillage sectors in Ireland. For an extension organisation like Teagasc it reduces of the cost per contact, because a relatively high number of stakeholders can be involved in the communication (Santucci, 2005). Discussion groups are also used in agricultural education courses whereby students are brought to a farm where the lecturer or local advisor will facilitate a group discussion. The Department of Agriculture, Food and Marine introduced and funded the Dairy Efficiency Programme in 2010, the Beef Technology Adoption Programme in 2012 and the Sheep Technology Programme in 2013 (DAFM, 2014). These programmes introduced by the Irish government were financially incentivised with the farmers being paid in the region of €900; These programmes were run for a 3 year period and financial incentives were made available to the discussion group members who completed a number of tasks throughout the year e.g. completing the e-Profit Monitor annually, using 5 star bulls or carrying out regular soil test (Boyle, 2014). The main objectives for these programmes are to encourage efficiency gains by expanding the level of participation in discussion groups.

O’ Loughlin (2012) said that farmers who participate in discussion groups adopt new farming practices quicker and more frequently than non-participants and this was mainly due to peer to peer influence. While Van Den Ban and Hawkins (1996) said that discussion groups have a greater influence on the motivation of member’s activities and actions compared to other methods such as lecturers and it is more likely that participants will adopt solutions discussed during a meeting. The use of discussion groups by agricultural extension services
is seen to be an effective method in the promotion of new technology adoption as farmers can learn from one another about the advantages and disadvantages of particular technologies (Garforth, et al., 2003). While Heavin (2012) stated that in his own experience of adopting new technologies as a farmer, he would obtain information about the success of a new method from other dairy farmers whose judgement he would respect. Luukkainen, (2012) researched the comparison of different extension methods in Kenya, she found that farmers preferred to learn from fellow farmers as they could understand each other better than from a dissemination facilitator. The dissemination facilitator is likely to be more educated and live his life in a different environment than the farmer. Therefore, it might be said that the farmer trainer and the other farmers are one the same wavelength with each other.

Discussion groups are a key methodology used by Teagasc to transfer knowledge to dairy farmers (Bogue, 2013). An evaluation report by Bogue (2013) on the impact of participation in Teagasc Dairy Discussion Groups after the introduction of the Dairy Efficiency Programme (DEP) had a number of interesting findings; he found that farmers’ motivation for joining discussion groups was primarily focused around learning and gaining new information. The DEP financially incentivised dairy farmers to participate in the discussion groups and the financial gain was an important motivational factor. Discussion group members were up to 20% more likely to adopt new technologies and best practice and they were also more likely to achieve higher profits. He also indicated that dairy discussion groups were an effective mechanism in the delivery of advice. He stated three factors to the success of a discussion group; regular meetings, a committed facilitator and a group chairman and secretary. The agricultural advisor was found to be a major dependence to facilitate the groups, (Bogue, 2013). It was also found that discussion groups were seen to be less beneficial to small farmers. Hennessy and Heanue (2012) conducted a study to investigate the effect of discussion group membership on technology adoption and farm profit on dairy farms. Their findings showed that farmers who participated in discussion groups had bigger farms and were located in a more advantaged area compared to those not participating in discussion groups.
2.5.1.2 One to One Communication

One to one communication between a farmer and his/her agricultural advisor has been the most common and basis method of communication. The dissemination of agricultural advice has been used in this method in many developing and developed countries (Oakley & Garforth, 1985). It is perceived by many that it is one of the most personal and effective means of communication. Morrison (2012) stated that one to one meetings with an agricultural advisor could be of great benefit as the focus is on the specific individual farm so a thorough investigation can be made of the business and the discussion would be in a confidential manner. Communication can be very effective with high levels of interaction and continuous feedback (Santucci, 2005). Watson (2012) has said that one to one communication between farmers and advisors is likely to remain a critical aspect of an effective knowledge transfer system. Watson (2012) also stressed that one to one communication is a significant part of facilitating farmers interpretation of public information e.g. press releases, media sources, newsletters, and print information. The National Open University of Nigeria (undated) stated that in the one to one communication method the agricultural advisor maintains regular contact with individual farmers. Practically, this method poses a challenge to extension workers in terms of the number of individual farmers to be covered. Individual contact methods are considered superior for conviction and action because of the face-to-face relationship of extension worker (teacher) and farmer (learner). Song and Kang (1984) reported that when an extension worker interacts on a one-to-one basis of education, although the approach is time consuming, its importance cannot be stressed enough. It is through working individually with the clientele that the extension worker learns about the people of the area, how they think, what their needs are, and how they carry on their work. Equally important is the opportunity individual contact provides for the local citizen to get to know the extension workers. The use of this method provides the extension worker the opportunity to show his credibility and integrity, (Song and Kang, 1984). The one –one method of communication is only for use with a limited number of individuals and generally related to very important or specific issues to the client or farm (Santucci, 2005). Is very labour intensive and time consuming and for an extension organisation can be very costly considering the inputs required.
2.5.1.3 Farm Visits

This method involves meeting individually with farmer or farm worker at the farm or home. A farm and home visit serves a number of purposes.

1. It establishes contact with men and women farmers and with others within the farm household.
2. To learn what practices and problems exist on the farm.
3. To provide information and assistance.

(National Open University of Nigeria, undated)

The benefits of a farm visit are that it allows the advisor to familiarise with the farmer and his family. This will enable the advisor to give specific advice or information to the farmer. The advisor can build up a knowledge of the area, and of the kinds of problems which the farmers face, which permits him to explain a new recommended practice or follow up and observe results to date, (Oakley & Garforth, 1985). In many instances it will lead to the development of a strong working relationship between the advisor and their client. However many extension organisations have noted this method as a very time consuming and expensive communication method. Anderson and Feder (2003) noted that the decrease in popularity of this system was due to the high cost associated with its implementation.

2.5.1.4 Public Events/ Results Demonstration

Public events are characterized by the use of direct communication in the presence of a large number of people. These include fairs, conferences, open days and field days, organized and managed to attract hundreds or thousands of people (Santucci, 2005). Morrison (2012) said that public events are a good way to showcase best methods of production and also have experts to demonstrate new techniques. Result demonstrations remain a valuable educational tool for agricultural extension workers (Gilbertson, 1957). Dr. Seaman A. Knapp is credited with the first use of the demonstration method in 1903 as a means of influencing the adoption of new farm practices. The main purpose of a
demonstration is to show farmers that a particular new recommendation is practicable under local conditions, (Oakley & Garforth, 1985). Comparison is the important element in a result demonstration: comparison between the uses of two different methods. Until a farmer has actually seen the results they will not be convinced by the advisor’s recommendation (Oakley & Garforth, 1985). A demonstration is an ideal way to present to farmers a comparison between traditional and new practices. It can also help to establish confidence in more scientific farming methods and increase the farmers’ confidence in ideas originating from research stations. Its major limitation is that it takes a long time to organise such an event and it is a costly use of resources (Oakley & Garforth, 1985). According to Santucci (2005) this requires a high level of management and usually demands the involvement of an organising committee, it is a public relations activity that allows the value and quality of the agency to be observed firsthand. Teagasc are frequent users of the result demonstration method. National and local events are an essential component of the organisation. Research demonstrations held at Teagasc main research centres allow for the showcasing of new practices and techniques as well as strengthening the relationship between Teagasc and the agricultural community.

2.5.2 Mass Media Communication in Agricultural Extension

Mass communication methods include for example radio, television, video, posters, newspapers and leaflets. (Oakley & Garforth, 1985). Adams (1982) defined media as any materials, objects, instruments or system which serves to communicate information including leaflets, farming press, other written and printed materials, all types of cinema films, radio and television and video system. Effective communication of new research findings and technologies in agriculture to rural farmers remains a promising strategy for increasing agricultural productivity (Abubakar et al., 2009). Mass communication methods can make contact at the same time with numerous amounts of people and constitutes the main vehicle for wide and rapid transmission of information to farmers (Mgbakor et al., 2013). However it must be noted that mass media is a one way communication channel and as said by Watson (2012), agricultural advisors help farmers to understand the information circulated in mass media platforms. The cost of extension advice through mass media comes
to be considerably low as compared to individual and group methods (Oakley & Garforth, 1985). Adolwa et al. (2012) completed research on communication methods influencing adoption on farms, it was found that community-based and mass media channels were noted as being significantly more advantageous in terms of accessibility, reliability and comprehensibility. Thus they were the most suitable for the communication and dissemination of knowledge and information. Descriptively, farmer field days and radio were deemed advantageous by many farmers. Mass media in general, and radio in particular, are not as interactive as community-based channels but radio as a channel has numerous advantages to the rural farmer and consequently they consider them favourably. Radio is mentioned as the channel that is suitable for the dissemination of information among rural populations as many farmers own radios making them easily accessible (Dutta, 2009; Momodu, 2002). In a study conducted by Abubakar et al., (2009) found that mass media is an efficient modern means of communication which possesses peculiar quality of sound, pictures and practical method of demonstrations; it also serves as an important source of farm information dissemination medium to the farmers. They also concluded that mass media is considered as a source of information to the rural populace and has become an important communicating tool to the farmers in rural areas.

2.5.2.1 Newspapers

Mass media (electronic & print media) are playing very important role in creating awareness about new agricultural technologies among farmers. Mass media are spreading agricultural technologies to the farmers at a faster rate than personal contacts. Print media such as Newspaper, magazines, newsletters, leaflets, pamphlets and posters have been widely used to disseminate information to farmers (Van den Ban and Hawkins, 1999). Khushk and Memon (2004) stated that production and distribution of printed material helps farmers in the transfer of new information and technologies. Printing helps in preserving the technologies in the shape of books/booklets, magazines, newspapers and brochures. The advantage of newspaper publications when used for agricultural information dissemination according to Apata (2010) was that the information contained in the article can be kept for future reference. Prager and Thomson (2014) referred to the agricultural mass media services being very strong in Ireland and National newspapers such as the Irish Farmers
Journal provide the main stem for circulation of information to the wider agricultural community. Newspapers like the IFJ are responsible for informing people about the latest agricultural news, technologies and technical advice. Santucci (2005) conveyed the message that print media require a considerable amount of time to be written, corrected, tested, edited, printed and distributed. Print media is suitable for those with a better education. This is a valid point to note and although it can target a large audience, feedback from these methods is not instant and the reader can interpret the message through their own filters (Santucci, 2005).

2.5.2.2 Television

Television is acknowledged as the most important medium for communicating with the rural populations of developing countries (FAO, 2001). In this regard, the television and radio are significant, as they transfer modern agricultural technology to literate and illiterate farmers alike, even in interior areas, within a short time (Nazari and Hasbullah, 2008). Santucci (2005) stated that electronic media has the power to change people’s attitudes and behaviour. It has often been noted that television and radio are the best methods of communicating a message to farmers, rural radio and television offers both the reach and the relevance to its listeners when the programs are generated in a community-based and participatory fashion. More than any other mass communication, medium, radio and television speak in the language and with the accent of its community (Girard, 2001). The beneficial difference to television from radio is that it combines the audio with the visual, allowing the viewer to fully involve themselves in an issue or topic. This coupling of audio and visual stimuli has proven that it can change human behaviour and ultimately improves farmer learning (Carpenter, 1983). It has the potential of providing information very easily to large audience dispersed over wide geographical areas, which is impossible through personal contacts Calvert (1990) argued that certainly television plays an increasingly important role in the economical delivery of information. However Calvert (1990), television is not the best tool for every situation. Television production is expensive and time consuming and it should only be used when the message is truly visual and action oriented. Santucci (2005) outlined a number of barriers to the use of television, 1) The audience
cannot interrupt nor can it repeat what it has seen or heard. 2) There is no possibility for rapid feedback. These are important observations and it shows that although electronic media portrays a message to a wide audience is can be open to misinterpretation due to the limited feedback and inability for the audience to engage in discussion.

2.5.2.3 Radio

Radio is the most responsible and efficient mass medium for disseminating information required for mobilizing farmers to participate actively in agricultural extension services, (Mgbakor et al., 2013). Radio as a communication medium plays an important role in the nation’s socio-cultural, political and economic development. People depend on radio to meet their needs of information, education and entertainment, (Ghatak, 2015). Radio has many advantages, key among them are that it reaches a large audience, conveys messages or news very quickly, is particularly effective in rural areas and non-literate cultures, is portable, it stimulates the imagination, and it carries authority (Norrish et al., 2001). Radio is listened to by 80% of people living in developing countries every week, reaching people isolated by language geography, conflict, illiteracy and poverty (Olalimpe, 1997). Omensosa (1997) observed that radio programmes are usually timely and capable of extending messages to the audience no matter where they may be as long as they have a receiver with adequate supply of power. Rogers (2003) observes that mass media channels like radio could be very important at the knowledge stage in the decision-innovation process of diffusion as it is the point that one first gains awareness of an innovation and understanding of how it functions.

The Irish state has had a long history with this communication medium, where Guglielmo Marconi developed his first overseas message by sending messages between his transmitting station in county Wexford and Cornwall in the UK in June 1895. Other messages were also sent from Wexford to both Clifden and Belfast which contributed to this sizable discovery (Clarke 1995). On an average day, 83% of Irish adults listen to a form of radio at some point every weekday with 40% of the population also listening into a form of local radio in different areas (Broadcasting Authority of Ireland, 2013). It has also been
suggested that national radio stations, especially RTE have lost out to local radio stations in the recent past. JNLR research has shown that in 2013, the listenership of most of the big national radio stations had dropped while the local radio stations across the country had generally held their own.

Teagasc use radio services for one way communication of important agricultural advice. National agricultural issues are regularly discussed on national radio frequencies. RTE (Radio Telifis Eireann), have a weekly agricultural programme which features news updates and discussions. Teagasc agricultural advisors/specialists often feature on the programme providing general advice. Teagasc have links with local radio stations across the country with a Teagasc advisor featuring each week with agricultural updates.

2.5.2.4 Mobile Telephony in Agriculture

Knowledge society technologies allow people to fully participate in society in this, the digital age, where creation and distribution of information is a key economic and social activity (CUITA, 2010). ICT is an important tool in the efficient management of modern farming, providing opportunities for access to essential current information as well as for trading activities, and it is also important to ensure that farming families participate fully in the knowledge society. Mobile Telephony offers faster and cheaper communication, (ID21, 2007) and it allows for the swift exchange of information among the farming community (Malhan and Rao, 2007). The use of mobile phone technologies (e.g. SMS) is most significant in the European Union (EU) and Ireland in particular is a high user of SMS, (CUITA, 2010). The pervasiveness of mobile technology in the rural context presents particular opportunities due to the take up of these devices and their ability to operate in the more remote areas, (CUITA, 2010). Telecommunication, especially mobile phones have the potential to provide solution to the existing information asymmetry in various lagging sectors like agriculture, (Mittal and Tripathi, 2009). There were over 10 billion SMS messages sent in Ireland in 2009, a 180% increase compared to 3.6 billion in 2004. If the total number of messages was averaged over all subscriptions that would average at 193 messages per subscriber for 2009 compared to 183 per subscriber for the same period in 2000 (Comreg, 2009). In an Irish consumer survey (Comreg, 2010) found that mobile phone
penetration increased from 37% to 96% from the second quarter of 2000 to the second quarter of 2010.

Telephone Communications via landline and mobile services are the main communications platform for Teagasc to contact clients. In research by Byrne (2013) 100% of Teagasc discussion group members clients had mobile phones and 33% of them were owners of smartphones, with 95% of farmers indicating that they use their mobile phones on a daily basis of text messaging and phone calls. The Discussion group element of agricultural extension has aided in the adoption of new practices. Farmers who are members of Teagasc discussion groups are contactable via mobile phone in relation to upcoming meetings and other important events. In research by Mittal and Tripathi (2009), they found that almost all small farmers reported some increase in convenience and cost savings by using their mobile phones as basic communication devices to seek information like input availability or market prices, with all interviewees reporting that mobile phone had generated positive economic benefits, the nature of that impact can be categorized in three ways: (i) easy access to customised content, (ii) mobility, and (iii) time-saving or convenience. They found that the second category is unique to the use of mobile phones. Farmers reflected the fact that the mobile phone has become the primary (or only) communication mode for many farmers, (Mittal and Tripathi, 2009). Mobile phones confer distinct advantages as a communication link in isolated circumstances because of its distinct feature of mobility, (Mittal and Tripathi, 2009).

2.5.2.5 SMS Text Messaging

SMS Text messaging services are becoming the new extension service in agriculture. The use of mobile telephony SMS in accessing agriculture extension information is key yet factors that influence uptake by small scale farmers in rural areas is under researched considering the emergence of many innovations on mobile telephony that is geared towards supporting agriculture extension services (Lung’ahi, 2014).

Farmers can now receive regular updates on market prices and technical advice e.g. fertiliser requirements for crops. An example of the use of mobile text messaging was a project in
Uganda as reported in by (Fielding & Ninsiima, 2012); two consultants were hired to develop an SMS service to develop content on sorghum and potato management. The information the system provided was developed in consultation with farmers and covers an array of topics, including best agricultural practices, market information, fertilizer use, natural resource management, financial management, plant spacing and disease control. The content was translated into farmers’ local dialects and edited into bite size chunks and distributed via SMS twice a week. The SMS system also allows farmers to retrieve content, through use of keywords, from a simple database populated with agricultural information. The farmers could also ask for advice by texting a question to the system where an expert advisor would answer the query. The system has benefited over 1000 farmers in the region and farmers have noted that their income has improved through greater yields due to the technical advice and also the market updates have benefited their ability to negotiate prices for their produce (Fielding & Ninsiima, 2012). Connolly and Woods (2010) examined the adoption and usage of technology by farmers in Ireland and they found that the use of mobile phones for talk and text was high regardless of the age profile of the interviewee. There was a suggestion from some of the interviewees that more of the services available from DAFM should be provided via SMS technologies, as these were suggested to be more practical for on-farm use.

Wims (2010) found that Irish farmers have enthusiastically embraced mobile telephony as a means of communication and that Teagasc has recognised that the mobile telephone can disseminate agricultural information rapidly to farmers. Teagasc advisors set up all their clients on a text messaging service. The advisor can send messages easily from the office at a relatively low cost. An SMS is sent to farmers reminding them of events and directions to same. In Horticulture Teagasc are sending messages to inform farmers about the risk of carrot fly and detailing advice on spray timing to prevent damage to crops. Farmers had noted favourably to this method of communication along with the use of email as the farmers are easily accessible through their mobile phone (Wims, 2010).
2.5.2.6 Innovations in Mobile Technology

In recent years there has been an explosion in smartphone usage. Smartphones fuse together the normal telephony operations of a mobile phone and the capabilities of a handheld computer. As mobile technology becomes more sophisticated, mobile application or apps have increased in popularity and have evolved into highly capable tools (Monahan, 2012). In 2012 Smartphones give control to end users in how they utilise applications that they choose to install on their phones according to their own interests and needs (Verkasalo et al. 2010). The most recent research on Smartphone’s in Ireland (Red C, 2011) was found to indicate that 49% of the Irish population own a Smartphone, an increase of 14% on the year previous. This figure breaks down to 37% of males owning a Smartphone and 32% of women. This same study found that 41% of the population aged between 25 to 34 years old own a Smartphone with those in the plus 55 age category are least likely to own a Smartphone at 19%.

Mobile-apps are software designed to take advantage of mobile technology, enabling the collection and transmission of data for economic and social activities—whether for commercial, administrative, or entertainment purposes (McNamara 2009). Mobile applications for agricultural and rural development (m-ARD apps) could provide the most economic, practical, and accessible routes to information, markets, governance, and finance for millions of people who have been excluded from their use (World Bank, 2011). Mobile phone ‘apps’ can be divided into two groups 1. Mobile apps that run locally within the phone and 2. mobile web apps that normally require an internet connection to access them. There is a limited number of agricultural apps, but the apps available range from weather, livestock, grassland, dairy, grains and horticulture. There are management information apps for farm management, calculator apps such grassland management tools and agricultural news apps for news events and up to date market information, (Monahan, 2012).

Teagasc have a Fertiliser tracker app which is free and is designed for general use by farmers in the Republic of Ireland to track their fertiliser usage against their fertiliser plan to ensure they do not exceed their fertiliser allowance and breech environmental legislation (Monahan, 2012). Another example of the use of mobile applications in agriculture is in Kenya where Kilimo Salama, a weather-based insurance m-app distributed by farm input
suppliers to insure farmers’ investments in inputs—such as seeds, fertilizers, and chemicals—against weather risks such as drought or excess rainfall. It uses solar-powered weather stations to provide farmers with full climate data (rainfall, temperature, wind speed, sunlight) and mobile payment technology to collect premiums and distribute pay-outs. The m-app also provides an advice line for farmers and sends text messages to help farmers improve their techniques (World Bank, 2011).

2.5.2.7 ICT and the Internet

The communication world has been radically revolutionised by the onset of the internet and the many new ICT’s that have evolved from it. The internet is capable of worldwide broadcasting, used to exchange information for individuals to communicate, regardless of their geographic location. Traditionally the exchange of agricultural information was predominately through industrial media including newspapers, television and magazines. However in recent years the awareness of technology and computer literacy has improved across all age groups (Varner, 2012). Nelson and Trede (2004) said that Agricultural Extension professionals perceived that the internet will be highly useful to beginning farmers in the future and if the internet and other innovative media are to be utilised heavily in the future, it may be necessary to help beginning farmers become familiar with those media. According to Lasley et al (2001) ICTs may alter the use of (or replace) traditional information and training systems currently operated by extension services and, thus, the role of extension agents. From the previous sections in this literature review we have seen an increasing popularity of the use of ICT on farms in relation to updates on weather and market pricing, more and more technologies are presenting themselves to be of use to farmers and with the development of mobile apps through the use of the internet, agriculture is becoming more exposed to the modern era.

Morrow et al. (2003) stated that Teagasc identified ICT as having a major opportunity to improve the efficiency of Teagasc operations and to aid in the delivery of services to farmers. While Teagasc’s forestry development department has developed new, innovative and cost effective ways of optimising the efficiency and effectiveness of knowledge transfer by using
and integrating ICT, (Meyen, 2012). The Teagasc forestry department have a website with 400 pages, 300 pdf documents and 600 images. They have an e-newsletter which is emailed regularly to clients which informs them of the latest news in forestry. In addition Facebook, Twitter and YouTube is also part of the ICT plan.

The farmers’ uptake of ICT is disappointingly modest, even for applications that have demonstrated economic benefits. Tyhsen (2000) attributed this to low levels of education and poor local infrastructure. Connolly and Woods (2010) examined the adoption and usage of technology by farmers in Ireland. The results showed that 29% of farmers rated themselves as experienced or advanced at using a computer. In general younger farmers tended to exhibit a more positive attitude towards the usefulness of web based technologies such as on line farming services and farming software. They also found that a farmer’s level of education influences their trust in online farming services and farming software. They indicated that having adequate knowledge and resources is the factor that most influences Irish farmers’ intentions to use farm software and websites. The 2011 Teagasc National Farm Survey results shows an increase in the usage of computers for both personal and farm business use. The percentage of farm households that had access to a PC in 2004 was 40% compared to 63% in 2011. The rate of usage for farm business purposes was 14% in 2004 to 33% in 2011 while of all farm households 23% had an email account which was used for farm business purposes and 53% of farm households had a broadband internet connection compared to 63% of households nationally. When farmers were asked what the main use for using a PC was it showed that internet and communication was the number one reason for use with the online herd register being in second (Teagasc, 2011). The slow uptake in ICT in farming families is primarily due to poor infrastructure. Broadband speeds in rural areas are below par compared to the speeds experienced in urban areas. Only 35% of Irish premises have broadband speeds of 10Mbps or higher. While only 69 % of Irish homes have broadband that is faster than a very modest 4 Mbps (McGreevy, 2015). In a survey of young farmers in Ireland by Macra na Feirme, it found that half of the country’s young farmers have little or no access to high speed broadband. Macra na Feirme president Sean Finan said that quality broadband is key to ensuring young farmers can access services online to keep in touch with the latest information to help them to be the best at what they do within the farm gate (Hogan, 2015).
2.5.2.8 Social Media in Agriculture and Extension

The World Wide Web has made finding and retrieving information easier, and has often been viewed as a reliable source of information because of the readiness of the information (Henroid Jr., Ellis & Huss, 2004). Social media is the most rapidly growing method of communication in the world. Most organisations are now using it to distribute information on the latest news topics, weather updates and promotions. In order for organizations to have a successful profile on a social networking site, it requires an active and committed group of supporters (Rigby, 2008). Farmers, researchers, enthusiasts and professionals have taken up Facebook and Twitter to share their views, their experiences and their ideas through various communities in Facebook and trending topics in Twitter (Saravanan and Bhattacharjee, 2013).

Stanley (2013) outlined four key areas of value of social media in agriculture:

1. Networking (Farmer-Farmer) via social media platforms.
2. Industry Knowledge, Extension & Marketing (Farmer – Agricultural Industry)
3. Consumer Engagement (Farmer/Industry – Consumer)
4. Crisis communication.

Stanley (2013) also noted that one of the key advantages of social media as a tool in farming is the ability to connect with farmers and agribusiness people from around the world over large geographical distances.

Extension workers are becoming increasing busy and are experiencing greater demands on their time. The use of social media as a communication aid to their farmer clients would prove to be beneficial. In some cases many extension professionals underestimate their client’s use and awareness of technology as Guenther and Sawn (2011) found that extension clients had a greater usage of electronic technology than that of college students. O’ Neill et al. (2012) said that social media offered a cheap method of communication with farmer clients while building and strengthening their social connections and long term engagement in extension programs when using social media websites like Facebook. Social media is now being used as a Knowledge transfer method and Teagasc are using popular social media sites such as Facebook and Twitter to post the latest news in agricultural matters and also to issue
advice on farming matters. Teagasc uses social media to increase brand awareness, get their message to a wider audience, actively engage with their clients and customers and improve knowledge dissemination. There is a prominent social media section on the homepage with links to their Facebook, Twitter and LinkedIn accounts, as well as links to their YouTube channel, (e-Government, 2013). Similarly in Canada an extension organisation called Farm Management Canada have benefited from engaging in social media increasing their interactivity with their farmers and connecting with other farmers who do not regularly participate in discussion groups (Stanley, 2013).

2.5.2.9 Social Media Websites Available in Ireland

Facebook is the most popular social media website in Ireland with 60% of the population having an account with 72% of users of Facebook logging on every day, (RTE, 2015). The Irish use Facebook more than any other English speaking country in the world (Weckler, 2013). While O’ Toole (2013) found that 75% of Irish Facebook account holders who specified an age declared that they were less than 35 years old. Twitter is the second most popular social network in the country, with 26% of Irish people owning accounts and with 35% of those users logging on every day. The next most popular websites among Irish people are Linked-in with 24% of the population using the site and Google+ with 23% of the population using the site.

The following websites are most popular websites available to users in Ireland and they are briefly documented in the following text, within which their functions and features are identified.

Facebook

Facebook is a popular free social networking website that allows registered users to create profiles, upload photos and video, send messages and keep in touch with friends, family and colleagues. The site is available in 37 different languages. It is the most popular social networking website in Ireland and is one of the most popular in the world. Facebook is used
by individuals, businesses, charities and organisations. Each member can create a personal profile, within which there are several key networking components. The most popular is arguably the Wall, which is essentially a virtual bulletin board. Messages left on a member's Wall can be text, video or photos. Another popular component is the virtual Photo Album. Photos can be uploaded from the desktop or directly from a smartphone camera. There is no limitation on quantity, but Facebook staff will remove inappropriate or copyrighted images. An interactive album feature allows the member's contacts (who are called generically called "friends") to comment on each other's photos and identify (tag) people in the photos. Another popular profile component is status updates, a microblogging feature that allows members to broadcast short announcements to their friends. All interactions are published in a news feed, which is distributed in real-time to the member's friends.

**Twitter**

Twitter is a free social networking microblogging service that allows registered members to broadcast short posts called tweets. Twitter members can broadcast tweets and follow other users' tweets by using multiple platforms and devices, those following other user's tweets are known as ‘followers’ (the Twitter version of friends in Facebook). Tweets and replies to tweets can be sent by cell phone text message, desktop client or by posting at the Twitter.com website. The default settings for Twitter are public. Unlike Facebook or LinkedIn, where members need to approve social connections, anyone can follow anyone on public Twitter. To weave tweets into a conversation thread or connect them to a general topic, members can add hashtags to a keyword in their post. The hashtag is expressed as #keyword. Tweets, which may include hyperlinks, are limited to 140 characters, tweets can be delivered to followers in real time, tweets are also posted on the Twitter website (Twitter, 2015). Tweets are permanent, they are searchable and they are public. Anyone can search tweets on Twitter, whether they are a member or not. Photos can also be shared on twitter the same as on Facebook but they are made public once posted and can be viewed by all users.
**Linked-In**

LinkedIn is a leading social networking site used for professional use. It is used for career opportunities and progression. It keeps its users connected to past and future employers, classmates and family professionals. Linked-in in many respects is like an online Curriculum Vitae whereby members detail their past and present employment along with their achievements and qualifications. The Linked-in version of ‘friends’ is ‘connections’ which is where members can connect with colleagues. Many companies or organisations use this website to check out potential employees. There are 300 million users worldwide and it promotes itself as a networking website whereby it strengthens and extends users networks of existing and trusted contacts (Linked-In, 2015).

**2.6 University Alumni Associations**

The University Alumni association is a long established method of University of retaining contact with its graduates. The term ‘Alumni’ means former pupil or student of a school. Alumni associations have the role of co-ordinating events to continue the connection between the college and its alumni. These efforts include programs designed to improve the overall quality of student life, strategies designed to orient and welcome new students to the campus, and initiatives designed to attract students to, and subsequently retain them within, the institution (Garland and Grace, 1994). Alumni associations are concerned with enhancing the image of the institution and the experience of those who have contact with it (Singer and Hughey, 2002). The success in the retention of contact with alumni is critical to institutions that aspire to maintain strong enrolments of qualified students, guarantee high levels of academic quality and achievement, and ensure that graduates are successful in obtaining appropriate employment once they receive their diplomas (Singer and Hughey, 2002). The involvement of current students in an alumni association encourages the growth of the alumni association and can provide students with significant opportunities for growth and development (Singer and Hughey, 2002). Kellogg (1996) investigated the extent to which true collaboration exists between student and alumni affairs and found that most student and alumni affairs professionals report that their experiences are primarily positive when
programs are planned cooperatively. The alumni association is shown to have an effect on student enrolments and can in turn help secure the future of a college. An example of an agricultural college alumni association is CAFRE Greenmount College in Co. Antrim. The Association aims to maintain social contact between Greenmount’s graduates and keep them up to date with technical information and news about the college. There are approximately 1700 members at a membership cost of £5 annually. In return for this members receive industry updates, invitations to a range of evening meetings and visits, attend forums to meet potential employers. They can also join the enterprise Clubs, for example, Dairy Club, Beef & Sheep Club and the Horticulture Club. There are opportunities to go on summer tours and there is an annual Christmas dinner dance. In addition the college has an annual magazine called the Greenmountaineer which includes the latest news from the college and it is distributed to all Greenmount association members (CAFRE, 2015).

2.7 Conclusion

This literature review provides knowledge on the background to the research project. Irish agriculture is very important to the economy and rural Ireland. The age structure of Irish farmers is alarming and this trend is seen across Europe and in African countries.

Agricultural extension has two structures; Public and Private Organisations. The review of literature on these structures provided information on the advantages and disadvantages of the two systems. Public extension had the aim of providing knowledge to farmers to ensure stable levels of production to meet the food requirements by a country’s population. The evolution of private extension services has been seen by many to have lost the basic principles of agricultural extension. It is shown in this chapter that agricultural extension and education have been at the backbone of agriculture for centuries and the innovation of new practices is an on-going process that is continually being encouraged to improve the agricultural industry. In many countries the education system is seen as the most important area in agricultural extension where people develop their knowledge from an early age. Education has been a publicly funded service and the structure of education across the world is similar with foundation awards that can lead students all the way to PhD level.
The retention of youth in agriculture is seen as an urgent issue and in order to ensure the future for global food production the declining number of youth needs to be addressed. The low levels of profitability associated with agriculture and the isolation that it brings to many farmers is a dark shadow on the sector. The issue of succession and inheritance and land mobility is leading to many young people developing alternative careers. The time that a person had to wait to inherit a farm holding is too great. To counteract this financial incentives are introduced in Europe to encourage young people into agriculture and the transfer of farm land from the old to the young. The role of young farmer organisations is so great that they have power in numbers and negotiate for better deals from their respective governments. These organisations have been known to have links with agricultural extension and an example of this is Macra na Feirme and Teagasc in Ireland.

The main communication methods used by agricultural extension organisations are reviewed in this chapter with direct communication and mass media being the two main categories. Mobile telephony and Social media are seen as the future of communication with farmers and the limitations to its use are very few with it already proving to be an effective means of communication.

However this literature review did not find any information directly related to the title of this thesis and this has shown that no other agricultural extension organisation is as concerned about the retention of contact with its agricultural college graduates as Teagasc. This is a unique situation to Teagasc and needs to be addressed.

The next chapter in this thesis documents the research findings on the development and piloting of methods for Teagasc to retain contact with its graduates from graduation to farm ownership.
Chapter 3- Research Findings and Analysis

3.1 Introduction

This chapter consists of four sections which present the results and analysis from the surveys undertaken in the current study. The first section is named section A and presents the findings of the Ballyhaise Agricultural College graduate survey of 464 graduates from the years 2008 – 2013. The second section (B) presents the findings of the evaluation survey of the methods that were piloted to keep Teagasc in contact with agricultural college graduates. Section C the third section presents the findings from an evaluation survey of a farm walk and guest lecture facilitated and lectured by a Teagasc advisor to agricultural college students. In section D the last section presents the findings from discussions with international extension organisations about their views and experiences in relation to the topic. This section gives a breakdown of the results of each method.

3.2 Section A - Findings from the Graduate Survey

A postal survey entitled “Teagasc Ballyhaise Agricultural College Graduate Survey” was sent to 464 Teagasc Ballyhaise Agricultural College Level 6 graduates (graduated from 2008 to 2013 inclusive) in April 2014. A postal survey was chosen as the most appropriate method of survey administration as e-mail addresses of graduates were not available. A total of 166 completed the survey yielding a 36% response rate.

Graduates were invited to provide their contact details i.e. name and phone number and were asked to provide information on their willingness to participate further in the research. They could provide their name and phone number. In total 101 of the 166 respondents (60.8%) provided their contact details. The survey is included in Appendix A of this thesis.
### 3.2.1 Graduates Characteristics

Information on the characteristics of the agricultural college graduates who responded to the survey at the beginning of this study are provided in Table 1.

<table>
<thead>
<tr>
<th>Table 1-Distribution of Respondents by Selected Personal Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Graduate’s Age (n = 165)</strong></td>
</tr>
<tr>
<td>19 - 25</td>
</tr>
<tr>
<td>26 - 30</td>
</tr>
<tr>
<td>31 - 35</td>
</tr>
<tr>
<td>36+</td>
</tr>
<tr>
<td><strong>Gender (n = 165)</strong></td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td><strong>Year of Graduation (n = 165)</strong></td>
</tr>
<tr>
<td>2013</td>
</tr>
<tr>
<td>2012</td>
</tr>
<tr>
<td>2011</td>
</tr>
<tr>
<td>2010</td>
</tr>
<tr>
<td>2009</td>
</tr>
<tr>
<td>2008</td>
</tr>
<tr>
<td><strong>Location (n=164)</strong></td>
</tr>
<tr>
<td>Cavan</td>
</tr>
<tr>
<td>Monaghan</td>
</tr>
<tr>
<td>Donegal</td>
</tr>
<tr>
<td>Meath</td>
</tr>
<tr>
<td>Leitrim</td>
</tr>
<tr>
<td>Louth</td>
</tr>
<tr>
<td>Longford</td>
</tr>
<tr>
<td>Westmeath</td>
</tr>
<tr>
<td>Sligo</td>
</tr>
<tr>
<td>Tipperary</td>
</tr>
<tr>
<td>Dublin</td>
</tr>
<tr>
<td>Northern Ireland</td>
</tr>
</tbody>
</table>
• The majority of respondents were aged between 19 and 25 year old (Table 1) and represent more recent graduates. This may account for the high response rate amongst this group. In addition, the majority of respondents who enter into a Level 5 Agricultural course do so immediately are completing second level education which may also explain why the age of the majority of graduates of the years 2013 – 2008 were in the 19 – 25 year old age category.

• The gender imbalance is obvious with 96.4% of respondents being male.

• The respondents were predominantly located in the counties bordering Northern Ireland, with Cavan having the most students (32.3%) followed by Monaghan and Donegal, respectively.

3.2.2 Respondents Level of Involvement in Agriculture

Respondents Engaged In Farming Activities

The vast majority (96.4%) of the 165 valid respondents were engaged in some form of farming activity following graduation (Figure 3). The graduates who were not engaged in farming activities indicated that they would farm in the future with 40% planning to farm in 1 – 5 years and 60% in 5 – 10 years.

Farming Status of Respondents

![Farming Status Chart](image)

Figure 3-Farming Status of Respondents
The age profile of the respondents had an influence on the type of farm activity engaged in (Table 2).

**Table 2-Relationship between Farming Status and Respondent Age (n = 160)**

<table>
<thead>
<tr>
<th>Farming Status</th>
<th>Age</th>
<th></th>
<th></th>
<th></th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>19-25</td>
<td>26-30</td>
<td>31-35</td>
<td>36+</td>
<td>TOTAL</td>
</tr>
<tr>
<td>Farm owner</td>
<td>12.8% (11)</td>
<td>16.7% (5)</td>
<td>50.0% (13)</td>
<td>50.0% (9)</td>
<td>23.8% (38)</td>
</tr>
<tr>
<td>In a farm partnership</td>
<td>2.3% (2)</td>
<td>13.3% (4)</td>
<td>7.7% (2)</td>
<td>5.6% (1)</td>
<td>5.6% (9)</td>
</tr>
<tr>
<td>Working on home farm with parents being owners</td>
<td>76.7% (66)</td>
<td>63.3% (19)</td>
<td>42.3% (11)</td>
<td>38.9% (7)</td>
<td>64.4% (103)</td>
</tr>
<tr>
<td>Working on farm for non-family member</td>
<td>8.1% (7)</td>
<td>6.7% (2)</td>
<td>0% (0)</td>
<td>5.6% (1)</td>
<td>6.3% (10)</td>
</tr>
<tr>
<td>Total</td>
<td>100% (86)</td>
<td>100% (30)</td>
<td>100% (26)</td>
<td>100% (18)</td>
<td>100% (160)</td>
</tr>
</tbody>
</table>

Table 2 shows that 76.7% of respondents aged 19-25 were working on their home farm with their parents with just 12.8% being in farm ownership. As the age profile of the respondents increases so too does the level of farm ownership as in the 31–35 and 36+ years of age groups it can be seen that 50% of both these age groups were in farm ownership. However there is still 42.3% of 31-35 year olds and 38.9% of 36+ year olds who are still working on their home farms with their parents being the farm owners.
Level of Involvement on Home Farm

Those who indicated that they were farming at home on the parents farms were asked to provide information on their level of involvement on the home farm. This can be seen in the pie chart in Figure 4. Almost two-thirds of the respondents have a minor role.

![Level of involvement on home farm](image)

**Figure 4-Respondents Level of Involvement on their Home Farm**

**Table 3-Relationship between Respondent Level of Involvement on their home with Respondent Age (n = 133)**

<table>
<thead>
<tr>
<th>Level of involvement</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>19-25</td>
</tr>
<tr>
<td>Responsible for minor management decisions</td>
<td>35.5%</td>
</tr>
<tr>
<td>Responsible for major/all decisions</td>
<td>64.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 shows the level of responsibility of respondents from the four age groups. As can be seen in the 19 – 25 year old group 64.5% have major or all responsibility for farm decisions. The same situation is shown in the 31 – 35 and 36+ age group but in the 26 – 30 year old age group 56% are in a minor management role.
**Respondents Farming Full Time**

The 158 respondents in the sample who were engaged in farming activities were evenly split with 50% engaged in farming full time.

**Time Spent Working on the Farm**

The 158 respondents who were farming were asked to provide information on the length of time spent working on the home farm on a weekly basis. Of the 158 respondents, 21.5% indicated that they spent up to 20 hours per week, 25.9% indicated that they spent 20 - 35 hours per week working on the farm and 52.5% were working over 35 hours a week on the farm.

**Off Farm Employment**

The respondents were asked if they had off farm employment and 58.3% had off farm employment and 41.7% did not have any off farm employment.

**Table 4-Relationship between the Numbers of Hours Spent Working on the Farm and Off Farm Employment (n = 158)**

<table>
<thead>
<tr>
<th>Hours spent working on farm</th>
<th>Off farm employment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Up to 20</td>
<td>34.7%</td>
</tr>
<tr>
<td>20 – 25</td>
<td>34.7%</td>
</tr>
<tr>
<td>35+</td>
<td>30.5%</td>
</tr>
</tbody>
</table>

Table 4 shows that those who had off farm employment spent less time on working on the farm compared to those who did not have off farm employment.
Respondents Method of Obtaining a Farm

All respondents were asked how they will obtain a farm holding. Table 5 shows that the majority of respondents will inherit a farm from a family member. It is interesting to note that only 5.1% of respondents indicated that they would enter into a farm partnership.

Table 5-Distribution of Respondents by Method of Obtaining a Farm (n = 166)

<table>
<thead>
<tr>
<th>Method of obtaining a farm</th>
<th>Yes (%)</th>
<th>No (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inherit a farm from a family member</td>
<td>84%</td>
<td>16%</td>
</tr>
<tr>
<td>Purchase their own farm</td>
<td>18.5%</td>
<td>81.5%</td>
</tr>
<tr>
<td>rent a farm</td>
<td>24.8%</td>
<td>75.2%</td>
</tr>
<tr>
<td>Enter into a farm partnership</td>
<td>5.1%</td>
<td>94.9%</td>
</tr>
</tbody>
</table>

3.2.3 Farm Characteristics

The data collection procedure obtained information about the farm size and enterprises in order to examine any relationship between the graduates farming activities and their choices in relation to communication with Teagasc after graduation from Agricultural College.

Farm Size

![Farm Size Distribution](image)

Figure 5-Respondents Farm Size
Farm Enterprise

The main farm enterprises were Beef at 36.9%, Dairy at 26.8%, Beef and Sheep at 15.9%, Sheep at 10.8%, Pigs at 7% and Tillage at 2.5%.

3.2.4 Agricultural College Experience

It was of vital importance to obtain information from graduates about aspects of their time in agricultural college in order to form a foundation to develop the overall objectives of the current study. The objectives of this section of the survey were to identify why respondents completed an agriculture course, what contact respondents had with a Teagasc advisor and if respondents enjoyed their experience in college.

Reason for Completing an Agricultural College Course

The respondents were asked to rank the reasons in choosing to complete an agricultural course. The results showed that 86.4% of graduates said that claiming farm supports was an important, 95% said being eligible for stamp duty relief was important and 93.8% said increasing knowledge of agriculture was important. One graduate’s reason for completing a course in Ballyhaise was ‘so I could meet other people with similar interests’.

Graduates Experience in College

The vast majority of the respondents (n=166) indicated that they had a positive experience while attending Ballyhaise Agricultural College with 57% finding their experience of Ballyhaise very good, 40% finding it good, 2.4% finding it poor and 0.6% or 1 respondent had a very poor experience.

Contact with an Advisor in Agricultural College

While the respondents where in agricultural college it would have been assumed that with Ballyhaise agricultural college located in the same building as the county advisory office, the respondents surveyed would have had some level of contact with a Teagasc advisor while attending the college. In order to obtain information about contact between graduates and an advisor in college information was obtained on whether respondents received a
classroom based lecture from a Teagasc advisor while in college. The results were disappointing in that 47.5% stating that an advisor did give a lecture and 52.5% stating that they didn’t receive a guest lecture. Less than half of the graduates received class based contact with a Teagasc advisor. While they also may have a received a guest lecture on other topics such as grassland management or livestock production that may not have been specific on Teagasc Advisory services that can be provided to farmers. Information like this if provided to graduates can encourage them to contact Teagasc.

When those who did not receive a guest lecture by a Teagasc advisor were asked if it should have been provided to them while in Ballyhaise, the result was that 92.8% said that an advisor should have given a guest lecture. The 47.5% who received a guest lecture from a Teagasc advisor where asked if it was worthwhile and 94.5% said yes. With results such as these arising it greatly influenced the development of methods of contact to be piloted in the research.

### 3.2.5 Respondents use of Social Media

The respondents in this sample were asked about their use of social media and how they access such websites. The respondents indicated which websites applied to their usage of social media. The results are shown in the following table 6.

**Table 6-Distribution of Respondents by Their Use of Social Media (n = 163)**

<table>
<thead>
<tr>
<th>Social Media Used</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook</td>
<td>59.7</td>
</tr>
<tr>
<td>Twitter</td>
<td>1.2</td>
</tr>
<tr>
<td>Facebook and Twitter</td>
<td>2.4</td>
</tr>
<tr>
<td>Other</td>
<td>4.3</td>
</tr>
<tr>
<td>None</td>
<td>32.3</td>
</tr>
</tbody>
</table>
Table 6 shows that the majority of graduates use Facebook or a combination of Facebook and Twitter. However 32.3% did not use any social media websites. The other applications that were used by graduates were Google Plus, Linked-In and an application called Instagram. The association between respondent’s age and their use of social media applications are shown in Table 7.

Table 7 - Relationship between Respondents Age and Their Use of Social Media (n=163)

<table>
<thead>
<tr>
<th>Website</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>19-25</td>
</tr>
<tr>
<td>Number in sample</td>
<td>(87)</td>
</tr>
<tr>
<td>Facebook</td>
<td>71.3</td>
</tr>
<tr>
<td>Twitter</td>
<td>0</td>
</tr>
<tr>
<td>Facebook and Twitter</td>
<td>1.1</td>
</tr>
<tr>
<td>Other</td>
<td>2.3</td>
</tr>
<tr>
<td>None</td>
<td>25.3</td>
</tr>
</tbody>
</table>

The results show in Table 7 that the vast majority of 19 – 25 year olds used Facebook representing 71.3% of the age group with 25.3% of this age group using no social media. The 36 + age group were the group with the largest proportion that did not use any social media websites. Twitter was not popular among any of the groups. The number of graduates using a PC to access social media is in the minority with a Laptop or Smartphone being the most commonly used items (Table 8).
Table 8-Distribution of Respondents by Method of Accessing Social Media (n = 165)

<table>
<thead>
<tr>
<th>Method</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC</td>
<td>5.5</td>
</tr>
<tr>
<td>Laptop</td>
<td>19.4</td>
</tr>
<tr>
<td>Smartphone</td>
<td>18.8</td>
</tr>
<tr>
<td>Tablet</td>
<td>4.8</td>
</tr>
<tr>
<td>Laptop + Smartphone</td>
<td>32.7</td>
</tr>
<tr>
<td>None</td>
<td>18.8</td>
</tr>
</tbody>
</table>

3.2.6 Respondents use of Advisory Services

This subsection is presented in two parts.

1) Respondents availing of the services of Teagasc
2) Respondents who are using a private advisory service.

Teagasc Advisory Services

The current level of engagement of respondents with a Teagasc advisor was identified. Two questions were asked; Are they or the farm they are working on availing of the services of a Teagasc advisor? The results showed that 56.6% or 90 out of 159 respondents who answered the question were availing of the services of a Teagasc advisor. They were also asked if they themselves have contact with the Teagasc advisor as it may be their parents only who are dealing with the advisor. It showed that 72.7% had contact or 64 out of the 90 respondents availing of the services of a Teagasc advisor. This figure is promising as it shows that the graduates have an interest in having some contact with Teagasc.

Private Advisory Services

Those who did not have a Teagasc advisor were asked if they had a non Teagasc advisor. Of the 69 respondents engaged in farming and did not have a Teagasc advisor 47.8% or 33 had contact with a non Teagasc advisor.
Table 9 shows the relationship between respondents age and contact with an agricultural advisor. There was an indication that respondent age has a significant impact on the level of contact with an agricultural advisor.

<table>
<thead>
<tr>
<th>Age</th>
<th>19-25</th>
<th>26-30</th>
<th>31-35</th>
<th>36+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes (52)</td>
<td>60.5%</td>
<td>(16)</td>
<td>55.2%</td>
<td>(18)</td>
</tr>
<tr>
<td>No (34)</td>
<td>39.5%</td>
<td>(13)</td>
<td>44.8%</td>
<td>(9)</td>
</tr>
<tr>
<td>Total (86)</td>
<td>100%</td>
<td>(29)</td>
<td>100%</td>
<td>(27)</td>
</tr>
</tbody>
</table>
Table 10-Relationship between Farm Size and Contact with an Agricultural Advisor (n = 140)

<table>
<thead>
<tr>
<th>Farm Size (Hectares)</th>
<th>&lt;40</th>
<th>40 - 80</th>
<th>80 -120</th>
<th>&gt;120</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact with an Advisor</td>
<td>Yes</td>
<td>(42) 51.2%</td>
<td>(26) 61.9%</td>
<td>(6) 75%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>(40) 48.8%</td>
<td>(16) 38.1%</td>
<td>(2) 25%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>(82) 100%</td>
<td>(42) 100%</td>
<td>(8) 100%</td>
</tr>
</tbody>
</table>

Table 10 shows that the larger farms tend to have more contact with an agricultural advisor than smaller ones. Although the number of farms over 120 hectares in size is only eight but seven of them or 87.5% had contact with an agricultural advisor compared to the farm less than 40 hectares only 42 out of 82 or 51.2% have contact with an advisor.

**Future Contact with Teagasc**

All the respondents were asked if they would like to have contact with a Teagasc advisor. 77.2% or 125 out of 166 said that they would. They were asked how they would like to engage with a Teagasc advisor as a method of contact. The following methods were put to the graduates and they were asked to select all the options that would like to use in a short closed answer format with the option to specify another possible method not listed.
Table 11-Distribution of Respondents by Potential Methods of Contact with a Teagasc Advisor (n = 166)

<table>
<thead>
<tr>
<th>Method of Contact</th>
<th>Yes</th>
<th>Number</th>
<th>Yes</th>
<th>Number</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook</td>
<td>22.3%</td>
<td>37</td>
<td>77.7%</td>
<td>129</td>
<td>100%</td>
</tr>
<tr>
<td>Newsletter via email</td>
<td>30.1%</td>
<td>50</td>
<td>69.9%</td>
<td>116</td>
<td>100%</td>
</tr>
<tr>
<td>Phone Call</td>
<td>49.4%</td>
<td>82</td>
<td>50.6%</td>
<td>84</td>
<td>100%</td>
</tr>
<tr>
<td>Text</td>
<td>51.2%</td>
<td>85</td>
<td>48.8%</td>
<td>81</td>
<td>100%</td>
</tr>
<tr>
<td>Twitter</td>
<td>1.2%</td>
<td>2</td>
<td>98.8%</td>
<td>164</td>
<td>100%</td>
</tr>
</tbody>
</table>

The other options suggested by respondents were:

A postal newsletter which would enable people to learn more about the benefits of the green cert and E-mail updates

As can be seen from the results in Table 11, text message was the most popular choice of contact and this is not surprising given the nature of young people and their use of ICT. The other popular choices were phone call newsletter via e-mail and Facebook. Twitter did not receive many votes with just two respondents selecting this method. The relationship between the age of the respondents and their preferred choice of communication was investigated to see if it had an influence in their choices.
Table 12—Relationship between Respondents Age and Chosen Method of Communication (n = 165)

<table>
<thead>
<tr>
<th>Method</th>
<th>19 -25</th>
<th>26 -30</th>
<th>31 -35</th>
<th>36+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number in sample</td>
<td>(87)</td>
<td>(32)</td>
<td>(28)</td>
<td>(18)</td>
</tr>
<tr>
<td>Facebook</td>
<td>25.3</td>
<td>12.5</td>
<td>35.7</td>
<td>5.6</td>
</tr>
<tr>
<td>Newsletter via email</td>
<td>17.2</td>
<td>37.5</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Phone Call</td>
<td>48.3</td>
<td>40.6</td>
<td>53.6</td>
<td>66.7</td>
</tr>
<tr>
<td>Text</td>
<td>55.2</td>
<td>46.9</td>
<td>57.1</td>
<td>27.8</td>
</tr>
<tr>
<td>Twitter</td>
<td>0</td>
<td>3.1</td>
<td>3.6</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 12 shows that a text message was more popular with the 31 – 35 year old age group. Twitter was not popular with any of the groups. It can be noticed that the 36+ age group are leaning more towards the more traditional methods of a phone call and text message instead of Facebook for example. To follow on from what methods they would like to use, their preferred location to meet with an advisor was also asked. They were asked again to select all the options that would like to use in a short closed answer format with the option to specify another possible location not listed.
Table 13-Possible Locations for Contact with a Teagasc Advisor (n = 166)

<table>
<thead>
<tr>
<th>Location</th>
<th>Yes</th>
<th>Number</th>
<th>%</th>
<th>Yes</th>
<th>Number</th>
<th>%</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussion Group</td>
<td>35.5%</td>
<td>59</td>
<td>64.5%</td>
<td>107</td>
<td></td>
<td></td>
<td>100% (166)</td>
</tr>
<tr>
<td>Visit by Teagasc Advisor to your farm</td>
<td>54.8%</td>
<td>91</td>
<td>45.2%</td>
<td>73</td>
<td></td>
<td></td>
<td>100% (166)</td>
</tr>
<tr>
<td>Farm Walk</td>
<td>34.9%</td>
<td>58</td>
<td>65.1%</td>
<td>108</td>
<td></td>
<td></td>
<td>100% (166)</td>
</tr>
<tr>
<td>Conferences</td>
<td>11.4%</td>
<td>19</td>
<td>88.6%</td>
<td>147</td>
<td></td>
<td></td>
<td>100% (166)</td>
</tr>
</tbody>
</table>

Table 13 shows the results and a visit by the Teagasc advisor to their farms was the most popular choice with a discussion group closely followed by a farm walk being the next most popular choice. To follow on from their preferred location for contact, they were asked about their interest in attending an event organised by Teagasc specifically for agricultural college graduates. The result was that 85.7% or 138 out of 161 respondents said they would attend such an event. In addition 82.2% of 163 respondents said they would like to receive regular updates about the Ballyhaise Agricultural College farm enterprises.

The comments provided in some of the surveys suggested that:

1. Ballyhaise should make the farm more relevant to students and allow them to run a micro unit similar to the pig unit in Greenmount Agricultural College in Co. Antrim.
2. A post-graduate group should meet 1 to 6 times a year; it would be good for making friends and aiding in career progression.
3. With poor beef and sheep prices, young farmers need a boost so the college should have more sheep and beef farm walks instead of dairy.
3.3 Section B: Evaluation of the Piloted Methods

Following completion of the ‘Teagasc Ballyhaise Agricultural College Graduate Survey’ 35 respondents indicated they were willing to participate further in the study, in addition 15 graduates from 2014 wished to be included in the pilot methods sample. Following analysis of the results of the graduate survey three methods of communicating with graduates were piloted on these 50 graduates. The three methods piloted were chosen based on the preferences the graduates indicated in the ‘Teagasc Ballyhaise Agricultural College Graduate Survey’. This section will present the results of the experiences with the three methods piloted.

The three methods piloted included

1. A Teagasc Ballyhaise Agricultural College Newsletter
2. A Teagasc Ballyhaise Agricultural College Facebook page
3. A weekly text message service with farm enterprise updates

A survey entitled ‘Teagasc Ballyhaise Agricultural College Survey on how Teagasc can keep in contact with Agricultural College Graduates, for the purposes of the data analysis the survey shall be referred to as the ‘evaluation of piloted methods survey’. The survey consisted of 27 closed ended questions and 7 open ended questions were developed. The survey was administered in November 2014 to 50 Teagasc Ballyhaise college Level 6 graduates. Respondents were also invited to provide their views on the piloted methods. The survey was administered via postal survey as e-mail addresses were not available for respondents. Follow-up phone calls were made in January 2015 to encourage graduates to return the survey. A copy of the survey is attached in Appendix D.

The objectives of the survey were:

- To identify the success of each method of contact between Teagasc and graduates.
- To identify the graduates’ preferred method of contact.
- To identify any improvements that needed to be made to the methods.

A total of 47 respondents returned a completed survey yielding a 94% response rate.
3.3.1 Respondents Characteristics

This subsection presents and discusses the findings regarding the characteristics of the agricultural college graduates who responded to the final evaluation of piloted methods survey. Table 14 shows the personal characteristics of respondents.

Table 14-Distribution of Respondents by Selected Personal Characteristics (n = 47)

<table>
<thead>
<tr>
<th></th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Graduate’s Age (n = 47)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 – 25</td>
<td>28</td>
<td>59.6</td>
</tr>
<tr>
<td>26 – 30</td>
<td>13</td>
<td>27.7</td>
</tr>
<tr>
<td>31 – 35</td>
<td>3</td>
<td>6.4</td>
</tr>
<tr>
<td>36+</td>
<td>3</td>
<td>6.4</td>
</tr>
<tr>
<td><strong>Gender (n = 47)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>41</td>
<td>87.2</td>
</tr>
<tr>
<td>Female</td>
<td>6</td>
<td>12.8</td>
</tr>
<tr>
<td><strong>Year of Graduation (n = 47)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>12</td>
<td>25.5</td>
</tr>
<tr>
<td>2013</td>
<td>11</td>
<td>23.4</td>
</tr>
<tr>
<td>2012</td>
<td>11</td>
<td>23.4</td>
</tr>
<tr>
<td>2011</td>
<td>4</td>
<td>8.5</td>
</tr>
<tr>
<td>2010</td>
<td>6</td>
<td>12.8</td>
</tr>
<tr>
<td>2009</td>
<td>2</td>
<td>4.3</td>
</tr>
<tr>
<td>2008</td>
<td>1</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>Location (n=47)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cavan</td>
<td>12</td>
<td>25.5</td>
</tr>
<tr>
<td>Monaghan</td>
<td>10</td>
<td>21.3</td>
</tr>
<tr>
<td>Longford</td>
<td>6</td>
<td>12.8</td>
</tr>
<tr>
<td>Meath</td>
<td>5</td>
<td>10.6</td>
</tr>
<tr>
<td>Leitrim</td>
<td>3</td>
<td>6.4</td>
</tr>
<tr>
<td>Donegal</td>
<td>5</td>
<td>10.6</td>
</tr>
<tr>
<td>Westmeath</td>
<td>3</td>
<td>6.4</td>
</tr>
<tr>
<td>Louth</td>
<td>2</td>
<td>4.3</td>
</tr>
<tr>
<td>Roscommon</td>
<td>1</td>
<td>2.1</td>
</tr>
</tbody>
</table>
The respondent’s characteristics echo a similar result as per the graduate survey administered at the beginning of the study. The majority of respondents were recent graduates from 2012 – 2014 and the gender imbalance eased slightly with 12.8% of the respondents being female.

### 3.3.2 The Teagasc Ballyhaise Agricultural College Newsletter

The Teagasc Ballyhaise College newsletter was developed monthly and sent out to graduates. The information was sourced from college staff in charge of the enterprises. All the college farm enterprises had an update each month; the enterprises were Beef, Sheep, Dairy, Pigs and Forestry. In addition there were updates on the college’s agricultural courses. Copies of all newsletters are located in Appendix E.

The main sections in the newsletter were:

1. **Did you know**
   - Provided interesting historical facts about the college

2. **Upcoming events**
   - Displayed information about Teagasc events e.g farm walks and information meetings

3. **Q and A Farming Tips**
   - Question and answer column where the reader could send in their farming queries and one question was answered each month.

4. **Each month there was a different headline topic about the college**
The enterprise information is very descriptive and provides technical information to the reader.

Did you know section provided an interesting historical fact about the college each month.

Figure 6 - Front Page of the September Newsletter

Upcoming events section provided important information e.g. important Teagasc events.

This section also included a major headline topic e.g. start of term dates.

The enterprise information is very descriptive and provides technical information to the reader.

Did you know section provided an interesting historical fact about the college each month.

Figure 7 - Newsletter Q and A Section

Q and A Farming tips section

Even lambs can suffer from scours on the 12th of September this advice is known to increase weight gain over the winter period. They have also been given a clostridial vaccination (Closp) and have been fed for 56 kg. It is important that even lambs are not satisfied at any weight less than 30 kg. It is still need to be careful to keep lambs condition satisfactory.

Download Spring born lambs calendar

Shearing spring born lamb calendar

Some lambs will need extra care before they shearing to prevent scours and to keep a good growth rate. It is advisable to give extra feed and keep a good shearing base. The best way to do this is to give spring born lambs a lambing diet. This diet is rich in vitamins and minerals which will help the lamb to grow quickly. It is important to keep an eye on the lamb's weight and to adjust the diet accordingly.

This month’s Q&A Farming Tips

Contact your local Teagasc advisor or visit our website for more information on this topic.
The newsletter was distributed by the following means:

- via e-mail
- Posted on the college Facebook page
- Uploaded to the Teagasc public website

There were four newsletters developed in total during the study period. The college activities during the months of August, September, October and November 2014 were documented in the newsletter.

Teagasc measured the popularity of the newsletter by the number of downloads from the website.

The issues September October and November were displayed on the website and the chart below shows the number of downloads.

Figure 8-Image of the Newsletter Posted on the College Facebook Page

Figure 8 shows the newsletter posted to the college Facebook page as a link to the Teagasc website. This allowed not just the graduates in the sample population to access the newsletter as the Facebook page was open to all users of Facebook who ‘liked’ the page.
Figure 9 - Teagasc Public Website with Link to Newsletter

Figure 9 shows the Teagasc Ballyhaise College web page with the Newsletter link to the right hand side of the figure. This was very user friendly and the image insert of the front page of the newsletter added to the viewer’s curiosity. The purpose of distributing the newsletter by these means was to widen the readership and increase the national interest by people to the college. It would have an impact on prospective students and may influence their choice of college to complete a course in agriculture. There are graduates of Teagasc Ballyhaise agricultural who may have been working overseas and could only have been reached through the use of the internet.

![No. of Downloads](image)

Figure 10 - Number of Newsletter Downloads from the Teagasc Website
Figure 10 shows the number of downloads of the newsletter. It is assumed that the downloads for October were helped due an online agricultural news website called Agriland quoted information from the newsletter about the Teagasc Ballyhaise dairy research herd. There are no figures for July or August as those issues were not uploaded to the Teagasc website.

The Agriland article on the 24th of October 2014 in Figure 11 sourced its information from the Ballyhaise Dairy enterprise update from the October issue of the college newsletter. It is encouraging to see that a national agricultural news website is using the information provided in the updates. It shows that there is an interest in agricultural college updates wider than its graduates.
3.3.2.1 Respondent Feedback

The feedback from the graduates was very useful to the evaluation of the success or otherwise of the newsletter method. Only 5 out of 47 respondents did not receive the newsletter accounting for 10.6% of respondents, this may have been due to incorrect email addresses provided by them.

Subsequently, the 42 respondents who received the newsletter were asked if they read it and 64.3% read them all, 28.2% read some of them and 2.4% did not read any of the newsletters. Of those who read all the newsletters 54.5% were aged between 19 – 25 years old, 68.2% were working on their home farm with the parents being the owners, 77.8% of them had major responsibility for management decisions on their parent’s farms and 18.2% were owners of their own farms. Of those who read some of the newsletters 62.5% were aged between 19 – 25 years old, 62.5% were working on their home farm with the parents being the owners, 62.5% of them had major responsibility for management decisions on their parent’s farms and 37.5% were owners of their own farms.

The graduates were asked if they found the content interesting and useful to them and out of 41 valid responses 100% of them found the content interesting with 15 respondents documenting the information most useful to them.

The comments were categorised as follows in order of popularity:

- Beef herd performance
- Dairy herd performance
- Grassland management
- Sheep flock performance
- The ‘Did you know’ historical section of the newsletter
- Technical advice in the Q and A section
- Being able to use the Ballyhaise farm’s performance to benchmark the respondent’s farms.
**Respondent’s Interest in Receiving Regular Updates about the Ballyhaise College**

When the graduates were asked if they would like to receive regular updates about Ballyhaise Agricultural College and its farm enterprises 94.3% said that they would i.e., 33 out of the 35 respondents.

In order to obtain clear results on the method the association between those who wanted to receive updates from Ballyhaise College and if they found the newsletter interesting was identified; 100% of respondents found the content interesting.

**The Respondent’s Preferred Enterprise in the Newsletter**

The respondent’s preferred enterprise in the newsletter was dairy as shown in Figure 12, accounting for 46.3% of responses, with beef being the next most popular enterprise among graduates.

---

**Figure 12-Graduates Preferred Enterprise Update in the Newsletter**
The respondents preferred to receive the newsletter via e-mail instead of Facebook with 83.3% preferring e-mail. All graduates were asked if they accessed the newsletter on the Teagasc public website and 19.1% of them did.

Respondents provided their opinions and ideas on what content should be included in future newsletter and the responses were categorised as follows:

- National Livestock prices.
- Farm Safety.
- Seasonal management tips.
- Agricultural technologies and workshop events for farmers.
- Other specific technical agriculture advice.

3.3.2.2 Influence of the newsletter on the performance of graduates farms

The graduates were asked if the newsletter had any influence on the management decisions on their home farm.

Of 42 valid respondents, 73.8% indicated that they used the newsletter as a tool to measure their home farm performance and 48.8% of them said that they changed their farming practices as a result. A total of seven respondents gave examples of what practices they changed. Examples are included below.

1. ‘Using back fences and walking cows on a narrow strip to get them to grass’
2. ‘Grassland Management’
3. ‘Autumn grassland management’
4. ‘We sponged the sheep’
5. ‘Increase in stocking rate due to grassland management and the use of A.I. on heifers.’
6. ‘For the autumn grazing started to use a back fence and it is working well. I can see the benefits of doing so by the regrowth.’
7. ‘Keeping a closer eye on grass growth and making decisions when grass supply is short and when too much grass is available’

The main practice changed was grassland management methods. As the newsletter was issued during the autumn months the autumn grassland 60:40 rotation planner was being used on the college farm and in addition there was videos posted on the Facebook page about the use of back fences for strip grazing dairy cows.

**Table 15-Relationship between Respondents Who Used the Newsletter to Change their Farming Practice and their Existing Use of Teagasc Advisory Services (n = 30)**

<table>
<thead>
<tr>
<th>Change in farming practice</th>
<th>Availing of Teagasc Services</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
<td>38.5% (5)</td>
<td>47.1% (8)</td>
</tr>
<tr>
<td>No</td>
<td>61.5% (8)</td>
<td>52.9% (9)</td>
</tr>
<tr>
<td>Total</td>
<td>100% (13)</td>
<td>100% (17)</td>
</tr>
</tbody>
</table>

Table 15 shows that 38.5% of those who are availing of Teagasc services changed their farming practice as a result of reading the newsletter.

**Relationship between Change in Farming Practice and Respondents Farming Status**

There was 35 respondents that were be used for bi-variate analysis with the graduate survey and evaluation of piloted methods survey. Bi-variate analysis was required as the personal and farm characteristics of respondents were contained in the graduate survey. There were 35 respondents in the evaluation of piloted methods survey who had also responded to the graduate survey in April 2014.
Table 16-Relationship between Respondents Change in farming Practice and Respondents Farming Status (n = 30)

<table>
<thead>
<tr>
<th>Change in farming practice</th>
<th>Farm Owner</th>
<th>In a farm partnership</th>
<th>Working on home farm with parents being farm owners</th>
<th>Working on a farm for a non-family member</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>42.9% (3)</td>
<td>100% (1)</td>
<td>35% (7)</td>
<td>100% (2)</td>
<td>43.3% (13)</td>
</tr>
<tr>
<td>No</td>
<td>57.1% (4)</td>
<td>0</td>
<td>65% (13)</td>
<td>0</td>
<td>56.7% (17)</td>
</tr>
<tr>
<td>Total</td>
<td>100% (7)</td>
<td>100% (1)</td>
<td>100% (20)</td>
<td>100% (2)</td>
<td>100% (30)</td>
</tr>
</tbody>
</table>

Table 16 shows that those in a farm partnership and those working for a non-family member indicated that they changed their farming practices as a result of reading the newsletter. Those working on their home farm with parents being the owners represent the largest group with 20 respondents, 35% changed their farming practice as a result of reading the newsletter.

Table 17-Relationship between Change in Farming Practice and Level of Respondents Involvement on their Home Farms (n = 26)

<table>
<thead>
<tr>
<th>Change in farming practice</th>
<th>Level of involvement on home farm with parents being the farm owners</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Responsible for minor management decisions</td>
<td>Responsible for major/all management decisions</td>
</tr>
<tr>
<td>Yes</td>
<td>42.9% (3)</td>
<td>36.8% (7)</td>
</tr>
<tr>
<td>No</td>
<td>57.1% (4)</td>
<td>63.2% (12)</td>
</tr>
<tr>
<td>Total</td>
<td>100% (7)</td>
<td>100% (19)</td>
</tr>
</tbody>
</table>
Table 17 shows the association between the graduate’s change in farming practice and their level of involvement on the home farm. Of the respondents who are on farms where their parents are the owners, 38.5% changed their farming practice as a result of reading the newsletter. The table shows that overall of those who are on farms with parents being the owners. The category with the greatest change in farming methods was those who are responsible for minor management decisions.

3.3.2.3 Influence of Newsletter on Graduates Making Contact with Local Teagasc Office

All respondents were asked if they made contact with their local Teagasc office and advisor as a result of reading the newsletter and 10.3% of 42 valid respondents said that they did.

Only 8.3% of 24 valid respondents who said they wanted to engage with a Teagasc advisor on issues relevant to young graduates (graduate survey in April 2014) made contact with their local Teagasc office as a result of reading the newsletter.
3.3.3 Facebook Method

The Teagasc Ballyhaise College Facebook® page was developed on the 24th of August 2014 and data e.g. views, likes, shares etc., were collected from the page until the 27th of November 2014. The content for the page was sourced from college staff and students. The page contained updates from the college academic year and academic events. Technical updates on the college farm enterprises also featured on the page. The material was uploaded to the page in the form of ‘posts’, notifications, photos and videos. The page was updated daily with a main feature each week. Main features included videos, photos, notifications or ‘posts’ and links to other useful webpages.

The page was designed to serve a number of purposes.

- To allow the college to keep in contact with its graduates and students. To notify subscribers of social media about the college and provide information to prospective students.
- To act as a method of knowledge transfer of best agricultural practice to all those who ‘liked’ the page.

The Facebook page had a large following from graduates in the sample, other graduates, current students and people with agricultural interests. There were over 2000 ‘likes’ between August 24th and November 27th 2014.

For the purposes of this research the page activities and trends were obtained to conduct data analysis in addition to the responses of the 47 respondents from the evaluation of piloted methods survey in the sample.

See the following figures with images of the piloted Facebook page.
Figure 13-The Home Page of the Teagasc Ballyhaise College Facebook Page
3.3.3.1 Respondents Usage of Facebook

The graduates were asked if they had a Facebook® account and 86.7% of respondents had. Those who had a Facebook account were asked how often they logged on to their Facebook® page.

![Number of times respondents Log in to Facebook (n=38)](image)

**Figure 14-Number of Times Respondents Log on to Facebook (n = 38)**
Table 18 shows that 71.4% of respondents who used smartphones accessed Facebook several times a day, with similar trends for those who use laptops.

**Teagasc Ballyhaise Facebook Page ‘Likes’**

Facebook uses ‘likes’ to measure the popularity of a page or post. A person can ‘like’ a page or post only once. In the period 24th August to 27th November 2014 the Teagasc Ballyhaise College Facebook® page achieved/received 2000 likes. When a page is liked it will be a feature on the users news feed, the page that is liked will update those automatically of its latest activities. There was a notable increase in the number of likes on the page after a post, link, video or photo was added.

Of the 39 respondents who had a Facebook® page, 84.6% (n=33) indicated that they ‘liked’ the Teagasc Ballyhaise College page, 69.7% of these respondents logged into their Facebook
accounts several times a day. Eighty per cent of those who liked the page were working on their home farm with their parents being the farm owners and 12% were farm owners themselves. Sixty three per cent who liked the page were responsible for major management decisions on their home farms. Fifty six per cent of respondents who liked the page were aged between 19 and 25 years old.

Respondents were also asked how often they visited the Teagasc Ballyhaise College Facebook page (Figure 15).

Figure 15-How Often Respondents Checked into the Ballyhaise Facebook Page (n = 37)
Table 19-Relationship between Respondents Level of Usage of Facebook with the Number of Times they Check into the Ballyhaise Facebook Page (n = 38)

<table>
<thead>
<tr>
<th>How often Respondents checked into the Ballyhaise Facebook page</th>
<th>How Often Respondents Log on to Facebook</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Several Times a day</td>
<td></td>
</tr>
<tr>
<td>Several Times a Day</td>
<td>10.7% (3)</td>
<td>10.5% (4)</td>
</tr>
<tr>
<td></td>
<td>12.5% (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Once a day</td>
<td>28.6% (8)</td>
<td>26.3% (10)</td>
</tr>
<tr>
<td></td>
<td>25% (2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2-3 times a week</td>
<td>42.9% (12)</td>
<td>42.1% (1)</td>
</tr>
<tr>
<td></td>
<td>50% (4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Less than 2 – 3 times a week</td>
<td>17.9% (5)</td>
<td>21.1% (8)</td>
</tr>
<tr>
<td></td>
<td>12.5% (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100% (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100% (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100% (1)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100% (28)</td>
<td>100% (38)</td>
</tr>
<tr>
<td></td>
<td>100% (8)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100% (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100% (1)</td>
<td></td>
</tr>
</tbody>
</table>

Those who log into Facebook every day were more likely to visit the Ballyhaise Facebook page with 42.9% visiting it at least 2 – 3 times per week.

![Figure 16-Times of Day People Viewed the Ballyhaise Facebook Page](image)
Figure shows that the most visits to the Teagasc Ballyhaise Facebook page were between the hours of 3:00 pm and 10:00 pm.

### 3.3.3.2 Facebook Page Links

A number of links were posted to the Teagasc Ballyhaise College Facebook page, including links to other webpages. The content of the links were news articles on the web relevant to agriculture. Respondents were asked if they followed any of these links and 20.5% (n=8) indicated that they did. Respondents indicated that the most useful links were those to the Agriland agricultural news webpage.

<table>
<thead>
<tr>
<th>How often Respondents checked into the Ballyhaise Facebook page</th>
<th>Respondents who followed the links posted on the page</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Several Times a Day</td>
<td>9.1% (1)</td>
<td>12.5% (3)</td>
</tr>
<tr>
<td>Once a day</td>
<td>36.4% (4)</td>
<td>12.5% (3)</td>
</tr>
<tr>
<td>2-3 times a week</td>
<td>36.4% (4)</td>
<td>50% (12)</td>
</tr>
<tr>
<td>Less than 2 – 3 times per week</td>
<td>18.2% (2)</td>
<td>25% (6)</td>
</tr>
<tr>
<td>Total</td>
<td>100% (11)</td>
<td>100% (24)</td>
</tr>
</tbody>
</table>
Table 20 shows that respondents who visited the Teagasc Ballyhaise Facebook page daily or 2 – 3 times per week accounted for over 70% of respondents who followed the links. A large proportion of those who did not follow the links visited the page less frequently.

3.3.3.3 Facebook Videos

Videos on the college farm enterprises were posted on the Facebook page. Both the enterprises Dairy and Forestry featured in the videos. There were four Dairy and two Forestry videos posted on the page during the three month study period. The number of views and likes the videos received during the study period were recorded.

Table 21-Data on Videos Posted to Ballyhaise Facebook Page

<table>
<thead>
<tr>
<th>Enterprise</th>
<th>Title</th>
<th>Date Posted</th>
<th>Video Length (minutes and seconds)</th>
<th>Views</th>
<th>Likes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy</td>
<td>Strip Grazing</td>
<td>20/11/14</td>
<td>1m09s</td>
<td>277</td>
<td>21</td>
</tr>
<tr>
<td>Dairy</td>
<td>Late Autumn Grazing management</td>
<td>20/11/14</td>
<td>1m51s</td>
<td>412</td>
<td>20</td>
</tr>
<tr>
<td>Dairy</td>
<td>End of year grazing</td>
<td>20/11/14</td>
<td>3m.11s</td>
<td>241</td>
<td>21</td>
</tr>
<tr>
<td>Forestry</td>
<td>Second year forestry students processing windblown trees</td>
<td>26/9/14</td>
<td>0m32s</td>
<td>94</td>
<td>1</td>
</tr>
<tr>
<td>Forestry</td>
<td>Second year forestry students felling trees</td>
<td>26/9/14</td>
<td>1m39s</td>
<td>217</td>
<td>8</td>
</tr>
<tr>
<td>Dairy</td>
<td>September on the college Dairy unit</td>
<td>12/9/14</td>
<td>2m59s</td>
<td>275</td>
<td>27</td>
</tr>
</tbody>
</table>
Videos were kept short and to the point in order to keep the viewer’s attention and to prevent them from closing the video. No video was more than three minutes and 11 seconds. The videos attracted in the region of 94 - 412 views and 1 – 27 likes. The Dairy videos had the most views and likes due to the broad topic in the videos which viewers could relate to regardless of their farm enterprise. See Figure 17 with link to videos.

Of the respondents who had a Facebook account 86.8% (n=41) indicated that they watched at least one of the videos posted. Of The 86.8% who watched the videos, 88.2% of watched the dairy videos and 20.6% watched the forestry videos.

The comments provided by respondents on what they found interesting in the videos had the following themes

- Grassland management techniques.
- Donal Patton’s practical approach and ability to relate to farmers.
- Forestry was noted as being enjoyable to watch for a change.

Figure 17-Video Posted on the Ballyhaise Facebook Page
Those who did not watch the videos on the Facebook page where those who visited the page 2 – 3 times a week or less indicating that if they visited the page more frequently i.e. once a day they would most likely have watched the videos.

### 3.3.3.4 Facebook Photos

Photos of the college’s students and farm activities were posted regularly on the page. In total 116 photos were posted from the 24th of August – 27th of November 2014. The photos were categorised as follows in Figure 18:

![Figure 18-Categories of Photos Posted (n = 116)](image)

**Figure 18-Categories of Photos Posted (n = 116)**
The respondents were asked which photos they viewed and the results are presented in the categories of photos posted and are shown in Figure 19.

![Bar chart showing photos viewed by respondents](image)

**Figure 19-Number of Photos Viewed by Respondents (n = 34)**

Figure 19 shows that the Dairy pictures had the most views by respondents with the land drainage and ploughing and reseeding the next most popular. The forestry photos did not attract much popularity.

### 3.3.3.5 Comments on the Facebook page

Users of Facebook can comment on posts on other Facebook pages. The page received many comments in particular to photos and videos posted. Graduates of the college posted comments on how they enjoyed their time completing courses there. Four of the respondents in the sample posted on the page with one respondent commenting often, one
respondent commenting occasionally and two respondents commenting rarely. Those who commented occasionally checked into the Ballyhaise Facebook page once a day.

3.3.3.6 Contact with a Teagasc office

Respondents were asked if they made contact with a Teagasc office as a result of an impact the Facebook page may have made on them, 6 respondents out of 47 said that they did.

3.3.3.7 Suggestions for improvement of the Facebook Page

The respondents provided their suggestions on how the page could be improved in future. The comments are listed below with the general theme being to continue with the page in its current format but to include more videos and photos.

- Need to include more photos.
- Include more farm performance measures.
- Get students more involved in the page.
- Need more videos on all enterprises.
- Would like to see more updates on beef and sheep.
- Keep weekly updates on all areas of the farm, including open days.
3.3.4 Text Message Method

The Teagasc Ballyhaise College weekly SMS text alert update began on the 21st of September 2014 and it continued each week until the 27th of November 2014. The content was sourced from the college staff in charge of the farm enterprises. Two text messages were sent out each week one for Dairy and one for Beef and Sheep enterprises, graduates indicated which messages they wanted to receive. Each message contained technical farm performance updates such as grass growth, animal live weight gain, fertiliser applications, milk yield and beef and sheep price reports from recent sales by the college. Copies of the text messages are included in Appendix G.

The text message method also informed graduates about upcoming Teagasc events and one such event titled ‘Transfer the Family Farm’ which provided information on farm succession and inheritance issues. The event was held in the Errigal Country House Hotel in Cootehill Co. Cavan on the 9th of September 2014.

In order to conduct this study the text message service allowed for regular communication with graduates in the piloting of the methods and to follow up on the responses of the graduates to the postal surveys administered. The text messages were sent in conjunction with the postal surveys in order to encourage graduates to return their survey in order to obtain feedback on the research methods.

The text message service was developed for the following reasons:

- The graduates indicated that a text message would be the best method of contact.
- To allow the college to keep in contact with its graduates.
- To inform the graduates with an interest in technical farm updates about the performance of the college farm.
- To act as a method of knowledge transfer of best agricultural practice.

The responses of the 47 respondents to the evaluation survey administered in November 2014 in addition to some responses to the survey in April 2014 were used in the analysis of the data for the text message update method of contact with Teagasc.
3.3.4.1 Respondents Smartphone Usage

The respondent’s smartphone usage was a question in the survey and 44 out of the 47 respondents or 93.6% said that they had a smartphone.

Sample Text Message

Date: 7th of November 2014

Teagasc Grad, Ballyhaise 7/11 Dairy, Gr 25kg/ha/d AFC 850kg/ha PGY 2400kg.Cows in at night 3kg meal 7kg bale silage 7kg grass YLD 11.2kg @ 5.17%F 4.09%P 1.06kgMS

The abbreviations in text message are explained in table 22.

Table 22: Abbreviations Used in Text Messages

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grad</td>
<td>Graduates</td>
</tr>
<tr>
<td>Gr</td>
<td>Grass Growth</td>
</tr>
<tr>
<td>Kg</td>
<td>Kilograms</td>
</tr>
<tr>
<td>ha</td>
<td>Hectare</td>
</tr>
<tr>
<td>AFC</td>
<td>Average Farm Cover</td>
</tr>
<tr>
<td>PGY</td>
<td>Pre Grazing Yield</td>
</tr>
<tr>
<td>YLD</td>
<td>Yield</td>
</tr>
<tr>
<td>F</td>
<td>Fat</td>
</tr>
<tr>
<td>P</td>
<td>Protein</td>
</tr>
<tr>
<td>MS</td>
<td>Milk Solids</td>
</tr>
</tbody>
</table>

A maximum of 200 characters was allowed which limited the amount of detail that could be included in the texts. The information had to be precise and straight to the point.

The text messages were sent using the Teagasc SMS messaging system via a provider called PUCA. ThePUCA system enabled the sender to send a text message to numerous recipients simultaneously.
3.3.4.2 Respondent’s views on the text messages

There were 22 respondents who received the Beef and Sheep text every week and 31 who received the Dairy Text with 6 respondents receiving both messages. See Figure 21.
Respondents chose the enterprise that they had most interest in and the enterprises they had on their home farms.

All of 43 valid respondents said that they read all the text messages. They were asked if they read the messages and could answer Yes, No or Some.

Twenty two out of forty three respondents (51.2%) found the messages very useful to them and 21 (48.8%) found them of some use to them, with no negative responses.

The respondents were asked to comment the text messages and their responses were as follows:

- ‘Not too detailed so easy to read.’
- ‘Can compare figures from Ballyhaise to home farm.’
- ‘Short and to the point.’
- ‘Include Grass Dry matter percentage in the text.’
- ‘I would like to see more info on management techniques.’
- ‘They are good because you can see the farm is producing.’
- ‘Include more detail make it clearer as it is very packed together.’
- ‘Yes enough detail everything from yield, meal, grass been fed, grass growth and milk solids.’

The respondents were asked if they would like to continue to receive text messages as a method of contact with Teagasc and 97.3% of the 43 valid respondents said that they would. Only one respondent said that they did not want to continue using the text message as a method of contact.
3.3.4.3 Suggestions for improvement of the text message service

The respondent’s provided their own suggestions for improvement for future use of a text message system for Teagasc to contact graduates

- ‘Include soil temperature in texts.’
- ‘Plenty of detail straight to the point.’
- ‘Very good lots of info.’
- ‘Have a sign up facility to receive the texts.’
- ‘Include rotation length, stocking rate, Somatic Cell Count, Milk price, Nitrogen level spread, and residual grazing covers.’
- ‘More frequent inclusion of upcoming Teagasc events should be in texts.’

The respondent’s comments are very positive to the text service and their suggestions are valid. The responses show a trend for the demand for more technical information in the texts.
3.4 Section C

3.4.1 Findings from a Farm walk with a Teagasc Advisor

A walk was held on the dairy farm of David Brady Stradone, Co. Cavan on the 4th of March 2014 and was facilitated by a Teagasc Dairy advisor from the Teagasc Ballyhaise Advisory office.

A group of 19 Level 6 Advanced Certificate in Dairy Herd Management students from Ballyhaise Agricultural College attended the farm walk as part of their college coursework. The topics discussed on the day related to setting up your own farm business, an overview of the services available by Teagasc and also technical agriculture topics e.g. grassland management for spring grazing and turnout of cows after the winter period.

The farm walk proved to be very interactive and positive, the survey identified that there was a demand for inviting a Teagasc advisor to give a guest lecture to final year students to meet the aims of the current study. The survey can be seen in Appendix B of this thesis.
Table 22 shows the results from the evaluation survey. The 19 students in attendance at the farm walk provided their views on the discussion group. A total of 84% of respondents previously attended a Teagasc farm walk and all the students said they would consider joining a discussion group as a result of being on the farm walk and they all had the opinion that a discussion group/farm walk is a good way of communicating with a Teagasc advisor.

Of the 19 participants, 17 (89.5%) felt that they could participate freely in the group discussions on the day.

Of the 19 respondents, 47.4% stated that the topics discussed on the farm walk were ‘Useful to me’. A further 52.6% of respondents stated that the topics discussed on the farm walk were of ‘Some use to me’. None of the students in attendance felt the topics covered in the

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were you Ever at a farm walk before</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>84.2%</td>
<td>3</td>
</tr>
<tr>
<td>Would you consider joining a discussion group</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>100%</td>
<td>0</td>
</tr>
<tr>
<td>Do you think it is a good method of engaging with an advisor</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>100%</td>
<td>0</td>
</tr>
<tr>
<td>Did you feel you could participate in the group discussion</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>89.5%</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 22-Distribution of Respondents by the Following Questions (n = 19)
farm walk were of ‘No use to me’. It is encouraging to note that no students found the topics of no use.

The open answer questions generated a lot of feedback from the students encounter with a Teagasc advisor. In the question which asked what did you enjoy the most? The students provided responses with the following themes: Topics on grassland management, animal nutrition, farmer to farmer communication and farmer to advisor communication.

The majority of students had nothing to note about what they enjoyed the least about the day, but those who did have criticism that the group was too large in size, the discussion on reseeding was not interesting and another comment was about some the host farmers agricultural practices in relation to silage quality.
3.4.2 Findings from a Guest Lecture with a Teagasc Advisor

The guest lecture was given on the 19th of May 2014 by a Teagasc Dairy advisor from the Ballyhaise Advisory office for the purposes of this study. The class involved were 20 Level 6 Advanced Certificate in Dairy Herd Management students from Ballyhaise Agricultural College.

The survey can be seen in Appendix C of this thesis.

Table 23-Distribution of Respondents by their Knowledge of the Teagasc (n = 20)

<table>
<thead>
<tr>
<th>Knowledge of Teagasc Advisory service</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate your knowledge of Teagasc advisory services before lecture</td>
<td>(7) 35%</td>
<td>(10) 50%</td>
<td>(3) 15%</td>
<td>(20) 100%</td>
</tr>
<tr>
<td>Rate your knowledge of Teagasc advisory services after lecture</td>
<td>(18) 90%</td>
<td>(2) 10%</td>
<td>(0) 0%</td>
<td>(20) 100%</td>
</tr>
</tbody>
</table>

Table 23 shows that the respondents knowledge was greatly increased as a result of this lecture, with the rate of increase being from 35% to 90% of the respondents having a good knowledge of Teagasc advisory service with 70 % finding it useful and 30% finding it of some use with no respondent uninterested in the lecture.

The respondents were also asked if the lecture would encourage them to avail of the services of a Teagasc advisor, 100% of the class said yes. This is a remarkable response and it shows that there is a benefit in possibly giving all students in the agricultural colleges the opportunity to increase their knowledge of Teagasc’s advisory services.
The open question which asked the students what did they see as the main benefits of an agricultural advisor generated comments from 18 of the 20 students. The comments contained the following themes: Agricultural advice about farm business management; decision making; career progression; the process of knowledge transfer and the depth and range of the advisor’s knowledge.

The open question which asked the students what did they like about the lecture. The students enjoyed the open and frank discussions, the information provided about the role of Teagasc and its advisors, the agricultural advice, the career advice and the quality of the speaker and their presentation.
No student provided any comments about what they disliked, showing they enjoyed the lecture and found it to be very beneficial.
3.5 Section D Findings of the Discussions with International Extension Organisations

One of the specific objectives of the current study was to investigate what methods were used by international extension and education organisations to keep in contact with graduates. Firstly the main extension organisations in the United Kingdom and mainland Europe were contacted with subsequent contact made with extension organisations in the USA and Canada, over nine organisations were contacted. A snowballing method of sampling i.e. after communication with an organisation they would then recommend another organisation to contact was then used to potentially expand the number of international extension and education organisations that participated in the current study. The majority of organisations contacted did not express an interest in the subject under investigation in the current study. Additionally, no conflicts of interest were identified between Teagasc and the organisations contacted in relation to the contents of the current study.

The SRUC (Scottish Rural University College) in Scotland provided information on their method of keeping in contact with their graduates. A scholarship programme was employed by the SRUC to maintain contact with graduates; however this scholarship programme was used to maintain contact with students who intended to pursue higher level agricultural qualifications i.e. higher level degrees. The SRUC scholarship programme was funded annually from a scholarship fund. Students can apply for it and if successful they get a paid placement with an SRUC/SAC consultancy office over a 3 month period prior to completion of their degree. However, as Teagasc do not operate a similar scheme no meaningful ideas could be regenerated from contact with Scottish College. The most successful outcome of the sampling of international organisations was in Northern Ireland through CAFRE (College of Agriculture, Food and Rural Enterprise) and DARD (Department of Agriculture and Rural Development). Northern Ireland has a similar structure to Teagasc in that CAFRE provide education and DARD provides agricultural advisory services, both are government organisations. They had piloted an initiative in conjunction with DARD to retain contact with recent graduates of agricultural colleges in Northern Ireland.
CAFRE invited the Development Branch staff of DARD to speak to final year CAFRE students to make initial contact with students before they graduated. The development staff were agricultural advisors and they provided students with information on the support and services they provided to farmer clients by DARD. As a result of this initial contact with final year students a decision was taken to run a series of events on local farms for younger farmers – in particular ex-CAFRE students. These events were run based on student demand. Student records for students 2001 – 2010 were collated according to post code and allocated to a senior advisory area and graduates were informed about events taking place in their locality. Dairy and Beef/sheep events were arranged with both events running in the same week. This resulted in each graduate having a choice of attending either a dairy or beef and sheep event in their locality that the graduates could attend.

The events that were held in April and May 2013 on benchmark farms across Northern Ireland and the team of development staff facilitated discussion groups on the farms at the events. The aim was to encourage as many graduates as possible to attend. In total 11 events were held on farms and attendances were taken along with a short survey to obtain feedback from graduates on their opinions of the event. The attendance was mixed and it was noted that it may have been partly due to the pressures on Farm businesses at the time. It had been hoped that the events could have been run earlier in the year but time constraints on the staff meant that no other dates in the year were possible to hold the events.

**Outcomes/Feedback from the Events**

There was no discernible difference between the views expressed by the attendee at the Beef & Sheep and Dairying events. However CAFRE and DARD took key messages taken from the events and they are as follows:

The farm walk and discussion of the past development of the farm and the young farmers’ development were well received, with the popularity of the demonstration of IT applications was mixed with a higher level of interest from dairying participants. The addition of new technology was a common theme in the answers to the question in relation to developing
young farmers with the majority of these comments coming from dairy attendees. In terms of the suggestions of topics for future discussion they tended to follow the topics covered on each farm visit. Dairy, beef, farm buildings and grassland topics were very popular with attendees and this was due to the focus on these at visits and the shortage of animal winter forage at that time.

**Interest in Future Events**

There was a good level of interest in attending future group meetings however time availability was identified as a possible constraint. In the Beef Event it was suggested that evening meetings on a farm of a group member would be most suitable. In the Dairy event the preference was for evening meetings also but a quarter of attendees were willing to meet in afternoon and on a demonstration farm instead of a group members farm.

**Methods of Contact Preferred**

SMS message was considered the most reliable method of contacting younger farmers, followed by letter and e-mail. Facebook was noted as probably the main method of communication online compared to email and the DARD development staff identified the potential of Facebook as a significant method of providing technical information to farmers. Secondly YouTube was identified by a number of attendees as a source of information or advice on how to carry out practical skills, repairs and other operations.

**Overall Recommendations by CAFRE/DARD**

There was a variation in attendance and it was probably a reflection of weather. Meetings in the Autumn/Winter would be less prone to this approach. The records held by Education administration pre 2006 in electronic format were limited and it would probably have been more effective to advertise meetings in press and online rather than by post. It would have been useful if the primary enterprise on home/employer farm were recorded for graduate
students as it would have permitted more targeted contact by Development Branches with past graduates. Graduates who were young farmers were more time limited than older farmers due to their workload and family commitments. In addition they were unwilling to commit to a long series of meetings but committed to attending up to four meetings per year.

3.6 Comments by Respondents on the Piloted Methods of Contact with Teagasc

The respondents provided some suggestions on the overall success on the piloted methods listed. Below are the comments and they are valid suggestions to be taken into account:

- Send the newsletter to Teagasc advisory offices.
- Should have a weekly question and answer forum on Facebook, answer those with top comments and those with the most likes, there is a need for a discussion forum for farmers in the North West.
- Include a past student profile in the newsletter the same as grass watch in the Irish Farmers Journal.
- The texts are very useful as you can compare it to your own farm.

Overall the respondents showed contentment in their responses. They showed their interest in the method and provided some useful ideas on what they think needs to be included in future methods.
3.7 Conclusion

The research findings from international extension and education organisations yielded a positive result. Northern Ireland DARD and CAFRE provided a base for the development of this research by investigating their experiences. There piloting of farm events with graduates provided valuable information and their recommendations for future development of contact methods for example the use of ICT gave direction.

The survey of graduates from Teagasc Ballyhaise Agricultural College provided information in relation to the graduates characteristics and their interest in retaining contact with Teagasc. As a result of the survey communication methods were developed based on the graduates preferences. The piloting of a guest lecture and a farm walk with students facilitated by a Teagasc advisor was very beneficial to both parties and students increased their knowledge of Teagasc services as a result of the method.

The development and piloting of methods for Teagasc to retain contact with graduates was piloted with 50 graduates from Teagasc Ballyhaise Agricultural College. Three methods: Facebook, College Newsletter and Text message, were developed and piloted. The methods were evaluated by the findings from a survey which by data analysis provided information on each method’s success. The Newsletter was used by respondents as a performance measurement tool for their own farms and holds a wealth of information on technical agriculture for the reader to digest. Facebook is the most interactive method and can be exploited even more. Photos, videos and webpage links were areas respondents felt could be used more frequently and they noted that discussion forums and graduate profiles could be integrated into the page. The text message method was without doubt the most direct method of contact. The information was short and to the point and conveyed the message very well to the recipient.

The following chapter includes the summary of the findings from this research, a discussion of the findings from the research and literature review. The chapter concludes with the recommendations to Teagasc on how to retain contact with recent agricultural college graduates.
Chapter 4 Summary, Discussion and Recommendations

The overall aim of the current study was to develop a useful method for Teagasc advisors to engage and keep in contact with agricultural college graduates.

Study Objectives

1. Identify what communication methods agricultural graduates would like from an extension organisation.

2. Assess and identify the characteristics of recent agricultural college graduates and their experience of agricultural college.

3. Develop and evaluate methods of communication for agricultural advisors to engage with agricultural college graduates.

4. Evaluate contact between a Teagasc advisor and existing agricultural college students.

5. Identify the current practices employed by international extension organisations to retain contact with agricultural college graduates.

Methodology

- In order to investigate what methods were used by international extension and education organisations to keep in contact with graduates, over nine extension organisations in the United Kingdom, mainland Europe the USA and Canada were contacted.

- To identify the characteristics of recent graduates and the methods they would like to use to contact Teagasc. A postal survey entitled “Teagasc Ballyhaise Agricultural College Graduate Survey” was sent to 464 Teagasc Ballyhaise Agricultural College Level 6 graduates (graduated from 2008 to 2013 inclusive) in April 2014.

- To evaluate the contact between a Teagasc advisor and current students, a farm walk was held on a local dairy farm and a guest lecture was given to students. The walk
and lecture were provided by a Teagasc Dairy advisor from the Teagasc Ballyhaise Advisory office. A group of Level 6 Dairy Herd Management students from Ballyhaise Agricultural College were used in the sample.

- Following completion of the ‘Teagasc Ballyhaise Agricultural College Graduate Survey’ 35 respondents indicated they were willing to participate further in the study, in addition 15 graduates from 2014 wished to be included in the pilot methods sample. Following analysis of the results of the graduate survey three methods of communicating with graduates were piloted.

1. A Teagasc Ballyhaise Agricultural College Newsletter
2. A Teagasc Ballyhaise Agricultural College Facebook page
3. A weekly text message service with farm enterprise updates

- In order to evaluate the piloted methods a survey entitled ‘Teagasc Ballyhaise Agricultural College Survey on how Teagasc can keep in contact with Agricultural College Graduates’ was developed. The survey was administered in November 2014 to the 50 Teagasc Ballyhaise college Level 6 graduates who wished to participate in the study.

4.1 Summary of Findings

The findings are presented in the context of the specific objectives.

**Objective 1 - Identify what methods of communication agricultural graduates would like from an extension organisation.**

- It was found that text message was the most popular method of contact that respondents wanted to use to contact a Teagasc advisor. The other choices in descending order of popularity were phone call, newsletter via e-mail and Facebook. Text message was the most popular choice with the 31 – 35 year old age group. It was found that the 36 + age group wanted to use a phone call or text message as a method of contact instead of new ICT like Facebook.
• The majority (59.7%) of respondents used Facebook and 32.3% did not use any form of social media. Facebook was more popular with 19 – 25 year olds representing 71.3% of the age group with 25.3% of this age group using no social media. Fifty percent of the 36 years + age group did not use any form of social media. The majority of social media users used their Laptop and smartphones to access social media.

• The most popular locations to meet an advisor in descending order were: A visit by the Teagasc advisor to their farms, a discussion group or a farm walk. Results of the survey also identified that 85.7% would like to attend an event specifically for graduates and 82.2% would like to receive regular updates about the Ballyhaise Agricultural College farm enterprises.

**Objective 2 - Assess and Identify the Characteristics of Recent Agricultural College Graduates and their experiences in Agricultural College**

• The “Teagasc Ballyhaise Agricultural College Graduate Survey” was sent to 464 Level 6 graduates (from 2008 to 2013 inclusive) in April 2014. A total of 166 completed the survey yielding a 36% response rate.

• The majority of respondents were aged between 19 and 25 year old at 52.7% and 96.4% of these were male. The respondents were predominantly located in the counties surrounding the college with Cavan having the most students at 32.3% of the respondents.

• The vast majority (96.4%) of respondents were engaged in some form of farming activity following graduation. The graduates who were not engaged in farming activities indicated that they would farm in the future with 40% planning to farm in 1 – 5 years and 60% in 5 – 10 years. The farming status of all the graduates was that 64% were working on the home farm with their parents being the farm owners, 24% were in farm ownership and 6% in a farm partnership and 6% were working on the farm of a non-family member.

• The respondents aged 19 -25, 76.7% were working on their home farm with their parents with just 12.8% being in farm ownership. As the age profile of the respondents increases so too does the level of farm ownership as in the 31 – 35 and
36+ years of age groups it can be seen that 50% of both these age groups were in farm ownership. However there is still 42.3% of 31-35 year olds and 38.9% of 36+ year olds who are still working on their home farms with their parents being the farm owners. In terms of the level of responsibility of the graduates on their home farms where their parents are the farm owners, 63% were responsible for major decisions and 37% were responsible for minor decisions on the farm.

- Fifty per cent were engaged in full time farming, with 21.5% spending up to 20 hours per week, 25.9% spending 20-35 hours per week and 52.5% working over 35 hours a week on their farms.
- The majority (84%) of respondents indicated that they would inherit a farm with 5.1% indicating that they would enter into a farm partnership.
- In terms of farm size, 56.9% of farms were less than 100 acres, 32.4% were 100-200 acres and 11.6% were over 200 acres. The main farm enterprises were Beef at 36.9%, Dairy at 26.8%, Mixed Beef and Sheep at 15.9%, Sheep at 10.8%, Pigs at 7% and Tillage at 2.5%.
- Seventy seven per cent of respondents said that they would like to have contact with a Teagasc advisor.
- The results showed that 56.6% were availing of the services of a Teagasc advisor and 72.7% of those who had a Teagasc advisor had contact with the advisor themselves. While 47.8% had contact with a non Teagasc advisor. It was also found that those with larger farms tend to have more contact with an agricultural advisor that smaller ones.
- Their reasons for completing an agricultural college course were as follows, 86.4% said for claiming farm supports, 95% said being eligible for stamp duty relief and 93.8% said increasing knowledge of agriculture. The vast majority of the respondents indicated that they had a positive experience in college with 57% finding their experience very good, 40% finding it good, 2.4% finding it poor and 0.6% finding it very poor. Graduates of the college posted comments on how they enjoyed their time in Teagasc Ballyhaise (Figure 17).
- Contact with an agricultural advisor while in college: 47.5% said an advisor did give a lecture and 52.5% said that they didn’t receive a guest lecture. 92.8% of those who
didn’t receive a guest lecture said that an advisor should have while 94.5% of those who received a guest lecture said it was worthwhile.

**Objective 3 - Develop and evaluate methods of communication for agricultural advisors to engage with agricultural college graduates**

**Newsletter**

- The Teagasc Ballyhaise Agricultural College Newsletter via email contained updates about the college and its farm. The newsletter was posted on the college Facebook page and the Teagasc public website. Statistics from the Teagasc website showed that there were 128 downloads for the September Newsletter, 666 for October and 348 for November. A national agricultural news website called Agriland also quoted material from the October newsletter.
- Of the 50 people in the sample for the piloting of the methods 42 received the newsletter. Subsequently 64.3% of the 42 respondents that received the newsletter read them all, 28.2% read some of them and 2.4% did not read any of them.
- Of those who read all the newsletters 54.5% were aged between 19 – 25 years old, 68.2% were working on their home farm with the parents being the owners, 77.8% of had major responsibility for management decisions on their parent’s farms and 18.2% were owners of their own farms.
- Of those who read some of the newsletters 62.5% were aged between 19 – 25 years old, 62.5% were working on their home farm with the parents being the owners, 62.5% of them had major responsibility for management decisions on their parent’s farms and 37.5% were owners of their own farms.
- All respondents found the content interesting and 94.3% wanted to continue receiving regular updates. The most popular farm enterprise among respondents was dairy.
- 83.3% of the respondents preferred to receive the newsletter via e-mail instead of Facebook and 19.1% accessed the newsletter on the Teagasc public website.
- Seventy three per cent of respondents indicated that they used the newsletter as a tool to measure their home farm performance and 48.8% of said that they changed
their farming practices as a result of its content. Ten per cent of respondents indicated that they made contact with their local Teagasc office as a result of reading the newsletter.

**Facebook**

- The results showed that 86.7% of respondents had a Facebook® account and that 68.4% of those with a Facebook account accessed it several times a day, 23.7% once a day, 2.6% two to three times a week and 5.3% less than two to three times a week. While 71.4% of respondents who used smartphones accessed Facebook several times a day.
- In the period 24th August to 27th November 2014 the Teagasc Ballyhaise College Facebook® page achieved over 2000 likes. Of the 39 respondents who had a Facebook® page, 84.6% indicated that they ‘liked’ the Teagasc Ballyhaise College page with 69.7% of these respondents logging into their Facebook accounts several times a day. Fifty six per cent of these were aged between 19 and 25 years old, 80% were working on their home farm with their parents being the owners and 12% were farm owners themselves and 63% were responsible for major management decisions on their home farms.
- Over 43% of respondents checked into the Teagasc Ballyhaise Facebook page two – three times a week and those who logged into Facebook every day were more likely to visit the page. The most visits to the Teagasc Ballyhaise Facebook page were between the hours of 3:00 pm and 10:00 pm.
- Those who visited the Teagasc Ballyhaise Facebook page daily or 2 – 3 times per week accounted for over 70% of respondents who followed the links on the page to other websites.
- Of the respondents who had a Facebook account 86.8% indicated that they watched at least one of the videos posted. Of those who watched the videos, 88.2% watched the dairy videos and 20.6% watched the forestry videos.
- The pictures in relation to the dairy herd on the farm had the most views by respondents with the land drainage, ploughing and reseeding the next most popular.
• Four of the respondents in the sample posted a comment on the page with one respondent commenting often, one respondent commenting occasionally and two respondents commenting rarely. Those who commented occasionally checked into the Ballyhaise Facebook page once a day.

• Six respondents out of forty seven made contact with a Teagasc office as a result of an impact of the Facebook page on them.

Text Message

• All respondents said that they read the text messages and 93.6% of them had a smartphone.

• Twenty two out of forty three respondents (51.2%) found the messages very useful to them and 21 (48.8%) found them of some use to them and 97.3% of respondents said that they would like to continue to receive text messages as a method of contact with Teagasc.

Objective 4 - Evaluate contact between an advisor and existing agricultural college students.

• A farm walk facilitated by a Teagasc advisor at which 19 students from a Level 6 Dairy Herd Management course attended provided information on the experiences of contact between students and advisors. A total of 84.2% of students previously attended a Teagasc farm walk before, all the students said they would consider joining a discussion group and they all had the opinion that a discussion group or farm walk was a good way of communicating with a Teagasc advisor. Seventeen of the students (89.5%) felt that they could participate freely in the group discussions, 19 students (47.4%) said that the topics discussed on the farm walk were useful to them and 52.6% said that the topics were of some use to them.

• The students said that the topics on grassland management, animal nutrition and the experience of communicating with the host farmer and the advisor were beneficial to them. Some students said that the group size was too large.
• The guest lecture from a Teagasc advisor to the same Level 6 class in Dairy Herd Management. The results from the feedback sheets showed that the students’ knowledge of Teagasc services was greatly increased and that they found it very useful to them.

• All of the students in the class said that the lecture would encourage them to avail of the services of a Teagasc advisor.

• The students gave their opinions on what they thought were the main benefits of an agricultural advisor to them with the responses as follows: Agricultural advice about farm business management; decision making; career progression; the process of knowledge transfer and the depth and range of the advisor’s knowledge.

• The students enjoyed the open discussions, the information provided about the role of Teagasc and its advisors, the agricultural advice, the career advice and the quality of the guest speaker.

**Objective 5 - Identify the current practices employed by international extension organisations for retaining contact with agricultural college graduates.**

• The majority of organisations contacted did not express an interest in the subject under investigation in the current study.

• The SRUC (Scottish Rural University College) in Scotland have a scholarship programme to maintain contact with graduates; however this scholarship programme was used to maintain contact with students who intended to pursue higher level agricultural qualifications i.e. higher level degrees.

• CAFRE (College of Agriculture, Food and Rural Enterprise) and DARD (Department of Agriculture and Rural Development) in Northern Ireland had piloted an initiative to retain contact with recent graduates of agricultural colleges.

• CAFRE invited the Development Branch staff of DARD to speak to final year students to make initial contact with students before they graduated. They provided students with information on the support and services that were provided to farmer clients.

• As a result a decision was taken to run a series of events on local farms for young farmers and graduates. Dairy and Beef/Sheep events were arranged with each
graduate having a choice of attending either event. They were held in April and May 2013 on benchmark farms across Northern Ireland and the team of development staff facilitated discussions at the events.

- CAFRE/DARD found that the farm walk and discussion about the farm hosting the event were well received. There was interest by attendees in attending future group meetings; however, time availability was identified as a possible constraint. In the Beef Event it was suggested that evening meetings on a farm of a group member would be most suitable.

- SMS message was considered the most reliable method of contacting young farmers. Facebook ® was noted as probably the main method of communication online compared to email and the DARD development staff identified it as a significant method of disseminating technical information.
4.2 Discussion and Conclusions

The following sections include the discussion and conclusions of the study which are derived from the results of the survey and the information obtained from the literature review.

**Objective 1 - Identify what communication methods agricultural graduates would like from an extension organisation**

Text messages and phone calls were the most popular method that respondents wanted to use to contact Teagasc. The CUITA (2010) reported that Ireland was a high user of SMS text messaging. The popularity of mobile telephony among farmers is very high and the research by Byrne (2013) found that 100% of Teagasc discussion group members surveyed had a mobile phone. Farmers who are in Teagasc discussion groups are contactable via their mobile phones in order to schedule meetings. Newsletter via email and Facebook were the next most popular methods of choice. Newsletters, leaflets, pamphlets and posters have been widely used to disseminate information (Van den Ban and Hawkins, 1999). The advantage of printed material is that it preserves the information (Apata, 2010).

The majority of respondents at 60% of the sample were users of Facebook and over 71% of users of Facebook in the sample were aged 19 – 25 years old. Social media is the fastest growing method of communication in the world and many extension workers are realising its potential for disseminating agricultural information. In Ireland Facebook is used by 60% of the population. With this information is provided an opportunity to exploit the level of user ship by respondents and use it to establish methods of communication between Teagasc and graduates. The technology gap between the age groups however was noticeable as 50% of those aged over 36 did not use any social media. Most respondents used their laptop and smartphones to access social media. The smartphone allows for the fusion of normal telephony operations and the capabilities of a handheld computer.

One to one communication has been used for the dissemination of advice in many countries and is perceived by many to be the best method of communication (Oakley and Garforth, 1985). Most respondents favoured the following methods of meeting an advisor in
descending order of popularity: A farm visit from a Teagasc advisor to their home farm - this method however given the time required to conduct farm visits would not be feasible, discussion group or farm walk was also popular and this method is a good way to showcase new techniques (Morrison, 2012; Oakley and Garforth, 1985). It also gives people the opportunity to engage with people who have similar interests which an individual farm visit would not be able to provide.

Over 82% of respondents indicated that they wanted information updates about Teagasc Ballyhaise Agricultural College. Use of a newsletter via email, Facebook and text messages would be ideal as methods of circulating information about the college to past students. A number of respondents stated in their survey that they were interested to know about what has changed on the college farm since they left college. In addition to further show the respondent’s level of interest was that nearly 86% said they would attend an event specifically for graduates. An event like such would ideally be held in the agricultural college from which the respondent graduated. Most likely format would contain a farm walk at the college to show graduates the current production levels of the farm. The high number of respondents willing to attend an event is a very positive indication of the interest for the subject. It is worth noting however that technology in the form of internet and phone has its advantages for the distribution of messages to a target audience, but the fact is that people still also like to interact with an extension service using traditional methods i.e. farm walk, open event, one to one communication.

**Objective 2 - Assess and identify the characteristics of recent agricultural college graduates and their experiences of agricultural college.**

The respondents in the study sample were in the vast majority male and aged 19 – 25 years old. CSO (2010) results showed that 88% of family farm holders were male but that more than half the farmers were over 55 years old. The farming population in Ireland is ageing as just 6.2% of all farm holders in 2010 were under 35 years old. This is not just unique to Ireland as similar patterns on age profile are seen in Europe and Africa (Zagata and Sutherland, 2015). The study corresponded with the CSO 2010 data as just 24% of the respondents in this study were farm owners. The respondents were in the main in
descending order from border region (Cavan, Monaghan and Donegal). The majority of respondents were engaging in farming activities but in 64% of cases the respondent’s parent own the farm holding. Although it is encouraging to see that 63% of respondents whose parents own the holding had major responsibility for decisions on the farm. It is understandable that in a sample where over 52% of the graduates are 19 – 25 year olds there would be few in farm ownership and it was found that the level of responsibility increased in the older age groups.

Fifty per cent of respondents were part time farmers and this is understandable given that 56.9% of respondent's farms were less than 100 acres in size. CSO (2010) results shown that the average farm size in the BMW region was 27.3 hectares or 67 acres. In terms of time spent working on the farm over 52% of respondents said that they are working over 35 hours a week on their farms. It is clear that the respondents are committed to agriculture and want to maintain the future of their farms. It was of no surprise when 84% of graduates indicated that they would inherit a farm of a family member as research by Bogue (2013 a) showed that the average age of successors was 25 and 95% of them were children of the landowners. In terms of the respondents farming enterprise over 36% had beef farms and this was expected as CSO (2010) showed that beef farming was the most dominant type of farming in Ireland.

The vast majority of respondents representing 97% said they enjoyed their experience in agricultural college. Agricultural education is provided in the main by Teagasc and Heanue and O’ Donoghue (2014) found that farmers who receive formal agricultural education have greater technical and allocative efficiency necessary to run a farm business. Kilpatrick (1997) and Leavy (1987) found a positive relationship between education and farm profitability. With other research showing positive implications of agricultural education on farmers it is no coincidence that the respondents in the sample had good reviews of the agricultural college.

The respondents all claimed that the main reasons for completing an agricultural college course in descending order of reason: To be eligible for stamp duty relief, to increase agricultural knowledge and lastly to claim farm supports. In a study by O’ Donoghue (2014) he found that students motivation for enrolment in agricultural courses were driven by
eligibility to qualify for schemes and incentives from both the state and EU. Given the financial rewards introduced by DAFM (2015) there is exceptional demand for agricultural courses (Teagasc, 2014) and CAO (2014) data showed that the demand was 2.5 times higher in 2014 than in 2007.

Respondents’ level of contact with an agricultural advisor while in college was shown to be limited with over 52% not ever having been given a guest lecture by a member of Teagasc advisory. The first step in Northern Ireland establishing contact graduates was while they were still students. It allowed them to obtain important background information about the student’s requirements from contact with an advisory service in future. Boyle (2012) did acknowledge the issue in Teagasc by stating that the connectivity between students and advisors is poor. Respondents who received a guest lecture felt it was worthwhile and those who did not receive a guest lecture said they should have. With this evidence it is plain and clear to see that the respondents had an interest in communicating with Teagasc advisory. Gowing (2010) acknowledged the success of the Macra na Feirme and Teagasc joint discussion group programme the 3C which was facilitated by Teagasc advisors, by stating that it allowed young farmers to discuss technical issues.

Overall the respondents are male and in the 19 – 25 age group. Many of whom are not in farm ownership which is due to a number of reasons such parent age. Therefore many respondents are engaged in off farm employment and given the volatile nature of farm incomes many would have no other choice if they want to earn a living. This information in hand allows for the tailoring of methods for Teagasc to contact respondents so as to suit the respondents busy schedules. The use of methods involving ICT would be best to retain contact with this group.
Objective 3 - Develop and evaluate methods of communication for agricultural advisors to engage with agricultural college graduates.

The development of methods for Teagasc to use to contact graduates were finalised after the results of the international experience, the graduate survey and the literature review. Three methods were identified as most suitable: A Newsletter via email, Facebook and SMS text message.

Newsletter

The newsletter was developed and distributed to graduates in the sample as a method providing updates about the college and its farm enterprises and also to disseminate agricultural knowledge. Each month information was collated and sent to graduates via email. This was the most cost effective and direct method of sending it. However issues such as invalid email addresses caused some upsets in its distribution. In addition the newsletter was uploaded to the college Facebook page and the Teagasc public website for all members of the public to view; this method was very a quick and easy way of publishing information. The newsletter was downloaded regularly and it spiked at 666 downloads for the October edition. It was also cited by Agriland (an agricultural news website). This shows how popular it had become. The newsletter was detailed and was in landscape format consisting of three pages of information about the college academic news and the farm enterprises. The information on the farm enterprises was detailed and technical so that the reader could gain knowledge for their own practical use. The success of the method was evaluated by a postal survey and the results were very positive. Only around 2% of respondents did not read the newsletter and this may be due to incorrect email addresses. The majority of the readers were in the 19 – 25 year old age group and 38% of them owned their own farms and around 63% of them were working on their parents farms with 63% of those on their parents farms having major responsibility for management decisions. It is encouraging to see that more of the respondents in this sample were farm owners. All the respondents found the content interesting and 94% wanted to continue receiving the newsletter. The newsletter was clearly very popular and its effectiveness was clearly shown when 73% indicated that they used it as a tool to measure their own farms performance, nearly 49% changed their farming practices and 10% made contact with a Teagasc advisor as
a result. This had a major impact on respondents and was a very effective method of dissemination of agricultural knowledge. Khushk and Memon (2004) also had similar findings on the distribution of printed material. Even though the sending the newsletter by email was cumbersome and time consuming, the respondents preferred to receive it by email than, for example the public website of Facebook. This method took a lot of time to prepare and it involved sourcing information every month about the farm enterprises. It required a number of college staff to share the information and have an interest in the success of the method. It was not the most efficient method in relation to time taken to publish the information, but once it published it was a print article which could be referred to again and again. In order to maintain this method each agricultural college would need to assign a staff member to edit and co-ordinate the newsletter, with the full cooperation of all college staff. In order for this to be successful it would need to be implemented with enthusiasm by management.

Facebook

A Facebook page was set up for Teagasc Ballyhaise Agricultural College. The recommendation from CAFRE and the level of usership among respondents in the graduate survey spurred the development of this as a method of communication for Teagasc with recent graduates. The method was evaluated using data from the Facebook account and the results of the evaluation of piloted methods survey. The page was used to post news, updates, photos and videos about the college. It was found that over 86% of respondents had a Facebook account and 68% of them accessed it several times a day. In total 71% of those who accessed their accounts several times a day used their smartphones. Monahan (2012) outlined the uses of smartphones and the addition of ‘apps’ in mobile innovation has allowed the user to transmit data for commercial, administrative and entertainment purposes (McNamara, 2009). The popularity of the page was measured by the number of ‘likes’ it received and over 2000 likes were on the page between the period 24th of August to the 27th of November 2014. Over 84% of respondents said that they ‘liked’ the page and 70% of them access their accounts several times a day. This shows that the more often people check their accounts they are more likely to like the page. The age trend was the
same as the other methods at 56% being between 19 – 25 years old who ‘liked’ the page. Only 12% of them were farm owners with most of them working on their parents farms. Facebook is most popular with the young generation it would possibly be the best method of interacting with that age group. It was encouraging to find that 43% of respondents checked into the college Facebook page 2 – 3 times per week. This shows that the interest level was high in the page. The highest number of daily views to the page were between the hours of 3.00pm and 10.00pm. This interest was due to the activity on the page with posts being put on at least once a week. The photos and video were posted every three to four days and college staff would assist in the provision of such material. The videos were very popular with over 85% of respondents viewing at least one video. The videos on the dairy enterprise received the most views at over 1250 for one video. The video contained information about the research herd on the college and member of staff gave a short 3 minute update. The combination of picture and sound allows the viewer to fully involve themselves in the particular topic. Girard (2001) said that more than any other mass communication medium radio and television speak in the language and accent of the community. The posting of material on the page was vital to its effectiveness. The more photos and videos that were posted the more views and ‘likes’ were received. This ensured that the page would have a wide reach or viewership.

The number of comments was low with just four of the 49 respondents commenting on the page. This is an element that obviously needs to be encouraged to engage people to share their views on a topic. Those who did comment were clearly fans of the page as two of them checked into the page every day.

This method of contact had potential to reach very wide audiences and it was very easy to post information about any event. It was very interactive and the page always shows activity with likes from viewers on every post and viewers could comment on every topic allowing for more engagement than other methods. It was not time consuming and did not require as much time as the newsletter and with over 2000 page ‘likes’ it already had a far larger following than the newsletter could ever compete with. The resources required to maintain a Facebook page in an agricultural college would not be of any great cost as internet connections and camera/video equipment is readily available in agricultural colleges. The coordinator of a Facebook page could be sourced for the administration staff with all staff in
the college providing an input to its content. For example college teachers could provide photos of student engaging in practical tasks on the college farm. Therefore as a cheap and easy method of communication with graduates, Facebook was the solution.

**Text Message**

The text messages were read by all respondents and over 93% of them had a smartphone to view them. The texts were sent weekly to graduates with short 200 character messages. The information contained in the messages was derived from the newsletters and any additional weekly news. There were two categories of texts 1. Beef and Sheep Text and 2. Dairy text. Each had information specific to the enterprise from the college farm. All the respondents found the messages useful for their farms and over 97% said they would like to continue receiving them. According to Red C (2011) 49% of Irish people have a smartphone. In the study it was found that 41% of 25 – 34 year olds own a smartphone. Mobile technology has advanced to a stage where ‘apps’ are available for almost anything. In agriculture there are ‘apps’ for weather, livestock, grassland, dairy, grains and horticulture (Monahan, 2012). Connolly and Woods (2010) examined the adoption and usage of technology by farmers in Ireland and they found that the use of mobile phones was high regardless of age. In African countries the use of SMS text messaging has been a very influential tool for knowledge transfer to farmers. Overall this method was very successful and received positive feedback. The advantage of this method is the information is detailed and very easy and quick to read and this was noted by respondents in their comments. The resources for this method are already in place in all Teagasc agricultural colleges via the PUCA online messaging system. Teagasc already use the text alert system to notify clients of events and meetings both nationally and internationally.
Objective 4 - Evaluate contact between a Teagasc advisor and existing agricultural college students.

The contact between a Teagasc advisor and current students enrolled in a level 6 dairy herd management course in Teagasc Ballyhaise Agricultural College was evaluated. Students attended a farm walk as part of their coursework with was facilitated by a Teagasc advisor. There were 19 students in attendance and the feedback was very positive. Over 84% had been on a farm walk before. The feedback was so positive that all of the students said that they would consider joining a Teagasc discussion group. The topics at the walk and the excellent facilitation skills of the advisor were a major influence on their answers according to comments provided in the survey. The students said they enjoyed being able to see what farmers were doing and to be able to ask the farmer questions. The farmer was very hospitable to the students on the day and did not hesitate in answering any of their questions. Nearly 90% of students felt they could participate freely in the discussions on the day and all were of the opinion that it was a good way of communicating with an advisor. However there was one negative comment in the feedback and that was that the group at 19 people was too large. This is a valid point as the average discussion group contains 12 – 15 people (Hennessy and Heanue, 2012). Overall the event was very successful and is shown to be popular with students. It would be a very useful method of establishing contact with students before they graduate. When a student knows an advisor by name and has spoken to him/her then they will know of someone who they can contact for advice when needed. As the students found the engagement with other farmers useful, then perhaps if young people were incorporated into existing discussion groups it would allow them to even learn from older farmers experiences.

The guest lecture by a Teagasc advisor was held based on the recommendations from CAFRE and also from the information provided in the graduate survey. As respondents indicated that they would have liked a guest lecture from an advisor and those who received one thought it was very worthwhile, the opportunity to pilot this method was taken. The same level 6 dairy herd management class received the lecture from the same Teagasc advisor who facilitated the farm walk. All students rated their level of knowledge of Teagasc services before the lecture and they rated their knowledge afterwards. All students said that their knowledge increased as a result. The advisor provided an excellent lecture containing
information about their role in Teagasc and the services that could be available to the students when they begin farming. Unfortunately, there is no advisory service tailored for graduates who are not running their own farms unless they are actively involved in their home farms. All the students were so impressed by the lecture that they said that they would consider availing of the services of a Teagasc advisor when they are in farm ownership/management. The students thought that the advice that an advisor provides and their depth and range of knowledge about farm business management was a major benefit to them. The students complimented the quality of the advisors lecture delivery.

These methods were very simple to implement and the results show that they were very effective. It gave the students a name and a face to remember, so they would know that there is an advisor who can provide assistance to them in their farming interests. It is important that more agricultural colleges implemented something like this. The agricultural colleges and advisory offices need to communicate about implementing a programme like CAFRE and DARD in Northern Ireland whereby they introduce the advisors to students before they graduate. This establishes contact that can remain if a committed effort is put in place.

**Objective 5 - Identify the current practices employed by international extension organisations for retaining contact with agricultural college graduates.**

Northern Ireland has identified the issue of retaining contact with graduates as being important. CAFRE/DARD’s development of farm events for graduates was a step in the right direction and their experiences aided in the design of this study. CAFRE invited development staff from DARD’s advisory branch to speak to final year students about the information and support that is available to farmers. This action was important as it was the first initial contact between graduates and an advisor. Their piloting of farm events was successful and the attendees were pleased with the information provided. An important factor to be taken into consideration was that the attendees wanted to have future events held in the evening and on each other’s farms. It was then clear they wanted to evolve the event into a discussion group format. The concept of farmers learning from their peers is known to increase the rate of dissemination of new technologies; Luukkainen (2012) found
that farmers preferred to learn from other farmers as they found it easier to communicate with each other than an advisor and O’ Loughlin (2012) said that the rate of technology adoption is faster among farmers in discussion groups due to peer – peer influence.

CAFRE concluded that SMS text message was the most reliable method of contacting the young farmers/graduates and an effective method of disseminating technical information. Research by Wims (2010) compliments CAFRE’s conclusion as he found that farmers are easily accessible through their mobile phones and Fielding and Ninsiima (2012) found that SMS messaging in Uganda improved potato farmer’s income due to the information circulated.

However many organisations did not express an interest in the subject and as stated by Boyle (2012) the degree of connectivity between students and the advisory service outside of the agricultural college experience is weak.

**4.3 Recommendations**

On the basis of the above discussion the following recommendations are set out with particular relevance to Teagasc for future development:

- In order to develop a permanent and active programme to retain contact with graduates **Teagasc need to introduce advisors to the students before graduation.** This establishes contact and allows students to become aware of who their local advisor is. This would make it easier for graduates in future to approach an advisor for advice. The positive feedback from the students after the guest lecture by an advisor and particularly their interest in joining discussion groups needs to be nurtured and allowed to develop. The students knowledge of role of Teagasc in Irish agriculture before the lecture was very poor and based on these findings **agricultural advisors should be invited to speak to all students in all agricultural colleges before graduation in order to give the message that Teagasc wants to keep in contact with them.**
• **The farm walk/discussion group as part of the Level 6 ACA should be retained as part of the curriculum.** The inclusion of an advisor as a facilitator allowed the students to engage and freely discuss farming issues. The student satisfaction was extremely high and in particular the agricultural knowledge they gained from the discussions. This gave students a positive experience of their engagement with a Teagasc advisor. This can form the basis for the development of specific graduate discussion groups.

• **It is important that an active database is kept on all students after graduation.** The students contact details in particular email addresses need to be available for future correspondence.

• **The study found that graduates still had curiosity in the performance of the college’s farm.** Many graduates were anxious to receive information about the college and its farm. As a large majority of graduates had an enjoyable experience in agricultural college, it should act as the main attraction for Teagasc to retain contact with graduates.

• The use of the methods piloted in this study can continue to allow the graduates to retain contact with Teagasc through the agricultural colleges. **The Facebook method was the most interactive, engaging and time efficient method.** For this reason every agricultural college should have a Facebook page and the role of managing the page needs to be assigned to a staff member. The page should have regular updates with the latest news from the college and events taking place. It can also be used as a public relations platform for the college. **The importance of posting videos and photos was found in this study.** It should be noted that the material posted should contain content from the academic and farm aspect of the college. The study found that the number of views and ‘likes’ to a Facebook page increases with each new post on the page. **The introduction of a discussion forum should be considered in the development of Facebook pages** as graduates wanted to openly discuss issues and receive responses from an advisor. **The advisory regions in Teagasc and advisors themselves with an interest in contacting graduates should**
also establish Facebook pages as it would allow potential new young farmer clients to get in contact.

- The Teagasc Ballyhaise College Newsletter was found to be an excellent source of technical agricultural information and it attracted readers from outside the study sample. The newsletter should be continued and an edition for each college would be beneficial not just to graduates but to the wider agricultural community. In order to publicly make the information available there needs to be a committed effort by Teagasc staff involved in the publication of a newsletter in order to source accurate information. An agricultural college is a centre of excellence and is looked up to by local farmers for the latest technologies. It is important that its performance is published and made available to all with agricultural interests. The availability of the information on the Teagasc public website, agricultural colleges and advisory offices would achieve this.

- The graduate’s interest in attending events specifically for them was very high and given the attraction they have it would be of benefit to graduates for Teagasc to hold a series of events in the agricultural colleges on topics such as farm succession and inheritance, technical agricultural advice and advisory services available. This would give graduates the chance to go back and meet the advisors.

- Text messaging was a very simple and effective form of communication with graduates. It was popular with graduates as they all were able to take note of the message, with a 100% penetration rate it was the most successful method of contact. This method can be used to distribute important messages on events and agricultural advice. It is used by advisors to organise discussion group meetings with clients therefore it can easily be used to contact graduates.

- The agricultural colleges and advisory offices in Teagasc need to agree on the structure of implementing future retention of contact with graduates. More connectivity is required with young people and the use of modern technologies as piloted in this study will achieve this.
• Overall there needs to be a commitment from Teagasc to take on the recommendations from this study to take the next step and develop a programme of engagement with graduates. This may mean the introduction of a tailored advisory service that will prepare graduates for farm ownership and management. The integration of graduates into existing discussion groups would aid in achieving this. Contact with other more experienced farmers can increase the rate of dissemination of knowledge. It would ensure the retention of future young farmers as clients and avoid losing them to the private advisory services. However it should be stated that if Teagasc decide to take on board these recommendations there needs to be sufficient staff resources to offer graduates a quality advisory client service. The population of Irish farmers is ageing rapidly and there is a decline in the number of active farmers; Teagasc need to keep in touch with the next generation of farmers to ensure the future of Irish agriculture.
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Teagasc Ballyhaise Agricultural College Graduate Survey

This survey is part of a Masters of Agricultural Science Degree for the Agricultural Innovation Support programme by Teagasc and University College Dublin.

Research Title: Develop and pilot a number of practical ways for advisors to engage with recent agricultural college graduates to ensure Teagasc retains contact with them from graduation to farm ownership.

The objectives of the survey are:

- To identify the graduates reasons for completing an agricultural college course.
- To identify how many graduates are engaged in farming.
- To establish the graduates level of contact with Teagasc since graduation and how they would rate their experience in agricultural college.
- To identify how many agricultural college graduates would like to engage with a Teagasc agricultural advisor.
- To establish what methods the graduates would like to use to communicate with an advisor.

If you have any queries please contact the survey administrator

John William Kelly,
Ballyhaise Agricultural College,
Ballyhaise,
Co. Cavan
Tel: 049 4338672
Mob: 087 2580084
E-mail: john.w.kelly@teagasc.ie
Thank you for taking the time to complete this survey. Any information you give will only be used for the purposes of the study.

If you could please carefully read the questionnaire as you will be given directions on how to answer the questions asked.

Please tick (√) most relevant

Question 1
Are you currently engaged in farming activities?

(Tick (√) one only)

Yes
No

If you answered No to Q1 skip to question 8

Question 2
What is your farming status?

(Tick (√) which applies)

Farm owner
In a farm partnership
Working on your home farm with your parents being the farm owners
Working on a farm for a non-family member
Question 3
If you are working on your home farm with your parents, how would you rate your level of involvement in the farm?

(Tick (✓) which applies)

- Responsible for minor management decisions
- Responsible for major/all management decisions

Question 4
How many acres/hectares are you farming?

(Insert figure in one box only)

- Acres □□□□ or Hectares □□□□

Question 5
What is the main farm enterprise on your farm?

(Tick (✓) one only)

- Beef
- Sheep
- Dairy
- Tillage
- Pigs
- Poultry
Question 6
Are you farming full time?
(Tick (✓) one only)

Yes  
No

Question 7
How many hours a week on average do you spend working on the farm?
(Tick (✓) one only)

Up to 20  
20 – 35  
35 +

Question 8
Answer if you answered No to Question 1

Do you intend to farm in the future?
(Tick (✓) one only)

Within 1-5 years  
5-10 years  
10 or more years
Question 9

How will you obtain a farm?

(Tick (√) which applies)

- Inherit a farm from a family member
- Purchase a farm
- Rent/Lease a farm
- Enter into a farm partnership
- Other please specify:
  ____________________________________________________
  ____________________________________________________
  ____________________________________________________

Question 10

Have you off-farm employment?

(Tick (√) one only)

- Yes
- No

Question 11

Which of the following best describes your reasons for completing an agricultural course?

(Tick (√) which applies) Not Important Important

- Eligibility to claim farm supports
- Stamp duty relief on farm inheritance and purchase
- To increase your knowledge of agriculture
Question 12
How would you rate your experience in a Teagasc Agricultural College?
(Tick (✓) which applies)

<table>
<thead>
<tr>
<th>Rating</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Very good</td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td></td>
</tr>
<tr>
<td>Very Poor</td>
<td></td>
</tr>
</tbody>
</table>

Question 13
Are you or the owner of the farm that you are working on availing of the services of a Teagasc advisor?
(Tick (✓) one only)

<table>
<thead>
<tr>
<th>Answer</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

Question 14
If you are engaged in farming, do you have any contact with an agricultural advisor?
(Tick (✓) one only)

<table>
<thead>
<tr>
<th>Answer</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>
Question 15
Would you like to engage with a Teagasc agricultural advisor on issues relevant to young graduates?
(Tick (✓) one only)

Yes  
No

Question 16
Do you use any of the following social media websites?
(Tick (✓) which applies)

Facebook  
Twitter  
Other please specify:
_________________________________________________________________
_________________________________________________________________

Question 17
What do you use to access a social media website?
(Tick (✓) which applies)

PC  
Laptop  
Smart Phone  
Tablet
Question 18
If you would like to engage with Teagasc, what method would you like to use as a method of contact?
(Please tick (✔) all the options that you would like to use)

- Facebook
- Newsletter via email
- Phone Call
- Text
- Twitter

Other please specify:
___________________________________________________
___________________________________________________

Question 19
If you were to communicate with an advisor, how would you like to meet to discuss relevant issues?
(Please tick (✔) the options that you would like to use)

- Discussion group
- Visit by Teagasc advisor to your farm
- Farm Walk
- Conferences
Other please specify:

_____________________________________________________________________
_____________________________________________________________________

Question 20
Would you attend an event organised by Teagasc specifically for agricultural college graduates?

(Tick (✓) one only)

Yes
No

Question 21
Would you be interested in receiving regular updates on Ballyhaise Agricultural College and the farm enterprises?

(Tick (✓) one only)

Yes
No

Question 22
When you were in agricultural college, did a Teagasc advisor ever give a guest lecture to your class outlining the services that Teagasc provide to farmers?

(Tick (✓) one only)

Yes
No
If the answer to question 22 is Yes, go to question 23
If the answer to question 22 is No, go to question 24

Question 23

Did you find it worthwhile?

(Tick (√) one only)

Yes
No

Question 24

Do you think that a Teagasc advisor should have given a lecture outlining the services that they provide to farmers?

(Tick (√) one only)

Yes
No

Question 25

If you would like to have further participation in this research and be involved in a pilot programme with Teagasc please provide your contact details below.

Contact number: 
Name (optional): 
This is the end of the questionnaire. Thank you very much for taking the time to complete this survey. Your input is greatly appreciated. If you have any suggestions or comments about keeping in contact with Teagasc please enter them in the box provided below.

Alternatively please contact the survey administrator John William Kelly, Ballyhaise Agricultural College, Ballyhaise, Co. Cavan. Tel: (049) 4338672  Mob: (086) 2580084 E-mail: john.w.kelly@teagasc.ie

THANK YOU
Appendix B Evaluation of a Farm Walk

Evaluation of Farm Walk with David Colbourne on the farm of David Brady

Please follow the instructions for each question

1. Were you ever at a farm walk facilitated by a Teagasc advisor before?
   (Please tick (√) one only)
   Yes ☐ No ☐

2. Did you feel that the topics discussed at the farm walk were useful to you?
   Please rate your response (1 = Useful to me, 2 = Some use to me, 3 = No use to me)
   ☐

3. After attending this walk would you consider being part of a discussion group when you graduate?
   (Please tick (√) one only)
   Yes ☐ No ☐

4. Do you think that a farm walk is a good way of engaging with a Teagasc advisor?
   (Please tick (√) one only)
   Yes ☐ No ☐

5. Did you feel that you could freely participate in the discussions on the day?
   (Please tick (√) one only)
   Yes ☐ No ☐

6. What did you enjoy most? _____________________________________________

7. What did you enjoy least? _____________________________________________

If you have any comments leave them below.
________________________________________________________
________________________________________________________

Thank You
Appendix C Evaluation of a Guest Lecture

Evaluation of Guest Lecture by David Colbourne

Please follow the instructions for each question

1. Please rate your knowledge of Teagasc advisory services before attending this lecture.
   Please rate your response (1 = Good, 2 = Fair, 3 = Poor)

2. Please now rate your level of knowledge of Teagasc advisory services after attending this lecture.
   Please rate your response (1 = Good, 2 = Fair, 3 = Poor)

3. Did you find the information provided useful to you?
   Please rate your response (1 = Useful to me, 2 = Some use to me, 3 = No use to me)

4. Would this talk encourage you to avail of Teagasc Advisory Services when you start a career in farming?
   (Please tick (✓) one only)
   Yes ☐ No ☐

5. What do you see as the main benefits of having a Teagasc advisor?
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

6. What did you enjoy most? _______________________________________

7. What did you enjoy least? _______________________________________ 

If you have any comments leave them below.
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

Thank You
Appendix D Evaluation of Piloted Methods Survey

Teagasc Ballyhaise Agricultural College

Survey on how Teagasc can keep in contact with Agricultural College Graduates

This survey is part of a Masters of Agricultural Science Degree for the Agricultural Innovation Support programme by Teagasc and University College Dublin.

Research Title: Develop and pilot a number of practical ways for advisors to engage with recent agricultural college graduates to ensure Teagasc retains contact with them from graduation to farm ownership.

The objectives of the survey are:

- To identify the success of each method of contact between Teagasc and Graduates.
- To identify the graduates preferred method of contact.
- To identify what improvements need to be made to the methods.
- To identify the secondary benefits to graduates from the piloted methods.

If you have any queries please contact the survey administrator

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Mob: 087 2580084
E-mail: john.w.kelly@teagasc.ie
Thank you for taking the time to complete this survey. Any information you give will only be used for the purposes of the study.

If you could please carefully read the questionnaire as you will be given directions on how to answer the questions asked.

Please tick (✓) most relevant

**Newsletter**

1. Did you receive the Teagasc Ballyhaise College newsletters?

   *(Tick (✓) one only)*

   Yes
   No

   **If the answer is YES go to Question 2**
   **If the answer is NO go to Question 11**

2. Did you read all the Teagasc Ballyhaise College newsletters?

   *(Tick (✓) one only)*

   Yes
   No
   Some

3. Was the content interesting/useful to you?

   *(Tick (✓) one only)*

   Yes
   No
4. What aspects of the content were most interesting/useful to you?
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

5. Did you use the newsletter as a tool for gauging your own farm’s performance?

   (Tick (✔) one only)
   
   Yes
   No

6. Did you change any practices on your own farm as a result of reading the newsletters?

   (Tick (✔) one only)
   
   Yes
   No

7. If yes, what practices did you change?
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

8. Did you make contact with your local Teagasc office as a result of reading the newsletters?

   (Tick (✔) one only)
   
   Yes
   No
9. Which was your preferred enterprise on the newsletters?

(Tick (✓) all that apply)

- Beef
- Sheep
- Dairy
- Pigs
- Forestry

10. Which is your preferred method of receiving the newsletters?

(Tick (✓) which applies)

- Email
- Facebook

11. Do you ever access the Teagasc Public Website to view the newsletters?

(Tick (✓) one only)

- Yes
- No

12. What content would you like to be included in the Teagasc Ballyhaise College newsletters in future?

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

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Facebook

13. Do you have a Facebook page?

(Tick (✔) one only)

Yes

No

If the answer is YES go to Question 14

If the answer is NO go to Question 28

14. How often do you log on to Facebook?

(Tick (✔) one only)

Several times a day

Once a day

2 – 3 times a week

Less often than 2 – 3 times a week

15. Did you ‘like’ the Teagasc Ballyhaise college Facebook page?

(Tick (✔) one only)

Yes

No
16. How often do you check in to the Teagasc Ballyhaise College Facebook page?

(Tick (✔) one only)

Several times a day
Once a day
2 – 3 times a week
Less often than 2 – 3 times a week

17. Did you follow any links posted from the Teagasc Ballyhaise College Facebook page to other web pages?

(Tick (✔) one only)

Yes
No

18. If yes, what links did you find useful

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

19. Did you watch any of the videos on the Teagasc Ballyhaise College Facebook page?

(Tick (✔) one only)

Yes
No
20. If yes which videos did you watch?

(Tick (✓) all that apply)

- Dairy herd update videos featuring Donal Patton
- Forestry students processing windblown trees

21. Which videos did you find most interesting and why?

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

22. Did you look at the photos?

(Tick (✓) one only)

- Yes
- No

23. Which photos attracted your attention?

(Tick (✓) all that apply)

- The Beef cattle
- The Dairy herd
- The Sheep flock
- The College Forestry
- Land Drainage
- Ploughing and reseeding
- The farm machinery
24. Did you ever post a comment on the Teagasc Ballyhaise College Facebook page?

(Tick (✓) one only)

Yes
No

25. If you did, how often did you comment?

(Tick (✓) one only)

Often
Occasionally
Rarely

26. Did you make contact with your local Teagasc office as a result of the Teagasc Ballyhaise College Facebook page?

(Tick (✓) one only)

Yes
No

27. Have you any suggestions on how the Teagasc Ballyhaise College Facebook page can be improved?

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
**Weekly Text Messages**

28. Do you have a smart phone?

(Tick (✓) one only)

Yes
No

29. Which text messages did you receive?

(Tick (✓) all that apply)

Dairy
Beef and Sheep

30. Did you read the text messages?

(Tick (✓) one only)

Yes
No
Some

31. Did you find them useful?

(Tick (✓) one only)

No use to you
Some use to you
Very Useful to you
32. Was there enough detail in the text messages?

(Tick (✓) one only)

Yes
No

Please Comment
_____________________________________________________________________
_____________________________________________________________________

33. Would you like to continue to receive texts as a means of contact with Teagasc?

(Tick (✓) one only)

Yes
No

34. Do you have any suggestions on how the text service can be improved?
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

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This is the end of the questionnaire. Thank you very much for taking the time to complete this survey. Your input is greatly appreciated. If you have any suggestions or comments on how Teagasc can keep in contact with our agricultural college graduates please enter them in the box provided below.

Alternatively please contact the survey administrator John William Kelly, Ballyhaise Agricultural College, Ballyhaise, Co. Cavan. Tel: (049) 4338108  Mob: (086) 2580084  E-mail: john.w.kelly@teagasc.ie

THANK YOU
The herd is a 120 cow spring calving system. The breeds of cows on the farm are pure Friesian and Jersey Friesian crossbreds. It is currently part of a research programme in investigating the profitability of dairy farms in the northern half of Ireland in a post quota scenario. The fertility performance of the herd has improved since the beginning of the project with empty rates reduced from 36% in 2005 to 9% in 2013. Because of this replacement rate has dropped to 18% and surplus dairy stock have been sold each of the last three seasons.

The farm area for the herd is 40 hectares.

The herd is split into two separate calving dates.

- Early calving group – mean calving date is the 25th of Feb.
- Late calving group – mean calving date is the 10th of March.

The two herds are managed separately throughout the year.

The objective of the current trial is to identify the optimum mean calving date for farms in the region. We are measuring what effect the differential in calving date will have on milk production and feed inputs.

**Whole farm situation**

- Soil temperature has ranged between 15 and 17ºC over the last 3 weeks.
- There are 36 hour paddocks being allocated to cows.
- Target post grazing heights are 4cm.
- Calves were weighed on the 15th of July, they weighed 130kg (well below target of 145kg), and ADG since turnout was 0.63kg / day.
- Milk yield 19.8kg, 4.17% fat, 3.54% protein (1.57kg Ms / cow), SCC 159,000 and TBC 13,000. (As of 14th of July)
- Growth rate to date is 7.6 tons DM which is 2.7 tons ahead of last year.
- Around 50% of the silage requirements have been conserved from the farm area.
- The current level of concentrate fed to date is 275kg per cow (€75).
- Milk output is 2500 litres per cow (€1000).
Grass management

- Growth rate was 104 kg DM / ha which is well ahead of demand of 63 kg DM / ha. Moisture deficit was starting to depress growth but we have had enough rain over the last week to boost growth and more is forecast. (As of 14th of July)
- Farm cover is 679 kg DM / ha (171kg DM / cow) for the early calving group which is on target.
- Late group farm cover is 616 kg DM / ha (172kg DM / cow) which is on target.
- With the dry weather the last month the driest paddocks are becoming stressed.
- Currently the cows are entering covers of 1200 – 1250 kg/DM/ha which a little low of the target. Three quarters of the grass is good quality with the remainder being not good due to it being on the hilly ground which is too rough to bale for silage.
- The aim is to maintain pre grazing covers of 1400kg/DM/Ha.
- Paddocks that are reaching high covers of 2500 – 3000 kg/DM/ha are being taken out for silage.
- Around 24% of the grazing area has been skipped over for silage; none of this is fit for cutting so will wait until next week to take this area out.

Cow Fertility

- Started AI on the 28th of April, 100% submitted in 6 weeks, Non – return rate is 56% which is on the low side. Introduced stock bulls after 6 weeks to mop up.
- Cows are tail painted and are monitored regularly for signs of heat.

Re seeding

- Two paddocks were reseeded that are not performing. They were ploughed and sown using a one pass powerharrow and air seeder in the first week of July. The grass is just beginning to appear this week.
- There is an issue with docks in some paddocks this will be addressed.
• Young stock are grazing poor quality grass and these will need to be weighed to determine the performance from the sward and if concentrates will need to be introduced to meet target weight gains.

(Teagasc Ballyhaise Agricultural College) Reseeded paddock with the grass emerging.
Sheep

The sheep enterprise in Ballyhaise operates an Early and Mid-season lamb production flock on 52 acres. The early flock is 70 ewes sired to Charollais and Texel rams. They commence lambing from the 12th of January. The Mid-season flock is 130 ewes sired to Texel and Suffolk rams with the aim of producing factory lambs. They commence lambing from the 1st of March.

Whole Farm Situation

- Ewes were sheared on the 18th of June and Click pour on (16 week protection and 40 day withdrawal) was applied two weeks later in the first week of July. The mid-season lambs were treated with Ectofly an 8 week protection product with an 8 day meat withdrawal period as some lambs will be soon approaching slaughter. Blow fly strike season is upon us and the required preventative actions need to be put in place.
- The ewes will be winter dipped in November for control of lice ticks and keds.
- There are no reported foot problems to date and the flock were not foot bathed in June this will be monitored as the dry weather can cause scald in the hoof.
- The pit silage was cut on the 27th of May with the quality being very good with high leaf content. This will be tested before feed out next autumn.

Early Flock Update

- All lambs from this flock have been sold to the factory. A total of 121 lambs have been sold at an average price of €120 a head. The average liveweight was 46 kg with a 20.7 kg carcass and a 45% killout.
- The first lambs were sold on the 2nd of May at 630 c/kg with an average live weight of 50.9 kg, carcass of 22.6 kg and kill out % of 45.1. They averaged €132 each.
- The last lambs from this flock were sold on the 12th of June at 570 c/kg with an average live weight of 43.5 kg, carcass of 19.4 kg and kill out % of 44.6. They averaged €110 each.
These lambs were finished indoors on an ad-lib diet of a 16% protein ration at a price of €285/tonne. Straw was provided as roughage in the diet.

**Mid-season Flock Update**

- No lambs from this flock have been sold yet.
- The lambs were weaned on the 25\textsuperscript{th} of June with an average liveweight of 31.5 kg. These lambs were on a grass diet with no creep meals. The mean lambing date was the 10\textsuperscript{th} of March.
- Creep meal is being introduced after weaning at a start off rate of 100g/head/day with this being increased up to 500g/head/day.
- Lambs received a worm dose on the 5\textsuperscript{th} of June with Noromectin a clear drench.

**Grassland Management**

- Rotational grazing is implemented with one paddock having been taken out for square bales of hay on the 21\textsuperscript{st} of June.
- Pre grazing heights are targeted at 8cm and grazing out to 3.5cm in order to maintain sward quality. Topping is done after grazing in order to reduce the stem content of the sward.
- Cattle slurry was applied on the 1\textsuperscript{st} of July to grazed paddocks at a rate of 2000 gallons/acre.

**Management Tasks for August**

- Check body condition of ewes and group them according to condition score. Thin ewes will be prioritised with good quality grass at it takes 7 weeks on grass at 8cm to gain one BCS.
- Problem ewes will be culled i.e. mastitis, broken mouth, aged ewes and prolapse ewes.
- Ewe lambs suitable for breeding in the autumn will be selected at weights of over 48kg.
- Rams will be purchased and existing rams in the flock will be given a full health check. Look for problems such as lameness, poor body condition and any injuries to the genitals.
Beef

There is a 60 cow suckler herd on the farm. It is a spilt calving herd with 30 autumn and 30 spring calving cows. All the calves are reared to beef with a 16 - 18 month bull beef and a 22 month heifer beef system being operated. The majority of the cattle on the farm are Charollais, Limousin and Simmental crosses.

(Leagasc Ballyhaise Agricultural College) Spring 2013 born heifers

Whole farm Situation

- The 26 autumn calves were weaned on the 9th of June. The average weight was 331 kg with an average age of 238 days ADG of 1.23kg/day. They received a worm dose (Panacur)
- The spring calves were weighed on the 11th of June and average weight was 143 kg at an average age of 86 days with an average daily gain of 1.21 kg/day. They were injected with Cydectin LA to treat worms, lice and mange.
- A Charollais bull is out with the spring calving herd since the 25th of April. The bull was bought on the 22nd of March for €3,900 at the Charollais Premier Sale in Carrick on Shannon. The bull is Kilvilcorriss Hugo, a son of Enfield Plexus.
- Heifers due to calve down next Spring at 24 months of age are in good condition with A.I used to Limousin (CWI) and Simmental bulls (KFY) they were chosen due to their high replacement value.
• Spring born bulls from 2013 are reaching their final days at grass with housing of these animals in late August for finishing they were weighed and average weight was 550kg.

• Cull cows were slaughtered on the 26th of June. The 5 cows average carcass weight was 398kg and they averaged €1344 at a base price of 340 c/kg. One graded U with the rest R grade. Fat score was 3 and 4.

Teagasc Ballyhaise Agricultural College stock bull

Kilvilcorris Hugo, a son of Enfield Plexus

Author: John William Kelly
Email: john.w.kelly@teagasc.ie
Phone: (087) 2580084
Upcoming Events

- Teagasc Clinic — Tues 9th September
  ‘Transferring the Family Farm’
  Errigal Country House Hotel, Cootehill, Co. Cavan
- College Open Day — 3 October 2014
  Information day for prospective students on courses available for September 2015. Tours of the college from 10.00am to 3.00pm

Start of new Term - Dates for Students to Return

- Friday 5th of September — Level 6 Specific Purpose Course In Farm Administration
- Monday 8th of September — Level 5 Certificate in Agriculture
- Tuesday 9th of September — Level 5 Certificate in Forestry
- Monday 15th of September — Dundalk IT students Year 1 and 2

Dairy

The herd is a 120 cow spring calving system. The breeds of cows on the farm are pure Friesian and Jersey Friesian crosses. The research programme on the farm is investigating the profitability of dairy farms in the northern half of Ireland in a post quota scenario.

The farm area for the herd is 40 hectares. The herd is split into two separate calving dates.

- Early calving group – mean calving date is the 25th of Feb.
- Late calving group – mean calving date is the 10th of March

The two herds are managed separately throughout the year. The objective of the current trial is to identify the optimum mean calving date for farms in the region. We are measuring what effect the differential in calving date will have on milk production and feed inputs.

Farm Update

There has been 8mm of rain over the last seven days; this has helped growth rates stay strong. The grass growth is at 81kg DM/ha and demand is 40kg DM/ha.

The average farm cover is 660kg DM/ha and cover per cow is 215kg. Covers are building well and we are on target with our autumn planner.

The aim this week is to increase the Average Farm Cover (AFC) by 100kg per week, to have an AFC of 1,100kg DM/ha at the end of September.

A budget of 3kg per cow was on the planner for this week, but because of strong growth rates we decided to just feed 0.5kg of concentrate per cow.

Cows are entering pre-grazing covers of 1,600kg DM/ha. There are two paddocks earmarked for baled silage because they are a little rough (clumpy), and will be cut as soon as weather allows.

Some ground has been ploughed for reseeding, but it is still too wet to work with yet. It will be sown next week weather permitting. With these paddocks taken out of the grazing platform the stocking rate is up at 3.1LU/ha.

We are following cows with 23 units of Urea (half a bag an acre), and wil bulk spread the remaining fertilizer allowance next week.

Cow Milk yield 15.35c, 4.9% fat, 3.85% protein (1.34kg MS / cow), SCC 148,000 and T3C 3,000.
(As of 2nd of September)
Sheep

The sheep enterprise in Ballyhaise operates an Early and Mid-season lamb production flock on 52 acres. The early flock is 70 ewes sired to Charollais and Texel rams. They commence lambing from the 12th of January. The Mid-season flock is 130 ewes sired to Texel and Suffolk rams with the aim of producing factory lambs. They commence lambing from the 1st of March.

The handling facilities are being upgraded on the farm with works currently under way. The handling unit at the sheep shed is being extended and a new forcing pen is being installed.

An old handling unit in the townland of Raheg is being refurbished to avoid the movement of sheep across the main road to the yard at the college; this will save time and improve farm safety.

Three new rams were purchased at a Sheep Ireland sale at Tullamore on Saturday the 23rd of August. Suffolk, Charollais and Texel were purchased. The Charollais has a 5 star rating for both Replacement and Terminal indices with replacement rank of top 4% and terminal of top 6%. The Texel has a 5 star rating for replacement value with a ranking in the top 10% and a 4 star rating for terminal value with a rank in the top 32%. The Suffolk has a 5 star rating for both Replacement and Terminal indices and is ranked in the top 2% for replacement value and 1% for terminal value.

Management Tasks for September

Flushing of mid-season ewes will occur and they will be grouped according to condition score. Thin ewes will be prioritised with good quality grass at it takes 7 weeks on grass at 8cm to gain one BCS.

A full health check will be done on the rams. Look for problems such as lameness, poor body condition and any injuries to the genitails.

Early Flock Update

82 ewes were synchronised on the 8th of August. Progesterone sponges were inserted into the ewe’s vagina and were left in for 12 days. The progesterone hormone induces heat in the ewes to allow for them to lamb in early January next year. The sponges were removed on the 18th of August and each ewe was injected with 2.5ml of PMSG

(Pregnant Mare Serum Gonadotropin) which increases the number of eggs released during ovulation, this in turn will increase the litter size.

The ram to ewe ratio used was 1:7. The rams were out for two days with the ewes. After this clean up rams were introduced to serve any ewes that will repeat.

12 rams were needed in total and 7 of these were brought in from Athenry

A Cobalt B12 drench was given to the ewes one week before spoling and will be given again at a week later at a rate of 5ml per head. Cobalt is known to improve fertility.

A fluke and worm drench was also given on the same day as the cobalt.

Ewe lambs were dosed with 2.5ml of Cobalt B12 on the 21st of August.

Beef

There is a 60 cow suckler herd on the farm. It is a split calving herd with 20 autumn and 30 spring calving cows. All the calves are reared to beef with a 16 - 18 month bull beef and a 22 month heifer beef system being operated. The majority of the cattle on the farm are Charolais, Limousin and Simmental crosses.

The autumn calves were weighed on the 14th of August. The average weight was 384 kg with an average age of 310 days. Average Daily Gain of 1.1 kg/day since birth and of 0.75 kg/day since weaning on the 9th of June.

This Month’s Q&A Farming Tips

Email in your farm related questions to john.w.kelly@teagasc.ie and one question will be answered each month.

Q: Why should I build up Autumn Grass Covers

A: Building up grass covers this autumn will allow for extended grazing and it will ensure that there is enough grass supply to feed the herd throughout the Autumn to late November / early December. With the costs of making winter feed becoming so high, good preparation this autumn will reduce your winter fodder requirement. Applying 20 – 40 units of Nitrogen an acre now to the grazing paddocks will boost coverage. Aim to have past grazing sward heights of 5 cm and increase the rotation length from 21 days in late August to 40 days in October. Grazing above ground last down to 5 cm. If it is not grazed down to this the regrowth will be poor in spring.

Autumn 2013 born bulls

The bulls averaged an AOG of 0.78 kg/day since weaning and the heifers averaged 0.74 kg/day. They received a wormer injection of Paramectin.

Spring born bulls from 2013 have been introduced to 2 kg of meal at grass since last weighing. They were weighed on the 25th of August and the average weight was 612 kg. The AOG is 1.25 kg/day. They have an AOG of 1.37 kg since last weighing on the 11th of July.

The autumn calving cows were scanned on the 6th of August. Out of 36 cows, 29 are in calf and are expecting 51 calves. There are two sets of twins.
Pigs

The pig enterprise in Ballyhaise is a 90 sow integrated unit.

Farm Update

New farrowing crates are being installed in the farrowing houses this month. The unit has moved to batch farrowing since the 17th August to facilitate a new research trial which is to start on the 1st of September. 11 sows are being served every 3 weeks on the unit instead of the previous method of 4 sows being served each week. The research trial due to start on the 1st of September is on Salmonella and is being carried out in conjunction with Teagasc Ashtown Co.Dublin.

Performance Update

<table>
<thead>
<tr>
<th>Piglet Mortality</th>
<th>8.6%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weaner Mortality</td>
<td>2.99%</td>
</tr>
<tr>
<td>Finisher Mortality</td>
<td>1.58%</td>
</tr>
<tr>
<td>Conception rate</td>
<td>94.4%</td>
</tr>
<tr>
<td>Finishers</td>
<td></td>
</tr>
<tr>
<td>Average liveweight</td>
<td>104.1 KG</td>
</tr>
<tr>
<td>Average deadweight</td>
<td>79.7 Kg</td>
</tr>
<tr>
<td>Kill out %</td>
<td>76.5%</td>
</tr>
</tbody>
</table>

Weaning to Sale Performance

- Daily feed intake: 873 g
- Average Daily Gain: 491 g
- Feed conversion ratio: 1.78

New Farrowing Crates being installed

Forestry

Pictured above are the Level 6 Advanced Certificate in Forestry Students at the Teagasc ‘Talking Timber’ event in Mullingar on the 2nd of Sept.

It was one of two timber marketing events organised by Teagasc with the co-operation of the Irish timber industry and the Forest Service, DAFM.

Buying and selling timber

It provided an opportunity for forest owners to find out more about the timber selling process and the harvesting options available to them. Feedback from forest owners has also highlighted the need for a suitable forum to engage with key players involved in the harvest and purchase of timber. The events facilitated forest owners who have timber for sale to make contact with timber buyers in their area.

Programme

The day started with an outdoor demonstration organised by the Irish Forestry and Forest Products Association where participants had the opportunity to view the quality of timber required by Irish sawmills. This outdoor demonstration was followed by indoor presentations from Teagasc, the Forest Service and speakers from the forest industry with a question and answer session afterwards.

There were ample networking opportunities for as a number of companies and contractors had a stand at the venue.

Other News

Upcoming Teagasc Clinics

Teagasc invite all farm families to their popular series of clinics on ‘Transferring the Family Farm’ which are designed to enlighten and educate farm families about the many details involved in an effective plan for succession.

The clinics will be held throughout the country – some of the selected venues that may be of interest are:

- Tues 9th September: Enrag Country House Hotel, Castletown, Co. Cavan
- Fri 12th September: The Ardboyne, Navan, Co. Meath
- Tues 7th October: Breafty House Hotel, Castlebar, Co. Mayo
- Wed 8th October: Great Northern Hotel, Bundoran, Co. Donegal
- Tues 14th October: The Abbey Hotel, Roscommon

Clinics will run from 10.30am to 1pm and will be repeated in the afternoon from 2pm at each venue.

The format for the event will consist of a short 30 minute presentation to give an overview of the main issues involved in a family farm transfer.

This will be followed by the main part of the event which will be the opportunity to engage one-to-one with accountants, solicitors, citizens advice, family mediation experts, social welfare representatives and Teagasc advisors. You will be able to ask questions and get information on your own particular situation.
Upcoming Events
Presentation of Certificates to Class of 2014 — 4th December 2014
College Open Day — 19th March 2015
Information day for prospective students on courses available for September 2015.

Tillage returns to Ballyhaise
It has been eighteen years since a cereal crop has been sown in Ballyhaise when Paul McGoldrick was in charge of the Department of Agriculture seed trials for Barley, Wheat, Oats and root crops. Plots were located on the college lands for testing of these crops for there suitability for commercial use. The field opposite the Church of Ireland in the village which contains four acres will grow Winter wheat. It is an ample opportunity for students at the college to learn crop husbandry.

Beef
Spring 2013 born bulls have been housed for the last month and are receiving 12kg of meal a head/day along with ad lib straw. The performance of the animals on this diet is remarkable at 2 kg of growth a day.
The Autumn 2013 born bulls have also been housed on the 20th of October and are on a diet of silage and 2 kg of meal a day.
All spring and autumn cows were dosed for stomach fluke using Zanil. Autumn calving is going well with 20 calves born and no losses and with only one cow needing some assistance. The calves are being vaccinated for viral pneumonia at two weeks of age, it involves administering a nasal injection to the animal.
The spring calves will be weighed before the end of the month and cows in poor body condition will be put on high quality silage during the winter. The calves are in super condition and they have all been vaccinated for pneumonia using a live vaccine via intramuscular injection. The risk of pneumonia to weaned calves at housing is high and rapidly infectious to the rest of the herd.

Teagasc, Ballyhaise College, Ballyhaise, Co. Cavan. Phone: +353 49 4338108 Fax: +353 49 4338540 Email: ballyhaise.college@teagasc.ie

Compiled by: John W. Kelly Teagasc Ballyhaise
Forestry
Second Thinning of Broadleaf Woodlands with a focus on Sycamore
Thursday 16 October 2014, Summerhill, Co Meath
Teagasc, in conjunction with the Forest Service, DAFM organised a National
Forestry Demonstration on the subsequent thinning of broadleaf woodlands
which the first year forestry students attended. The following was
demonstrated and discussed on the day:
• Growing trees for quality timber
• Timing of the thinning operation
• Preparation for thinning
• Getting the job done

Sheep
Breeding season is in full swing on the farm with
The rams out with the mid season ewes. With
grass being in good supply all ewes are in excellent
body condition. Scanning of the flock is the next
job on the list which will determine how successful
the rams have been.

All ewes were dagged and dosed with 5ml of cobalt
and 16ml of Flukiver before breeding. There were
a number of ewes suffering from lameness
and as a remedial measure all ewes were
footbathed with 7.5% footbath solution of water and
Copper Sulphate (Bluestone).

Replacement breeding ewe hoggets were
purchased in mid September at a sale in Ballinrobe
mart. Twenty Mayo Mules are now part of the
flock, they are known for their prolificity, hardiness
and mothering ability.

Ewe lambs were winter shorn on the 12th of
September this practice is known to increase
weight gain over the winter period. They have also
received a clostridial vaccination (2ml of Heptavac
P Plus). We selected 19 of these for breeding on
the 15th of October the weight range was from 48—
56 kg. It is important that ewe lambs are not
selected at any weight less than this as they are
unlikely to be capable to rear lambs successfully.

This Month’s Q&A Farming Tips
Email us your farm related questions to
john.w.kelly@teagasc.ie

Wearing Spring born suckler calves
Some herds will have already weaned their
calves by now but for some late spring calves
and farms with large grass supplies still have to
complete this task. Grass tetany is still an
issue and it is important to have Magnesium
mineral licks or supplements in the water still
available to cows. The cold damp weather that
has come with the month of October so far
brings an increased risk of the
condition occurring.
Calves should be on meal for at least
two weeks before weaning and to
reduce the shock of the absence of
milk from the calves diet at weaning.
Wearing in batches of ten to avoid
stress to the calf.
Vaccination for Bovine Respiratory
Disease (Pneumonia) should be
considered as the risk is high
when calves are housed.
Pigs

The pig enterprise in Ballyhaise is a 90 sow integrated unit.

Farm Update
The new farrowing crates have been installed in the farrowing houses last month and it is improving piglet safety due to reduced lie overs it also has resulted in better pig performance in terms of weight gain. Batch farrowing is proving a good method for the unit due to improved time management, easier cross fostering, opti pig implementation and animal health as an all in all out policy is being operated for each house with it being washed each time.

New heat pads have also been installed and room temperature is easier to regulate.

The unit sells half the weaners produced directly off farm to a specialist pig finisher. 122 pigs were sold on the 18th of October at 35 kg liveweight at 10 weeks of age. 36 pigs are to be sold to the factory at the time of writing at an average liveweight of 114kg.

Dairy

Farm Update
There has been 34mm of rain over the last seven days. The grass growth has since fallen to 30kg DM/ha and demand is 45kg DM/ha. Farm grass covers will now drop as a result. Soil temperature is at 12.5°C.

Started to close paddocks from the 1st of October, target is to have 60% grazed by the 25th of October. We have 35% closed to date because we grazed some lower covers, we will struggle to hit the target so we have decided to maintain feed levels at 2kg.

Peak cover of 1100kg DM/ha has been reached and now farm cover is 1000 kg DM / ha (337kg DM / cow) which is on target according to the farm autumn budget.

Pre-grazing yield is 2500kg DM / ha, these are on the strong side but we had to skip into lighter covers to catch up on area grazed.

We will have to graze 1.1 ha per day average for next two weeks in order to meet the autumn planner targets.

Grass Dry Matter is 15% and cows are grazing down to 4.0cm on average.

Grass growth to date is 15.2 tonnes DM / ha.

The reseeded fields have emerged but not as well as hoped as we have not been able to graze it due to the deterioration in weather conditions.

Cows Milk yield 14.5 kg, 5.04% fat, 4.05% protein (1.31kg MS / cow), SCC 193,000 and TBC 5,000.
Upcoming Events

Presentation of Certificates to Class of 2014 — 11th December 2014

College Open Day — 19th March 2015

Information day for prospective students on courses available for September 2015.

Cleaning land drains in Ballyhaise

Open land drains are being cleaned this month on the farm with some drains not having been cleaned for nearly 60 years. Once opened the water could clearly be seen flowing at a rapid rate. This will no doubt improve the land on the farm and in turn increase soil fertility and grass growth. With these drains open we will measure its effectiveness on the soil drainage and if necessary we will install shores in the paddocks. Unless the main drains are opened there is no point in putting in shores.

Sheep

As the winter approaches the sheep flock in Ballyhaise is planning ahead for lambing in the new year. The sheep shed is cleaned and disinfected and any minor repairs to the penning of facilities is underway.

The early flock was scanned on the 22nd of October and out of 66 ewes in lamb the litter size is 1.84. This flock was treated for liver fluke and will receive another fluke treatment after lambing in the new year.

The new Charollais ram was let out with 19 ewe lambs on the 16th of October, all these lambs weighed over 48kg. The remainder of ewe lambs under this weight will be kept dry for the year and will be used as replacements next year.

25 lambs were sold on the 8th of October and they averaged €90 with a carcass weight of 20.5kg and a kill out of 41.9%.

Another 22 lambs were sold on the 6th of November. They averaged 49.4kg live weight with a 21 kg carcass this represents a 42.4% kill out. As a result of this they averaged €104 a head.

The last 22 lambs left to finish are housed and are on 1kg of meal and ad-lib hay.
Beef
Spring 2013 born bulls are receiving 12kg of meal a head/day along with ad lib straw. These animals are now approaching 720kg live weight and will be slaughtered as soon as the trade stabilizes.
All cattle on the farm have now been housed due to deteriorating weather conditions which is making the land wet. All calves have been housed this week and dosed for coccidiosis from 20 days of age and all the cows were treated for lice and vaccinated for BVD.
Preparations for breeding replacements are under way with some of the autumn born 2013 heifers being selected next week. The breeding policy on the farm is to use high EBI high fertility animals with strong maternal traits, milk production potential is most important for high growth rates in calves.

Forestry
Forestry past pupil wins 2014 RDS - Forest Service farm forestry award
Justin Good, Derrhyooh, Milltown Co Cavan has won this year’s coveted RDS- Forest Service Farm Forestry Award. Justin attended Teagasc Ballyhaise College in 1990 on the then Agri-forestry course. Having worked for a number of years in forestry and established his own woodlands, Justin continued his education in forestry, first at Galway-Mayo Institute of Technology and then Waterford Institute of Technology to qualify with an honours degree in forestry. He now works as a private forestry consultant.
The RDS-Forest Service Irish Forestry Awards promote standards of excellence in the production of native forests and trees. The Awards continue the historic involvement of the RDS in the development of Irish forestry which saw over 55 million trees planted in Ireland from 1766 - 1806 through the Society’s land improvement and afforestation projects. Since their inception in 1987, the Awards recognise and reward farmers who are employing the basic principles of sustainable forestry management on their properties including: sound commercial management; environmental protection: bio diversity and social amenity.
Justin has always been very positive in promoting forestry not only in Cavan but country wide and continues to welcome forestry students from Ballyhaise to his forests to share in his knowledge and expertise.

Email in your farm related questions to john.w.kelly@teagasc.ie

Scanning pregnant ewes
Early lambing flocks will need to be scanning sheep this time of year. It is important to scan your flock in order to supply them the correct amount of energy required for foetal growth, mammary development/milk production and maintenance of the ewe. Being able to know what each ewe is expecting is invaluable and will help to minimize losses caused by weak born lambs and in turn improve profitability.
For accurate scanning results, ewes should be scanned between 60 and 90 days in lamb.

Ideally 60—70 days is the optimum, as the scanning date moves nearer to 90 days is becomes more difficult for the scanner to identify how many lambs the ewe is carrying.
The ram should be removed from the flock 40 days before scanning as any ewes that are pregnant less than 40 days will show up as empty.
Once scanned the ewes should be grouped according to litter size and those expecting multiple lambs need to be fed higher amounts of energy by inclusion of concentrate feeds in the diet.

Forestry students with Justin Good and Marianne Lyons, forestry teacher in Justin’s woodlands last
Dairy

Farm Update

Grazing conditions have become difficult on the farm in the last two weeks. Cows are out for two to three hours per day. They are allocated 6kg of grass, 7kg of silage and 3kg of meal. There are three paddocks left to graze on the farm and these should be finished by Monday (17th Nov). The cows will be housed full time after this. The average farm cover is 730kg DM/ha and the growth rate is falling back to 11kg DM/ha/day. The farm should be closed at 620-630kg DM/ha. Some closed paddocks have covers as high as 1,600kg DM/ha. We are not worried about carrying these over the winter because next spring we have a very compact calving period and a very high demand (3.5 LU/ha in first rotation), so we need as much grass as possible. Some areas of the farm are just too wet in early spring, so we need to carry more grass on the drier paddocks to have enough to keep going. The dry cows are on pit silage, while the milking cows are getting baled silage. We will hold one bale per cow over spring as an insurance policy for times of poor growth. Cows are milking 10.3 litres at 5.17% fat, 4.09% protein (1kg MS) and 330,000 SCC.

The SCC should come down next week because we found the cows with high cell counts and dried them off. We housed the weanling heifers and weighed them. They averaged 236kg with the lightest crossbred calf being 200kg. They will now be on silage and 2kg of a high-energy heifer nut.

Soil temperature is 6.5°C
Total rainfall for the past 7 days is 51 mm.

Pigs

The pig enterprise in Ballyhaise is a 90 sow integrated unit.

Farm Update

The salmonella trial has started this week on the unit. The first trial is 28 days long and it required 168 finisher pigs to be infected with salmonella. The boars and gilts were separated and an acid treated feed for the finishers is being tested in this trial to investigate its effectiveness in controlling the disease. Half of the finishers are on a standard non acid treated feed to be used as a control in the experiment. In order to conduct the trial the pigs are fed manually. The next 28 days will determine if the acid feed can control salmonella in pigs.

A batch of sows are farrowing the week of 17th of November, 11 sows are due and farrowing crates are being prepared. 11 sows have been served once by AI on the week of the 10th of November.

The river Annalee burst its banks on Thursday the 13th of November, as a result it has flooded a large portion of the dairy paddocks including the newly reseeded paddock that was sown in early September.
Appendix F SMS Text Messages Sent to Graduates

Evaluation Survey Message

Date: 05-12-2014
Time: 15:13
Teagasc Grad, Thanks for returning the survey on contact with Teagasc. If you have not returned it please do so. Thanks John W Kelly

Beef and Sheep Text Messages

Date: 21-11-2014
Time: 10:00
Teagasc Ballyhaise, 21 Nov BEEF. 14 20 month bulls sold Carcass Wt 414kg Live wt 714kg KO 58% 390c/kg AV €1593/hd

Date: 17-11-2014
Time: 12:47
Teagasc Ballyhaise 14 Nov. Sheep 22 lambs sold 6 Nov 49kg LW 21kg ColdWT 42.4% KO. €104/hd. Beef 2 cows left to calve. All stock now housed.

Date: 07-11-2014
Time: 15:07
Teagasc Grads, Ballyhaise Beef + Sheep. 15 autumn cows and calves housed today. All calves vacc. for pneumonia with intranasal vaccine. 22 lambs sold yesterday

Date: 02-10-2014
Time: 11:11
Teagasc Grads, Ballyhaise SHEEP. 25 lambs sold 42% KO. 48kg Live, 20.3 Kg Carcass Av €90. BEEF 10 autumn calves born, Bulls in shed on 10kg/hd/d ration, adlib straw
Date: 17-10-2014
Time: 11:13
Teagasc Grad, Ballyhaise SHEEP 17 lamb sold factory price pending, 19 ewe lambs let out to Charolais ram AvWt 50kg. BEEF 18 autumn calves born, Cows vacc for IBR

Dairy Text Messages

Date: 17-11-2014
Time: 12:41
Teagasc Ballyhaise, 14Nov Dairy, Gr 11kg/ha/d. AFC 650kg/ha PGY 1600kg. Cows out for 2-3 hours/day. 6kg grass, 7kg silage 3kg meal. YLD 10.9kg @ 5.17% F 4.09% P 1kg MS/c

Date: 07-11-2014
Time: 14:45
Teagasc grad, Ballyhaise 7/11 Dairy, Gr 25kg/ha/d. AFC 850kg/ha PGY 2400kg. Cows in at night 3kg meal, 7kg bale silage 7kg grass YLD 11.2kg @ 5.17% F 4.09% P 1.06kg MS

Date: 22-10-2014
Time: 12:40
Teagasc Grad: Ballyhaise 22Oct, GR 48kg/day KgDM/LU 310. AFC 1000kg PGY 2500kgs, Feed 3kg meal, Soil temp 12.5C. Grass Dm 15% Yld 14.5kg, 5.04% F, 4.05% P, 1.31kg MS/Cow

Date: 16-10-2014
Time: 09:47
Teagasc Grad: Ballyhaise 16Oct, Gr 30 kg/ha/day, KgDM/LU320. PGY 2200kgs. Feeding 3kg meal. Closed paddock 1st Oct. Soil temp 8.8C. Yield 13.2kg, 4.9% Fat, 4% P, 1.18kg MS/Cow
Date: 02-10-2014

Time: 12:48

Teagasc Grad. Ballyhaise 29Sep Growth 70kgs/ha/day, AFC 1100kg/ha 372 kg/DM/LU. Pre Graze Yld 2100kgs Milk Yld 14.6 kg, 4.87% F 3.97% P. 1.29kg MS/cow

Date: 25-09-2014

Time: 12:06

Teagasc Grad:Ballyhaise,21Sep,Growth 66kg/ha/day.AFC 1000kg/ha,Pre Graze Yield 2100kgs. Feeding 2kgs meal/hd/day. Yield 15.1kg@4.68%F&3.96%P. MS/cow 1.3kg/day

Newsletter Texts

Date: 08-09-2014

Time: 17:44

Teagasc Grads Plz see newlook newsletter on your email Teagasc Transfer Family Farm Clinic tomorrow in Errigal Country Hse hotel Cootehill at 10.30 & 2pm.

Date: 29-08-2014

Time: 13:59

Teagasc Grads, August Newsletter is sent to ur email, Please also like the Teagasc Ballyhaise College Facebook page...John W Kelly

Date: 21-07-2014

Time: 17:04

Teagasc Graduates, Please check ur email to see the Ballyhaise July newsletter, U can also txt ur prefered enterprise to 0872580084...Thanks... John W Kelly
Date: 15-07-2014

Time: 15:27

Teagasc Grads Thank you for reply with email details. College newsletter will be sent to your email soon. If you did not send ur email details plz txt 0872580084

Graduate Survey

Start Date: 01-07-2014

Time: 15:36

Teagasc Graduates (Ballyhaise), Thank you for returning the recent survey. To receive updates please reply with your email address to john.w.kelly@teagasc.ie