Agricultural Study Trip to Ireland

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Ireland is an island measuring 174 miles wide by 302 miles long, which is approximately the size of Indiana. The gulf stream provides ideal weather conditions (45˚F to 65˚F with 35 to 45 inches of yearly rainfall) to grow perennial ryegrass and white clover pastures. Many producers commented it rains one-third of the time in Ireland. Some commented that was every 3rd day or 8 of every 24 hours. Agricultural enterprises occupy almost 64% of the land in Ireland and pastureland is 81% of that total. Dairy and beef are the largest two agricultural sectors. In fact, there are more cattle in Ireland than people. With the amount of pastureland and livestock, greenhouse gas emissions represent 32% of all emissions in Ireland.

In September 2017, agricultural Extension professionals from Alabama traveled to Ireland to study nutrient management, livestock and crop enterprises and extension methods. The group was able to interact and learn from Teagasc (pronounced Cha-gas) scientists and advisors, producers and industry for 11 days (Figure 1).

As part of the European Union, Ireland must comply with many environmental regulations. From a nutrient management standpoint, producers must strictly adhere to their nutrient management plans. Commercial fertilizer and manure applications are regulated, including cutoff dates in the fall for application of nutrients from each source. Farmers soil test annually. Soil test results will dictate the maximum amount of nutrients that can be applied and nutrient purchases are closely monitored by Irish officials. To apply more nutrients than soil test results allow, farmers must apply for a Nitrates Derogation. Typically, farmers will apply 70 units of nitrogen in the spring, along with any needed phosphorous and potassium. An additional 30 units of nitrogen may be applied after grazing events when additional growth is needed. One dairyman shared with our group that inspectors had visited his farm three times this year already to compare his fertilizer purchases to the application records he maintains.

Phosphorous is heavily regulated, with the ultimate goal of no net-P in the soil at the end of the growing season. Nutrient management plans only allow phosphorous to be applied at the crops removal rate. No banking of additional phosphorous in the soil is permitted.

Soil organic matter ranges from a low of 2.5% to a high of 8% in many areas. These rich limestone and sandstone soils are basically a sponge that absorbs the frequent rainfall easily. There is little or no evidence of erosion. Field borders and property lines are marked by thick rock walls and hedges throughout the country. Although rain falls almost one-third of the time, there is little runoff. While buffers and filter strips are common in the United States, Irish producers do not have either to contend with. The land is intensively managed with every available acre utilized correctly.

Perennial ryegrass is the primary forage with some white clover. Farmers commonly discussed plans to replant these paddocks on a routine basis, often every five years. Ryegrass stands were composed of many ryegrass varieties which created incredibly thick and dense stands. Seeding rates are similar to our recommendations in the U.S. but with a dramatically different result. The cool weather and continuous, light rain creates ideal growing conditions for the crop. Similar to New Zealand in this regard, dairy production is the wisest, best-use of the resources they have to work with.

Scientists at Teasgasc conduct ryegrass variety trials yearly. Teagasc is the Agricultural and Food Development Authority in Ireland and is responsible for agricultural research, student education and extension. From these ryegrass variety trials, they have developed pasture profit indexes (PPI) on varieties. There are 5 PPI including early spring growth, overall season growth, persistency, nutrient quality and silage quality. Ireland has set a national goal of producing 15 T DM/ha for pastures. Farmers use rising plate meters to measure ryegrass production and report measurements in an app created by Teasgasc scientists. Currently, average forage production is 12 T DM/ha.

Perennial ryegrass paddocks in Ireland have very few weeds. The main reasons for this are effective use of rotational grazing and proactive use of herbicides. The greatest weed problems were observed in lower input farms in southwestern Ireland, where farmers contend with poorer soil and hilly terrain. Frit flies are a key pest affecting establishment of perennial ryegrass stands and are managed through a timely insecticide application.

It is common practice for Irish livestock producers to take their animals off the grazing paddocks for the winter months. This is not due to harsh winter conditions, but instead as a way

of preserving the grass stands. Barley straw is used as bedding material for those animals that will be housed in barns. It is not uncommon to see slatted-floor barns utilized, for both.

Contractors provide services such as silage/balage harvest, manure spreading, and fertilizer applications. Dairy producers in particular find it much more cost-effective to pay for these services versus owning the equipment. These contractors drive their equipment to each farm versus the hauling of equipment commonly seen in the U.S.

There are approximately 14,000 dairies in Ireland. Most of the dairies are grass based dairies which produce milk from February to December each year. This milk is used to produce cheese, ice cream and infant formula. Ireland is the world's largest producer of infant formula. Milk production was measured and paid by protein or solids instead of fluid milk as we are accustomed to in the United States. 90% of dairy production in Ireland is exported as solids such as cheese, ice cream, butter, creams, and whey. Grass based dairies begin calving in February and finish by April. Until April, mixing rations of ryegrass silage, barley and other minor grain supplements is a common practice on grass-based dairy farms. The goal is to have all cows rebred in 9 to 12 weeks post-partum. The average production of grass based dairies in Ireland is slightly over 15,000 lbs. milk/year. Approximately 10% of Ireland's dairies produce the fluid milk needed for consumption and are run similarly to U.S. dairies. Companies like Dairymaster, Alltech and Keenen provide cutting edge technology and equipment for the dairies that milk year round.

Most beef producers are part-time farmers. Primary beef cattle breeds used in Ireland are Limousin, Simmental, Belgian Blue, Salers, and Charolais. Most beef farmers use traditional (red and white) Simmental cows mated to Continental terminal sire breeds. It is not uncommon for calves to wean between 750 and 1000 lbs. at 7 months of age. The European Union does not allow beef producers to use growth implants. Most bull calves

are fed intact except if they were very heavy at weaning. Calves are finished primarily on ryegrass and ryegrass silage with limited use of concentrates. Calves are generally slaughtered between 16 and 24 months of age. Cattle are sold based on conformation (muscling) and age. Having cattle ready for slaughter at Christmas is desirable since 47% of Irish beef is exported to England and beef is the protein of choice at Christmas in England. Average herd size is similar to the U.S.

There are approximately 2.4 million ewes in Ireland. Sheep are raised on range land (less fertile) as well as improved rotational grass systems. Teasgasc developed a maternal composite breed of sheep in the 1970's named Belclare that many commercial sheep producers utilize. They are mated to terminal sire breeds of Charollais, Texel, Suffolk and Vendeen. Most of the lambs are exported to Scotland for finishing.

Over 300,000 hectares of the best land in Ireland is used for tillage. Cereal crops are the main output led by barley, followed by wheat and oats. Because of the fertile soils, Ireland produced the most wheat per hectare in the world. Irish farmers also grow maize, beans, peas, oilseed rape, sugar beets, and potatoes. Potato farming has become very intensive. Most potatoes are grown for consumption but a few potato farms grow the crop for seed trade only. Rooster is the variety that is most commonly grown, representing approximately 55% of the crop. More potatoes are still eaten in Ireland today than in most other countries in the world.

English grain aphids injure barley and wheat by direct feeding and more importantly by spreading viruses such as barley yellow dwarf virus and cereal yellow dwarf virus. Many populations of English grain aphids are resistant to the pyrethroid insecticides which had been the most effective management tool. Researchers at Teagasc are exploring alternatives, such as use of native flowers in the field borders to encourage natural enemies of aphids. Disease management is a challenge in a country where statistically rain can be expected a third of the time. Potato growers rely on fungicides with various modes of action, both curative and preventive, to control diseases such as late blight. The pathogen causing Septoria leaf blight on wheat and barley has become resistant to most fungicides. In order to manage this disease farmers have to apply a combination of three fungicides three times throughout the growing season. Specialty crop farmers face their own challenges. A black currant grower is trying grass strips to help manage pests in as natural a way as possible. A leaf curl midge is one of his greatest problems at this time.

Teagasc is also responsible for extension. Extension agents are called advisors in Ireland. Currently, there are 52 advisory offices located throughout Ireland employing 1000 to 1200 people. Advisors are hired as dairy, beef, sheep or crop advisors. There is no program equivalent to 4-H in Ireland. Teagasc advisors provide a mixture of fee based and free programing. Advisors

generate approximately 50% of their yearly salary helping farmers with paperwork regarding EU agricultural subsidies and filing for derogations. Another very successful fee based program is Discussion Groups. The fee to belong to a Discussion Group starts at $140 euros/year. These are small groups of like-minded farmers organized by advisors that meet regularly at each other's farms and discuss challenges to efficient and profitable production. Producers indicated Discussion Groups were important for their success. Advisors also organize an annual Teagasc Advisory Program. This program provides farmers throughout the country an opportunity to see new research and technology applied to farm conditions. This event attracts several thousand farmers and is a no cost program. A wide range of practical, financial, technical, and educational training is available for farm family clients. Each advisor has specific expectations. For example, a dairy advisor is expected to work with 150 clients, 5 discussion groups, make 100 farm visits and 300 consultations per year. Studying in Ireland was extremely beneficial in better understanding agriculture on a global scale. In Alabama, it is expected Discussion Groups will be implemented into extension programming in 2018. It is also expected that we will strongly encourage producers to soil and forage test to better manage their nutrients. This study trip was organized by Explorations by Thor, who is a NACAA partner in providing professional development to NACAA members.

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