Visit to a cereal grower - Fri., 17th., April, 2015.

Introduction

Name of farmer: John (and his son) Hughie Mc Carron

Location of farm: Springhill farm, Quigley’s Point, Inishowen. Approx. 10 miles from CCS

Cereal crop grown: Spring oats/ Spring barley/ He also grows potatoes.


They also grow a selection of vegetables e.g. carrots, turnips, etc

They run a small shop along main road where they sell potatoes and vegetables. No livestock on farm.

John has been a tillage grower for 39 years. We wanted to ask him questions about growing cereals.

Soil type

Main soil type on farm: Medium loam texture with good drainage and good aeration. Good structure and very fertile. South-facing slope meaning more sunlight therefore a warmer soil and therefore earlier sowing.

Soil type is a brown earth.

Why you think this soil is suitable for growing this crop: High fertility and v. good drainage.

Approx. pH of this soil: pH is approx. 6.0

Rotation

Do you use a rotation?: Yes

What rotation do you use?
He uses a 1 in 3 rotation for the barley and oats i.e. he grows barley 1 year in every 3.

He said oats are a good crop to put into a rotation because they have a deep root system and therefore take up nutrients from deeper down in soil. Ploughs deeper for oats also so helps prevent a plough pan. Also oats grow v. tall and therefore help shade out weeds.

He told us he uses a 1 in 4 rotation for his potatoes. He said that potatoes are a good crop to use in a rotation because their dense foliage (leaves and stems) help shade out weeds and therefore there are less weeds in the following cereal crop.

Varieties grown.

What varieties do you grow?: At present he grows Concerto barley and Binary oats

John told us that Concerto is a malting variety but he said that he grows it for two main reasons:

(a) It gives a high yield
(b) It is a Scottish variety and since Donegal has a similar climate to Scotland, he feels it grows well here

What are the main characteristics that you consider when choosing a variety?
Wants high yield for both. Likes a large seed (“pickle”) size for oats. Length and strength of straw.
Do you change the varieties you grow often? : yes every 3 years e.g. he grew a variety of barley called *Frapino* last year.

John consults the “*Recommended list of varieties*” annually and chooses the best varieties for him. He told us he changes varieties often because disease resistance (of cereal varieties) can break down after a few years.

Do you use certified seed? Yes

**Why do you use certified seed?** He uses certified seed because it gives a higher yield. The seed are of very good quality. Other advantages of certified seed are:

(See barley notes page 2.)

### Soil preparation

**What are the main things you do to get your soil ready e.g. ploughing, etc:**

John ploughs as early as possible depending on weather conditions. Usually Feb. to March. This year he ploughed later because of bad weather. Then he power harrows the soil to break up the soil.

Hughie said he likes to power harrow 2 days before sowing so the soil dries out a little.

Then he broadcasts the fertilizer onto the soil surface. Then he sows the seed using a *one pass system*. This machine has a cultivator at the front of the seeder which breaks up the soil even more and it also mixes the fertilizer into the soil also. Then the seeder part of the one pass system sows the seed. He then rolls the soil afterwards to press down the seed.

(See advantages of rolling after sowing in barley notes)

### Fertiliser application

**Do you get your soil tested often?** Once every 5 years.

**Do you have to put on lime and how often?** It depends on the results of the soil test. This year he applied 2 bags of lime per acre. He told us he used granulated lime this year. It works faster than the slaked lime but the effect does not last as long. Barley uses up more lime in the soil than oats i.e. it will grow better at a high pH. Oats can tolerate a lower pH i.e. a more acid soil.

**What type of fertilizer do you usually apply?** 10 : 10 : 20

**How much fertilizer do you usually apply per acre?** It depends on the results of the soil test. Usually 2.5 bags per acre for oats and 3 bags per acre for barley.

**Do you broadcast it or use a combine drill?** He broadcasts the fertilizer onto the soil after the first power harrowing. Then the power harrow in the one pass system mixes the fertilizer into the soil just before the crop is sown.

**Do you top dress the growing crop with nitrogen?** Yes.

**How many top dressings do you apply and when do you usually apply them?**

He applies one top dressing of nitrogen. He applies the N as soon as the second leaf appears on the plant. This is usually a month after sowing. He applies 1.5 bags of C.A.N. (27% N) to the oats and 2-3 bags of C.A.N. to the barley.

John told us that barley has a higher demand for nutrients than oats.
**Sowing the crop**

What is your seeding rate per acre? 12 stone of seeds per acre for both barley and oats. John said he can sow up to 30 acres on a good day.

How deep do you sow the seed? 5cm deep (2 inches)

What date do you try to sow your crop by: As early as possible. Usually between mid-March and mid-April. He sets tramlines at sowing time.

What do you think are the advantages of tramlines? He uses tramlines because he can then spray his crops throughout the growing season without driving over his crop. He has a 21-meter wide sprayer so sets his tramlines at this spacing.

**Weed, pest and disease control.**

What are the main weeds that could affect your crop: Redshank and Chickweed are the worst. Grass weeds can also be a problem. He does not have a problem with Cleavers usually.

How do you usually control these?: He uses a mixture of 2 herbicides (weedkillers). One is called Ally and the other is called Foundation. He applies the herbicides post emergence i.e. after the weeds come up.

What are the main diseases that could affect your crop?: The two main diseases are Rhynchosporium and Powdery Mildew

How do you control these?: He uses a mixture of two fungicides. One is called Proline and the other one is called Adexter. He usually applies 2 or 3 sprays per year depending on the presence of the diseases.

What are the main pests that could attack your crop?: Leatherjackets can be a huge problem.

How do you control these?: He sprays Dursbane onto the soil to prevent these. Aphids are not a problem because of the windy weather in Donegal. Crows and pigeons can also be a problem at harvest time.

**Growth Regulator**

Do you apply a growth regulator? Yes

If you do when do you apply it and why do you apply it?: he applies it at the 2nd node stage. It controls the height of the crop and helps reduce lodging of the crop.
**Harvesting and yield**

**How do you tell if your crop is ripe and ready for harvest?** : Bites the grain and it should be v. hard. Crop turns a golden yellow colour. In barley, the ear bends over and lies parallel to the stem. The moisture content (m.c.) should be at 20% minimum. Last year the m.c. was 15-16% because of the v. dry summer. He uses a moisture meter to check the m.c.

**What machine harvests your crop** : Combine harvester.

**How many acres can you harvest in a typical day?** : 10-12 acres per day.

**When do you harvest your crop usually?** He usually harvests his crop at the end of August or early September, but he said that the main priority is that the crop is ripe.

**What is your average yield per acre usually?** : His average yield for Spring barley is 2.5 – 3 tonnes per acre (i.e. 5 -7 tonnes per Ha). His average yield for Spring oats is 2 tonnes per acre (5 tonnes per Ha). John said that he is quite happy with these yields.

**Straw** : He usually gets 8 round bales per acre.

**Storage**

**How do you treat your crop for storage?** : John uses “Propcorn” (i.e. Propionic acid) to treat his barley for storage. He dries his oats for storage.

**Can you tell us a little about acid treatment?** : He uses acid treatment on the barley because he rolls it before selling it. Acid treatment means that the barley can be harvested and stored at a higher moisture content (20%). Consequently, when this barley is rolled it is not as dusty for livestock. Acid treated grain is also more palatable to livestock. He usually applies 2 gallons of propcorn per tonne of grain if the m.c. is 20%. He would apply more if the m.c. is higher.

**Are there any pests/diseases that affect your crop in storage?** No. He makes sure to keep cats away from the stored grain as their urine can affect the quality of the grain.

**Use of crop**

**What do you usually use your crop for?** : He sells both the barley and oats to local farmers, and also to the co-op in Carndonagh.

**Do you roll it?** : He treats the barley with acid and then rolls it before selling it. He does not roll the oats.

**Straw** : He sells the straw locally. He got 20 euros a bale last year.

John told us that he used to get 102 punts (Irish pounds) per tonne of barley in the old days. He now gets 130 euros per tonne. He feels that prices have not increased sufficiently, considering the cost of fertiliser, fuel, machinery, seed, etc.

**Machinery.**
Crop project

Cereal production.
Introduction.

On Friday, 28th April, 2015, my agricultural science class visited a cereal grower called John Mc Carron. John’s farm is called “Springhill farm” and is located in Quigley’s Point, Inishowen. The farm is approx. 10 miles from our school. John and his son, Hugh, grow 22 acres of Spring oats, 45 acres of Spring barley and 18 acres of maincrop potatoes. They also grow a selection of vegetables e.g. carrots, turnips, etc.

The Mc Carrons run a small shop along the main road where they sell potatoes and vegetables. They have no livestock on the farm. John has been a tillage grower for 39 years. We wanted to ask John and Hugh about the different management tasks and husbandry practices involved in growing cereals. We were not going to ask him questions about his potato crop as we were going to visit a potato grower at a later date.

photo
Soil type.
The soil on John’s farm has a medium loam texture with very good drainage and good aeration. It has a good structure and is very fertile. It has a south-facing slope meaning that it receives more sunlight, and is therefore a warmer and earlier soil. The main soil type on the farm is a brown earth. The pH of the soil is approx. 6.0.
**Rotation.**

John uses crop rotation. He uses a 1 in 3 rotation for the barley and oats i.e. he grows barley 1 year in every 3. He said oats are a good crop to put into a rotation because they have a deep root system and therefore take up nutrients from deeper down in the soil. He also has to plough deeper for oats and this helps to prevent a plough pan. Furthermore, oats grow very tall (approx. 1.5 m.) and therefore help shade out weeds.

He told us he uses a 1 in 4 rotation for his potatoes. He said that potatoes are a good crop to use in a rotation because their dense foliage (leaves and stems) help shade out weeds and therefore there are less weeds in the cereal crop in the following year. He also told us that using a rotation helps to keep the soil “fresh”. This means that the same nutrients don’t get used up by growing the same crop and also that the soil gets a “rest”.

![John uses a 1 in 3 rotation for his cereals.](image-url)
Potatoes help to shade out weeds.
Varieties grown.
At present John grows *Concerto* barley and *Binary* oats.
John told us that Concerto is a malting variety but he said that he grows it for two main reasons:

(a) It gives a high yield
(b) It is a Scottish variety and since Donegal has a similar climate to Scotland, he feels it grows well here

Variety Descriptions
Variety descriptions are in alphabetical order. Information is also given on the year each variety was first listed in Northern Ireland and on the name of the UK agent.

*Concerto* (Provisionally recommended)
First listed in 2009; Nickerson
- malting variety;
- very high treated and high untreated yields;
- medium length straw with low straw yields;
- average standing power, quite poor resistance to brackling but very good resistance to necking;
- poor resistance to Rhynchosporium, quite poor resistance to net blotch, quite good resistance to Ramularia and very good resistance to mildew;
- early to ripen.

Real Seed Sample here
John wants high yield for both his barley and oats. He likes a large seed ("pickle") size for oats. The length and strength of straw is also very important to John as he sells the straw to farmers for bedding. He changes the variety grown every 3 years e.g. he grew a variety of barley called *Frapino* last year. John consults the “Recommended list of varieties” annually and chooses the best varieties for him. He told us he changes varieties often because disease resistance (of cereal varieties) can break down after a few years.

He uses certified seed because it gives a higher yield. The seed are of very good quality.

Other advantages of certified seed are:
(See barley notes page 2.)
Soil preparation.

John ploughs as early as possible depending on weather conditions. Usually Feb. to March. This year he ploughed later because of bad weather. Then he power harrows the soil to break up the soil. Hughie said he likes to power harrow 2 days before sowing so the soil dries out a little. Then he broadcasts the fertilizer onto the soil surface. Then he sows the seed using a one pass system. This machine has a cultivator at the front of the seeder which breaks up the soil even more and it also mixes the fertilizer into the soil also. Then the seeder part of the one pass system sows the seed.

He ploughs as early as possible. He power-harrwors the soil 2 days before sowing.

He then rolls the soil afterwards to press down the seed (see advantages of rolling after sowing in barley notes)
**Fertiliser application**

He gets his soil tested once every 5 years. The amount of lime and fertilizer applied depends on the results of the soil test. This year he applied 2 bags of lime per acre. He told us he used granulated lime this year. It works faster than the slaked lime but the effect does not last as long. Barley uses up more lime in the soil than oats i.e. it will grow better at a high pH. Oats can tolerate a lower pH i.e. a more acid soil.

He applies 10 : 10 : 20 fertiliser to the soil. The amount applied depends on the results of the soil test. Usually 2.5 bags per acre for oats and 3 bags per acre for barley. He broadcasts the fertilizer onto the soil **after** the first power harrowing. Then the power harrow in the one pass system mixes the fertilizer into the soil **just before** the crop is sown.
He broadcasts the fertilizer onto the soil and then harrows it in before sowing.

He applies one top dressing of nitrogen. He applies the N as soon as the second leaf appears on the plant. This is usually a month after sowing. He applies 1.5 bags of C.A.N. (27% N) to the oats and 2-3 bags of C.A.N. to the barley.

John told us that barley has a higher demand for nutrients than oats.

He top dresses his growing crop with C.A.N.
**Sowing the crop**

John’s seeding rate is 12 stone of seeds per acre for both barley and oats. John said he can sow up to 30 acres on a good day. He sows the seed 5cm deep (2 inches). He sows his cereals as early as possible, usually between mid-March and mid-April. He sets tramlines at sowing time.

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**Photo of one pass system**

He uses tramlines because he can then spray his crops throughout the growing season without driving over his crop. He has a 21meter wide sprayer so sets his tramlines at this spacing.

John uses tramlines in his cereal crops.
**Weed control.**

The main weeds that affect his crops are Redshank and Chickweed.

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**Redshank.**

**Chickweed.**

Grass weeds can also be a problem. He does not have a problem with Cleavers usually.

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**Grass weeds can be a serious problem.**  **John controls weeds using herbicide sprays.**

He uses a mixture of 2 herbicides (weedkillers). One is called *Ally* and the other is called *Foundation*. He applies the herbicides post emergence i.e. after the weeds come up.
Disease control.

The two main diseases that attack his crops are *Rhynchosporium* and *Powdery Mildew*. He uses a mixture of two fungicides to control these. One is called *Proline* and the other one is called *Adexter*. He usually applies 2 or 3 sprays per year depending on the presence of the diseases.
Pest control.

John said that Leatherjackets can be a huge problem. He sprays *Dursbane* onto the soil to prevent these.

Leatherjackets live in soil and eat the roots and lower stems of plants.

Aphids are not a problem because of the windy weather in Donegal.

Crows and pigeons can also be a problem at harvest time.
Growth regulation.
John applies a growth regulator called “Ceraide” to his cereal crops. He said that this doesn’t actually shorten the length of the straw (i.e. plant stems). He said that the growth regulator actually strengthens the straw and thus helps prevent lodging. He applies it at the 2\textsuperscript{nd} leaf stage.
Harvesting and yield

John bites the grain and it should be v. hard. The crop turns a golden yellow colour. In barley, the ear bends over and lies parallel to the stem. The moisture content (m.c.) should be at 20% minimum. Last year the m.c. was 15-16% because of the v. dry summer. He uses a moisture meter to check the m.c.

Ear bends over and lies parallel to the stem. Moisture metre.

He uses a combine harvester to harvest his crops. He can harvest up to 10-12 acres per day.

Combine harvester.
He usually harvests his crop at the end of August or early September, but he said that the main priority is that the crop is ripe.

The average yield for his barley is 5-7 tonnes/Ha.

His average yield for Spring barley is 2.5 – 3 tonnes per acre (i.e. 5-7 tonnes per Ha).
His average yield for Spring oats is 2 tonnes per acre (5 tonnes per Ha).
John said that he is quite happy with these yields.

Straw: He usually gets 8 round bales per acre.
John uses “Propcorn” (i.e. Proprionic acid) to treat his barley for storage. He dries his oats for storage.

He uses acid treatment on the barley because he rolls it before selling it. Acid treatment means that the barley can be harvested and stored at a higher moisture content (20%). Consequently, when this barley is rolled it is not as dusty for livestock. Acid treated grain is also more palatable to livestock. He usually applies 2 gallons of propcorn per tonne of grain if the m.c. is 20%. He would apply more if the m.c. is higher.

He makes sure to keep cats away from the stored grain as their urine can affect the quality of the grain.
**Use of crop.**
He sells both the barley and oats to local farmers, and also to the co-op in Carndonagh. He treats the barley with acid and then rolls it before selling it. He does not roll the oats.

![Rolled barley.](image1)

![Barley straw used for bedding.](image2)

**Straw:** He sells the straw locally. He got 20 euros a bale last year.

John told us that he used to get 102 punts (Irish pounds) per tonne of barley in the old days. He now gets 130 euros per tonne. He feels that prices have not increased sufficiently, considering the cost of fertiliser, fuel, machinery, seed, etc.