

Spring barley – know how much to sow

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Research has shown that there is a direct correlation between grain numbers/m² at harvest and barley yield. So it's vital to establish and manage the crop well.

Grain number is the key determinant of yield in spring barley (assuming weeds, disease, weather and fertility are right). Wheat grains will plump up if their numbers are few and conditions good. But if you don't have enough barley grains on the field at grain-fill, yield will go a-begging.

So how do you make sure you give the crop every chance to harvest the potential yield? Grain number per square metre is mainly influenced by ear number which, in turn, depends on plant number and the number of shoots per plant. Establishing the correct number of barley plants is essential to achieving high yields.

Barley will compensate somewhat for higher or lower plant numbers by producing higher or lower tiller numbers but there is a limit to how much the crop can adjust.

How many plants do I need to establish?

In order to achieve maximum yield you need to establish the right number of plants to produce enough good sized ears of grain at harvest time. Research from Teagasc Oak Park shows a spring barley plant population of approximately 300 plants/m² is required to achieve maximum yield. Such a plant population should in turn produce a canopy of 1,000 to 1,100 shoots/m². Use the table as a guide to target plant populations, in order to achieve 1,000 shoots/m².

Don't confuse establishment with germination percentage. Essentially, establishment rate is the percentage of seed that will survive to create a viable plant count. If we sow a random sample of 100 seeds (assuming the minimum standard of germination of 85%), we can expect 85 to germinate. However, slugs, crows, stones and compaction can all reduce the number of plants that make it above ground (generally we assume this loss to be 10%), giving us an establishment rate of 75%. When sowing into a cold seed bed, it is not uncommon for only 60% to 70% of seeds to establish. This is where your previous experience and



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LEFT: Mike McCarthy and Willie Hanrahan examine barley seed.



Table 1: Sowing targets

Sowing date (week)	Up to mid-March	Mid late March	Early to mid-April	Late April
Target plants m ²	280	300	300	325

seedbed conditions need to be taken into account.

Willie Hanrahan and his father, also Willie, grow or contract over 700 acres of winter wheat, winter barley, winter oats and spring barley centred on Crough Keal, Clogheen, Co Tipperary.

“We use exclusively certified seed,” says Willie senior, “We feel it’s worthwhile to use certified seed but with the expense involved you want to get the seed rate absolutely right.”

The Hanrahans take into account advice from their merchant, Dairygold, their customers such as Bretts and also Teagasc. “We’ll certainly take into account the 1,000 grain weight, the date of sowing and weather conditions but soils are reasonably uniform around here so that’s somewhat less of a factor,” says Willie Hanrahan.

What is the correct seeding rate?

Once you have decided how many plants you would like to establish, you need to calculate your seeding rate. If you sow too few seeds, you are then depending on the tillering capacity (i.e. the ability to produce a number of seed heads from one seed) of the crop to achieve this. Sowing too many seeds will result in unnecessary expense and a crop of tall and weak

plants. This will lead to increased risk of lodging and a lot of small ears at harvest time. To determine the correct seeding rate for your fields, take the following factors into account:

- Seed quality (germination%, thousand grain weight, variety).
- Soil conditions.
- Time of year.
- Anticipated pest problems.
- Previous experience.

Thousand grain weight (TGW) is the weight of a thousand grains and is expressed in grammes. It varies according to seed size and variety. The DAFM provides standard TGWs associated with each variety but these should only be used as a guide, and it’s more appropriate to establish the TGW of the relevant seed lot. If you cannot locate the TGW on the label; ask the merchant. Seeding rate can be calculated using the following formula:

$$\frac{\text{TGW} \times \text{target plant population/m}^2}{\% \text{ establishment}}$$

Let’s assume a TGW of 45. Sowing date is 20 March and conditions are good and dry but cold so establishment will be 75%.

$$\frac{45 \times 300}{75}$$

75% = 185kg/ha or 11.5 st/acre

If you were to repeat the same equation but with a TGW of 43 for instance the result would be as follows, $\frac{43 \times 300}{75}$

75% = 172kg/ha or 11st/acre

As you can see, a difference of just three grammes in a TGW resulted in a variation of 13kg/ha. Varieties can often vary like this in TGW, so calibration is key. It can be very tempting to just keep planting when people finally get out into fields, but this variation should be taken into account especially when changing variety.

Your machine may have been accurately sowing one variety, but changing to another without re-calibration may result in a seeding rate either too heavy or too light. This can result in unnecessary expense or loss of yield. In my experience, certain seed dressings can also have an effect on seed rate. Sometimes seed dressing can vary between seed suppliers so, again, calibration is necessary.

So, there is no direct answer to the question “At what rate do I sow barley?” No general seeding rate exists and several factors can influence the result. However, one thing is certainly clear. The seed rate calculator must be used if correct establishment is to be achieved.

“Particularly when margins are tight it’s essential to establish the right number of plants, ears and grains,” concludes Willie Hanrahan.