

Perils of early sowing

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It's been a difficult 12 months for cereal growers. Scarce planting opportunities in autumn 2019 resulted in the winter cereal area dropping 40% on the year before. Spring cereals established on the available ground were clobbered by drought in April and May.

So what should cereal growers do this autumn? Traditionally, the ploughing match, a COVID-19 victim, was the cue to order seed and there is a strong temptation to plant early to avoid the misfortune that occurred last season. But caution is needed. Early planting can lead to increased pest and disease pressure and greater risk of grass weeds.

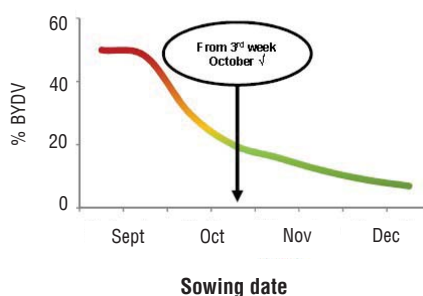
Planting winter wheat and barley early (mid to late September or later further south) generally guarantees good seedbeds and temperatures during germination leading to higher establishment rates. However, early planting increases the likelihood of:

- BYDV.
- Take-all.
- Grass weeds.
- Disease.
- Lodging.

BYDV

Early-sown crops are at the highest risk from BYDV and yield reductions of 3.7t/ha have been recorded in Teagasc winter barley experiments. Coastal areas are at particular risk and the danger is enhanced by a mild autumn/winter when the aphid migration period is longer and aphids are more likely to survive the winter.

Figure 1
BYDV risk increases with early sowing



– Tom Kennedy, Teagasc
national tillage conference 2014.

Early-sown crops emerge earlier and have a much longer period of exposure to migrating aphids carrying BYDV. Delaying sowing date may reduce or eliminate the need for an insecticide application but there is the risk of poorer establishment.

Insecticides cannot be relied on for full control of aphids. Knock Down Resistance (KDR) was first identified in Ireland in 2013. Aphids with the KDR gene are less susceptible to pyrethroid insecticides (Karate Zeon/Decis Protech, etc.) but to date, KDR has only been identified in *Sitobion avenae* (grain aphid) which is an important vector of Barley Yellow Dwarfing Virus (BYDV) in Ireland.

As we do not have neonicotinoid seed treatment (Redigo Deter) pyrethroids are the only insecticides available for BYDV control in winter and spring barley.

Integrated pest management (IPM) is increasingly important. While avoiding early sowing is a key IPM management tool, minimising the green bridge between crops and monitoring for control failures are other important IPM tools.

Variety selection is becoming another IPM tool as seed companies invest in breeding techniques to develop BYDV tolerant/resistant varieties.

A limited amount of seed of a BYDV-tolerant variety KWS Joyau will be available this season. It is important to differentiate between resistant and tolerant varieties. Currently, BYDV resistant varieties are not available in Ireland.

Take-all

Wheat is more susceptible than barley to the soil-borne fungus take-all. Continuous cereals are most susceptible, particularly second and third wheats after a take-all break crop. The disease is carried over on the roots of the previous crop so early sowing increases take-all risk.

Take-all inoculum declines after harvest but it is important that volunteers are eliminated as they too can act as a bridge carrying the infection from one season to the next. Therefore, delayed sowing reduces the disease in continuous cereals.

Weather conditions have a large impact on take-all. Take-all is active in the soil at higher soil temperatures so it is favoured by early sowing. A wet spring allows the buildup of the pathogen and take-all effects will be exacerbated in a dry summer.

High soil pH, poor soil structure, poor drainage and fluffy seedbeds all favour take-all. Seed treatments (Lattitude) were effective in reducing take-all in wheat in Teagasc trials but will be more effective when combined with delayed sowing.

Grass weeds

Grass weeds are becoming an increasing problem with brome species and blackgrass difficult to control. Avoiding the main germination period is a key IPM technique. The key germination period for sterile brome and blackgrass is September and tapers off as sowing moves into October. Winter barley should be avoided as there are no chemical control options.

Delayed sowing also allows the use of stale seed beds which are an effective IPM measure to reduce the weed seed bank. Ideally, the first flush of brome/blackgrass should have appeared in the field before sowing.

The Enable Conservation Tillage (ECT) project was set up by Teagasc under the European Innovation Partnership (EIP) initiative and has demonstrated on many of the focus farms the advantages of delayed sowing for grass weed control. Ideally, farms with problem weeds such as brome and blackgrass should wait until the spring but focus farmers in the project have demonstrated a reduction in grass weeds by delaying sowing until mid to late October.

Disease

Early sowing results in a longer period of exposure to pathogens in weather that favours our key diseases such as septoria. Early disease infection inevitably leads to increased fungicide costs and reduced yields. Slow-developing varieties with excellent disease profiles should be sown first.

Lodging

Early planting increases lodging risk. Better establishment results in denser canopies leading to weaker stems and taller shoots. Bringing sowing date forward by two weeks can reduce the lodging resistance by one point.

Weather is the big unknown factor. Sowing this autumn is a balance between risk and reward. Sow heavier land with low grass weed pressure and lower BYDV and take-all sites first, leaving more vulnerable land till later but sowing the third week in September is risky.



Farmer profile: Paddy Harrington, Co Cork

Paddy Harrington who grows winter barley, winter wheat and spring oats at Ballingarry Middle near Kinsale in Co Cork has had some vivid experiences with BYDV. Just a few kilometres from the coast, his fields are at great risk because aphids love the prevailing mild conditions.

Farming since 1967, Paddy remembers 1983 as a very bad year for the disease. "It was as if you sprayed the crop with

Gramoxone," says Paddy. "More recently, 2017 was also difficult. You could lose 70% of yield in a bad year."

Trials

Paddy credits retired scientist Tom Kennedy (and other Teagasc colleagues) who conducted trials over many years on Paddy's land with helping farmers to develop effective strategies against aphids and BYDV, in particular. As seed

dressings and chemicals have systematically been removed from the market, Paddy says sowing date is more important than ever.

"There's sometimes a temptation to sow winter barley early but we find that can lead to mildew galore as well as the risk of BYDV. It is tempting to sow if September is fine, but in our experience it's almost always better to delay planting until the first week of October."