

Know your enemy: grass weed identification

Jimmy Staples
Enable Conservation Tillage Project advisor

Ronan Byrne
Walsh Fellow, Teagasc Oak Park

Weeds compete with crops for light, water and nutrients, reducing yields. In order for any crop, regardless of establishment system, to reach its full potential, weed control must be effective.

Accurate identification supports the development of a robust weed control strategy comprising both cultural and chemical elements built around the biology of the target weed. Grass weeds are easily identifiable after heading out by examining the head structure.

But at this stage, the only control options available are roguing or crop destruction in order to prevent seed return. It is important therefore to record and map these weeds so that they can be controlled in the following crop.

Ideally, an integrated pest management (IPM) strategy should be developed after identification of the grass weed at the earliest possible stage. This strategy should focus on:

- Depleting the seed bank.
- Killing weed seedlings.
- Stopping seed set.
- Preventing seed return.

To be truly effective, an IPM strategy needs to be planned over the whole rotation and not just in the current and following crop. A rotation that includes non-cereal crops, combined with the use of stale seedbeds and delayed sowing of winter cereals, are just some actions that can be implemented in the case of autumn-germinating grass weeds.

Grass weeds are easiest to control with herbicides up to early tillering. However, it is at these early stages of their growth cycle in autumn and early spring when accurate identification can be difficult.

There are a number of key identifiable characteristics to look for when identifying grass weeds in these early stages of growth:

- The youngest leaf – is it rolled or folded?
- The presence, shape and size of the ligule at the base of the leaf.
- The presence or absence of auricles, which wrap around the stem at the base of the leaves.
- Characteristics such as leaf colour, colour at the base of the stem, growth habit and hairiness of stem and leaf can be quite variable, but useful identifiers.
- Presence of rhizomes and stolons.

The key is to rely on multiple traits, not just one, when identifying a grass.

Identifying sterile and great brome

After heading out, both species have wedge-shaped long, spreading awns. At the vegetative stage, sterile brome can be hairy, but great brome is visibly hairy.

Both species can have purple/red striping down the leaf sheath. Sterile brome has a serrated ligule and no auricles. Great brome grows in a more upright manner than sterile brome and is generally a larger, more robust plant. In great brome the axis (see picture) of the panicle is hairy, whereas in sterile brome it is not.

Identifying rye brome

Rye brome is a rather upright, sturdy grass. After heading out, seeds are arranged in loose panicles. Cutting a mature rye brome seed across its cross section reveals a deep V or U shape.

This is in direct contrast to soft and meadow brome, which are characterised by their saucer-shaped cross sections. Furthermore, comparing the spikelets of rye brome with meadow and soft brome also reveals slight gaps between the seeds, which are not seen in the more compact spikelets of these other two brome species.

Identifying soft and meadow brome

Blackgrass ligule.

Soft brome is more common on uncultivated land than in fields where soil disturbance is common. Meadow brome is the only brome species that has rhizomes. This is a crucial identifying characteristic.

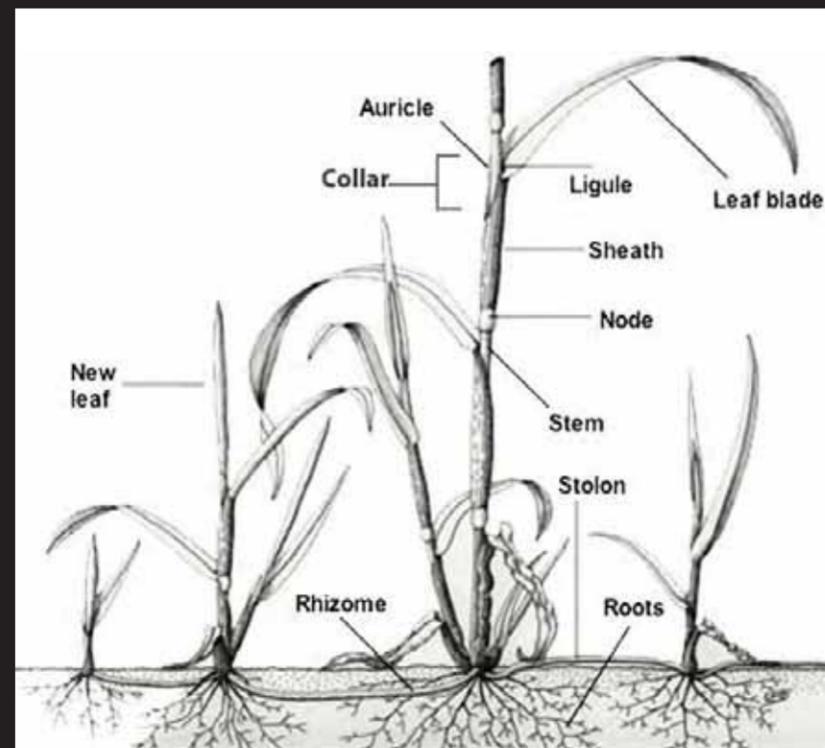
Soft brome has no auricles and a short, flat ligule. Similarly, meadow brome has no auricles, but has short to medium feathery, pointed ligules. Soft brome has soft hairs over the whole plant. Meadow brome has a hairy leaf sheath.

If plants survive to seed production, these species can be tricky to tell from one another. Soft brome has a looser panicle, with longer pedicels (branches) than meadow brome.

Furthermore, soft brome spikelets are typified by soft hair, whereas meadow brome spikelets are hairless.

Identifying black grass

Black grass grows in a very upright manner, with long slender leaves with no hair. The leaf sheath is smooth and hairless, and can range in colour from green to purple. Black grass has no auricles, with medium flat, finely serrated ligules.



Winter wild oat spikelet.



Canary grass roots.



Brome hairs on leaf.



Jimmy Staples, Teagasc.

A key characteristic to look out for, for simple identification/differentiation from young cereal plants, is the purple colour at the base of black grass stems.

This characteristic can be variable among populations and not all plants will have this colouration. However, if it is noted, it is a quick tell-tale sign that there are alien plants growing in a field with young cereal plants.

The mature black grass spikelet is slender and cylindrical, sharing similarities with common foxtail and timothy.

Black grass seed heads are much thinner than these aforementioned grasses. For further differentiation, common foxtail has rhizomes. Black grass produces large amounts of seeds. Mature seeds range in colour from yellow to purplish.

This grass is notorious for its resistance to herbicides and this is a growing issue in Ireland. A zero-tolerance approach is a must for this weed, so accurate identification is crucial.

Identifying lesser canary grass

Lesser canary grass is somewhat

of an unknown quantity, but has become more prevalent in recent years. It is becoming an increasing issue, particularly where continuous spring barley is grown. Lesser canary grass has pale green leaves, typically broader than those of brome or black grass. Lesser canary grass has folded leaves and no auricles.

Strikingly, these plants can have a distinctive red sap in the root tips. Furthermore, a reddish colouration can also be observed in the base of the stem at the vegetative stage of lesser canary grass.

The lesser canary grass seed spikelet has a distinctive tufted shape and can easily be seen bobbing and weaving above the crop canopy after reaching maturity.

Identifying wild oats

Wild oats are a tall, stout, annual tufted grass very similar to cultivated oats. Wild oat leaves are broad, flat and rough and have a distinctive anti-clockwise twist in the leaf when viewed from above. The leaf margins are hairy towards the base and some plants will have hairy stems. It is

also notable by its lack of auricles and the presence of a medium to long rounded ligule.

Identification between the winter and spring species of wild oats is very difficult at the vegetative stage. The main differences being the stouter appearance of the winter species, which can also grow up to 1.8m tall compared with 1.5m in the spring germinating species.

Once the panicle has emerged, there are two features which make it possible to identify between the two species.

- Presence or absence of an awn on the third seed in the spikelet; and
- Whether seeds remain attached to each other or separate at shedding.

In winter germinating species, the awn will be absent from the third seed (and fourth seed if present), also the seeds will remain attached to each other and shed as a unit from the spikelet.

Spring germinating wild oat species will have awns present on the third seed within the spikelet and seeds will separate when mature and are shed singly.