

Ploughing Date for Grass/Clover Leys Prior to Sowing Spring Cereals

OFTS49

Ploughing down grass/clover leys is an essential component of mixed farming systems. The aim is to exploit efficiently the bank of fertility built up during the ley:

- a) to maximise yield of the following arable crop and
- b) to minimise loss of nutrients, particularly nitrogen (N), to the environment.

Research at SAC has shown that the date of ploughing, relative to the date of sowing the following arable crop, can have a major effect on crop yield and N uptake and loss.

Maximising crop yield depends on:

- Maximising the amount of **soil mineral N** in the soil in spring.

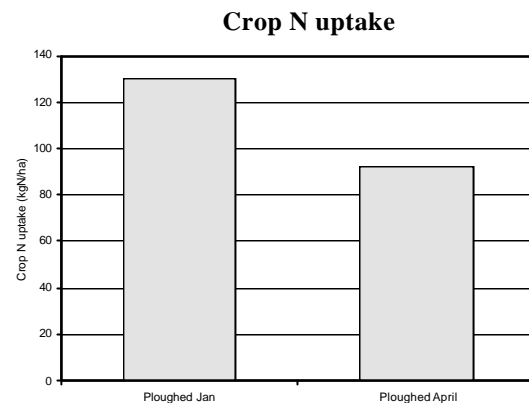
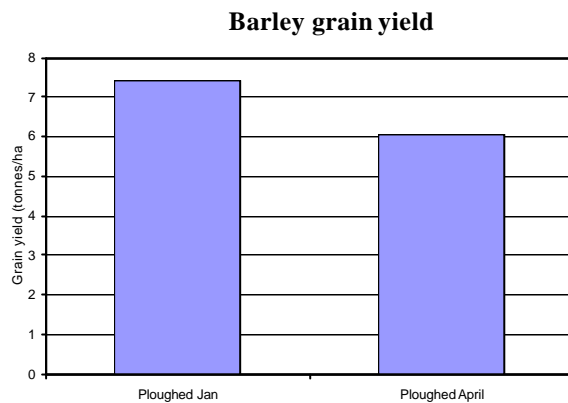
Preventing nitrogen losses from the farm system:

- Should be one of the main aims of organic farmers.
- Ploughing in autumn and leaving a bare surface will lead to significant N leaching.
- Maintaining a winter green cover helps to minimise N leaching losses.
- Spring ploughing of the ley will give less N loss than autumn ploughing.
- Plough early in the year to ensure that N is released at sowing.

BUT:

- Ploughing down the ley starts a complex series of N processes in the soil, many by microbes.
- **Soil aeration and warming** encourages soil micro-organisms to become very active.
- Some soil organic N is **mineralised and becomes available** as nitrate and ammonium.
- The buried turf acts as a carbon (energy) source for micro-organisms, but they also require N.
- There is **competition between crop and soil micro-organisms** for mineralised soil N.
- The soil micro-organisms can **lock-up or immobilise** some of the mineralised N.

Ploughing in January versus ploughing in March prior to sowing a spring cereal



ACTION POINTS:

- Plough early in the year (January) so that N immobilised after ploughing is released at sowing.
- Ploughing later in Spring can cause immobilisation and loss of N due to the warmer temperatures stimulating microbial activity.
- Leave a gap between cessation of grazing and ploughing to help ensure a good nutrient bank.
- Ensure residues are spread evenly when ploughing and maintain a good soil structure to get the most out of the fertility bank.

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