

Grain options

Costs

There are relatively small differences between the costs of the different grain treatment options, apart from drying. Approximate cost is €30/t, including processing, additive, storage losses and working capital cost. Treatment with urea-based products e.g. Home N'Dry and Maxammon costs €40/t to €45/t including processing. But there are additional advantages as the crude protein content increases and the higher pH may be an advantage for high concentrate diets.

Acid treatment

- It's popular to roll grain at the time of organic acid treatment using a crimping machine and store the grain aerobically in a clean, dry vermin proof store. This eliminates the workload attached to rolling at feed-out and ensures the acid is uniformly applied.
- To control insects, the grain temperature must be reduced after treatment, so some ventilation is necessary.
- For long-term storage of grain, rolled and treated off the combine, increase the application rate by 10%.
- For pulses, increase the application rate by 10%.
- When moisture content is less than 25%, it will be necessary to crack pulse seeds prior to treatment.
- Propcorn application rates are shown in Table 3.

Crimp

- Harvest grain at 30% to 35% moisture, crush the grain and store it anaerobically until feeding time. Under these conditions, it undergoes lactic acid fermentation.
- Suitable crops include barley, wheat, triticale, oats, maize, peas and beans.
- Crucial to the success of this system is achieving and maintaining strictly air-free conditions throughout storage, and minimising the duration of exposure to air during feed-out.
- Mould-inhibiting additives prior to ensiling, help to limit spoilage of the grain during feed-out.

Urea treatment

- Urea is the most common source of ammonia used to treat grain harvested at 16% to 20% moisture content.
- The whole grain is stored under sealed, air-free conditions (e.g. sealed beneath conventional silage plastic sheeting) to prevent ammonia loss.



A high-yielding winter wheat and a high-yielding spring barley crop will give similar (excellent) performance, provided grain yield is at least 50% of the total DM yield.

Table 2: Grain treatment options

Preservation option	Optimum moisture content %	Requirement for ventilation	Storage unit
Dried	14	Yes	Feed store or bin
Green	15-16	Yes	Feed store or bin
Organic acid treated	18-22	Yes	Feed store
Crimped	30-40	No	Ensiled anaerobically
Ammonia treated	18-22	No	Ensiled and sealed
Alkali treated	18-22	No	Feed store

Table 3: Propcorn application rates

Cereal grain moisture %	Litres propionic acid/t	Cereal grain moisture %	Litres propionic acid/t
16	5.5	22	8.5
18	6.5	24	9.5
20	7.5	26	11.5

- Products: HomeN'Dry or Maxammon. The advantage of these additives over the traditional urea is that the enzyme urease is present to ensure that the grain seed coat is broken down so that it does not pass through in the dung.
- Home N'Dry contains urea and ureases enzymes.
- Maxammon – buy the urea and enzyme separately and mix on-farm. Be careful to use feed grade urea only.
- The cost of both is approximately €27/t.
- The crop should be sealed down for four weeks and can be left open in a shed after that.
- Increases the crude protein content to between 14 and 16%, depending on

the starting CP%. Get it tested before, and after, the treatment to check the increase.

Caustic treatment

- Treat grain with sodium hydroxide (caustic soda) which disrupts the seed coat of grains so that the grain can be fed directly to cattle without further processing.
- Whole grain can be harvested at up to 30% moisture and soaked in, or sprayed with, sodium hydroxide solution.
- The grain is then stored aerobically.
- The grain is harvested at the conventional stage or slightly earlier (15% to 30% moisture).