

INTRODUCTION

In recent years there have been striking changes in the arable sector of Welsh agriculture. The area devoted to cereals declined from 56,000ha in 1990 to 46,000ha in 2000. Recent changes such as decoupling, climate change and the introduction of agri-environment schemes may reverse this downward trend in cereal production.

This leaflet focuses on two potential cereal crops for Welsh farmers: naked oats and triticale. Both crops require only moderate amounts of nitrogen fertilizer (80 – 120 kg N/ha) and maintenance dressings of phosphorus and potassium (around 60 kg P₂O₅ and K₂O /ha). They have fewer pest and disease problems than wheat or barley and many of the pesticides that are approved for use on these crops can also be used on naked oats and triticale.

As with all novel crops, growers are advised to ensure that they have a good knowledge of the requirements of the market they are aiming for, and how they will produce a crop that meets that specification well before planting.

NAKED OATS

Background

In traditional varieties of oats the kernel or groat is surrounded by a thick husk that lowers the energy value of the grain. In naked oats the kernel threshes free from the seed at harvest thereby increasing nutritive value, especially for non-ruminants. Although the yield per unit area of naked oats is about 20 to 25% lower than those of conventional husked varieties, the higher oil and nutrient content of the grain attract a premium.

Agronomy

Winter varieties are preferred to spring varieties as they are higher yielding, and at present there are few spring varieties of naked oats commercially available.

Naked oats can be grown on a wide range of soil types. Sites infested with blackgrass or wild oats should be avoided as these weeds can be difficult to control. Any cereal volunteers and weeds must also be controlled so that the harvested grain is free from contamination.

Naked oats are grown in much the same way as conventional husked varieties. Growers should choose a variety with high yield, short straw, high resistance to lodging, high specific weight and low % screenings.

Sow at a rate of 100-125Kg/ha at 25-40mm depth using conventional cereal drilling machinery. Avoid shallow drilling, as the seed is very attractive to birds.

Early sowing in the autumn can lead to attack by aphids and problems with barley yellow dwarf virus, which can be more damaging in oats than other cereals. Excessive nitrogen dressings should also be avoided as these can increase lodging. The main disease problems are mildew and crown rust, although these can be controlled by use of resistant varieties and fungicides.

A spring sown crop is likely to be ready for harvest a week or so after spring barley. To obtain a clear sample with few husks adhering to the grains, it is essential that the crop is fully mature before combining. A combine set up for barley and wheat might need slight adjustment to drum settings and fan speed for the smaller grain size of naked oats. The grain must be dried to around 14% immediately after harvest. Grain that is to be stored for a longer time must be dried down to 12% moisture content. Naked oats have a high resistance to airflow, so for on-floor drying the recommended maximum depth for initial drying stages is 1m. If batch drying ensure low temperatures are applied (<50°C) to maintain oil quality.



Figure 1: Naked oats

Markets and uses

Naked oats contain around 30% more protein (typically 11-13%) and 40-50% more oil than hulled varieties. A substantial market exists in supplying high energy, high protein feed for non-ruminants, especially poultry. The superior nutritional qualities of the grain can realise premium prices through entry into human food markets, where their β-glucan content is of interest as a source of soluble fibre. A developing market also exists for fractionating naked oats for producing cosmetics. Oat straw can also obtain premium prices from sales into the high-value equestrian market as good quality bedding/feed.

Indicative gross margins for naked oats are given in Table 1, alongside those for triticale and barley.

nb: Gross margins will vary considerably between individual businesses. The figures quoted in the table below should only be used as a guideline when preparing budgets. The figures refer to spring sown crops.

Table 1: Indicative Gross Margins / ha for triticale, naked oats and barley

	Triticale	Naked Oats	Barley
OUTPUT			
Grain yield (t/ha)	5.75	5	5.5
Grain price (£/t)	58	72	60
Total Grain £/ha	333.5	360	330
Straw yield (t/ha)	4	4	3.75
Straw price (£/t)	30	35	40
Total Straw £/ha	120	140	150
Total Output £/ha	453.5	500	480
VARIABLE COSTS			
Seed	70	70	42
Fertiliser	55	55	55
Spray	60	60	70
Total Variable Costs £/ha	185	185	167
GROSS MARGIN £/ha	268.5	315	313

TRITICALE

Background

Triticale is a hybrid cereal created by crossing wheat with rye. A breeding programme is then used to produce a stable, self-replicating hybrid that will not revert back to either wheat or rye. The potential benefits of this cross breeding are the high yields of wheat and the disease and stress resistance of rye. The name triticale is derived from the genus names of wheat (*Triticum*) and rye (*Secale*).

Agronomy

Varieties of both winter and spring triticale are commercially available in the UK. The winter varieties have a vernalisation requirement and must be sown in the autumn or early spring (before mid-February) for them to produce flowering stems and grain. Spring varieties can be sown in late autumn or spring and may be preferable on farms with livestock.

Triticale can be grown on most soil types, using conventional cereal drilling equipment. Recommended sowing depth is 20-30mm, and growers should aim for row widths of 100-120mm, adopting a sowing rate of 200-230Kg/ha. As it is drought tolerant triticale can out-perform other cereals on sandy soils. In general, triticale is an easy crop to manage due to its hardiness and good disease resistance. Autumn sown crops can be grazed up to twice during late winter and early spring, providing useful fodder. Controlled grazing can promote tillering, but over-grazing can cause damage and reduce yields. Sheep grazing rather than cattle will cause less soil poaching and compaction during this time of year.

As the straw tends to be tall and weak the crop is susceptible to lodging, especially when grown after well-fertilized grassland. It can also be difficult to combine unless a growth regulator is used. Growers are recommended to choose a variety with high yield, short straw and good resistance to lodging. Triticale can also be grown for wholecrop, in which case it can be sown on its own or in mixtures, typically with a companion legume. Harvesting for wholecrop takes place earlier than for grain, which will allow grassland, a winter forage such as kale, or another cereal to be sown after the wholecrop has been removed.

Markets and uses

Triticale is mainly grown for animal feed purposes. The grain has a high protein content with high levels of the amino acid lysine, which make it particularly suitable for inclusion in the diets of pig and poultry.

As the unit cost of production of triticale is relatively low, it could be a suitable crop to be promoted into bioethanol production in the future.