RYE

WHY ISN'T RYE GROWTH MUCH MORE PREVALENT?

by Andrew Wilkinson, Milling & Grain Magazine

A highly versatile crop, rye (Secale cereale) is grown primarily as a forage for cattle and other ruminant livestock, whilst also being grown for use as a feed ingredient, for alcohol distillation, and for use in human consumption.

Initially, rye likely began growing in the area of what is now present-day Turkey, but it is possible that it could have come across from much farther east still. Reaching its apex fairly quickly, rye was already widely cultivated by the Romans, although there is evidence that it was grown far earlier too.

Agriculturally, rye is very similar to wheat and barley, so it has many of the same applications. Given how easy it is to grow and how hardy it is as an agricultural staple, why isn't rye growth much more prevalent?

In global terms at least, the number of rye cultivators is relatively low, especially when compared with wheat and barley. There are exceptions of course; regions such as Scandinavia are examples of where rye production bucks the international trend.

There has also been considerably less effort put into the development and improvement of rye, in part because rye is a cross-pollinator, whereas wheat and barley are self-pollinators, with cross-pollinators making the maintenance of pure lines of breeding stock incredibly difficult.

Production and export

Rye is grown primarily in Eastern, Central and Northern Europe. The main rye belt stretches from northern Germany through Poland, Ukraine, Belarus, Lithuania and Latvia into central and northern Russia. Rye is also grown in North America (Canada and the United States), in South America (Argentina, Brazil and Chile), in Oceania (Australia and New Zealand), in Turkey, in Kazakhstan and in northern China.

Production levels of rye have fallen in most of the producing nations, as of 2012. For example, production of rye in Russia fell from 13.9 million metric tons (t) in 1992 to 2.1 t in 2012. Generally speaking, rye is either consumed close to where it is grown or exported to neighboring countries, rather than being shipped worldwide – like the crop's counterparts wheat and barley now so often are.

Feeding value

According to Denmark-based KWS agronomist Jacob Nymand, rye is already poised to become the main grain source for cattle and pigs in his country, and he sees there being "no reason" why it shouldn't become a major feed source elsewhere in the world too.

However, while rye has a lower feeding value than wheat (4-5 percent less MJ/100kg of grain) and a 1-2 percent lower protein content, its higher yield generates more feed value/ha on light soils than wheat, and while rye has similar fibre content to other grain, the fibres do take a very long time to breakdown. "So, in the same way that rye bread makes us feel fuller for longer, the same applies to pigs," stated Mr Nymand, in a recent interview with PigWorld. He added that, "While this is a potential negative in pig production, using a wet feed system where the rye is fermented enables intakes of 20-40 percent in the ration and has the benefit of leaner meat, improving marketability."

As a result, about 150,000ha of rye is now grown for both human and animal feed purposes in Denmark, and the area is expected to grow further – largely at the expense of

second placed wheat.

The negative effects of rye

Although there are commercial enzymes available that can counteract the negative effects of rye, reluctance to using rye grain as a feed ingredient persists. The primary concern is the presence of ergot alkaloids. Ergot, a fungus, is currently the most common disease of rye.

The key problem that I brought about by the presence of ergots is that they can be very can be very toxic if present in sufficient concentrations. However, in the case of rye, ergot is now much less of a problem as newer cultivars of rye are developed that are resistant to the fungus itself. Keeping the wild grasses around field borders is also an effective method of reducing the chances of developing an ergot problem.

Are we making the most of rye as a food or utility feed crop?

Well in a report recently compiled by a team of expansion researchers from The University of Minnesota, this is probably not the case. The team of experts consisting of Jochum Wiersma, Scotty Wells and Axel Garcia, reported some of their conclusions on cereal rye in a recent edition of the "Minnesota Crop News" bulletin.

The most notable of the team's findings was that rye is much more commonly used in some parts of the world as both feed and food, such as some areas in Scandinavia, with Wiersma citing the examples of "pumpernickel bread" the Scandinavian perennial favourite "knäckebröd" or crispbread.

So, although some regions of the world do seem to exploit rye more fully than others when it comes to food use, do the same regions operate with the same level of ruthlessness when it comes to using rye for feed?

Use of rye in feed

In Denmark and Germany, according to Jochum Wiersma, "As a feed stuff, rye has some interesting properties that have grabbed the attention of hog producers as a way to reduce antibiotic usage and stress in the group housing systems," with both currently mandatory under the respective country's agricultural policies.

However, this is not the case in North America, where the development of variety has occurred at such a slow pace in recent decades, that the acceptance of alternatives to the current crops of choice stalls quite frequently. In fact this can also be said of much of Western Europe too.

Also, despite containing gluten, rye has enjoyed exponential growth in recent years, a success that owes much to its perceived image as a healthy grain – an example being rye whiskey, which has enjoyed a five-fold increase in consumption since 2002, according to Eater Magazine.

But could this apparent reluctance by Western growers to produce more rye be exclusively down to an absence of government legislation, or even the aforementioned reluctance to change?

Although these two points could be factors, one feels that the most prominent reason is that, as mentioned previously, rye has one notable Achilles heel in the fact that its very nature makes it incredibly susceptible to ergot, as the grain cross-pollenates with other crops.

With the enhanced susceptibility to developing this disease in mind, as opposed to wheat, barley and oats, it is not surprising then that rye is not afforded the same amount of growing area as its counterparts.