CROPQUEST

Spelt Wheat Food Potential

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Spelt

Spelt (*Triticum spelta*) is a distant cousin of conventional wheat (*Triticum aestivum*), with a unique gluten structure that makes it easier to digest. Compared with wheat, spelt is taller (150 ± 20 cm), has long, lax ears (15 ± 20 cm), a brittle rachis and adherent glumes (Lacko-Bartosova et al., 2010).

Spelt has enjoyed a recent revival in popularity in artisan breads and cereals. As well as being a popular and nutritious substitute for wheat flour in breads, it is being increasingly enjoyed in cereals, risottos, pizza and pasta amid growing recognition of the importance of a high fibre diet.

A comparison of spelt with wheat, barley and oats reveals why spelt production decreased in popularity. While spelt has a higher protein content than other cereal crops, it also has inconsistent yields, low test weights, a shortage of adapted cultivars and an expensive de–hulling process (Lacko-Bartosova et al., 2010; Schmitz, 2004). Wheat, barley and oats have higher yields, consistent high quality crops and the ability to free thresh (the hulls are separated from the kernel at harvest). Many of these qualities can be attributed to breeding programs (Schmitz, 2004).

Spelt has a higher lipid content and also a higher unsaturated fatty acid/palmitic acid ratio than wheat, which results from a level of oleic acid double that of wheat. Compared to wheat, spelt has, on average, 30–60% higher concentrations of Fe, Zn, Cu, Mg, and P, which is most pronounced in fine bran and coarse bran, where cereal minerals are naturally concentrated (Kohajdova & Karovicova, 2008). This allows for naturally enriched bread based products to be produced (Abdel-Aal et al., 1997; Kohajdova & Karovicova, 2008). In contrast to minerals, and especially P, the phytic acid content tends to be 40% lower in spelt than in wheat, as indicated by data obtained in fine brans, where aleurone cells, which naturally contain phytic acid are the most concentrated (Ruibal-Mendieta et al., 2005).

Little agronomic data for the production of spelt wheat has been produced, particularly from a Western European and Irish context. The majority of literature published focuses on the health, nutritional and baking aspects of spelt products.
Spelt can grow in a range of soil pH's from 6.0 – 7.5, but for optimum growth the soil should be pH 6.0. Lacko-Bartosova et al. (2010) conducted trials in Slovakia between the years 2005 and 2008 and found an average yield of 5.81 t ha^{-1} (min, 5.06 t ha^{-1}; max, 6.90 t ha^{-1}). The average thousand grain weight of the crop during this period was 42.5 g. *Triticum spelta* is a hulled wheat species in which the grain is strongly enclosed in glumes. Glumes protect the grain against diseases, but during harvesting the grain is hardly threshed from the glumes. The share of glumes was on average 30.87% (Lacko-Bartosova et al., 2010). This gives a yield of de–hulled spelt kernels of 4 t ha^{-1}.

Spelt grain prices doubled late last year in 2014 Smithers (2014) reported in the that the price of conventional spelt has risen from £500 to £1,600 per tonne. In the UK, refined spelt flour – which uses 40% more grain than wholegrain would be the first spelt based product to disappear from shops. Organic spelt grain prices command a higher price at approximately £2,000 per tonne.

Spelt is suitable for the production of wholemeal bread or bran nutrition bars, rather than bread from sieved or refined flours (Ruibal-Mendieta et al., 2005). Fine spelt bran is particularly suitable as a raw material for nutrition bars as it combines a high mineral and unsaturated fatty acid contents with a low proportion of P in the form of phytic acid, a slightly sweet taste, and a composition still rich enough in starch to manufacture biscuit-like bars (Bonafaccia et al., 2000; Kohajdova & Karovicova, 2008).

Market Outlook

Demand for spelt in Ireland has grown dramatically in the last few years with a number of bakeries opening which use spelt flour to produce artisian products. These companies include 'Cathys Spelt for Health' who produce a range of spelt baking mixes and various bakeries who are using spelt flour to create a range of spelt breads. Odlums has also introduced a spelt flour "in response to a renewed revival in spelt flour in recent years due to its nutritious qualities". Due to the unique structure of the gluten component of spelt, some people who sufferer from wheat intolerance may be able to consume spelt with no adverse effects.

If more farmers choose to grow spelt the prices will reduce to reflect the supply. However, there is considerable demand to allow for large expansion of the crop before demand is met. Figure 1 shows the SWOT analysis for cultivating spelt in Ireland. Variations in yield can be overcome with breeding of spelt varieties more suited to our climate but this will require time and demand to accomplish. A campaign to make consumers aware of the high fibre and mineral contents of spelt and the taste will lead to an increase in demand from people looking to increase fibre in their diets.

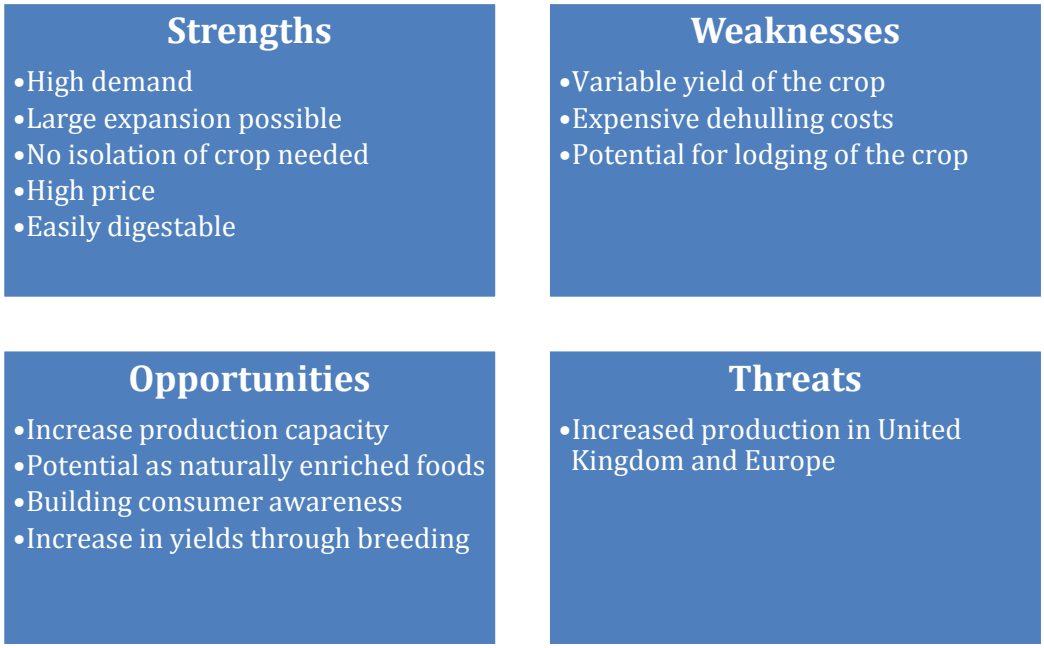

Figure 1: SWOT Analysis for the production of spelt in Ireland.

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