

T-2 and HT-2 toxin in oats

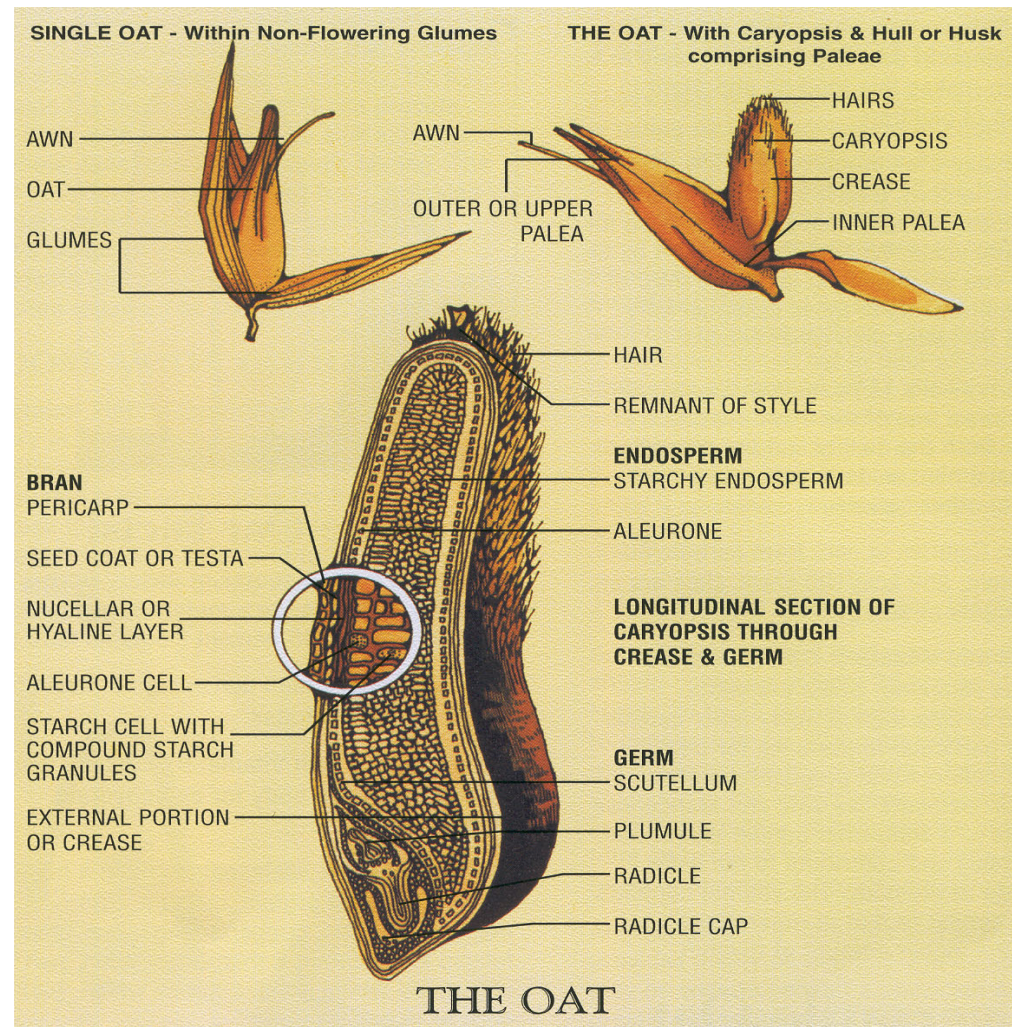
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Oats



Synopsis of Oats

- Oats rank 6th in world cereal production following wheat, maize, rice, barley & sorghum
- The value of oat production is approximately 6% of worldwide cereal production
- The USA & Russia are the biggest producers
- The oat is adapted to the cold climate of Northern countries

Oat production 2005/06

- EU – approximately 7.6 million tonnes
- Biggest producers – Finland and Poland – each with approximately 1.1 million tonnes
- 1990-91 – 74% used for animal feed with remaining 22% for seed and human consumption
- The total amount of the crop used for human food in the UK has risen from 28% to 52%

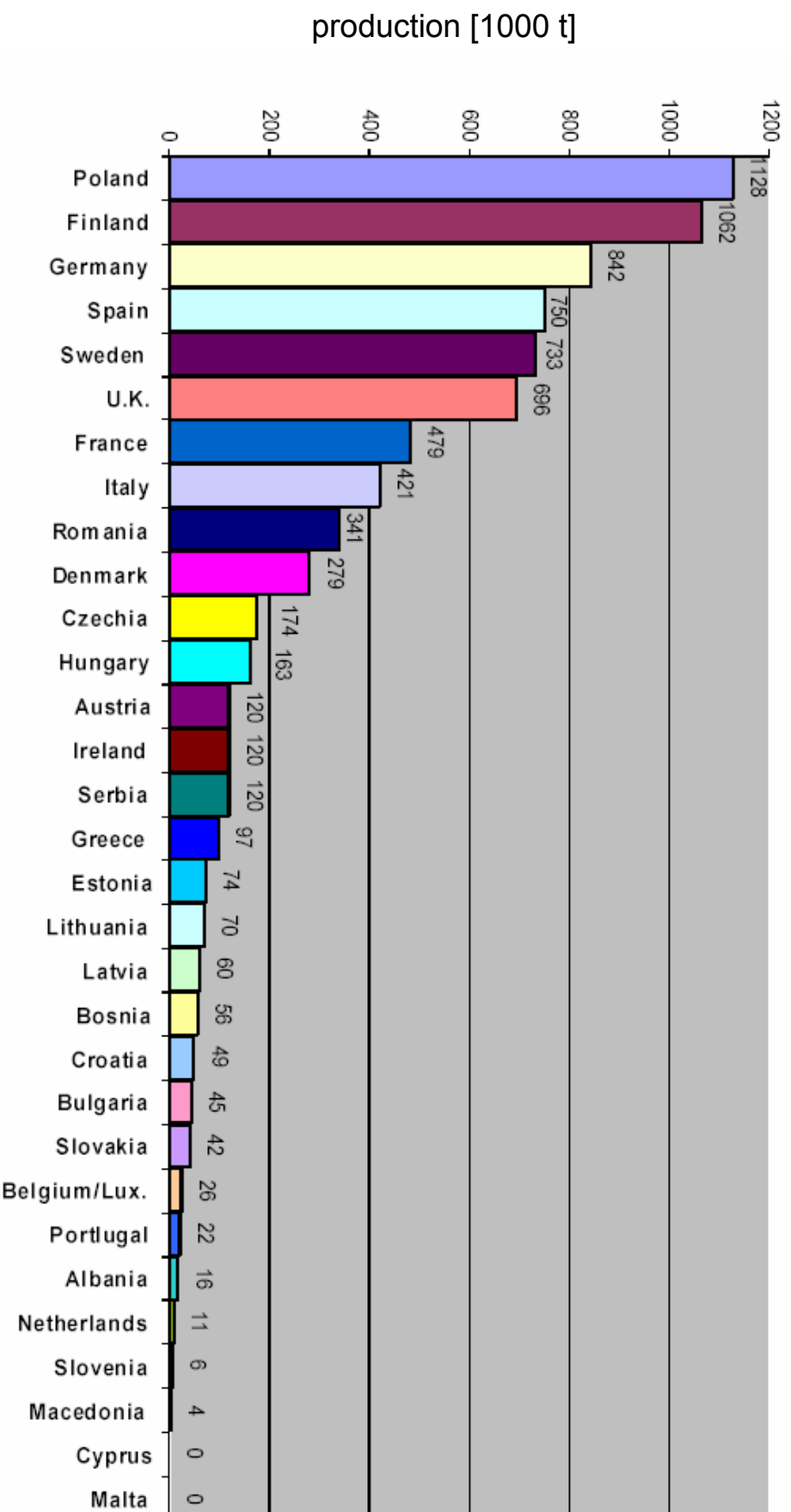
T-2 & HT-2 in oats

- Any discussion on T2 and HT2 in oats should take into account the well documented health benefits of oats (such as beta-glucan) and their availability to the European consumer.
- The health benefits associated with the beta-glucan content of the oat help in the management of glucose and insulin levels after meals and have led to the publication of the Heart Health Claim
- Therefore, any potential legislation needs to be based on a rational, robust and scientific assessment and based on safety, feasibility and practicality

Guidelines for growers and processors

- We believe it is necessary to have some Guidelines to help growers and processors to minimise the risk of HT-2 and T-2 Mycotoxins – this is urgently needed
- A large amount of work has been undertaken in the UK and elsewhere and in spite of a 4 year FSA/HGCA funded investigation PLUS an ongoing PhD studentship, it is not yet possible to produce these.

EU Crop Forecast for oat, 2006



Quality criteria

oat milling requirements (Zechner, 2001)

- high value of entire oat (riddle sorting > 2,0 mm)
- low value of hulls
- easy to dehull
- light colour

quality components (Schönberger and Kropf, 2000)

- value of entire oat: min. 99 %
- weight of hectolitre: min. 54 kg
- weight of thousand grains: min. 30 g
- value of hulls: under 26 %
- humidity of grains: max. 15 %

Consumption data for infants

Germany

oats: 3,1 g/day (97,5 percentile: 64,3 g/day)

cereals: 90 g/day (VELS-Study, Banasiak et al., 2005)

oat flakes: 40 g/day (Kersting M., 2001)

Norway (6 years)

(Norkost, 1997)

oat: 6,2 g/day

rye: 13 g/day

wheat: 180 g/day

Great Britain (1,5 - 4,5 years)

(Gregory et al. 1990, 1992)

4,1 g/day

2,0 g/day

47 g/day

Consumption data for adults

Germany

wheat: 171 g/day (assessment for the EU, 1999 Landesanstalt für Ernährung Bayern)

cereals and cereal products: 310 g/Tag (FAO, 2003)

portion of breakfast cereals: 30 g

Norway (16-29 years)

(Langseth, 2000)

oat: 7,5 g/day

rye: 15 g/day

wheat: 280 g/day

Great Britain (16-64 years)

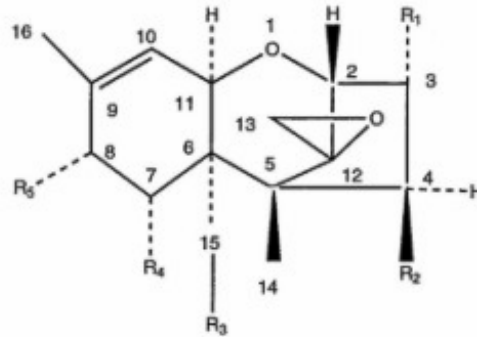
(Gregory et al. 1990, 1992)

12 g/day

7,4 g/day

130 g/day

T-2 and HT-2 toxin



- T-2 and HT-2 are mycotoxines from the group of trichotecenes
- belong to subgroup type A
- T-2 and HT-2 are produced by *Fusarium langsethiae*
- *Fusarium langsethiae* is a newly identified species so there is very limited information for it (HGCA, Quaker Oats and Harper Adams PhD studentship)

T-2 and HT-2 toxins in raw oats

oats from 2003-2006

T2 and HT2 concentrations [$\mu\text{g}/\text{kg}$]						
origin	Mean	Median	90th %	95th %	Max	n
Finland	452	300	977	1526	3500	104
Sweden	144	64	337	456	575	6
Germany	76	32	158	268	383	16
UK	837	500	2308	2520	3528	20
all	451	253	996	1586	3528	146

	%>10 $\mu\text{g}/\text{kg}$	Mycotoxin concentration [$\mu\text{g}/\text{kg}$]				
		Mean	Median	90th%	95th%	Max
HT2+T2	92	570	213	1492	2160	9990

Number of samples analysed for trichothecenes was 458.
 Harper Adams University College funded by the UK Food Standards Agency and the UK Home-Grown Cereals Authority.