

Insecticides Prevent Major Losses in UK Wheat

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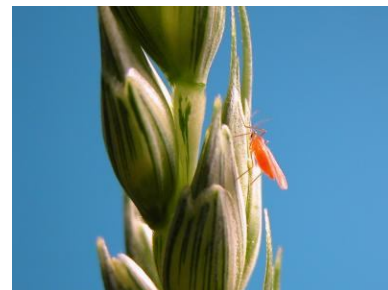
In recent years, insecticides have been used on 80% of the wheat acres in the UK mainly to target aphids and the orange wheat blossom midge [1]. In average years, these pests would reduce wheat yields by 3% if untreated; insecticides reduce the losses to 1.5% [2]. Because of the low cost of insecticides, the additional yield results in an economic return six times greater than the cost of treatment for aphids [3].

Cereal aphids have been recorded attacking crops in Britain since at least the 18th century, but were not regarded as being of economic importance [4]. The direct effects of cereal aphids on cereal yields were not appreciated until 1968, 1975-1977 which were years of severe outbreaks. Five trials conducted in 1976 showed an average 33% increase in yield in response to a single insecticide spray [5].

Grain aphids overwinter on grasses and early-sown cereals, flying on to infest cereal crops in summer. Aphid feeding has been shown to reduce the flow of nutrients to the developing grain, causing yield loss from reduction in grain size [5]. Aphids can increase in number very quickly in suitable conditions and are increasing in the UK due to warm autumns and mild winters.

A serious outbreak of damage caused by orange wheat blossom midge larvae was first noticed in areas of eastern and southern England in 1993. Crop losses of over 50% were estimated in the worst cases [6]. The damage was detected too late for effective spraying. In 1994 the return in increased yield produced by spraying produced a 1:5 cost benefit ratio [6]. In areas where effective spray action was not taken, damage increased by 50% from 1993 levels. The orange wheat blossom midge has occurred as a serious problem in parts of the UK every year, culminating in 2004 when 500,000 hectares were sprayed.

The larvae of this species overwinter in the soil for up to 13 years before emerging which is stimulated by rising soil temperatures and rainfall. The midges mate at the emergence site and eggs are laid on wheat plants. Larvae feed on the swelling grain turning it to mush. Growers are advised to take soil samples and to purchase insecticides if more than 12 million larvae are found per hectare, in case favorable weather causes massive emergence.



Orange blossom wheat midge



Left: wheat kernel damaged by midge larvae
Right: sound kernel

References

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