

Keeping the Bugs out of Beer without Pesticides

Colin Campbell

Science Department, East Malling Research,
New Road, East Malling, Kent ME19 6BJ UK. e-mail: colin.campbell@emr.ac.uk

- Our cool maritime climate favours hop pests and diseases.
- High volume fan-assisted spraying is the only means of control on old varieties.
- Ensuring good spray coverage at the top of plants means that spray drift can become a problem.
- Classical breeding methods have been used to produce hops half the height of conventional plants and these can be grown as a continuous hedge.
- 'First Gold' the world's first dwarf hop variety was released from EMR to UK growers in 1996.
- Advantages of dwarfs for pest and disease control
 - 1) Regular crop inspection is easy
 - 2) Low volumes of sprays can be applied directly to foliage
 - 3) Shrouded sprayers can be used to minimise spray drift
 - 4) Machine harvesting creates greater habitat stability
- Two-spotted spider mite control without pesticides
 - 1) Supplement naturally occurring predators
 - 2) Hop beta-acids
- Damson-hop aphid control
 - Until 2003 all hop varieties in the world were susceptible to aphids
 - Aphid resistance from a wild hop from Japan has been bred into EMR hop breeding lines.
 - Host plant resistance to the damson-hop aphid is augmented by non-selective predation by many naturally occurring species including Ladybirds, anthocorid bugs, parasitic wasps and green lacewing larvae.
 - Integrated use of aphid sex pheromones options
 - 1)attract and kill 2)Pathogen vector 3)Mating disruption 4)Attract beneficials