IOBC/wprs Bulletin Vol. 51, 2009

Working Group „Integrated Protection of Field Vegetables". Proceedings of the Meeting at Porto (Portugal), 23-29 September, 2007. Edited by: ROSEMARY COLLIER.
(ISBN 92-9067-**225**-8) [vi + 112 pp.]

Abstract: In cole crops, a remarkable change in pests has been noticed over the last decade. Pests which had hardly been found on Brassica crops before suddenly developed into a major pest problem. On the other hand, pests appearing to be a problem in one year disappeared as fast as they had appeared.

Abstract: Studies have focused on the progress of diapause and post-diapause development in one early- and one late-emerging population of *D. floralis* at various temperatures. For the early emerging biotype, diapause progressed gradually at low temperatures and terminated in late spring. For the late emerging biotype also, diapause progressed gradually for a certain period, but did not end, no matter the duration of chilling. For both populations, diapause developed faster at a constant 18 ºC compared to combinations with chilling periods, indicating that chilling was not a prerequisite for diapause development. For the late emerging population, results indicated a second phase of diapause development with a threshold temperature of about 7 °C. However, the rate of this second phase of development did not increase linearly with temperature but had an optimum at about 12 °C. Post-diapause development for both populations was similar and had a lower threshold of about 2 °C. Results explain how delayed emergence in some populations is regulated.

Abstract: The aim of this project was to determine how host-plant finding and oviposition by the cabbage root fly (*Delia radicum*) were affected when non-host plants, commonly called "companion plants", were "grown" alongside *Brassica* (cauliflower) plants. The companion plants were made from both green and brown card, as artificial "companion" plants produce similar disruptive effects as living plants. Fewer eggs were laid on cauliflowers surrounded by green (48% reduction) and brown (32% reduction) companion plants than on cauliflowers surrounded by bare soil (control). Lowering the leaves of the companion plant from three-quarters to half the height of the cauliflower plant reduced the disruptive effect from 48% to 18%. The companion plants also disrupted fly activity under field-cage conditions. For maximum impact in disrupting oviposition by this fly, companion plants need to be green, be at least three-quarters as tall as the Brassica plants and be grown in the crop row so that their leaves are amongst those of the *Brassica* plants.

Abstract. Sex pheromone traps have been developed to trap the adult males of the three main UK wireworm pest species. Recommendations have been issued for their use with an emphasis on monitoring populations in grass the year before potatoes are planted. There are three assumptions underlying this method; that annual wireworm cohorts are of equal size, that adult male distributions relate to larval distributions, and that activity/density relationships are similar for the three species. Data are presented to challenge each of these assumptions and it is concluded that current advisory recommendations lack scientific credibility.

control on lettuce or brassica crops, pyrethroids are applied to control caterpillars. This emphasises the importance of considering the entire pest complex when planning a control strategy; insecticides applied to control one pest may exacerbate problems with another.

Abstract: The onion thrips, *Thrips tabaci* (Thysanoptera, Thripidae) is a major pest of *Allium* crops in the UK and is the main arthropod pest of both leek and salad onion. Recent research has demonstrated increasing levels of pesticide resistance in UK populations. However, according to growers, control using chemical pesticides has always been poor. The problem lies with the cryptic nature of *T. tabaci* and the difficulty growers have in ensuring that control applications reach their intended target. A field experiment was done to test the hypothesis that 'the intra-plant distribution of *T. tabaci* is affected by the natural cycle of environmental conditions throughout the day', with the aim of identifying a predictable pattern of distribution which might help to target control measures.

The salad onion varieties White Lisbon [*A.cepa*] and Guardsman [*A.cepa/ A.fistulosum* cross] were direct-drilled into the field at Warwick HRI, Wellesbourne, Warwickshire, UK on five occasions between May and August 2006. The plots were situated close to a leek plot which had been maintained since 2005 and upon which a large population of thrips had overwintered. Sampling took place over a series of eight replicate days between 22 June and 17 October 2006. Samples were taken five times a day from the two varieties of salad onion. The first sample was taken at dawn and the last at dusk; the remaining three samples were spaced evenly throughout the day (dependent on the times of dawn and dusk) with a mid morning, early afternoon and late afternoon sample in each case. Sampling was destructive and the plants were separated into three sections: stem, basal half of leaves and apical half of leaves. The three sections were sealed in separate plastic bags and taken back to the laboratory for assessment. The numbers of live adult and larval *T. tabaci* on each section of each plant were recorded. The majority of adults were found on the basal section of the plant throughout the day There were hardly any insects on the stem and this was the case across all time points. In the early and late afternoon, there was a clear and statistically significant change in distribution, with a much higher proportion of adults occupying the apical half of the leaves. In contrast, the vast majority of larvae occupied the basal half of the leaves and remained there throughout the day. Based on these data, recommendations could be made to growers to focus their spraying efforts in the early afternoon, and to target warmer days when *T. tabaci* is likely to be more active, in order to increase the efficacy of such control measures.

Abstract: Onion thrips (*Thrips tabaci*) is the most important pest of leek grown in the UK. Thrips may also attack other *Allium* crops, particularly salad onion. Large populations of thrips can develop, causing blemishes to the leaves, which reduce quality and may make the crop unmarketable. In 2003, approximately 83% of the area of *Allium* crops treated with insecticides/nematicides in the UK was treated for thrips and the pyrethroid insecticide, deltamethrin, was the main insecticide used. However, there was some evidence that thrips cannot be controlled effectively with deltamethrin and indeed, insecticide resistance to pyrethroid insecticides in field populations of *T. tabaci* was confirmed in 2006. This paper describes experiments to determine the efficacy and persistence of novel insecticide treatments and evaluate the use of entomopathogenic nematodes as part of an integrated control programme. The aim of a replicated field trial at Warwick HRI, Wellesbourne in 2005, was to compare insecticide treatments applied to leek as seed treatments or foliar sprays. There were three seed treatments and six insecticides applied as foliar sprays. The tenth treatment was the insecticide-free control. The first spray treatments were applied on 14 July and three sprays were applied subsequently. The plots were assessed regularly for thrips damage. Thrips numbers were low during July and August and only started to increase considerably in September.

Abstract: *Rhizoctonia solani* is a relatively new plant pathogen on carrot in southwestern France. This pathogen can a cause various symptoms such as: damping off of seedlings, crown rot, constricted crowns and sunken, elliptically-shaped spots. At present there are no control techniques available for growers. The aim of this study is to determine the available options – both chemical and alternative techniques – for addressing problems related to *R. solani*. Our results have confirmed that there are differences in varietal susceptibility to *R. solani*. Some varieties show less susceptibility to tap root lesion symptoms in particular. Regarding the potential of antagonist microorganisms, the agents and strains tested did not provide a significant reduction in damage under the conditions of our experimental study. Our trials highlighted the efficacy of coating seeds to protect against seedling damping off and, to a lesser extent, against the other symptoms as well. Finally, regarding the possible use of azoxystrobin, we achieved good results with respect to seedling damping off and spot symptoms.

Abstract: The paper presents the preliminary results of a study on the effect of 11 compounds found in cabbage leaves (epicuticular wax, α-amyrin, β-amyrin, lupeol, sucrose, glucose, fructose, vitamin C, palmitic acid, stearic acid, and arachidic acid) on the natural resistance of cabbage to onion thrips (*Thrips tabaci*), flea beetles (*Phyllotreta* spp.) and cabbage stink bugs (*Eurydema* spp.). Twenty cabbage genotypes were included in a field experiment and these were artificially grouped as follows: 9 early, 5 mid-early, 6 mid-late (based on the longevity of growing period), 3 red, 17 white (based on the colour), 14 hybrids and 6 non-hybrid varieties (based on their genetic origin). We showed statistically significant differences between cabbage genotypes in the feeding damage caused by all three pests, the net weight of the cabbage heads and the yield loss caused by onion thrips. Based on the results of one year's research we have shown that, for all of the groups of cabbage genotypes listed above, there was a clear negative relationship between damage by onion thrips, flea beetles and cabbage stink bugs and the epicuticular wax content. However, further work is required to establish the effect of the other compounds.

Abstract: The pea crop is especially sensitive to weed damage; so great attention should be paid to its cultivation. Effective weed control promotes continuous development and ripening of the pea crop and makes harvesting easier. We did a replicated field experiment in spring 2006, using 5 herbicides with different modes of action. We tested their effect on the growth of the vegetative parts of pea plants. Afalon Dispersion (linuron), Command 48 EC (clomazone), Pledge 50 WP (flumioxazin), Sencor 70 WG (metribuzin) were applied pre-emergence and Basagran (bentazon) post-emergence. To determine any phytotoxic effects of the herbicides, we collected samples on two different occasions and made a visual assessment. The first sample was taken at the 2-3 leaf stage, the second at flowering. Each of the samples contained 10 plants, collected at random from the plots. The length, fresh and dry weight of the shoots was determined. Afalon Dispersion (linuron) had the greatest effect on the growth of the pea plants, causing severe phytotoxic symptoms. The double doses of Pledge 50 WP and Command 48 EC also had damaging effects on the pea plants.