

Stem boring pests of winter oilseed rape

SUMMARY

- **Two ‘new’ pests of winter oilseed rape are present in Scotland**
- **Cabbage stem flea beetle and rape winter stem weevil**
- **They cause similar damage but require different approaches for their management**

Introduction

In the last few seasons, several stem-boring pests of winter oilseed rape have been seen in Scottish crops. Their perennial occurrence and increasing levels of damage will require a revision of the management of oilseed rape pests in Scotland, particularly in the autumn.

In contrast to England, Scottish winter oilseed rape crops have usually only had to worry about slugs and flea beetles (*Phyllotreta* spp) as autumn pests. However, in recent years cabbage stem flea beetle (*Psylliodes chrysocephala*), rape winter stem weevil (*Ceutorhynchus picitarsis*) and insecticide-resistant peach-potato aphids (*Myzus persicae*) have caused problems. In the 2004/2005 season in particular, rape winter stem weevil has caused significant problems in south east Scotland, with most crops having the pest present in the stems in the spring, and damage ranging from slight to severe in some crops, especially in the Tweed Valley. Damage has been seen as far north as Brechin in 2006.

Cabbage stem flea beetle

Cabbage stem flea beetle (*Psylliodes chrysocephala*) has been a pest of winter oilseed rape crops in England for many years. The beetle has been reported sporadically in Scotland in the past but an intense search for it in the mid-1990’s did not uncover a single specimen in Scotland. However, in August 2000, large numbers of the beetles were caught up in the rape harvest in Lothian and the Borders, and in subsequent seasons the adults have been found on germinating rape in the autumn, and grubs have been found in the stems of crops in the spring.

The beetle is 3-5 mm in length, and is a metallic blue-black colour (sometimes light brown), with powerful hind legs that allow them to jump (Fig. 1).



Fig. 1: Adult cabbage stem flea beetle

The adult beetles appear in June/July and feed harmlessly on leaves and pods of rape crops for a couple of weeks, before undergoing a summer period of dormancy before reappearing in mid August/early September, often being caught up in the rape harvest. The beetles won’t damage the harvested seed, but their numbers can be very high and the beetles can cover trailers, walls, machinery and seed in their thousands as they seek a way out of the store.

The beetles need to feed for 2-3 weeks before they will begin to lay eggs near germinating rape plants. They will feed on brassica weeds and also the cotyledons and young leaves of emerging winter rape, and whilst this is not the most damaging stage of the pest, the shot-holing of cotyledons and young leaves can lead to stunting of the crop, particularly in combination with slug damage (Figs. 2 & 3).



photo: R. Coutin (OPIE, France)

Fig. 2: Shot holing of cotyledons by cabbage stem flea beetle



photo: V.H. Paul (Soest, Germany)

Fig. 3: Shot holing of older leaves by cabbage stem flea beetle

The beetles will feed and lay eggs until temperatures approach 0°C, so egg laying and hatch of larvae may continue for several weeks. It is the larvae of cabbage stem flea beetles that are most cause for concern. From October onwards the newly hatched larvae will seek out young rape seedlings and chew their way into the petioles of leaves, and tunnel their way into the stem of the plant and occasionally the growing point (Fig. 4). This weakens the stems and allows water to enter their feeding tunnels which, when frosts occur, cause the leaves and stems to freeze, contributing to the winter loss of plants and foliage.



photo: R. Coutin (OPIE, France)

Fig. 4: Larva of cabbage stem flea beetle

In the spring infested plants will remain stunted and topple over if the stems are severely damaged. The larvae (up to 7 mm long by this point) exit the plants in the spring and pupate in the soil, the adults emerging from June onwards.

If, on average, the beetles are damaging 10% of the leaf area, then an insecticide treatment to prevent further damage by the beetles may be worthwhile. Make sure that cabbage stem flea beetle damage is not confused with that caused by slugs; slug damage tends to lead to larger, ragged holes of leaves and whole sections of leaf material eaten.

Plants can be checked for the presence of cabbage stem flea beetle larvae from November onwards, and if, on average, 3-5 larvae are found per plant, then an insecticide treatment may be worthwhile. Combining this treatment with the light leaf spot fungicide treatment or autumn herbicide application may be worthwhile, but the insecticide should not be used purely as an insurance treatment. As the grubs are very susceptible to insecticide prior to burrowing into the leaf, an insecticide treatment may give several weeks protection on the plant surface. Note that you may find some legless white grubs in some leaf petioles – these are leaf miner grubs and are not a problem. Beetle grubs have 3 pairs of legs, have a distinct head and are lightly spotted.

The use of an insecticide seed treatment (Chinook) on winter oilseed rape seed has probably been keeping cabbage stem flea beetle in check since its introduction in 2002, but there have been reports of inadequate control as beetle and larval damage have been seen in crops sown with Chinook treated seed.

Whilst grubs of cabbage stem flea beetle have been found in rape stems in the spring, numbers have seldom been a cause for concern, as the vast majority of grubs found have been those of the rape winter stem weevil.

Rape winter stem weevil

The rape winter stem weevil (*Ceutorhynchus picitarsis*) made its presence felt in the 2004/2005 season, where many crops in the Lothians and Borders exhibited the typical symptoms of weevil damage in the spring. This was a large increase compared to the occasional crop damaged in 2004. The Tweed Valley in particular seems to be a hotbed of rape winter stem weevils based on the reports from 2005. Reports for 2006 indicate a wider spread of the pest northwards towards Aberdeenshire.

The adult weevil is 2.4-3.7 mm in length, a metallic black colour, with reddish-brown tips to its legs (Fig. 5). The adult weevils migrate to



photo: R. Büchi (FAP, Switzerland)

Fig. 5: Adult rape winter stem weevil

oilseed rape fields in September/October after a summer period of dormancy and feed on the leaves, causing little damage. This feeding is needed for their eggs to mature, and they begin to lay eggs on leaf petioles 4 weeks after arriving on the crop. Eggs may be laid throughout the winter if the conditions remain mild. The eggs hatch during the winter and the legless larvae tunnel into the stem and down to the crown of the plant. The winter is spent feeding at the base of the stem until April/May, when the grubs leave the plants to pupate in the soil. Adult weevils appear in June but spend the summer in a period of dormancy. Because the grubs feed over the winter months, nothing becomes apparent until the spring when the crop begins to show signs of damage. Symptoms of rape winter stem weevil damage range from the production of many lateral shoots at stem extension (Fig. 6), to stunting of the plant through to complete death of the plant in severe infestations. Cutting open the stem base usually reveals the weevil grubs and the hollowed out tunnels in the stem and crown (Fig. 7).



photo: V.H. Paul (Soest, Germany)

Fig. 6: Stunting and production of lateral shoots by rape winter stem weevil larvae



photo: K. König (Munich, Germany)

Fig. 7: Larva or rape winter stem weevil and larval damage to the stem of oilseed rape

Rape winter stem weevil larvae are legless, white and 4-5 mm long, with a brown-yellow head capsule. Management of rape winter stem weevil involves targeting the adult weevils in the autumn, before the weevils have had a chance to lay

their eggs. Consequently monitoring of the appearance of the weevils in winter rape crop from September is necessary as there is a 3-4 week window of opportunity to control the adult weevils before they have begun to lay eggs on the crop. Treatment with a pyrethroid insecticide is recommended once weevils begin to appear in crops, possibly as a tank-mix with the light leaf spot fungicide treatment if the timings are appropriate. Currently available insecticide seed treatments do not appear to be effective.

Cabbage stem weevil

Cabbage stem weevils (*Ceutorhynchus quadridens*) are often confused with cabbage seed weevils (*Ceutorhynchus assimilis*), as their timing on rape crops overlap to some extent. Whilst seed weevils are a slate grey colour, cabbage stem weevils are a dull grey or rust-brown colour (Fig. 8). Cabbage stem weevil grubs were found in several crops in 2005, but at low levels (1-2 per plant) and only in a few plants.



photo: Bayerische Landesanstalt für Landwirtschaft Institut für Pflanzenschutz (Germany)

Fig. 8. Adult cabbage stem weevil

Cabbage stem weevils lay eggs in leaf petioles or directly into the stem of plants in the spring, and the grubs tunnel their way into the mid-rib of the leaf or the stem. The damage caused by cabbage stem weevil is usually insufficient to directly damage the plant; some fungal diseases such as stem canker can gain access to the stem through larval exit holes made as they leave the plant to pupate. Control of this pest is currently not worthwhile, as the levels of infestation seen are not a cause for concern.

Management of stem-boring rape pests

Vigilance is essential when it comes to the management of these pests in winter oilseed rape. Watching out for cabbage stem flea beetles on the sides of trailers and in the harvested oilseed rape grain can be an early warning that this pest is present on the farm. Sowing seed treated with Chinook (beta-cyfluthrin + imidacloprid) will control cabbage stem flea beetle to some extent, although dry conditions may reduce the efficacy of this approach. Checking the crop regularly from emergence and looking for signs of pest activity: shot-holing of leaves, beetles or weevils hiding under leaves can give valuable information and flag up the crop as potentially being at risk from these pests. SAC will be monitoring for the migration of rape winter stem weevils into crops so that an accurate spray timing can be given to growers to apply an approved pyrethroid insecticide to target the weevils before they have a chance to lay their eggs.

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