

Southern green shield bug in soybean



Legumes
Translated

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Shield bugs (species of the superfamily *Pentatomoidea*) are important insect pests in soybean production worldwide. They are also known as stink bugs because they have glands that excrete a strong odour. Two bugs have become more common in recent years in Europe: the southern green shield bug (*Nezara viridula*) and the brown marmorated shield bug (*Halyomorpha halys*). The southern green shield bug is a cosmopolitan species. It is polyphagous and damages a great number of field and vegetable crops among which soybean is a preferred crop.

Outcome

The southern green shield bug is a relatively new soybean pest in Europe. It is becoming more abundant and could become a serious pest. Monitoring should start in May or June and continue during July and August. If economic thresholds are exceeded, pesticide application may be required in order to protect soybean yield and quality.

Applicability

Theme: Crop care measures

For: All soybean growers

Where: Where soybean is planted

Timing: June – October

Equipment: Spraying if needed

Follow-up: Monitoring of fields

Impact: Yield

Biology

Adults of the southern green shield bug are 12 to 15 mm long and 7 to 8 mm wide. The body resembles a shield. There are three distinct white dots and two smaller ones and all of them are in line on the scutellum. This species can be easily confused with the green shield bug, *Palomena prasina*, which is also green. The green shield bug does not have white dots on the scutellum, and the larvae (nymphs) are not as colourful as the immature stages of *Nezara viridula*.



Green shield bug – two adults. Photograph: IFVCNS





Different stages of the southern green shield bug. Photograph: IFVCNS

There are up to five generations per year. Adults shelter overwinter in houses and barns and other structures. This is a Mediterranean species which has expanded its habitat because of the recent mild winters. An average January temperature higher than 5°C is a strong factor in the spread of this insect. It has therefore increased significantly in regions where this threshold is exceeded. The timing of adult emergence and induction of diapause, size and fitness of adults and temperature, among other factors, are of greatest importance for successful overwintering. The southern green shield bug responds strongly to climate change by shifting its distribution to the north. After overwintering, adults mate and the females lay up to 300 eggs in groups of 30 to 130 on the back of leaves. After hatching, the nymphs remain in the group until second instar.

The southern green shield bug feeds by piercing plant tissue with needle-like stylets. The feeding punctures are not immediately visible. Adults and nearly all nymphal stages (2nd to 5th nymphal stage) feed on plant tissues. Soft parts of the plant and the developing flowers or fruits are preferred. Yellow or dark spots and even necrosis follow as a result of feeding. Feeding on flower buds can result in loss of the flower. The largest threat to the seeds

is damage in the early stages of formation. Feeding injuries on pods result in seed damage and distorted pods. Experience shows that the bugs invade soybean crops in larger numbers in central Europe only when pods are ripening. Therefore, damage is limited so far. In south-eastern Europe, the bugs appear earlier, at the end of flowering period. The timing of invasion will probably change as the pest becomes more abundant, which is one of the reasons why this species can be expected to become a more serious problem in soybean production in the coming years.

Control

Bio-control of the southern green shield bug is a challenge since antagonist species have not yet sufficiently established themselves in response to the spread. Treatment with insecticide has so far been only rarely justified. There are no insecticides approved for this potential pest in most European countries. Spraying may be needed to protect yield if shield bug populations are high (the threshold is 8 to 10 specimens collected in 10 sweeps with a sweep net at the beginning of flowering). This pest can be chemically controlled using organophosphate or pyrethroid compounds depending on the registration in every country. The use of trap



Southern green shield bug (nymphal stage) in group damaging soybean pods. Photograph: IFVCNS



Nezara viridula - Different Growth Stages
Photograph: IFVCNS

crops (forage pea, bean, brassicaceous crops) should be considered. The purpose of trap crops is to attract shield bugs to lay eggs on them. These are subsequently chemically treated before the bugs spread to adjacent soybean plants.

Key practice points

- Fields should be scouted regularly and systematically for the presence of pests. The green shield bug is easily observed.
- Control measures should only be taken where a pest population approaches a profit-threatening "economic" threshold. The costs of applying a pesticide to a field with low yield potential may not be justified.
- When chemical control is needed, apply the lowest effective amount of the respective pesticide using equipment that is properly calibrated.

Further information

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Information shared in this practice note results from the trials and studies carried out by the Institute of Field and Vegetable Crops Novi Sad, Serbia.

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