Critical phases in rapeseed: Effective protection against pollen beetle with minimized risk

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Date 15.04.2026 | **Issue** 4/2026 | **ISSN** 2815-522X | **Language** EN
www.plant-protection.com/article/2398?lang=en



The cultivation of winter oilseed rape is associated with overcoming a number of agronomic challenges. Its long vegetative period exposes it to attacks by various pests, but among the most dangerous enemies before flowering, the rape pollen beetle Brassicogethes aeneus(Meligethes aeneus) is categorically ranked. Managing it requires agricultural producers to have perfect knowledge of its biology, constant field monitoring, and precise balancing between protecting the yield and safeguarding bees.

According to data from the regional "Agriculture" services in April, the onset of adult insect appearance was recorded.The recorded attack level is below the ETL in the regions of: Vidin, Kyustendil, Pleven and Plovdiv. In the Burgas region, an attack was recorded around and slightly above the ETL (3-5 adults/m2)

Activation and Damage Mechanism

The rape pollen beetle is directly dependent on temperatures. The adult beetles become active with the first spring warming, and when temperatures reach around 15°C, they massively enter the rape crops and begin feeding on the flower buds.

The most serious and irreversible damage is inflicted during the bud formation phase. To reach the pollen, the beetles literally gnaw through the closed buds from the outside in. Damaged buds do not open – they dry up, turn yellow, and fall off, leaving bare flower stalks. This directly reduces the number of pods and collapses the yield potential of the crop.

Although the larvae also feed on the flower parts of open flowers, the economically most important moment for control is before mass flowering, while the buds are still closed and vulnerable.

Weeds: The Early Incubator for the Pest

Before the rape forms buds, the beetles need food. Here, weed vegetation plays a key role. Cruciferous weeds such as wild mustard (Sinapis arvensis L.) and wild radish (Raphanus raphanistrum L.) in and around the block serve as an initial host base. Therefore, effective weed control is a fundamental preventive method that limits the initial pest population.

Economic Threshold Levels (ETL): When to Spray?

The decision to treat should be based on an actual survey of the block, not on isolated observations. Preventive spraying without a reached threshold is a bad practice that leads to unnecessary costs and creates resistance.

The economic threshold level is not a constant – it is determined by the development stage, density, and overall potential of the crop. According to official data from the Plant Protection Service and practical bulletins, the benchmarks are as follows:

"Green to yellow bud" stage: 2 beetles/plant in weaker crops and 4 beetles/plant in well-developed crops with high potential.

"Bud formation – first yellow buds" stage: 4–6 beetles/plant.

Beginning of flowering: over 8 beetles/plant.

In practice, lower thresholds are also encountered – 1 adult/plant in phase D and 2–3 adults/plant in phase E.

The stage and condition of the crop are decisive in the assessment for intervention.

Product Choice and Combating Resistance

When intervention is proven necessary, work only with insecticides that are currently registered in Bulgaria for rape, and follow the labels without any deviations. In practice, contact and/or systemic insecticide solutions are used. Among the publicly known technological examples of active substances are: lambda-cyhalothrin and tau-fluvalinate.

To avoid the development of resistance (which is a serious problem with the pollen beetle), it is critically important not to delay the application and to rotate products with different modes of action.

Protecting Bees

The bud formation and flowering period in rape coincides with intensive foraging by honey bees. This is where the farmer's greatest responsibility lies:

Mandatory Notification (EPORT): According to Ordinance No. 13 of 26.08.2016, farmers are obliged to notify beekeepers of an upcoming treatment. This must happen no less than 3 days and no more than 15 days before the spraying date. Notification is made via SMS and/or e-mail to the owners of apiaries in the respective and neighboring land areas through the EPORT system.

Time Window for Spraying: For ground application of insecticides, treatment must be carried out strictly within the window from sunset to 10:00 AM the next day, when bees are not flying en masse.

Agrometeorological Conditions: Take into account wind speed, temperatures, and observe the required buffer distances to apiaries.

Special Attention to Labels: Strictly monitor for products designated in the BAPBG registers with the standard phrase "SPe8 Dangerous to bees", and apply maximum safety measures when working with them.

Good plant protection in rape is that which preserves the yield without destroying the fragile balance of the ecosystem and without threatening the livelihood of beekeepers.

More on the topic:

Pests on Rape

Weeds as Hosts for Diseases and Pests on Cultivated Plants