

PROBLEMS WITH CEUTORRHYNCHUS QUADRIDENS PANZ. (COL.: CURCULIONIDAE) IN HUNGARY

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In Hungary winter rape (Brassica napus L. f. biennis Thel.) is at present grown on an area of 50,000 ha. Summer rape (B. napus L. f. annua Thel.) growing is only carried on under experimental conditions.

Winter rape has in spring the following major pests: Meligethes aeneus Fabr., Ceutorrhynchus quadridens Panz., C. assimilis Payk. and Dasyneura brassicae Winn.

Damage done to rape by C. quadridens Panz. was first observed in 1952 (Sáringer, 1962 a). It had until then been known only as a pest of cabbage (Brassica oleracea L.). In the course of detailed investigations carried on for more than 15 years the following plants have proved to be feed to C. quadridens Panz. in Hungary: Brassica oleracea L., B. napus L. f. biennis Thel. et annua Thel., Brassica rapa L., Sinapis alba L., Raphanus raphanistrum L., R. sativus L., Brassica oleracea L. var. gongloides L., B. oleracea L. var. botrytis L., Nasturtium officinalis R. Br., Camelina sativa L. and Lepidium draba L.

The ontogeny of C. quadridens Panz. in Hungary is, in short, the following. It has one generation a year. The imagines overwinter in an obligatory diapause in the leaf litter at the skirts of forests, under the bark of trees, in thatched roofs and hot-bed soils. Early in March, sometimes even at the end of February, they leave the hibernacula and appear in the rape. The swarming of the imagos can be followed by means of Moericke's yellow dished. Swarming lasts for 30 - 50 days, and can be illustrated by a two-peak curve. The first peak is at the end of March - beginning of April, the second in the middle of April. The first peak of swarming is much more expressed than the second one.

The larvae spend the larger part of their lives in the stem of the plant where they feed on the pith. They move downward, from the upper part of the plant towards the root-neck.

The imagines peel first the leaves, then the stem, and finally the ripening pods in larger or smaller patches of irregular shape.

On the basis of national surveys in cabbage it can be said to be of at least the same economic importance as Phorbia brassicae Bché. is.

The question of how the larvae feeding in the rape stalk influence the seed production was decided in the following way. The seed yield of 150 rape plants with more than 30 larvae living in the stalk of each and that of another 150 plants with no larvae living in the stalks were weighed separately. According to the weighing results seed production was 14,3 g/plant in the larvae infested lot, and 14,4 g/plant in that free of larvae. The thousand-seed-weight was 4,0 g in the case of infested plants and 4,2 g for those free of infestation. The differences are not significant. Thus, according to the results of larvae of C. quadridens Panz. do not cause seed losses in winter rape. The imagines, on the other hand, do considerable damage by peeling the ripening pods, as a consequence of

which the pods dehisce 7 - 10 days earlier, before biological maturity, and shed the seeds. According to our data seed losses thus caused may be as much as 5 per cent in some years.

C. quadridens Panz. has - as mentioned above - an obligatory diapause which cannot be broken either by a temperature optimum for its development or by supplying favourable feed even after four and a half to five months of rest. The process of reactivation starts only in imagos kept at temperatures between 0° and -5°C for a longer period (30 - 35 days) (Sáring, 1976). Similar conclusion was arrived at by Kazda (1958) and Ankersmit (1964).

In order to establish the order of preference for the feed plants of C. quadridens Panz. olfactometer examinations were carried out with imagos starved for 24 hours. According to the results the odour of the leaves of winter rape has an attractive effect compared with the odour of Lepidium draba leaves.

The fecundity of C. quadridens Panz. was studied at temperatures of 22-24°C, under short-day (13/11 LD) and long-day (17/7 LD) conditions, and without illumination. No significant difference between the effects of long- and short photoperiods on the fecundity of the imagos was found, while imagos kept in complete darkness laid significantly fewer eggs than those raised either with long- or with short photoperiods.

From the point of view of population dynamics it is remarkable that the C. quadridens Panz. lays eggs first of all on the most developed rape plants. According to another observation of mine the number of egg piles is always larger in dry, warm springs than in cool, rainy ones.

In Hungary cabbages are sometimes infested by C. quadridens Panz. already in the hot-bed. In this case seedlings carrying the eggs are planted out. The larvae feeding in the petioles usually destroy the seedlings soon after transplantation.

Protection against C. quadridens Panz. is provided in Hungary on the basis of studies of the swarming habits of imagos. The swarming of imagines can be followed with Moericke's yellow dishes in warm springs, and by means of nets in cool weather. In winter rape the optimum time of control is the end of March, at the first peak of swarming. From the beginning of flowering chemicals not damaging the bees are only permitted for use in the control operations (Sáring, 1962 a, b; Sáring and Kacsó, 1963). Protection for cabbages must start already in the hot-bed, then continue in the field (by dusting or spraying with insecticides containing phosphoric acid ester as active agent).

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