

FACTSHEET

Potato

THE EUROPEAN CORN BORER ON POTATO

HISTORY

The European corn borer *Ostrinia nubilalis* (Hübner) is an introduced pest. It was introduced from Europe in the early 1900s and was first reported near Boston in 1917. It gradually spread from there to other parts of the United States and to Canada.

LIFE CYCLE

The European corn borer feeds on over 200 species of plants including the potato. It has a four-stage life cycle: adult, egg, larva, and pupa. The adult is a moth, which is active at night and hides during the day. European corn borer moths are 1.5 to 2 cm long and are about 1 cm wide when wings are folded at rest. The female moth is pale yellowish brown with dark wavy lines running across the wings. The male has darker fore wings and is slightly smaller than the female.



moths



egg mass



larva

The European corn borer breeds in weedy or grassy areas adjacent to potato fields and lays its eggs on the underside of potato leaves and on potato stems. It prefers to lay eggs on the bottom 2/3 of the plant. The eggs are laid in small masses. They hatch in about 4-9 days. The larvae feed on the surface of the plant for 2-3 days and then enter into the stem, where they feed and grow to maturity. Full-grown larvae usually spend the winter in the stem. They then spin a cocoon, pupate and emerge as new adults.

DAMAGE

The first sign of infestation is usually wilting of the stem on hot humid days. An entry hole is usually easy to find on the stem as it is surrounded by frass, the excrements that the larvae expel while feeding inside the stem. The larvae can be found by cutting the stems open. Full-grown larvae are 2.5 cm long. The head is black and faint lines and rows of brown dots can be seen along the body. They are very active when disturbed. There can be more than one larva per stem and more than one hole per stem. A single borer can also attack more than one stem. The borers have many enemies; they are attacked by other insects, such as parasitic wasps, and suffer from disease. The larvae are also cannibalistic and if a large borer encounters a smaller one, it will often eat it.



damage

Potato plants seem to have a high tolerance for this insect; as fairly high levels of infestation often do not seem to materially affect yields. Varieties with weak stems are more likely to suffer reduced yields, as affected stems will break more easily during heavy windstorms or rainstorms. Early infestations can also be more damaging than later ones. It is prudent to be vigilant and to monitor populations in areas where this insect has been known to cause damage.

MONITORING

Monitoring of moth flights is suggested to determine if a field is at risk. Sticky traps baited with strain-specific pheromones can be used for this purpose. The Iowa strain is believed to be the predominant strain in this area. Sticky traps are placed in grassy areas or in hedgerows close to potato fields and attract male moths in search of females. Catches of males are an indication that females are present, ready to mate and about to lay eggs.



sticky trap

Several models, based on degree-day accumulations, have also been used to predict flight occurrence. In a 3-year study on PEI, first moth flights occurred between 200-320 Degree-Days (DD)(base of 10°C), while peak moth flights occurred between 300-440 DD. First egg masses were found between 290-340 DD, peak egg masses from 390-415 DD and first larvae from 450-500 DD. Although predictive models are useful, they do not necessarily indicate the presence of moths in an area. The only way to gauge infestation levels in a potato field is to evaluate the density of egg masses on potato plants in the field shortly after moths have been caught in the area.

CONTROL

The white egg masses, which resemble fish scales, are small and well hidden in the potato canopy. They can be found on the stem or on the underside of potato leaves, usually next to a leaf vein. They can easily be confused with spray residue. Once egg masses have been found, the plants can be flagged and should be checked every day. The appearance of black head capsules through the eggs is an indication that the hatch is imminent and that a spray application will soon be required.



hatch

European corn borer larvae are not particularly difficult to kill, but pesticide applications, to be effective, must be made before the larvae enter the stem; once in the stem they are impossible to kill. As egg masses hatch over a period of time, it is necessary to repeat applications at 4-5 day intervals for as long as significant numbers of egg masses can be found. Fortunately, the egg laying period is generally quite concentrated with this species. A pesticide application is necessary if there is more than one egg mass per 6 plants on average. Spray must be applied very carefully to obtain thorough coverage as the bottom of the canopy and the underside of leaves are the target areas and are very difficult to reach. Consult your chemical dealer for advice on which pesticide to use.