SASKATCHEWAN ALFALFA SEED PRODUCERS ASSOCIATION

STORED PRODUCT PESTS IN SASKATCHEWAN ALFALFA LEAFCUTTING BEE POPULATIONS

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Stored product pest insect specimens were collected during the 1997 - 2000 field seasons from leafcutting bee trapnests, leafcutting bee incubators and leafcutting bee cell samples submitted by producers. Where necessary, insect larvae were reared to the adult stage in the laboratory. All specimens collected have been identified to genus and species level. A list of the stored product pest insect species found in association with alfalfa leafcutting bee populations is given in the table below.

While the two most common stored product pest insect species collected from alfalfa leafcutting bee populations during the 1997 field season were the dried-fruit moth and the black carpet beetle, the confused flour beetle and the black carpet beetle were most commonly observed during the 1998 field season. In the 1999 and 2000 field seasons, the dried-fruit moth and the black carpet beetle were once again the two most common stored product pest insect species observed.

The dried-fruit moth is most commonly seen in its larval form, when cells are removed from nest material. The larvae are able to chew through polystyrene nest material and destroy bee cells in their search for pollen and nectar prior to overwintering and emergence in spring as adult moths. Larvae of the black carpet beetle, the confused flour beetle, and the white-marked spider beetle also damage nest material and bee cells, killing bee larvae as they search for pollen and nectar.

Stored product pests are capable of feeding at low temperatures and producing more than one generation per year. As the insects tunnel in nest material, they not only cause extensive damage to bee cells but also provide tunnels in the nest material which may serve as entry points allowing chalcid parasites to parasitize leafcutting bee cells.

Control of stored product pest insects involves adequate breaking and tumbling of bee cells, and utilization of proper bee cell storage techniques, especially during winter storage. Since many stored product pest insect species are active at relatively low temperatures, it is recommended that alfalfa leafcutting bee cells be held in the 5-8°C range during the period between bee cell harvest in the fall and bee cell incubation in the spring. Recent research has indicated that treatment of bee cells with pyrethrin aerosols for chalcid parasite control in the incubator will also control stored product pest insect species present in the incubator during the earliest part of the incubation period, when stored product pests are often active in the incubator.

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Stored product pest insects found in Saskatchewan alfalfa leafcutting bee populations

Black carpet beetle	*Attagenus unicolor* (Brahm)
Confused flour beetle	*Tribolium confusum* du Val
Dried-fruit moth	*Vitula edmandsae serratilineella* Ragonot
Larder beetle	*Dermestes lardarius* Linnaeus
Rusty grain beetle	*Cryptolestes ferrugineus* (Stephens)
White-marked spider beetle	*Ptinus fur* Linné
Yellow mealworm	*Tenebrio molitor* Linnaeus

Figure 1

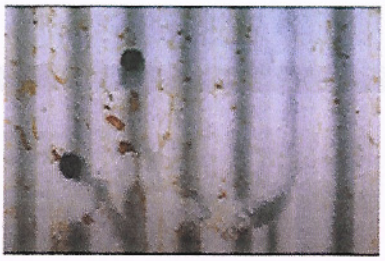

Figure 2

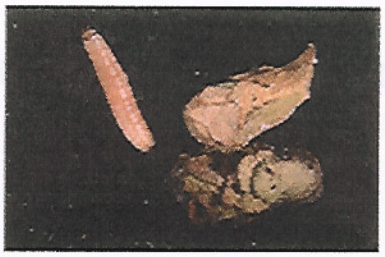

Figure 3

Figure 4

Figure 5

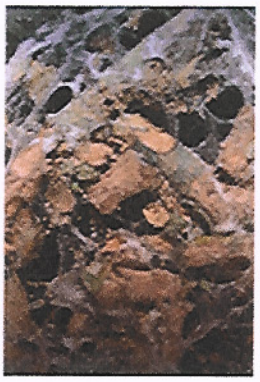

Figure 6

Figure 7

Figure 8

Figure 9

Figure 1. Black carpet beetle larva and associated leafcutting bee cell damage.
Figure 2. Polystyrene nest material damaged by black carpet beetle larvae.
Figure 3. Dried-fruit moth larva.
Figure 4. Dried-fruit moth larva and associated leafcutting bee cell damage.
Figure 5. Polystyrene nest material damaged by dried-fruit moth larvae.
Figure 6. Dried-fruit moth larval webbing after fall cocoon spinning period.
Figure 7. Adult dried-fruit moth.
Figure 8. Adult white-marked spider beetle.
Figure 9. Leafcutting bee cells damaged by white-marked spider beetle.

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