ORGANIC FARMING RESEARCH FOUNDATION

PEST PROFILE

BRASSICA LOVING FLEA BEETLES

Know your Pest	**Striped Flea Beetle** *Phyllotreta striolata*	**Crucifer Flea Beetle** *Phyllotreta cruciferae*
Flea beetles are highly mobile and may fly long distances in search of suitable plants.		
	Prefers Potato, especially potato tubers, but will also feed on tomatoes and other plants in the nightshade family.	Prefers Napa cabbages, and brassicas with glossy leaves and spicy aroma. Will also feed on horseradish.
	**What do the eggs look like? Where do they lay them?** Elliptical in shape. White to yellowish gray. They are laid at the base of host plants, or in soil round the base of the plant. Eggs hatch in 11-13 days (at 77°F). Adults mate and lay eggs singly or in groups of 3-4 in soil at the base of host plants.	
	**What do the larvae look like?** Larvae feed on the root hairs and taproots of seedlings. Damage is usually minimal at this phase except in the case of the Tuber Flea Beetle which feeds on potato tubers and the roots of potatoes. When larval development is complete, larvae pupate in small earthen cells for 9-13 days before emerging as adults.	

KEY STRATEGIES FOR ECOLOGICAL PEST MANAGEMENT

<table>
<tr><td rowspan="2">Stress the Pests</td><td colspan="2">• Plant a trap crop to attract pests away.
Pac Choi and Pacific Gold Mustards are especially effective.</td><td>• Remove alternative food sources.
• Interrupt life cycles.
• Create a barrier with floating row cover.</td></tr>
<tr><td>What are its food habits?
What parts of the crop does it like to eat?

Adults feed on both upper and lower leaf surfaces, but most often on the underside of leaves where they chew small, circular holes through to the upper cuticle. Crops with more waxy leaves (Brassica Oleraceae - such as broccoli, kale) are less attractive and feeding is restricted to leaf margins, especially as the plants mature and the waxy coating thickens. Crops with glossy leaves and spicy aromas (B. napa and B. juncea such as bok choy, Napa cabbage, mustard) are highly attractive. These crops are susceptible from planting until harvest.</td><td>What factors influence its abundance?

In early fall, adult beetles leave fields to overwinter in areas with leaf litter or crop residues. To help reduce their abundance, manage weeds, remove crop residues, and make sure to rotate crops so that susceptible crops are not in the same area year after year.</td><td>What is its life cycle?
When does it emerge?

Adults overwinter outside the field in hedgerows, grassy and woody field borders, and in ditch banks. They move into the field in spring. Larvae emerge and feed on root hairs for 25-30 days, then pupate for 10-15 days before adult beetles re-emerge at the start of summer. There are 2+ generations per year, with overlap in generations such that crops are almost always at risk.</td></tr>
<tr><td>Enhance the Populations of Beneficial Insects</td><td colspan="2">Attract beneficials by providing food or shelter.</td><td>Don’t forget the edges! Plant in your borders to increase the population of natural enemies.</td></tr>
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KEY STRATEGIES FOR ECOLOGICAL PEST MANAGEMENT

Know your Allies	**What are beneficial insects that can keep the populations down?** The following insects will feed on adult stages of flea beetles: • Braconid wasp (Microctonus vittatae) • Lacewing larvae (Chrysoperla spp.) • Big eyed bugs (Geocoris spp.) • Damsel bugs (Nabis spp.)	**What kinds of plants will help entice beneficials?** The following can enhance floral resources and encourage predatory insects: • Anise • Dill • Chamomile • Marigold • Clover	**Time your planting to give your crop the upper hand on emerging insects.** Planting later than the "normal window" may help plants avoid the first generation of overwintering flea beetles.
Healthy Crop Diversity	Grow a variety of crops with natural defenses against pests or are unattractive to the pests on your farm.	Build your soil - healthy crops can better withstand pest pressure.	Use crop rotation and avoid large areas of monoculture.

Sources

eOrganic - Managing Cruciferous and Solanaceous Flea Beetles in Organic Farming Systems - https://eorganic.org/node/12461

Cornell University - Flea Beetle Pests of Vegetables - https://ecommons.cornell.edu/bitstream/handle/1813/43272/flea-beetles-veg-FS-NYSIPM.pdf?sequence=1

University of Minnesota Extension - Flea Beetles - https://extension.umn.edu/yard-and-garden-insects/flea-beetles#cultural-controls-3089561

Colorado State University Extension - Flea Beetle Fact Sheet - https://extension.colostate.edu/docs/pubs/insect/05592.pdf

SARE Handbook - Manage Insects on Your Farm - https://www.sare.org/resources/manage-insects-on-your-farm/

Washington State University Whatcom - Potato Flea Beetles: Biology & Control - http://whatcom.wsu.edu/ag/documents/seedpotatoes/eb1198e.pdf/

Utah State University Extension - Flea Beetles on Vegetables - https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=1902&context=extension_curall

Canola Council - Flea Beetles - https://www.canolacouncil.org/canola-encyclopedia/insects/flea-beetles/

Check Out the OFRF National Organic Research Agenda (NORA)
http://www.ofrf.org/research/nora