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BANKER PLANTS

A Holistic Approach to Pest Control with Biological Control Agents

What is a banker plant?

A banker plant is a host plant for a Biological Control Agent (BCA), such as a parasitic wasp or predatory bug. Some banker plants support an alternative insect species which the BCA feeds on, but does not pose a threat to the crops being produced. Banker plants are started and inoculated in greenhouse settings during late winter or early spring. Before setting up your system, check with State regulations on use of banker plants.

Banker plants can be utilized effectively in both indoor and outdoor production. Apply banker plant systems with ornamentals, vegetables, or specialty crops, wherever a valuable crop requires protection.

Why use banker plants?

Successful use of BCAs to control plant pests requires a holistic approach. Prevention is key! Establish banker plants and BCA populations before the expected time when pests typically become a problem in the crop. It is often very costly and too slow to manage an out of hand pest population after the fact with BCA's alone, especially in ornamental production and other high value crops.

Banker plants are an economical way to improve the efficacy of BCAs. They are not a stand-alone solution, but increase the success rate of a system incorporating BCAs for pest control. Banker plants support your investment in BCAs, help provide a constant supply of beneficials, and make the most of BCA introductions.

BCAs and banker plants in an Integrated Pest Management program can help reduce pesticide inputs, and manage or overcome issues with pesticide resistance. There is no REI (Restricted Entry Interval) for BCAs or banker plants!

Field perennial production with Alyssum banker plants; Greenhouse production banker plants in hanging baskets

APHID BANKER PLANT SYSTEMS

Aphid banker plant systems are among the most common, utilizing grasses such as barley, oats, wheat or rye. The grass plants are populated with *Rhopalosiphum padi* aphids, which only survive on monocots (grasses). Together they are excellent hosts to support populations of the parasitic wasp *Aphidius colemani*, an aphid parasite. In this system, *R. padi* aphids thrive on the grass plants, *A. colemani* wasps lay their eggs in the aphids, and the new wasps emerge to spread out in the crop seeking other aphids to parasitize. Hence, they control the pest aphids in the crop. If they deplete the supply of pest aphids, they can go back to the banker plants to continue their life cycle.

Barley, oats, wheat or rye banker plants may also attract and support other naturally occurring BCAs such as Syrphid flies and Lady bugs.

- Start with a minimum of 2 banker plants per acre and maintain by adding a minimum of 1 per acre bi-weekly. More is better.
- Many growers use a combination of purchased banker plants and their own production. When producing the banker plants, they must have protection (such as the hair nets shown) NOT to keep the *Rhopalosiphum padi* aphids in, BUT to keep *Aphidius* and other BCAs out!
- Produce enough banker plants to be ready as new greenhouses are opened. Place them in the greenhouse before filling it with plants.
- It is a system that needs continuity - maintain plants properly. Put banker plants on their own irrigation line to provide appropriate watering.
- NOTE that *Aphidius colemani* is only effective against green peach and black melon aphid.
- Release *Aphidius colemani* weekly for 4 to 5 weeks until the *Aphidius* population is established.
- To verify establishment - look for exit holes of *Aphidius* on parasitized aphids.
- Monitor the system: watch for other BCAs showing up (usually in springtime) and hyper parasites (late summer). Watch for aphid species showing up in the greenhouse.

Implementing an aphid banker plant system is equivalent to adding 1 BCA/sq.ft/week.

Other banker plant systems include:
Pepper 'Purple Flash, Alyssum (Lobularia), Portulaca, and/or Lantana to support *Orius insidiosus.*
Mullein plants – *Verbascum Thapsus, Verbascum densiflorum* – to support *Dicyphus hesperus.*

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