


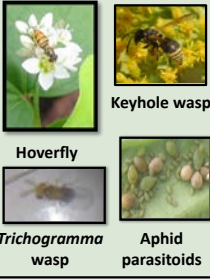




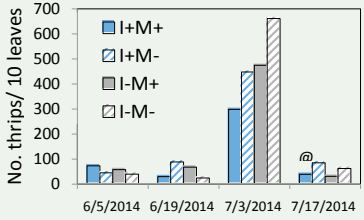


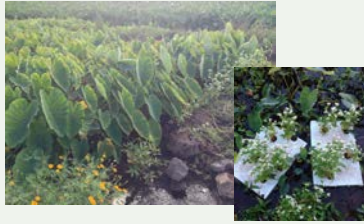

# Insectary Plants for Organic IPM

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## Introduction

Insectary plants are plants that attract beneficial insects. Most insectary plants (e.g. buckwheat, cilantro) produce great abundance of nectar and pollen which are critical for the survival, development and reproduction of many natural enemies of agricultural pests such as hoverflies and parasitoids. Some insectary plants provide ground cover (white clover, buckwheat) which create habitats for ground arthropods, thus supply food for spiders. Another type of insectary plants attract certain arthropods that are not agricultural pests but indirectly attract natural enemies of common agricultural pests (e.g. sunn hemp, macaranga). Other insectary plants (e.g. sweet potato, cowpea, lablab) produce extra-floral nectaries (nectar glands not associated with flowers). Parasitic and predatory insects use extrafloral nectaries as food sources and mating sites during periods when few plants are in bloom (drought or early spring). This poster summarizes how to integrate different insectary plants into different agroecosystems that are compatible with organic farming practices.

Crop/Target pests	Predators wanted	Insectary settings	Organic IPM strategies
<p><b>Brassica crops</b></p>  <p>Diamond backmoth Imported cabbage worm Imported cabbage webworm aphids</p>	 <p>Keyhole wasp Hoverfly Trichogramma wasp Aphid parasitoids</p>		<ul style="list-style-type: none"> <li>Sunn hemp planted as border row attracts <i>Trichogramma</i> wasps that can parasitize lepidopteran eggs.</li> <li>Buckwheat insectary plants provide pollen and nectar for hoverflies and parasitoids that are natural enemies of aphids.</li> <li>Wasp nesting blocks attract keyhole wasps that can feed on caterpillars.</li> </ul>
<p><b>Eggplant</b></p>  <p>Thrips, mites Minute pirate bug (MPB) Spider</p>	 <p>A flower pot filled with hydroponic solution supported by a PVC pipe. MPB is always associated with macaranga</p>	 <p>Insectary plant Macaranga male flowers</p>  <p>No. thrips/10 leaves</p> <p>6/5/2014 6/19/2014 7/3/2014 7/17/2014</p>	<ul style="list-style-type: none"> <li>An established eggplant field heavily infested with thrips are too late to install insectary plants.</li> <li>Marigold plants were introduced into the eggplant field using flower pots filled with hydroponic solution supported by a PVC pipe.</li> <li>Marigold flowers can lure away thrips and are attractive to minute pirate bugs (MPB).</li> <li>Introducing male flowers of macaranga (always associated with MPB) on eggplant foliage serves as a way to introduce this predator.</li> <li>One month after introduction of MPB, M+ had lower thrips count than M- regardless of I +/- treatments (Fig. 1).</li> </ul>
<b>Introducing insectary plants into other cropping systems</b>			
<p>Sunn hemp as living mulch interplanted between zucchini rows to reduce silverleaf whitefly damage.</p> 	<p>Using native Hawaiian plant, Uhaloa (<i>Walteria indica</i>) as field border can attract pollinators and other predatory wasps.</p> 	<p>Marigold/buckwheat planted along the borders of or on floating rafts in taro loi to mitigate mite damage.</p> 	<p>Cowpea borders in a green onion no-till system is effective in reducing thrips damage.</p> 

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