

Cover Crop (340) Appendix VII Cover Crops that Balance Pest Problems of Farms in the Southeast

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Many crops can be managed as cover crops, but only a few have been studied specifically for their pest-related benefits on cash crops and field environments.

Learn all you can about the impacts of a cover crop species to help you manage it in your situation. Here are several widely used cover crops described by their effects **under conservation tillage** in relation to insects, diseases, nematodes and weeds.

- **Cereal Rye** (*Secale cereale*)—This winter annual grain is perhaps the most versatile cover crop used in the continental United States. Properly managed under conservation tillage, rye has the ability to reduce soil-borne diseases, nematodes and weeds. Rye is a non-host plant for root-knot nematodes and soil-borne diseases. It produces significant biomass that smothers weeds when it is left on the surface and also controls weeds allelopathically through natural weed-suppressing compounds.

As it grows, rye provides habitat, but not food, for beneficial insects. Thus, only a small number of beneficial insects are found on rye.

Fall-planted rye works well in reducing soil-borne diseases, root-knot nematodes and broadleaf weeds in all cash crops that follow,

including cotton, soybean and most vegetables. Rye will not control weedy grasses. Because it can increase numbers of cut worms and wire worms in no-till planting conditions, rye is not the most suitable cover where those worms are a problem ahead of grass crops like corn, sweet corn, sorghum or pearl millet.

- **Wheat** (*Triticum aestivum*)—A winter annual grain, wheat is widely adapted and works much like rye in controlling diseases, nematodes and broadleaf weeds. Wheat is not as effective as rye in controlling weeds because it produces less biomass and has less allelopathic effect.

- **Crimson Clover** (*Trifolium incarnatum*)—Used as a self-reseeding winter annual legume throughout the Southeast, fall-planted crimson clover supports and increases soil-borne diseases, such as the pythium-rhizoctonia complex, and root-knot nematodes. It suppresses weeds effectively by forming a thick mulch. Crimson clover supports high densities of beneficial insects by providing food and habitat. Because some cultivars produce “hard seed” that resists immediate germination, crimson clover can be managed in late spring so that it reseeds in late summer and fall.

• **Cahaba White Vetch** (*Vicia sativa* X *V. cordata*)—This cool-season annual legume is a hybrid vetch that increases soilborne diseases yet suppresses root-knot nematodes. It supports beneficial insects, yet attracts very high numbers of the tarnished plant bug, a serious pest.

• **Buckwheat** (*Fagopyrum esculentum*)—A summer annual non-legume, buckwheat is very effective in suppressing weeds when planted thickly. It also supports high densities of beneficial insects. It is suitable for sequential planting around non-crop areas to provide food and habitat for beneficial insects. It is very attractive to honeybees.

A well-planned crop rotation maximizes benefits and compensates for the risks of cover crops and cash crops. Planting rye in a no-till

system substantially reduces root-knot nematodes, soil-borne diseases and broadleaf weeds. By using clovers and vetches in your fields and adding beneficial habitat in non-cultivated areas, you can increase populations of beneficial insects that help to keep insects pests under control. Mixed plantings of small grains and legumes combine benefits of both while reducing their shortcomings.

As pesticides of all types (fungicides, herbicides, nematicides and insecticides) are reduced, the field environment becomes increasingly resilient in keeping pest outbreaks in check. Plantings to further increase beneficial habitat in non-cultivated areas can help maintain pollinating insects and pest predators, but should be monitored to avoid build-ups of potential pests. Researchers are only beginning to understand how to manage these “insectary plantings.”

Editor’s Note: Each cover crop listed here, except for cahaba vetch, is included in the charts (p. 62 and following) and is fully described in its respective section. Check the *Table of Contents* (p. 4) for location.

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Phatak, S.C. and J.C. Juan Carlos Diaz-Perez. Managing pests with cover crops. In Clark, Andy, ed.. 2007. Managing cover crops profitably, 3rd edition. SARE/CREES/USDA. Pg. 30-31.