

## GETTING THE BENEFITS FROM COVER CROPS WITHOUT THE RISKS

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Cover crops can be used to serve many management goals on vegetable farms. Part of a successful cover-crop strategy is avoiding some of the problems that can be anticipated.

Recent work in my lab has addressed the problem of crop inhibition following a cover crop. There are two situations where we have consistently measured inhibition of the following crop by an unacceptable 15 to 40%. One is when an overwintering grain crop is allowed to get too old. The other is when a vine crop follows a spring mustard cover crop.

### Spring management of small-grain cover crops:

The bottom line: Kill small grains early, when they are only about six inches tall. If mixed with a legume, you can delay a little more.

It is common practice to let rye and other small grains get to the boot stage before they are killed. The expectation has been that a couple of weeks for decomposition will eliminate allelopathy, nitrogen tie-up, and rough trash. Our results show that to be an incorrect expectation.

We raised rye, triticale and wheat over winter and killed them at the boot stage. After incorporation and a rest, we sowed beans, sweet corn and cucumbers, and transplanted tomatoes, peppers and cabbage. All of the crops were inhibited to an unacceptably large extent.

We proved that this inhibition is *not* allelopathy, so methods to reduce allelopathy will not help. The inhibition occurred even when ample nitrogen was applied to overcome nitrogen tie-up. Research elsewhere has shown that the maximum benefit for nitrogen recovery comes when the small grain is just beginning to grow in the spring. Furthermore, killing it at that time gives the highest field corn yields.

### Vine crops after crucifer cover crops:

The bottom line: Don't plant a vine crop in fields that had a live crucifer cover crop in the spring.

Crucifer cover crops are good for suppressing soilborne diseases, and have proven valuable preceding beans, onions and celery. It can be tempting to use them to reduce disease in vine crops as well.

We planted both yellow and brown mustard as early as possible in the spring, incorporated at flowering, then sowed pickling cucumbers and Jack O'Lantern pumpkins. Over 4 years, we consistently had large reductions in stand and growth. Researchers in Michigan and Florida have found the same effect on cantaloupes and watermelon.