

## MANAGING THE GREEN MANURE CROPS FOR SUGARBEET CYST NEMATODE MANAGEMENT

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The primary reason to grow oil radish or white mustard varieties is to reduce cyst nematode population in future sugarbeet crops. These varieties will also add the humus to be plowed under for soil tilth and pliability and improve water holding capacity.

Fodder radish and white mustard must be cultivated as carefully as a main crop as they are mainly a "plant protection measure". Soil cultivation should create optimum aeration and irrigation and prepare for deep penetration of the roots. Seedbed preparation and sowing must ensure rapid and even germination of the seeds.

Rotation should be considered with an emphasis on short season crops. For spring planting the rotation crops should include crops such as sweet corn, onion seed or dry beans. The fall planting should include crops such as fall barley or winter wheat.

The following should be considered for managing the green manure crops:

1. Planting date:

Early sowing in the fall is more effective. For fall planting, last week of July - 2nd week of August is the optimum planting date in the Treasure Valley, Idaho. For spring planting, the 1st two weeks in March. 8-10 weeks growing period with soil temperature above 60° is needed for nematode control.

2. Field preparation:

- a. Remove straw if possible or chop it as short as possible and work it into the ground or
- b. Work the stubble immediately after cereal harvest.
- c. Irrigate to germinate volunteer cereal and weed seeds.
- d. Loosen soil deep enough to allow dense root penetration and optimum aeration for egg hatching.

3. Seeding Rate:

25 lbs/A is the optimum seeding rate to insure dense planting, to reduce weed problems and provide more egg hatching.

4. Planting method:

Planting methods can be with a grain drill or mixed with the fertilizer in a fan spreader truck. A light harrowing would be necessary to cover the seed after the truck. The planting must be completed by no later than August 10th in the Treasure Valley.

5. Fertilization:

A rotation following a cereal crop would require 50 units of nitrogen to decompose the straw and another 50 units to establish a good crop of radish or mustard. Most of the added nitrogen will be accounted for in the spring for the following crop.

6. Irrigation:

Adequate soil moisture and aeration are important for both egg hatching and seed germination. Furrows would need to be put into the field for irrigation. This would not be necessary under sprinkler irrigation. It will require at least three irrigations and will need to be kept wet to get the seed to germinate and nematode eggs to hatch.

7. Weed Control:

Broadleaf weed control will be necessary for they act as a host to the nematode and will reduce the effectiveness of the radish or mustard. Weed control in the green manure crops can be accomplished by the following:

- a. Pre-irrigation will help germinate the volunteer grain and broadleaf weed seeds.
- b. Dense planting of the oil radish or white mustard will reduce the weed population.
- c. The use of registered herbicide, before or after planting for grass and broadleaf weeds.

8. Chopping and Turning (incorporation):

- a. Fine chopping at pod formation stage (12" height) will prevent seed formation, if needed. This will help prevent moisture loss.
- b. Plowing under to mix the green top and roots with soil.

One concern in growing these crops is the length of growing time. It does require 8-10 weeks of at least 65° soil temperature to get a good growth and more nematode reduction.

Frost is a major concern for it will kill the plants if the temperature drops below 25°.

A fall radish planting can be followed by beets but another season with a non-host crop, such as winter wheat, onion, potato, corn or beans will provide more nematode control. This will extend the nematode control and provide the rotation that is needed for a good crop of sugarbeets the next year.

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