Planning for a Stale Seedbed  
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**What it is:** The stale seedbed technique is an old method to enhance weed control in seeded crops. It was developed by farmers years ago, even before herbicides were available. This technique works best for later seeded crops, but may be adapted to many systems.

**How to begin:** A stale seedbed is created by tilling the soil early, which encourages the weeds to germinate. In most springs, this means tilling the soil by late April, with a good weed flush by mid-May. After the weed cover is established, the emerged weeds are killed without disturbing the soil. This is accomplished by using herbicides like Roundup, Gramoxone or Ignite, or by using non-chemical means like propane flamers, or by mowing very close to the ground. The key is not to disturb the soil, so that fresh weed seeds remain buried. The crop is then seeded or planted with minimal soil disturbance. In many cases, growers find that weeds only sprout in the small area disturbed around the seed or the transplant.

**Who should use it:** Many vegetable growers have been using a version of stale seedbeds for some time, especially for seeded crops. Vine crop growers are likely the largest users of the stale seedbed, and onions, carrots, beans, peas, turnips and lettuce can be established quite well in a stale seedbed. As well, transplant growers can also use a stale seedbed with small changes to their transplanters. It was interesting that, in our cover crop demonstrations across Ontario, using newer cover crops like marigolds, pearl millet and sorghum for nematode control, our best stands of cover crops were achieved with a stale seedbed system.
Wet weather prevailed in 2004, and late blight developed in many potato production areas of North America. The legacy of a “late blight year” is high inoculum levels that increase the risk of an early start to late blight the following year. The initial sources of inoculum are infected seed, infected tubers in cull piles and infected volunteer plants.

If infected seed is planted and sprouts, the fungus grows from the infected tuber into the sprout and keeps growing along the stems. The length of time between the planting date and the appearance of symptoms depends on the weather. Rain, dew, sprinkler irrigation and high relative humidity provide favorable conditions for disease. Foliar or stem symptoms can develop as early as June in wet years. The following is a summary of preventative practices to use before planting. These practices are very effective in reducing late blight in the canopy and consequently the incidence of tuber infection.

Management Practices Before Planting

Field Selection: The incidence of late blight is low in fields with sandy soils and good drainage. In such soils, no standing water is found between the rows after heavy rains. This keeps the canopy drier, and spores have less chance to germinate and infect the crop. If possible, plant very susceptible varieties in soils with good drainage to reduce the risk of tuber infection.

Drainage Improvement: Heavy rains during the growing season are common in some areas, and water may remain standing in fields for several days after a downpour. Ditches dug along the edges of a field should improve surface run-off from areas of a field where water tends to accumulate. This will reduce a source of moisture that keeps the leaves wet for two or three days.

Destruction of Cull Piles: Cull piles are the greatest source of spores all season long. Late blight may produce spores on the surface of infected tubers even when the tubers have not sprouted. Bury culls, or cover the cull pile with black plastic in the spring. Keep the edges of the plastic in place with dirt or stones. If the cull pile is too big and cannot be buried or covered with plastic, apply a herbicide when the tubers sprout to kill the tubers and the late blight fungus. Check the cull pile regularly and re-spray if there are any new sprouts.

Healthy Seed: Not all infected seed shows obvious symptoms of late blight, and certification is no guarantee that seed is free of late blight. Remove suspicious tubers when cutting seed. Slivers left around the cutter should be destroyed, not added to cull piles.

Seed Treatment Containing Mancozeb: Tubers infected with late blight produce spores on cut surfaces that can infect healthy tubers. Mancozeb kills the spores of late blight. This will reduce the spread of disease during seed cutting and planting. The mancozeb treatment should be applied when the tubers are dry. If the tubers are sweating the treatment becomes slimy.

Remember, late blight is a devastating disease. Follow practices that reduce the risk of early infection to give the crop a healthy start.
Early season weed control (bud break until 30 days after bloom) is the most important time to control weeds under fruit trees. It’s not easy to find time to apply herbicides or cultivate during this time. Now is the time to plan the timing of these operations.

Fruit tree growers tend to take one of two approaches:

1. **Apply a soil residual herbicide before weeds emerge in the spring. Plan to follow with a 2nd treatment in about 8 weeks (early June).**

   **Advantages:**
   - Maximizes yields by controlling weeds through the critical weed-free period.
   - Frees up time for important bloom disease sprays.
   - Removes overwintering weeds harbouring Tarnished plant bugs.
   - Allows pruning and early hand thinning to proceed.
   - Allows late season weeds for beneficial insects.
   - Works best for early harvested crops eg. cherries, apricots, summer plums, early peaches.

   **Disadvantages:**
   - Need to apply very early - before weeds emerge. Difficult in an early year.
   - May require a 3rd treatment by early August to prevent harvest problems.
   - May allow weed seedbank increase due to late summer escapes.
   - The 2nd treatment may be required before spring jobs are finished.

2. **Allow early season weeds to grow for a couple of weeks, before applying a burndown treatment. May include a soil residual herbicide. Plan to follow with a 2nd treatment in about 4-8 weeks (early July).**

   **Advantages:**
   - Flexible for timing of 1st treatment.
   - Allows scouting to identify weed species present.
   - Usually does not require a 3rd treatment.
   - Can avoid soil residual herbicides - safer for soils > 2% organic matter.
   - Provides refugia for beneficial insects early in spring.
   - Allows late season weeds for beneficial insects.

   **Disadvantages:**
   - May reduce yields by allowing weed competition during critical period.
   - May not control winter annual weeds well.
   - May allow build-up of Tarnished plant bugs or other pests.
   - 1st treatment timing coincides with many other operations.
   - Crop loads pull branches down when 2nd treatment is required.

Planning the timing of the required 2 or 3 treatments, and integrating them into your other work plans, should ensure that weeds are in control during the Critical Weed-free Period and will not rob yields from your crops.

**Weed Management Strategy for Grapes**

Grape growers have similar options to those listed for tree fruit above, but their season is pushed back by several weeks. However, the later harvest season for grapes may increase the need for late season weed control to enhance harvest operations. Grape growers need to assess the need for August treatments, depending on weed escapes.

Growers who hill vines for winter protection will control early weeds when they begin to dehill, and will control late weeds when they start to build the hill in late summer. This is another advantage of hilling – compressing the need for weed control to about 8 weeks.