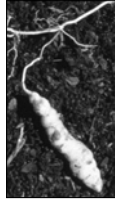
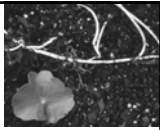


Fumigation

- ✦ The option of last resort.
- ✦ Can I control these after planting?



Fumigation

- ✦ Fumigants kill weed seeds and vegetative propagules
- ✦ They are the only herbicides that affect weed seeds
- ✦ Chemical fumigants are TOXIC
- ✦ Good site preparation is critical to obtaining good results – regardless of which fumigation method that is chosen

Fumigant options

- ✦ Chemical Fumigants:
 - ◆ Metham Sodium (liquid)
 - ◆ Basamid (granules)
- ✦ Steam pasteurization
- ✦ Solarization

For Best Results:

- ✦ Cultivate to 8 inches
- ✦ Soil should be free of debris and clods
- ✦ 55 F at 6 inches
- ✦ Moist, not wet
- ✦ Add amendments before fumigation

Before fumigation – bed preparation is critical



- ✦ It should be like a seedbed ready for planting

Chemical Fumigants

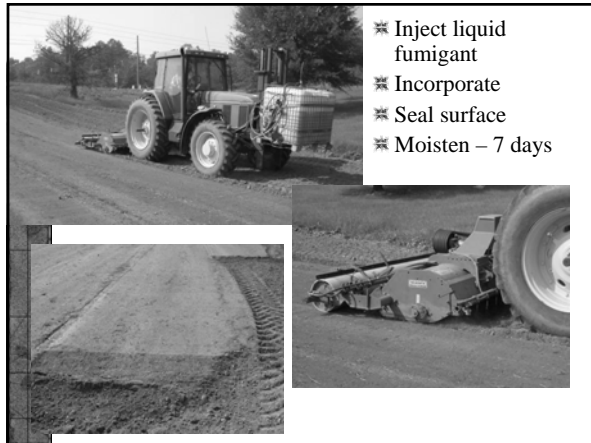
- ✦ Methyl Bromide
- ✦ Metham Sodium
- ✦ Basamid

Methyl bromide

- ✦ The quickest, most versatile & effective
- ✦ The most hazardous
- ✦ NO LONGER AVAILABLE

Metham sodium (formerly Vapam)

- ✦ Liquid application
- ✦ Tarp helps but can be “sealed” with irrigation
- ✦ Time: 7 days, then shallow cultivate, then wait another 7 to 14 days

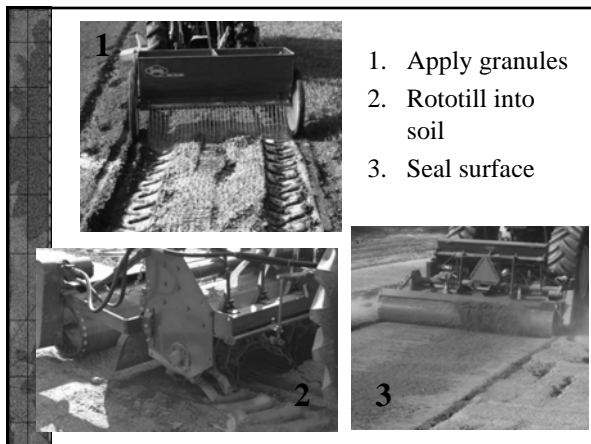


✦ Inject liquid fumigant
✦ Incorporate
✦ Seal surface
✦ Moisten – 7 days

Basamid (dazomet)



- ✦ Granular formulation
- ✦ Rototill, then seal surface & irrigate
- ✦ Time: 7 days, then shallow cultivate, then wait another 7 to 14 days



1. Apply granules
2. Rototill into soil
3. Seal surface

For best results, cover with plastic



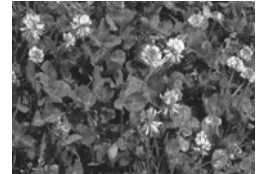
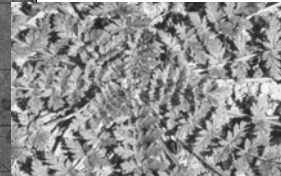
- ✦ Leave on for 7 days
- ✦ Shallow cultivation
- ✦ Let soil “air out” for at least 2 weeks

For best results with Metham or Basamid

- ✱ Use a tarp
- ✱ If not, keep soil surface moist for 7 days. (This seals the surface and traps the vapors)

Even fumigants don't kill everything.

Hard-seeded weeds like clover, red-stem fillaree and Carolina geranium will survive



Common reasons fumigants don't work

- ✱ Soil too wet or too dry
- ✱ Soil too cold
- ✱ Heavy soils not cultivated to adequate depth
- ✱ Some hard-seeded weeds are not controlled (clover, Car. geranium)

Alternatives to Chemical Fumigants

- ✱ Steam
- ✱ Solarization



Steam Pasteurization

- ✱ Maintain 180 F for >30 minutes
- ✱ Will kill most pathogens
- ✱ Many weed seeds will escape



Must use a canvas tarp – plastic will melt

Solarization

- ✱ Cover soil with clear plastic
- ✱ Solar energy is trapped. Soil is heated.
- ✱ Try to reach at least 140 F for several days
- ✱ Only works in summer
- ✱ Generally takes up to 6 weeks
- ✱ Works on small-seeded annuals, but generally not very effective on perennials or large-seeded annuals

Solarization is generally not as effective as chemical fumigants



Methyl
bromide

Solarized then
sprayed with
glyphosate

Regardless of which method is chosen – Site Preparation is Critical. For Best Results:

- ✧ Cultivate to 8 inches
- ✧ Soil should be free of debris and clods
- ✧ 55 F at 6 inches
- ✧ Moist, not wet
- ✧ Add amendments before fumigation



After fumigating -- Sanitation!

- ✧ Inspect nursery stock
- ✧ Add top soil and organic amendments before fumigation
- ✧ Use weed-free mulches

Don't introduce weeds to
a clean bed