



Bean Time-Lapse - 25 days | Soil cross section

[Bean Time Lapse Video](#)

Non-chemical Intervention



Missouri Valley Master Gardeners



Weed Control



Types of Weeds

Weed: a plant growing where it does more harm than good (compete with crops; harbor insects & diseases)

- Annual—comes up from seed each year
- Perennial—comes back from roots each year
- Noxious—designated by USDA as harmful to crops, habitats or ecosystems

Common annuals

Spread from seed

- Crabgrass
- Pigweed
- Purslane
- Lambsquarter



Perennials

Spread from seeds, roots, tubers, bulbs and rhizomes (difficult to manage)

Tilling often spreads them; mulches have little impact

- Canada thistle*
 - Field bindweed*
- *noxious



Start early

- Shallow hoeing
- Pull by roots
- Dispose
- Be vigilant



Prevention

- Check any soil hauled in
compost & manure may be sources
- Look over container plants
- Coordinate with neighbors



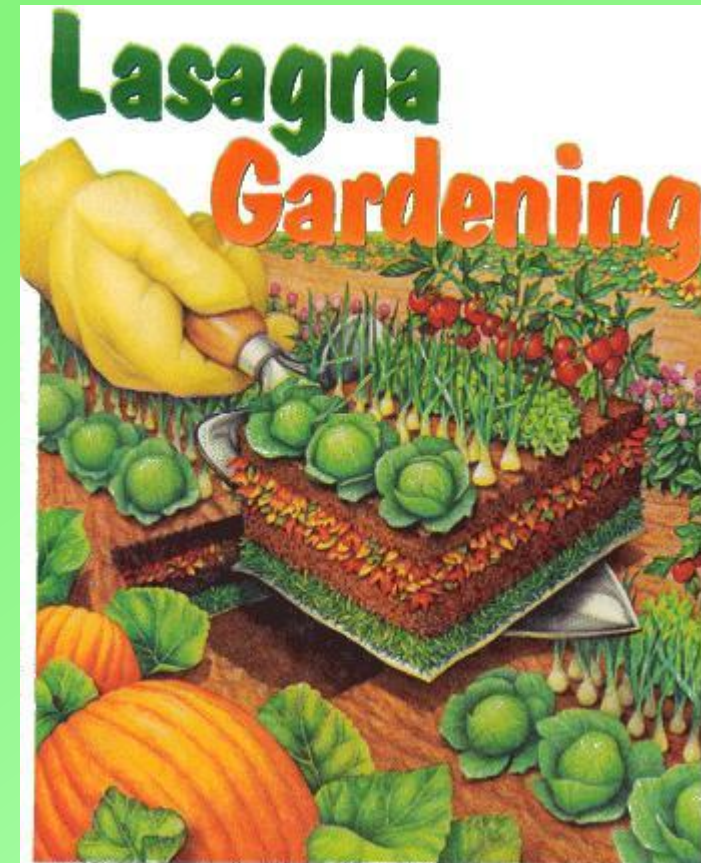
Control—bed planting

- Reduce tillage
- Untilled areas or heavy mulch between



Control—No-till

- Digging brings up weed seeds
- Plant directly into soil or mulch
- Lasagna Gardening:
 1. Newspaper or shredded paper
 2. Grass clippings
 3. Hay
 4. Hay (again—1 wk. later)
 5. Well rotted or aged manure
 6. Grass clippings



Control—Water Management

- Don't sprinkle over whole area
- Use drip systems
- Mulch



Control--Rotation



- Rotation of crops
- Following—keep part of garden clean-tilled or plant cover crops
- Solarization—in July, till & moisten soil; stretch clear plastic tightly over soil. Leave on through August

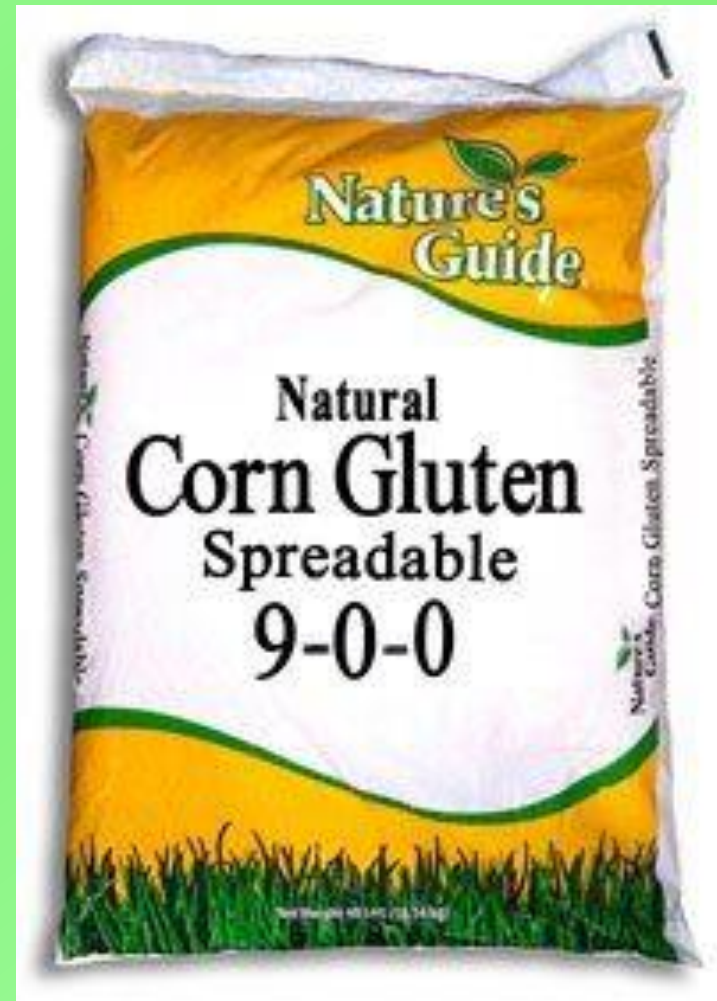
Control—Cover Crops



- Grown in the winter in annual beds
- Winter-hardy grain (annual ryegrass, winter wheat)
- Legume (clover, alfalfa)
- Combination

Non-chemical herbicide

- Corn gluten meal
- Pre-emergent
- Not effective on established perennials
- Read labels



If you can't beat them... eat them

- Dandelions: fritatta, stir-fry, salads, jelly
- Purslane: soups, salads
- Lambsquarters: salads, soups, smoothies, pizza



Insect Control

- Keep plants healthy
- Use companion plants
- Plant fragrant flowers and aromatic herbs
- Pick & dispose of insects
- Protect predacious insects



Prevention

- Paper collars to thwart cutworms



Prevention

- Straw mulch reduces Colorado potato beetles



Prevention

- Floating row covers



Control

- Strong water spray
- Soap spray :
(1 tsp. dishwashing liquid/ qt. water)



Control

Traps



Control

Natural insecticides

- Bt (Bacillus thuringiensis--Thuricide, DiPel)
- Semaspore
- Diatomaceous Earth



Bees, Bees, Bees



- There almost 50 kinds of bees in North America
- The declining number of bees has brought them into the news
- The European Honey Bee that is an introduced species get most of the attention

Mason Bees



- Solitary-no queen or hive
- Extraordinary pollinators
- Emerge from hibernation at 55 degrees-out now
- Non aggressive don't sting
- Builds nest in hollow tubes
- Deposits egg and pollen food source for egg then seals chamber with mud
- [http://www.xerces.org/wp-content/uploads/2009/11/tunn](http://www.xerces.org/wp-content/uploads/2009/11/tunnel-nest-management-xerces-)

Bumble Bees



- 265 species of bumblebees (genus: *Bombus*) in the world
- Larger than other bees
- Covered with dense fur lets them fly in colder temperatures
- Live in colonies, have different divisions of labor
- Have overlapping generations
- Has an annual life cycle
- Need a cavity in which to build their nest.

Environment



- Insecticides do NOT discriminate they will kill or damage all insects
- Plant for diverse flowering times-food over all seasons
- Provide nesting habitat
 - Limit concrete and green grass
 - Avoid plastic mulches
 - Limit tilling
- Open ground, stack of rocks, rodent nest

Monarchs



- Monarchs lay eggs on many species of milkweed, and that is what the caterpillars eat.
- *Asclepias tuberosa* (butterfly weed), *Asclepias incarnata* (swamp milkweed), and *Asclepias syriaca* (common milkweed)
- Butterflies enjoy the sun
- Water dish

Monarch Joint Venture



- **High priority** milkweed seeds needed include
- *Asclepias tuberosa* -- butterflyweed
- *A. incarnata* -- swamp milkweed
- *A. verticillata* -- whorled milkweed
- *A. perennis* -- aquatic milkweed

Vegetable of the Month



Resources

- Bergeson, Eric. Successful Gardening on the Northern Prairie.
- <http://igrow.org/gardens/gardening/get-the-weeds-out-while-they-are-young/>
- <https://www.nrcs.usda.gov/wps/portal/nrcs/detail/sd/newsroom/releases/?cid=NRCSEPRD1393810> (no-till)
- <https://www.extension.umn.edu/garden/yard-garden/vegetables/green-manure-cover-crops-for-minnesota/doc/M1228.pdf>
- <http://igrow.org/gardens/gardening/garden-peas/>
- https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5306468.pdf
- <https://monarchjointventure.org/get-involved/create-habitat-for-monarchs/milkweed-see>