ORGANIC PEST & DISEASE CONTROLS FOR VEGETABLES

1. HELPFUL AIDS DURING SUMMER MONTHS

A. **ROW COVER -** physical barrier for bug control, helps retain water.
B**. MULCH -** Use straw for water retention. The mulch helps control some disease in tomatoes.

2. DRIP SYSTEMS - Benefits

A. Lowers water usage
B. Gets the water down to the roots
C. Doesn't splash on plants like hand watering. Helps with soil-borne diseases or powdery mildew by not wetting whole plant

3. WEED CONTROL - why?

A. Controlling weeds will help reduce insect pests. Many insect pests live on weeds.

4. INSECT CONTROL

A. **INSPECTION -** Inspect your plants for bugs. What kind are they? Good or bad? Get a good ID book.
B. **HANDPICK BUGS -** I hate this but wearing gardening gloves helps with this task. Hand pick off tomato hornworms and squash bugs. Be diligent.

Squash bugs go from egg to nymph in 7-10 days. Every Sunday I go out and picked off the adults, nymphs, and eggs and then re-cover the plants with row cover. I put the adults and nymphs in a bucket of soapy water. Example: The first week, I had 5 adults, 25 nymphs, and numerous leaves with the eggs on them. After the third week, I had no adults, 5 nymphs and just a couple of leaves with eggs. I had gotten the problem under control but it took work, as I had to inspect each leaf/stem.
C. **ROW COVER – My most important tool.** I use the lighter weight in summer-.05. It lets the sun (85%) and rain through but acts as a physical barrier against bugs. It also helps diffuse hail somewhat. The hail doesn't punch holes in your leaves so bad.
D. **ATTRACT BENEFICIAL INSECTS -** Plant flowers that attract beneficial insects!
E. **COMPANION PLANTING -**There are many books and articles on the internet to find out what is a good companion plant for your particular plant
F. **USE FOIL**- Use aluminum foil as a physical barrier on squash plants to keep squash vine borer away. Wrap the first 12 inches of stem in foil, then bury the stem thereafter. Also use foil under the plants (lay flat) to confuse some insects like aphids and thrips. Use foil banner strips to keep birds off.

G. **INSECTICIDES**

A. **NEEM**-comes from a tree in India. It is both an insecticide and fungicide. It's great for powdery mildew and kills on contact and repels many insects with its scent-also use as a fungicide. Will kill bees on direct contact and earthworms (don't spray soil).
B. **Bt-(**Bacillus thuringiensis) does not harm animals, people or the

environment. Specifically works on caterpillars, loopers and tomato hornworms by wrecking their digestive system.

C. **SPINOSAD-** A broad-spectrum, organic insecticide made from soil microbes. Even though it is toxic to most insects, it is relatively safe to use around beneficial and non-target species because it is only toxic if ingested or if a treated surface is contacted while wet. If used carefully only insects that **actually ingest (eat) something that has been treated**, such as a leaf, are affected. Spray in evenings after bees go to their hives. Good for coddling moth on apple trees and fire ants and more.

D. **NOLO BAIT or SEMASPORE-***Nosema Lucustae* - A naturally occurring fungus helps to weaken and kill grasshoppers when they eat it. This method can help you reduce grasshopper populations at your place over time. You must start using it as soon as you see small grasshoppers. After they get big, it is not as effective.

E. **DIATAMACIOUS EARTH-**use for soft-bodied insects like aphids, fleas, whiteflies. Comes from fossilized sea shells. Has sharp edges.

5. DISEASE CONTROL-BE ON THE LOOK OUT!

FUNGICIDES

A. **COPPER FUNGICIDE-**Liquid Copper Fungicide is organic and controls a large variety of fungal diseases, including peach leaf curl, powdery mildew, black spot, rust, anthracnose, fire blight and bacterial leaf spot and some blights. Will not burn plants. Can be used up to day of harvest

B**. BIOLOGICAL FUNGICIDES- Actinovate and Serenade are two biological fungicides.** These are safe, 100 percent natural biological fungicides that both prevents and controls a broad spectrum of root and foliar diseases such as root rot, blight, wilt, bottom-and stem-rot, Fusarium and bacterial leaf spot. When applied as a drench or sprayed the dried spores of a naturally occurring bacteria or fungi germinate and begin to grow on and around the plant roots/leaves. In doing so they create a biological defense against root infecting pathogenic fungi which cause disease such as wilt and root rot.

C**. NEEM-** A broad spectrum insecticide, miticide AND fungicide, 70% Neem Oil controls numerous diseases as well as insects and mites. Controls insects including whitefly, aphids, thrips and scale.

Neem is also a broad-spectrum fungicide. Controls fungal diseases including black spot, rust, powdery mildew.

D**. GREEN CURE**-Potassium carbonate vs. sodium bicarbonate (baking soda). Excellent for powdery mildew and other fungal diseases. Good on squash.

E. **SULFER-**An excellent organic fungicide, Sulfur Plant Fungicide is a finely ground wettable powder containing 90% elemental sulfur. Controls diseases on fruits, vegetables and flowers. Effective against powdery mildew, rust, scab, brown rot, rose black spot and many more. Will not burn plants.

FOR TOMATO DISEASES-

A. USE ROW COVER to protect plants from bugs **particularly leaf hoppers**
B. PLANT MARIGOLDS FOR NEMOTODES and repel bugs
C. ROTATE YOUR CROPS on a 2 to 3 yr rotation
D.USE COPPER FUNGICIDE or SERENADE FUNGICIDE for Early Blight