1.0. CUTWORM MANAGEMENT (Vermont)
(adapted from fact sheet by G. Neilson, UVM Extension)

There are many species of cutworms. The adults are night-flying moths which do no damage. The larvae feed on plants by chewing, and they vary as to damage done and host plants preferred. Generally they destroy more of the plant than they eat. Their numbers vary greatly from year to year. Cutworms injury is of four
types. Solitary surface cutworms cut off young plants at or slightly above or below the soil line, sometimes dropping the severed plants into their burrows. Because most of the plant is not eaten, these cutworms do great damage, attacking and felling new plants nightly. The black, bronzed, clay-backed and dingy cutworms are in this group. Climbing species, the variegated and spotted cutworms, climb the stem of trees, shrubs, vines, and crops and eat the leaves, buds and fruit. Subterranean species, the pale western and glassy cutworms, remain in the soil and feed upon roots and underground parts. Army cutworms occur in great numbers, consuming plant tops and then "marching" on to other fields. Most cutworms pass the winter as partially grown larvae. They are already large, voracious feeders when transplants and seedlings are set in the fields. Overwintering cutworms may live under trash or bark, in clumps of grass or in earthen cells in the soil. They become active and begin feeding as the weather warms in spring, remaining hidden under debris or in the soil and feeding at night. Many species continue to feed well through June, then pupate in the soil to emerge later as moths. Normally there is only one generation per year. The moths crawl from their brown pupal cases in the soil and climb up through the soil, following the tunnel made by the burrowing larva. If this tunnel is blocked, the fragile moth cannot escape the soil. The moths mate and lay eggs in late summer, beginning the next generation. The moths often seek out grassy or weedy areas to lay their eggs, which are usually deposited on plant stems or in the soil. One female may lay hundreds of eggs. The hatching larvae feed until cold weather and then hide for the winter in a sheltered, dry place.

Cultural practices may offer some degree of cutworm control: Plow and fallow fields in mid- to late summer to prevent the laying of eggs. Plow in the fall to expose the larvae or deeply bury the pupae. Cultivate fields in the spring after vegetation has appeared and grown a few inches, then delay seeding to starve the cutworms. Plan rotations to avoid row crops following a grassy sod. Plow sod fields in late summer or early fall the year before planting. Cultivate young crops frequently to injure and expose hiding cutworms to predators. Insecticide treatments can be directed toward the soil surface on the plants; pyrethroids are labeled for most vegetable crops (see the New England Vegetable Management Guide). Granular insecticide
treatments, applied to the seed or to developing seedlings, are of little, if any, value in controlling cutworms. Dr. Eric Sideman from Maine reports that organic growers have been successfully using a Bt bait. They mix a concentrated Bt solution with bran and molasses and place along the rows of crops. One grower has had good luck with making patties of the material and placing them out. (Vern Grubinger, ed., University of Vermont Extension, VERMONT VEGETABLE AND BERRY NEWS - June 15, 2001)

2.0. Whiteflies on tomato and watermelon (Florida)

With the current tomato market, many growers are hesitating to spray. Several reports indicate problems with whitefly on watermelon as well. At this stage of the game, many growers are relying on broad-spectrum materials including a variety of pyrethroids, such as Asana, Baythroid, Danitol and Warrior as well as some of the organo-phosphates (Monitor) and carbamates such as Thiodan (Gene McAvoy, Southwest Florida Pest and Disease Hotline, May 22, 2001).

3.0. Bravo and Ridomil for downy mildew in watermelon

The use of Bravo should be avoided on watermelon as it begins to set fruit as it can result in sunburn on the upper surface of fruit. This is especially true under the hot dry conditions that we are presently experiencing. Growers have reported good success in slowing the spread of the disease with Ridomil (Gene McAvoy, Southwest Florida Pest and Disease Hotline, May 22, 2001).

4.0. KAOLIN CLAY- organic product to control flea beetles

A kaolin clay product, Surround WP (Englehard Corp.), is currently labeled for fruiting vegetables (tomato, eggplant and pepper), onions and cucurbits. This is one of the few products which is approved for certified organic growers, that can suppress flea beetles on fruiting crops, onion thrips on onions and cucumber beetles on vine crops. Kaolin clay has sufficiently low toxicity that EPA has listed it as "generally regarded as safe" (List 4). It could be used as a food additive up to 2.5%, and is exempt from food tolerance requirements. The REI is 4 hours and it can be used up to the day of harvest; however, it leaves a residue which must be washed off any parts of the plant that will be harvested. Leaves and fruit turn white as if sprayed with paint, but photosynthesis and growth are not inhibited. For harvest, it is unlikely that it could be washed off of leaves or soft fruit like summer squash, but can be used against leaf-feeding insects that attack early stages, before fruit is formed. Insect groups controlled include beetles, thrips, leafhoppers, flies, and soft bodied insects such as pear psylla.

Kaolin has several modes of action:
1. Repellency - hides visual and tactile cues that the pest uses to recognize host plants, hence it does not feed.
2. Irritation -- particles adhere to insect body parts.
3. Mortality - by covering small, soft-bodied insects with particles.

Use rates are high, about 6-25 lb/acre in airblast or boom sprayers. In backpack sprayers, use a dilution of * lb per gallon. It is advisable to mix a slurry first, in a bucket or smaller container, then add this to the spray tank with agitation running. Adding powder directly to the spray tank may result in clumping or clogging of filters. This material has moderate rain-fastness, but may need to be re-applied after a heavy rain. Allow leaves to dry before determining need for re-application. Since repellency ('hiding the leaf') is the main mode of action, good coverage of leaf surfaces is important. -R Hazzard (R. Hazzard, ed., University of Massachusetts Extension, Agroecology Program, Vegetable IPM Message, Volume 12, Number 5, June 14, 2001).

5.0. Early blight on tomato
Early Blight on fresh market and home garden tomatoes is well advanced for this time of year. Fresh Market tomatoes are particularly susceptible to this disease. If more than 3% of the foliage is affected it may be very difficult to control the disease while weather remains moist and warm. For the commercial grower, a good program of chlorothalonil or azoxystrobin will give good control. Early Blight will be more serious on plant short of N. (Robert J. Precheur, ed., Ohio State University Extension Vegetable Crops VegNet Vol. 8, No. 18. June 20, 2001)

6.0. Septoria leaf blight on tomato
Septoria Leaf Blight generally is a serious disease late in July. This year we have seen it on fresh market and processing tomatoes in southern, central and northwest Ohio in the last week. This disease affects only foliage and stems--not the fruit. But if more than 50% of the foliage is damaged before fruit is sized, yields will suffer. Commercial growers can use azoxystrobin to control this disease. This fungicide must be alternated with chlorothalonil or mancozeb fungicides to control development of fungal resistance to azoxystrobin. Neither of this latter fungicides are particularly good at controlling Septoria Leaf Blight, however. In the past Benlate has been tank mixed with chlorothalonil to give adequate control. Benlate may be hard to find this year, though. (Robert J. Precheur, ed., Ohio State University Extension Vegetable Crops VegNet Vol. 8, No. 18. June 20, 2001)

7.0. Phytophthora blight on cucurbits
Phytophthora Blight on Cucurbits is a problem early this year too. Fields with drainage problems may require use of a fungicide to help control this disease. Ridomil Gold has been the most effective material. Quadris (azoxystrobin) has been useful in control where it has a label. (Robert J. Precheur, ed., Ohio State University Extension Vegetable Crops VegNet Vol. 8, No. 18. June 20, 2001)

8.0. GREENHOUSE TOMATOES: Nutrition Tips
The most popular method of growing greenhouse tomatoes is in bags or other containers filled with an artificial peat-based mix. With such a system, a fertilizer mixture is injected into a trickle irrigation system every time water is applied. This is called constant feed. A common fertilizer program is to use a 7-11-27 plus calcium nitrate. The 7-11-27 is mixed at a rate of 15 ounces per gallon to make a concentrate stock solution. The calcium nitrate is
mixed at 10 ounces per gallon of stock solution. These two stock solutions should be in separate containers. If they are mixed together as a concentrated stock solution, they will react, causing precipitates to settle out. This changes the character of the fertilizer and can clog the emitters. Every time the crop is watered, each of these two fertilizer solutions is injected into the irrigation water at a dilution ratio of 100 to 1. This provides a final concentration of 200 parts per million (ppm) of nitrogen which is appropriate for tomato plants that are bearing. (You should start newly set plants at half this concentration and gradually work up to 200 ppm.) To do this right requires two injectors; one for each of the fertilizers. They should both inject at the same time, so the two materials are mixed in the water line. This is safe because they are diluted when they are mixed and they are not in the line long before they pass through the emitter into the growing media. Some growers have only one fertilizer injector and so they alternate fertilizers. This means that each fertilizer material is injected at every other watering and results in the nutrients being applied at half the recommended rate. There are a number of crops showing nutrient deficiencies as a result. It is best to use two injectors so you can inject the materials at the same time. Another option is to move the injector suction tube from one stock solution to the other half way through the irrigation cycle, but make each stock solution double strength. This should apply the correct amount of each material, but be sure to make the switch half way through the cycle or you can over apply certain nutrients. –John Howell (Ruth Hazzard, ed., Vegetable IPM Message, University of Massachusetts, Agroecology Program, June 21, 2001, Volume 12, Number 6)

9.0. UNEVEN CROP GROWTH

It is easy to find uneven crop growth this year. This can result from any of a number of factors that are unfavorable for crop growth such a weather conditions. In some fields, the soil pH in the top inch or two is quite low (acid). This can happen even if a recent soil test indicates that pH is quite good. The reason is that when many common fertilizers such as urea and ammonium sources of nitrogen are applied they have an acidifying reaction in the soil. If such fertilizer is broadcast and harrowed in, it is only incorporated a few inches deep. Incorporation is usually about one half the depth of disc penetration. This results in an acidifying reaction in the top few inches where the roots of small plants are located. This is a serious problem for sensitive plants. If this pH problem is combined with other unfavorable factors, even less sensitive crops can be affected. The result is typically stunted and uneven growth and sometimes leaf discoloration. On most soils it is wise to lime to keep pH at 6.5 to 6.8. This will minimize problems with fertilizer acidification. Some growers even topdress some lime over sensitive crops such as onions. –John Howell, (Ruth Hazzard, ed., Vegetable IPM Message, University of Massachusetts, Agroecology Program, June 21, 2001, Volume 12, Number 6)

10.0 Pesticides for caterpillars in cole crops

Confirm 2F

This product from Rohm and Haas was one of the first insect growth regulators (IGR) to be registered for use on vegetable crops. It was designated a reduced risk material and targets caterpillars. It has a general use label, with specific activity against a wide range of caterpillar pests on fruiting vegetables, virtually all leafy vegetables, brassicas, and mint. It has low risk to mammals (rat oral LD 50 > 5000 mg/kg) and a restricted entry interval of 4 hours. Tebufenozide mimics the natural insect hormone (ecdysone) that induces molting in insects. It must be ingested to be effective. Once ingested, feeding stops within 24 hours and a premature molt is induced. Death takes several days. It has a long residual period (10-14 days). Research trials show excellent efficacy, equivalent to standard pyethroids, so this product should provide an effective alternative for caterpillar control to allow rotation
with other products and conservation of beneficials. The long residual period has advantages, but also means there is a relatively long preharvest interval (7 days on fruiting vegetables).

**Spintor 2SC.**
This product is effective against all caterpillars that infest cole crops, and works well at the 3 oz rate in crucifers, which keeps cost down. It has very low toxicity to mammals, birds and was registered as Reduced Risk material. Spinosad is derived from naturally-occurring soil organism, and has two modes of action: as a nerve poison (by contact with treated surfaces) and a stomach poison (by ingestion of treated surfaces). Restricted entry interval is 4 hours and days to harvest is one.

**Bt’s**
Bt kurstaki products (Dipel DF, Javelin WG, Biobit, Condor, Lepinox, Crymax, Mattch) and Bt aizawi products (Xentari, Agree) are both effective against caterpillars. These are general use materials with a 4 hr REI and 0 days to harvest, safe for applicators and for beneficial insects. Bt kurstaki products have been effective against all caterpillars in crucifers in the past and reports from this year are that they are giving excellent control of loopers and diamondback moths. Because these two strains of Bt are not cross-resistant, rotating these two strains of Bt can help prevent resistance development to one or the other Bt product -- something which has been shown to occur in diamondback moth if it is repeatedly treated with one type of Bt. Either of these products are recommended where looper or diamondback moth is present and there is the possibility of resistance to synthetic pyrethroids; Bt aizawi can be used where there might be resistance to Bt kurstaki products. Apply in the morning of a warm day when caterpillars will be actively feeding and will ingest a toxic dose.

**Avaunt (indoxycarb).**
A newly registered, general use product, registered under the EPA Reduced Risk track. It is currently labeled for control of caterpillars in crucifers, peppers, tomato, lettuce, and whorl-stage corn. Indoxycarb must be ingested; once ingested, it is converted to a toxin which inhibits sodium ion entry into nerve cells, causing paralysis and death. Feeding stops rapidly. The restricted entry interval is 12 hours and preharvest interval for most vegetables is 3 days.

**Proclaim (Emamectin benzoate) –**
A selective insecticide for caterpillars, derived from a metabolite of a bacteria (Streptomyces avermitilis), hence one of the general category called avermectins. This is a restricted use product active against some of the more difficult-to-control caterpillars and those that have developed resistance to other products such as beet and fall armyworm, cabbage loopers, and diamondback moth. Proclaim is labeled for head and stem brassicas (not brassica leafy greens), head lettuce, and celery.

Mode of action: the product must be ingested and causes worms to become paralyzed and stop feeding quickly. Death occurs in 2-4 days. The product has trans-laminar (but not systemic) activity: treated leaves absorb the material which gives longer residual period.

The mammalian toxicity is low (considered slightly toxic to mammals, rat oral LD50 = 1516 mg/kg ). The restricted use designation may be the result of high toxicity to aquatic organisms (Rainbow trout 96-hour LC50 = 174 parts per Billion) and bees. Avoid drift into aquatic areas (a 25 ft border required). Highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. The restricted entry interval is 48 hours and preharvest interval is 7 days. (Ruth Hazzard, ed., Vegetable IPM Message, University of Massachusetts, Agroecology Program, June 21, 2001, Volume 12, Number 6)
11.0. Sources for corn earworm traps

Getting a corn earworm trap set up in your silking corn is about the best investment you can make to be sure you will harvest clean corn all season! Nylon net traps placed in corn that is coming into fresh silk will provide you with an immediate and early warning on newly arrived flights. We recommend Hercon luretapes which have proved reliable for years now. Three sources of traps and lures are:

--Gempler's (general supplier) P.O. Box 270, Mt. Horeb, WI 53572 (800) 382-8473
--Great Lakes IPM (general supplier) 10220 Church Street, NE, Vestaburg, MI 48891 (517) 268-5693
--Trece, Inc. (manufacturer of pheromone lures and traps), P.O. Box 6278, Salinas, CA 93912 (408) 758-0204

Scout your fields! Scouts are reporting unexpectedly low infestation rates of European corn borer in pretassel stage corn, even where there are high trap captures – some fields below the 15% thresholds, but as you see below, some are above. So – scout and find out! See last week’s message for scouting details. Floating row covers removed in the past two weeks appear to have delayed ECB infestations. We may be at or passing the peak flight period for the first generation. Some sites had lower captures this week compared to last week. Watch for common armyworm in whorl or pretassel corn, which causes ragged feeding damage similar to fall armyworm and may be especially noticeable at field edges. (Ruth Hazzard, ed., Vegetable IPM Message, University of Massachusetts, Agroecology Program, June 21, 2001, Volume 12, Number 6)

12.0. SCOUT CABBAGE TRANSPLANTS FOR SYMPTOMS OF BLACK ROT!

When buying into transplants, you may be buying into black rot. Black rot of crucifers is caused by the bacterium Xanthomonas campestris pv. campestris. The bacteria can infect plants at any growth stage. Initial symptoms consist of localized wilting at the leaf margin followed by a yellowing of the tissue. The most characteristic symptom is a yellow “V-shaped” lesion on the edge of the leaf, with the base of the “V” toward the leaf center. Within the yellow tissue, leaf veins become black. The blackened veins may extend from the leaf to the main stem. The bacteria can survive in infected plant debris and on or in the seed. Infection occurs through pores on the leaves (stomata & hydathodes), wounds or insect injuries. The bacteria need moisture (rain, dew, etc.) to infect and multiply. So the weather conditions we’ve had the first weeks in June are perfect for disease development. Warm days promote growth of the bacteria and symptom development, and morning dews provide the moisture needed by the bacteria. Black rot is very difficult to control. Here are a few suggestions on how to avoid or minimize the problem: · Scout greenhouses and seedbeds on a weekly basis. Characteristic V-shaped lesions are expressed on seedlings. The wilting and blackened veins distinguish the disease from symptoms of water stress or other physiological disorders. · Keep varieties separated in the greenhouse and in seedbeds. The bacteria are rapidly spread in water, and close spacing in seedbeds and in the greenhouse are ideal for rapid disease development. Keeping the varieties separate will help you identify problematic varieties. · Transplants should only be handled when the foliage is dry. · If black rot is detected in a seedbed, consider all plants at the location to be contaminated. Do not attempt to separate healthy plants from diseased plants...many plants will be contaminated, but will not be showing symptoms. · Destroy all remaining plants in a seedbed as soon as transplanting operations are completed. · Clean all transplanting equipment before and after each use. · Do not plant transplants showing black rot
symptoms or transplants suspected of being contaminated. · Flea beetles must be controlled in seedbeds and in production fields. Research has shown that flea beetles can transmit the bacteria from infected plants to healthy plants. Insect wounds provide a large window of opportunity for infection. · Avoid using overhead irrigation, but if necessary irrigate during the time of day when the plants will dry quickly. · Contaminated equipment, people, animals, overhead irrigation, and wind-driven rain will spread the disease. Always work in the diseased fields last and restrict activities in fields until late in the day when plants are completely dry to reduce the potential spread of the disease. · A three-year rotation is recommended. Pathogenic bacteria will survive in the crop tissue until the tissue breaks down and rots. · Infected cabbage heads should not be placed in storage. If black rot shows up in your field, copper sprays are legal to use for disease control. Unfortunately, copper only does a fair job of controlling black rot. --Helene R. Dillard, Department of Plant Pathology, Geneva Experiment Station (Ruth Hazzard, ed., Vegetable IPM Newsletter University of Massachusetts, Agroecology Program, JULY 5, 2001, VOLUME 12, NUMBER 8)

13.0. WEED MANAGEMENT BETWEEN PLASTIC

This is just a reminder that now is an excellent time to clean up those row middles between plastic mulch. Weeds that look small now will likely overtake the field reducing yields and interfering with harvest. Techniques for removing weeds between plastic are as follows. Cultivation and hand weeding are always effective although time consuming and expensive. Weeds right next to the mulch are difficult to control without handwork. Flaming is another option. The constraint with flaming is that weeds next to the plastic are difficult to control because the flame will melt the plastic. In addition, small grasses are usually not killed because the growing point is usually below ground. Herbicides registered for use include Gramoxone and Scythe. Both of these herbicides must be shielded or directed to avoid crop contact and injury. Scythe is registered for most crops. Gramoxone is registered for pepper, tomato, and eggplant in all 6 New England states and for cucurbits in Maine, New Hampshire, and Connecticut only. Low pressure, no wind, well-made shields, and proper rate selection are all important to insure good activity. Be especially careful with shields utilizing controlled droplet applicator nozzles. These nozzles produce a fine mist, which can move easily with minimal winds. Shields should have non-absorbent curtains at their base, which hug the ground or plastic and minimize drift. Read the herbicide labels and check the New England Vegetable Management Guide for further information. --Rich Bonanno (Ruth Hazzard, ed., Vegetable IPM Newsletter University of Massachusetts, Agroecology Program, JULY 5, 2001, VOLUME 12, NUMBER 8)

14.0. CAUTIONS FOR USE OF PERMIT HERBICIDE IN SWEET CORN

Permit (halosulfuron) 75% WSG. 2/3 to 1.33 ounce per acre (0.032 to 0.063 lb a.i./acre) is now labeled for sweet corn but should be used with caution. Burning has been observed in some fields. This herbicide provides postemergence control of many weed species which are not under drought stress. It is rainfast in 4 hours. Use a non-ionic surfactant at a rate of 1-2 qt/100 gal spray or a crop oil concentrate at 1 gal/100 gal spray. Control varies with type and size of weed. Species listed on the label include redroot pigweed, pokeweed, common ragweed, Pennsylvania smartweed, common sunflower, velvetleaf, wild mustard, yellow nutsedge, and wild radish. Do not cultivate for 7 days after application. Most vegetables can be planted within 12 months of application except crucifers, carrot, leeks, onions, lettuce, beets, and spinach. Some sweet corn varieties may be injured by Permit and no reliable list of susceptible varieties has yet been developed. Regular sugary varieties do not appear to be more tolerant than se (sugar enhanced) types or sh2 (supersweet) types. Initially, this herbicide should be used on a small scale to control problem weeds such
as yellow nutsedge, ragweed, velvetleaf, and triazine-resistant lambsquarters. Other postemergence options continue to exist. These include AAtrex (atrazine), Basagran (bentazon), Formula 40 (2,4-D), Lorox (linuron), and Evik (ametryn). Atrazine, Basagran, and 2,4-D have been the most commonly used.


15.0. TWO-SPOTTED SPIDER MITE IN THE GREENHOUSE

Two-spotted spider mite was observed in vine crops at two farms this week. Growers should look in tomato crops as well. Hot weather favors outbreaks of this pest. At low levels these can be controlled with releases of commercially available biocontrol agents. See the New England Vegetable Management Guide for recommended chemical control in tomato. Below is an article by Cathy Thomas, IPM Program, Bureau of Plant Industry, Pennsylvania Department of Agriculture. This is focused on greenhouses, but much applies to field crops as well.

Bug vs. Bug--Biological Control of Two-Spotted Spider Mite

A population of two-spotted spider mite (Tetranychus urticae) can increase rapidly especially during hot, dry periods. Whether you are using chemical or biological control, treatment must start at low densities for effective control. Two-spotted spider mite, the most economic spider mite in greenhouse crops, can infest many crops including tomatoes, peppers, eggplants and ornamental plants. Most of the difficulty in controlling this pest is initial detection. Since there is no winged stage, sticky traps are ineffective, hence, plant inspection is the only method to assess if mites are present. Damage is caused by larvae, nymphs and adults piercing the plant cells and sucking out the contents. The damaged cells appear as yellowish white spots (chlorophyll is destroyed) on the upper surface of the leaf. As populations increase, the whole leaf will eventually turn yellow. Crop losses may occur when about 30% of the leaf surface is damaged.

Life Cycle. Two-spotted spider mite has five life stages, egg, larva, first nymphal stage (protonymph), second nymphal stage (deutonymph), and the adult mite. The female deposits round eggs on the underside of the leaf. These eggs hatch into larva with six legs that begin feeding immediately. After they have eaten, their color changes and two dark spots appear in the middle of the body. The larvae take in enough food before they settle on the leaf with their legs drawn in until they develop into the protonymph. After a period of feeding the protonymph develops into the deutonymph. The two body spots are very visible on these two stages compared to the larvae. The total development time varies with temperature, humidity and the host plant. Approximate development time (egg to adult) at 86°F is 7 days. Nymphs and adults produce webs and if populations are high the plant can be completely covered with webs. At this point, obtaining control is difficult and biological control is not effective.

Monitoring. Mites usually develop on the undersides of leaves and are often found at certain spots in the greenhouse. These areas have a more favorable climate for development (dry, warm). Inspect plants for mite development near heaters, doors and vents. It is important to have at a 16x hand lens to monitor for this pest. If you have difficulty-detecting mites on leaves, tap the leaves over a sheet of white paper. This technique dislodges mites (and other pests) and provides for easier identification.

Remember to maintain broadleaf weed control inside the greenhouse and at least 20-ft around the outside. In many cases, spider mite infestations develop from weeds left in the greenhouse from the previous crop season. Remove the weeds and destroy! (Ruth Hazzard, ed., Vegetable IPM Newsletter, University of Massachusetts, Agroecology Program, June 28, 2001, Volume 12, Number 7).
16.0. Cabbage Varieties in Florida

Cabbage was harvested from 7900 acres in Florida in the 1999-2000 season. The average yield was 507 50-lb crates per acre and the total production was over 4 million crates. With an average price/crate of $5.04 the crop was worth over 20 million dollars. Florida ranked fifth in 2000 among the states in value of the fresh market cabbage crop exceeded only by New York, California, Texas, and Georgia.

The EauGallie fine sand was prepared in early November 2000. Beds were formed and fumigated with methyl bromide:chloropicrin, banded fertilizer was applied in shallow grooves on the bed center after the beds were pressed and before the black polyethylene mulch was applied. The total fertilizer applied was equivalent to 220-0-304 lb N-P2O5-K2O/acre. The final beds were 32-in. wide and 8-in. high, and were spaced on 5-ft centers with six beds between seepage irrigation/drainage ditches which were on 41-ft centers. Seeds were sown on 19 October into 1.5 x 1.5 x 2.5 inch containerized cells of styrofoam transplant flats filled with a commercial mix. Supplemental nutrients were supplied periodically as liquid 20-20-20 (N-P2O5-K2O). The plants were hardened by withholding water and nutrients during the final phase of production.

Transplants were set in the field on 29 November in two rows per bed with plants spaced 12 inches within rows and each row was 8 inches to each side of the bed center. Twenty-four plants per entry were arranged in a randomized complete block design with four replications. At harvest, two border plants from each end of the plots were not used, thus, 20 plants from each plot were used in data collection. Pesticides labeled for insect and disease control included: Bacillus thuringiensis, spinosad, imidacloprid, methomyl, insecticidal soap, and metalaxyl/chlorothalonil.

Cabbage was harvested when heads displayed a glossy sheen (rather than a waxy, dull sheen) and innermost wrapper leaves curled back tightly from the heads. Heads were cut with three to four wrapper leaves, graded for marketability, measured and weighed. Notes were made concerning any characteristic which caused the heads to be rejected as marketable. Six heads per plot were sampled and cut longitudinally through the core and inspected for density, tipburn, and core dimensions. Data for marketable yield in 50-lb crates/A and as a percentage of plants set, plant stand, average head weight and diameter, and core characteristics were analyzed.

Cabbage yields ranged from 873 50-lb crates for ‘Red Dynasty’ to 1357 50-lb crates/acre for ‘Gideon’ (Table 1). Yields of ‘Bravo’, ‘Pruktur’, ‘Gloria’, and ‘Ramada’ were not different from those of ‘Gideon’. The proportion of heads harvested varied from 86% for RCB 12 to 100% for ‘Bravo’ and ‘Matsuma’. Times from transplanting to first harvest were 71 days for RCB 12 to 93 days for ‘Red Dynasty’. Yields in this trial were similar to those obtained in the last trial held at this location and about twice the state average yield. Average head weight ranged from 2.6 pounds for ‘Red Dynasty’ to 4.1 pounds for ‘Gideon’. Accordingly, all entries produced heads that would make 18 or less per 50-lb crate (Don Maynard, Univ. Florida Vegetarian Newsl. July 2001).

17.0. Triploid watermelon varieties in North Florida

The popularity of seedless (triploid) watermelon has rapidly increased in the past few years. Triploid watermelons are indeed virtually seedless, as it is not uncommon (as visible on the pictures below) to find one brown, mature seed here and there. As a response to the increased demand for seedless watermelons, twenty two (22) commercial cultivars and breeding lines (Table 1) were evaluated on black plastic polyethylene mulch and drip irrigation in the Spring of 2001 at the North Florida Research and Education Center - Suwannee Valley (NFREC-SV), near Live Oak, FL. ‘Tri-X 313’ was considered the standard triploid cultivar for the area. (To view cultivars mentioned in this article, click here.)
Following soil test recommendations, fertilization consisted of a preplant application (/acre) of 500lbs of 13-4-14, and weekly injections of 8-0-8 at daily rates ranging between 1 and 2.5 lb/acre/day following IFAS recommendations. Four-week-old transplants were established in the field on March 23 onto 30-ft long plots, at a 3-ft within row spacing. As rows were 7.5-ft apart, this created a stand of approximately 1,900 plants per acre (on 5,800 linear bed feet of plastic/acre). One row of ‘Mardi Gras’ (used as a pollinizor) was planted every two rows of triploids. Entries were randomized and three plots were established for each entry. Irrigation was applied to maintain soil water tension at a 12-in depth between 8 and 15 kPa. Insect and disease control measures followed IFAS recommendations. Watermelons were once-over harvested on June 12. Fruits were individually weighed. Sweetness was estimated by determining soluble solids content on 6 representative melons of each variety. Weather conditions in the Spring of 2001 were generally hot and dry. Under these conditions, total marketable yield ranged between 655 cwt/acre for ‘Trillion’ to 389 cwt/acre for ‘Imagination’ (Table 2), ‘Trillion’ had a significantly highest marketable yield in this trial. ‘Revolution’ had the highest individual fruit weight. All entries had red flesh, with the exception of the yellow-fleshed ‘SS-3521Y’. Differences in sweetness were numerically small and ranged between 10.6 and 12.1, except for ‘Disko’ (9.9) and ‘Tri-X Palomar’ (10.1).

The goal of most triploid watermelon breeding programs is to create a seedless cultivar with the visual characteristics of the popular ‘allsweet’ seeded type. Typically, these melons are 20 to 22 lbs each, are elongated, and have a rind pattern with a dark green background and small light-green stripes. Existing triploid cultivars tend to be small fruited (15-19 lbs/fruit), virtually round, and with either Jubilee-like rind pattern or original rind patterns. In this trial, rind pattern could be classified into five groups (see pictures): ‘Sunday Special’ and ‘Imagination’ have solid dark rinds; ‘SS-3521Y’ and ‘Freedom’ have Crimson Sweet-like rind patterns; ‘Tri-X Palomar’, HG-5003’ and ‘HG-5005’ have a contrasted rind with a "blue hallo"; ‘Hazera-1032’ rind pattern was ‘allsweet’-like. All the other entries had rind pattern similar to ‘Tri-X 313’. Most entries were round or oblong in shape, with the exception of ‘Revolution’ and ‘Hazera 1032’ which were markedly elongated. The pictures below also show the internal flesh quality and rind thickness of all selected entries, along with a sample of ‘Mardi Gras’ for reference. With its elongated shape, rind pattern, and high yield and sweetness, ‘Revolution’ was overall the most attractive cultivar in this trial. (Simonne, Bob Hochmuth, Ext. Agt. IV, NFREC-Live Oak, Mike Dukes, David Studstill and Wayne Davis - Univ. Florida Vegetarian Newsletter July 2001)

18.0. **Purple blotch of onion**

Purple Blotch of Onion

During the past two weeks, purple blotch of onion was observed in several onion fields in central Illinois. This disease attacks onions, garlics, and leeks. The disease, caused by the fungus Alternaria porri, occurs throughout the world but is most severe in areas with hot, humid climates. Symptoms first appear on leaves as small (1/8 inch in diameter), water-soaked lesions that quickly develop white centers. As lesions enlarge, they become zonate and brown to purple. The lesion margin is often a shade of red or purple and is surrounded by a yellow zone that extends upward and downward for some distance. In moist weather, the surface of the lesion may be covered with brown to dark gray fruiting structures of the fungus. After a few large lesions form in a leaf, they may coalesce and girdle the leaf, and tissues distal to the lesions will die. Similar lesions may form on seed stalks and floral parts of seed onions; as a result, seeds do not develop or are shriveled. Control. Crop rotation of 3-4 years with unrelated crops, and practices that reduce hours of leaf wetness, i.e., good field drainage and reduced plant density, would reduce the threat of the disease. Applications of the fungicides Chlorothalonil (Bravo), Iprodione (Rovral), Mancozeb
(Dithane), Maneb, or Quadris are effective in reducing disease severity. However, use of a single fungicide throughout the growing season is not recommended. Because onion leaves are increasingly susceptible to A. porri as they age and leaves that emerge close to bulb maturity are more susceptible to the pathogen, purple blotch may be difficult to control as bulbs approach maturity. Label recommendations must be closely followed. Mohammad Babadoost (217-333-1523, babadoos@uiuc.edu) (Illinois Fruit & Vegetable News, Volume 7, No. 11, July 11, 2001)

19.0. Aphid thresholds in pepper
(Massachusetts Report)
Plants are gaining stature, putting out new blossoms, and beginning to develop fruit. Scout fields now for aphids and bacterial leaf spot. Aphids fly into peppers in June and July. The most common species is green peach aphid, which is light green, yellow green, or pink, with no distinctive marks. Wingless females feed on the underside of leaves, and give birth to tiny nymphs which look just like them.
Most of the time, predators such as ladybeetles and lacewings, and aphid parasites, keep aphid numbers under control in peppers. Avoiding unnecessary sprays will help reduce aphid problems. Aphids may build up after broad-spectrum insecticides are used, especially synthetic pyrethroids. Monitoring: examine the underside of four leaves per plant on 25 plants. Count aphids found. Calculate the average aphids per leaf (divide total by 100). Threshold: 10 aphids per leaf. At lower numbers, recheck to determine if populations are increasing. This threshold has been used successful in IPM fields in MA and CT for many years. See New England Vegetable Management Guide for recommended materials. (Ruth Hazzard, ed., Vegetable IPM Message, University of Massachusetts, Agroecology Program, JULY 12, 2001, VOLUME 12, NUMBER 9)

20.0. Web site to assess food safety on the farm
Food*A*Syst program materials developed by Kansas State University Research and Extension are now web-posted. Food*A*Syst is a guide to help producers confidentially self-assess food safety risks and take corrective and preventative actions to lower the risks of contaminations in the food they produce and direct market to the public.
Each section is a stand alone with risk assessment check-lists, risk descriptions, and other resources. Topics include Beef Cattle Production; Production of Eggs and Home-Raised, Home-Butchered Broilers and Turkeys; Growing Vegetables, Fruits and Produce; Safe Water Management; Wastewater Management; Managing Production Waste: Reduce, Reuse, Recycle, and Compost; Processing, Packaging, and Transporting Fresh Foods Safely; Safe Handling of Food at Open Markets. To view these materials, see http://www.oznet.ksu.edu/library/fntr2/samplers/FOODASYS.htm For more information, your one-stop contact is the Kansas Center for Sustainable Agriculture and Alternative Crops office at kcsaac@oznet.ksu.edu. (AGRICULTURE AND NATURAL RESOURCES NEWS June 27, 2001)

21.0. Food Safety Web sites
New USDA Food Safety Website
WASHINGTON, July 2-- The U.S. Department of Agriculture today launched a new Web site (http://www.nal.usda.gov/fsrio) aimed at providing a database of food safety research
projects to the research community and the general public. The Web site provides detailed information on food safety research projects, spending, and accomplishments by U.S. Federal agencies, along with links to other important food safety research information.

The Food and Drug Administration (FDA) developed a series of one-page Fact Sheets summarizing their various activities including those involving food safety. http://www.fda.gov/opacom/factsheets/justthefacts.

"Basics for Handling Food Safely"
FSIS updated the popular publication: "Basics for Handling Food Safely." Safe steps in food handling, cooking, and storage are essential to prevent foodborne illness. The Spanish version will be available soon. http://www.fsis.usda.gov/OA/pubs/facts_basics.htm

"Focus on Parasites and Foodborne Illness"
Parasites may be present in food or in water and can cause disease. Ranging in size from tiny, single-celled organisms to worms visible to the naked eye, parasites are more and more frequently being identified as causes of foodborne illness in the United States. The illnesses they can cause range from mild discomfort to debilitating illness and possibly death. http://www.fsis.usda.gov/oa/pubs/parasite.htm

"FSIS Promotes Independence from Foodborne Illness"
Fourth of July picnics and gatherings must be kept safe from interlopers such as bacteria and other microorganisms that can cause foodborne illness. Being ill in summer -- the optimum time for outdoor freedom -- is no picnic; yet, year after year, foodborne illnesses increase during the summer. There are reasons why this happens and ways to ensure picnic food safety. http://www.fsis.usda.gov/OA/news/2001/july4.htm

"Redesigned Slaughter Inspection System Improves Food Safety" The Food Safety and Inspection Service recently announced that the revised design of its HACCP-based inspection models project continues to produce results showing dramatic improvements in food safety and other consumer protections, according to FSIS verification data now available for young chickens. http://www.fsis.usda.gov/OA/news/2001/himpdata0607.htm

22.0. Upcoming meetings

The National Association of County Agriculture Agents Annual Meeting will be August 5-9 in Albuquerque, NM. See http://cahe.nmsu.edu/nmacaa/ for conference information

New Crops & New Uses: Strength in Diversity New Crops & New Uses: Strength in Diversity, the fifth national symposium sponsored by the Association for the Advancement of Crops, the Purdue University Center for New Crops and Plant Products, the New Uses Council, Inc., and the Jefferson Institute, will be November 10-13 in Atlanta, GA. Abstracts and poster presentations will be accepted until July 15. See http://www.hort.purdue.edu/newcrop.


National Natural Resource Extension Professionals Conference - Presentation Abstracts Due September 2nd Revolutionizing or Evolutionizing Extension, the third and largest national Natural Resource Extension Professionals Conference, will be held next year from
June 2-5, 2002, in Naples, FL. See http://conference.ifas.ufl.edu/nrep/ Presentation abstracts are due September 2, 2001. For questions, contact Dr. Joe Schaefer, conference organizer: jms@mail.ifas.ufl.edu. For registration, contact Ms. Mandy Padgett, conference coordinator: mrpadgett@mail.ifas.ufl.edu

CRED Conference: Strengthening Communities: Enhancing Extension's Role
The Community Resources and Economic Development Base Program team will host a national conference next year. "Strengthening Communities: Enhancing Extension's Role," will be February 24-27, 2002 in Orlando, FL. As information is available, it will be posted on a conference web page developed through the Southern Rural Development Center. For future reference, bookmark http://ext.msstate.edu/srdc/cred/conf.htm. For more information on CRED, access this site and click on the star-lettered logo.

Second International Conference and Exhibition on Nutraceuticals and Functional Foods
November 28 - December 1, 2001 Portland, Oregon URL: www.worldnutra.com Contact: Dr. Sefa Koseoglu
Tel/Fax: 979-690-7309
Email: nutra@tca.net
or
Dr. Fereidoon Shahidi
Tel: 709-737-4552
Fax: 709-737-4000
Email: fshahidi@mun.ca

Organic Horticulture Conference, Trinidad and Tobago, 8 - 10 October 2001, for info, contact:

Ms. Marion Alleyne / Ms. Lisa Martinez
FAO Local Co-ordinators
FAO of the UN
134-138 Frederick Street
Port of Spain
Trinidad and Tobago
Tel.: (868) 625 0467; 0468
Fax: (868) 623 0995
E-MAIL: FAO-TTO@FIELD.FAO.ORG

Taro Conservation Strategy Workshop, Secretariat of the Pacific Community, Suva, Fiji 3rd to 7th September, 2001. For information contact: Dr. Danny Hunter, dannyh@spc.org.fj or Dr. Mary Taylor, maryt@spc.org.fj, Tel: (679) 370 733, Fax: (679) 370 021