Vegetarian 98-09

September 1998

CONTENTS

I. NOTES OF INTEREST
   A. Vegetable Crops Calendar.

II. COMMERCIAL VEGETABLES
   A. REALLY Hot Pepper!
   B. Raised Bed and Square Foot Gardening.
   C. Foods that Heal.
   D. Sweet Onion Variety Trial, Spring 1998.

III. VEGETABLE GARDENING
   A. Minor Vegetable Crops.

Note: Anyone is free to use the information in this newsletter. Whenever possible, please give credit to the authors. The purpose of trade names in this publication is solely for the purpose of providing information and does not necessarily constitute a recommendation of the product.
I

NOTES OF INTEREST

A. Vegetable Crops Calendar.


II

COMMERCIAL VEGETABLES

A. REALLY hot pepper!

Planting bell pepper during August and September in Florida presents some interesting challenges. For example, we have all seen summer planted pepper develop, often within hours of transplanting, a condition known by such names as "heat stress," "plastic damage," "heat girdling" or "stem scalding." The outward appearance is an hourglass like pinching in of the stem just above the plastic mulch that is usually associated with a tan or light brown discoloration. The stem will eventually collapse so completely that the plant falls over. Depending on the severity of the condition, the plant (even fallen plants) may survive for several days before finally dying all together.

Many assume this phenomenon is caused by the "flap" made by stretching the plastic mulch during the mechanical hole punching operation and hence the term "plastic damage". However, the phenomenon occurs quite nicely even in the absence of a plastic "flap". What then is causing this heat girdling?

A study designed to look at transplant plug moisture levels in the field proved fruitless as heat girdling occurred in all treatments regardless of plug moisture levels. However, we realized that efforts to establish the treatments had taken so long everything was transplanted between 11:00 a.m. and noon. As a result, another trial was established to test the effect of planting time on the incidence of heat girdling. Fully saturated, pepper transplants were set in a well-irrigated field at 9:00 a.m., 11:00 a.m., 1:00 p.m., and 3:00 p.m. on September 9, 1997. A water wagon was pulled across all plots at 4:00 p.m.

Plants set at 11:00 a.m. and 1:00 p.m. exhibited 40% and 25% heat girdling, respectively, compared to 3% and 8% for plants set at 9:00 a.m. and 3:00 p.m. In theory, plants set well before (9:00 a.m.) or well after (3:00 p.m.) the noon day sun were able to adjust their water usage to minimize heat girdling. Plants set during the peak sun hours basically bypassed the adjustment phase just trying to cool themselves (i.e., transpiration) and when the transplant plug ran out of water heat girdling occurred! Other factors must certainly be at play (air and soil temperatures, stem pressure potentials, drying winds, etc.) but time of day definitely makes a difference. Your production schedule may not allow you to discontinue planting from 11:00 a.m. to noon for example, but if you do, we believe your need for resets will be reduced.

Weather plays a dominant role as well. Our efforts to establish how soon water should be applied following field setting were foiled because we set out our trial on a day when the solar insolation was only half that of the day we established the time of planting trial (though it seemed very hot and bright to us!). We were able to determine however, that using the water wagon sooner rather than later was much better and that bed wetness also affected heat girdling (more scalding on the road bed than on the ditch bed). These studies must be repeated in August '98 so we will keep you posted.

But, the next time you are planting pepper in the summer you should take a cue from the old saying "only mad dogs and Englishmen go out in the noon day sun." Perhaps there's a lesson here for the pepper grower as well!

(Vavrina, Vegetarian 98-09)

B. Raised bed and square foot gardening.

Some gardeners enjoy mounding beds and planting crops above normal ground level for the sake of appearance. The technique becomes a form of raised-bed gardening and eliminates some of the stooping that goes with performing gardening chores. It also provides a neat garden - a look backyard farmers admire.

Formal raised beds can range from mounded piles of soil a few inches to a foot or more high. Many are enclosed with landscape timbers or treated lumber. The technique gives a neat, packaged look and blends into patio designs.

Raised-bed gardens have become one way to organize planting thoughts and have made maintenance easier. They put crops in full view and make them easy to reach, while assuring good drainage for plants.

Beds 4 feet wide can be cultivated from the sides, without stepping on the soil. Raised beds also have been elevated on legs to accommodate a wheelchair for the handicapped. Raised beds give a
tidy appearance to the landscape and actually are
neat, keeping soil off the paths and out of the
house.

One bed can be devoted to tomatoes and
Southern peas, while another is devoted to beans or
even a shrubby crop of blackberries or a peach tree.

When wooden, brick or even concrete block
drains give form to the bed, the gardener has a
sitting area available that can make planting or
weeding a bit easier. In addition to the appearance
and some ease of culture, the main reason for raised
beds is the excellent drainage that gardeners in the
lowlands surely need.

Equal parts of sphagnum peat moss and
perlite make a loose, light substitute for raised-
bed soil. The mix needs the addition of 2 pounds of
dolomitic lime for every 100 square feet of bed
surface to adjust the acidity for most crops. The lime
can be worked into just before planting the bed, but is
better incorporated a week or two earlier to begin
adjusting the acidity.

Fertilizer may be added at planting time, at a
rate of 1 pound of 6-6-6 to each 100 square feet of
bed area. Garden centers and wholesale grower
supply houses stock the ingredients for soilless mix.
Gardeners also can buy a prepared mix by the bag
from garden centers or by the truckload from
companies that supply commercial greenhouses.
Square-foot gardens made at ground level or in
raised beds can be surprisingly productive. Sites 4
feet by 4 feet or 8 feet by 8 feet can help feed a
family.

The technique divides a garden into
individual square feet of space. An area 4 feet by 4
feet will have 16 squares for planting. The number
of plants in each square is determined by the amount
of room needed by the specific crop planted in it to
produce a harvest.

A single square, for example, can contain
one staked tomato, four lettuce or bean plants, one
pepper plant or 50 radishes. Positioning of seeds or
plants within the square also depends on the crop.
Where a single plant occupies a square, set the seed
or transplant in the middle to allow room to grow in
different directions. Several plants in the same square
may be planted in rows, smaller squares, or at random.

For example, to fill a square with four bean
plants, divide the area into smaller squares and plant
each seed in the middle of each. Root crops often are
sown at extremely close spacings. A square foot can
accommodate 50 carrots or radishes or 20 turnips or
onions. These seeds can be scattered across the
square or sown in small rows. Harvest early by
thinning out young plants for use as tender greens or
roots, creating room for the rest to mature. Other
cropping techniques are often used in raised bed and
square foot gardening. The French intensive method
sets plants in hexagonal patterns within wide rows.
Plants are seeded or transplanted at recommended
 spacings in a six-sided configuration, then an
additional plant is placed in the center. In an effort to
use every bit of land, gardeners similarly have planted
the corners of triangles, squares or rectangles, then
added a plant or two in the middle.

Trellises add a third dimension to a garden
and are useful to gardeners seeking more space.
Rather than allowing vine crops to sprawling over the
ground. Many plants can be grown in cages, including
tomatoes, eggplants and melons. In addition to space-
saving planting techniques, gardeners have an
additional resource: the many recent introductions of
dwarf varieties and bush forms of plants that once
grew only as vines. While these space-savers, as
they are called, take less garden room, the harvests
may be somewhat smaller than those from their full-
size relatives.

(Tom MacCubbin - Extension Agent
Orange County, Vegetarian 98-09)

C. Foods that heal.

One of the fastest growing trends in the food
industry and one that could have significant positive
impact on vegetable sales is in the area of functional
foods. Functional foods have also been dubbed
nutraceuticals, pharmafoods, phytochemicals or
designer foods and take in a whole array of foods and
nutritional substances. Driven by an estimated 40
million health conscious Americans, major
market are directing market focus toward products
that offer specific health benefits. People seeking to
ensure good health as they age, form the basis for
the movement. They are concerned about family
nutrition, eat above average amounts of fruits and
vegetables, and exercise regularly. Dr. Nancy Childs
of St Joseph's University in Philadelphia has been
tracking consumer interest in functional foods since
the early 90's. According to Dr. Childs, a majority
of consumers (55 percent) strongly believe that foods
or food products can significantly reduce the risk of
cancer and other diseases. Her findings indicate that
the profile of the functional food consumer is a
well-educated female, approaching middle age, with higher
than average income, who is stressed out and trying
to lead a healthy active lifestyle.

Nutraceuticals are considered to be any food
or part of a food that may provide medical or health
benefits including the prevention or treatment of
disease. They are naturally occurring compounds
found in plants, algae, microorganisms and other
biological sources which support specific bodily
health functions. While there has been a wide range
of claims and benefits attributed to the use and

consumption of functional foods, some of which "stretch" science to the absolutely ridiculous, there is a growing body of scientific evidence that supports the role of phytochemicals in a healthy lifestyle. Functional foods could play a role in the prevention and treatment of at least four of the leading causes of death in the United States, namely cancer, diabetes, cardiovascular disease and hypertension. The National Cancer Institute estimates that one in three cancer deaths is related to diet and that eight out of ten cancers have a nutrition/diet component.

Many US food giants including Kellogg, Heinz and Nabisco have picked up on this trend and are actively pursuing the development of products with nutraceutical benefits. Quaker Oats, a leader in capitalizing on the healthy food market, proclaims, "...fiber from oatmeal, as part of a low saturated fat, low cholesterol diet, may reduce the risk of heart disease." Ocean Spray cites research supporting cranberries' ability to combat urinary tract infections. The Citrus Industry has employed a similar campaign to advocate the nutritional benefits of orange juice.

The vegetable industry has also encouraged the increased consumption of vegetables through the Five a Day for Better Health program. Recent research has discovered a number of phytochemicals in vegetables. These important findings could be used to further publicize the benefits of vegetables in a healthy diet and boost the consumption of vegetables.

Lycopene, the carotenoid found in tomatoes that gives them their red color, is attracting intense interest among the international research community. The ground breaking study conducted by the Harvard Medical School which demonstrated a strong correlation between the consumption of tomato products and the reduced risk of prostate cancer, has lead to further research on lycopene. Work performed at the Dana Farber Cancer Institute reveals that lycopene accumulates in the prostate in high concentrations, supporting earlier findings that lycopene contributes to a lower incidence of prostate cancer. Lycopene has been shown to have potent anti-oxidant properties, which plays a role in cancer prevention. As an anti-oxidant, lycopene works to neutralize free radicals, which are normal by-products of the body's metabolic processes. It is thought that these free radicals can react with and damage molecules in cell membranes and genetic material leading to the development of various diseases, including cancer. Research at Ben Gurion University in Israel and the American Institute for Cancer Research indicates that lycopene is more potent than carotenes in reducing cancerous growths. In addition to tomatoes, lycopene is found in strawberries, watermelon and red grapefruit.

Broccoli and other crucifers like cauliflower, cabbage and kale, contain phytochemicals known as isothiocyanates, which are known to be effective stimulators of natural detoxifying enzymes in the body and explain why consumption of broccoli and it's relatives are associated with a lower risk of contracting cancer. Some epidemiological studies, however, indicate that to cut the risk of colon cancer in half a person would have to eat approximately two pounds of broccoli or similar vegetables a week, a target that few people manage to achieve. Research at John Hopkins School of Medicine has shown that sprouts grown from broccoli seeds contain 30 to 50 times the amount of the anti-cancer principle in mature broccoli. This discovery makes it possible to easily obtain a reduction in cancer risk with the consumption of just over an ounce of sprouts per week.

Even more intriguing, according to Dr. Richard McAvoy, at the University of Connecticut, is the possibility of selecting or breeding cultivars that would have elevated levels of desirable phytochemicals, making them valuable sources of healthful principles. Research into this area could also produce new crops grown for their nutraceutical benefits. An example of this is purslane, a common weed which has been identified as containing omega-3 fatty acids. Omega-3 fatty acids are functional food substances commonly associated with fish oil. These fatty acids have been recognized as having cardiovascular benefits and are thought to contribute to the low incidence of heart disease in certain cultures. Other beneficial effects attributed to omega-3 fatty acids include the relief of symptoms associated with arthritis and other inflammatory diseases. Increasing the omega-3 fatty acid content of purslane through breeding or genetic manipulation could result in a new crop with pharmaceutical applications. Development of plant based sources of these fatty acids could also help take the pressure off rapidly dwindling marine fishery populations.

In addition to the healing qualities of vegetables touched on here, there is a whole range of pharmaceutical properties associated with veggies. The benefits of carrots and garlic have long been touted. It seems that moms who have long admonished their children to "eat your vegetables so you will grow big and strong" were at the vanguard of a movement that is already big business. The Nutrition Business Journal, a trade publication has placed the nutraceutical market at $86 billion and growing. Nutraceuticals already outsell prescription drugs in Europe and Japan. Rising health care costs and Americans' concern with health and quality of life coupled with an interest in alternative therapies will ensure that this trend is not likely to fade away soon. The nutraceutical movement could play a major role...
in increasing the 21st century’s demand for fresh vegetables. The vegetable industry might be well advised to take advantage of this trend in designing future marketing strategies to stimulate the consumption of vegetables.

(Gene McAvoy, Hendry County Vegetarian 98-09)

D. Sweet onion variety trial, Spring 1998.

Sweet (short-day) onions are a relatively minor crop in Florida. Production exists as both dry bulbs (mature) and green tops (immature). Limited production exists throughout the state. One of the biggest deterrents for increased production is competition from established markets from the south Texas and south Georgia areas. However, the potential exists for expanded production, especially in the areas of local sales and direct marketing.

The objective of this trial was to evaluate the performance of sweet onion varieties under north Florida conditions.

The transplants for this trial were produced from field beds at the NFREC, Quincy. Forty entries were seeded on 6 Oct 1997, at rate of 30 seeds per ft, into rows spaced 12 inches apart. Preplant fertilization of seedbeds was 500 lbs/a of 6-8-8. Dacthal at 12 lbs/a was applied over the top after seeding. Seedbeds were top dressed once with 34 lbs N/a. Because of the extremely wet conditions the entries were not transplanted into the production field until 20 Jan 1998. Soil type was an Orangeburg loamy fine sand. Preplant fertilization was 1000 lbs/a of 6-8-8. Production scheme was 3 rows spaced 15 inches apart under a 5 ft tractor and in-row spacing was 5 inches (62,726 plants/a). Goal 2XL at 1 qt/a was applied on soil surface before transplanting and Dacthal at 12 lbs/a was applied over the top after transplanting. Nitrogen was applied twice during the season at 60 lbs N/a each time. One top dressing of K2O as KCl at 60 lbs/a was made during the season. Registered pesticides were applied as needed to control pests.

Entries were harvested as they matured, where maturity was defined when 25% of the tops had fallen down. Harvest occurred from the period of 4 May to 18 May. Bulbs were lifted, allowed to dry for a few hours and tops and roots removed. Bulbs were then placed in bushel baskets and dried for 72 hours at 100° F in large drying rooms. After drying time was complete, onions were removed, allowed to cool down and graded. Grading consisted of discarding culls (small onions, splits, off color and decayed) and sizing into medium (1.5-2 inches), large (2-3 inches) and jumbo (>3 inches) categories. Bulbs were then weighed and counted.

Because of the large number of entries evaluated, only the results of the 25 released varieties will be presented. Total yields ranged from 781 50-lb bags/a for ‘Sweet Magnolia’ to 305 50-lb bags/a for ‘Rio Ringo’ (Table 1). No other variety produced yields as high as ‘Sweet Magnolia’. Yields were lower in 1998 than in 1997, especially with the early varieties, probably due to the late planting date, but would still be respectable yields for most varieties. Yields of jumbos followed a similar pattern to the total yields. ‘Sweet Magnolia’ also produced the largest average bulb at 11.6 oz and ‘Granex 33 and ‘Rio Ringo’ produced the smallest at 6.8 oz. All varieties had percent marketable levels above 87% except ‘Rio Bravo’ (73.1%). Bolting was very low (<1%) for all varieties.

(Olson, Vegetarian 98-09)
Table 1. Average bulb weight and yield for onion variety trial, NFREC, Quincy. Spring, 1998.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Source</th>
<th>Bulb wt. (oz)</th>
<th>Yield (50-lb bags/a)</th>
<th>Jumbo</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweet Magnolia</td>
<td>Palmer Seed</td>
<td>11.6 a</td>
<td>738 a</td>
<td>781 a</td>
<td></td>
</tr>
<tr>
<td>Timon</td>
<td>Palmer Seed</td>
<td>10.0 c-f</td>
<td>552 bc</td>
<td>693 bc</td>
<td></td>
</tr>
<tr>
<td>Evita</td>
<td>Shamrock</td>
<td>9.5 d-h</td>
<td>539 b-d</td>
<td>618 c-e</td>
<td></td>
</tr>
<tr>
<td>Sweet Success</td>
<td>Sunseeds</td>
<td>9.0 e-l</td>
<td>530 b-d</td>
<td>587 d-f</td>
<td></td>
</tr>
<tr>
<td>Sunup</td>
<td>Sunseeds</td>
<td>9.7 d-f</td>
<td>497 b-f</td>
<td>584 d-f</td>
<td></td>
</tr>
<tr>
<td>Dessex</td>
<td>Sunseeds</td>
<td>9.1 e-k</td>
<td>523 b-e</td>
<td>582 d-f</td>
<td></td>
</tr>
<tr>
<td>Daybreak</td>
<td>Shamrock</td>
<td>8.0 k-r</td>
<td>443 c-j</td>
<td>572 d-g</td>
<td></td>
</tr>
<tr>
<td>Pegasus</td>
<td>Asgrow</td>
<td>9.7 d-f</td>
<td>521 b-e</td>
<td>567 d-h</td>
<td></td>
</tr>
<tr>
<td>Big Pete</td>
<td>Palmer Seed</td>
<td>8.4 g-o</td>
<td>317 k-m</td>
<td>558 d-i</td>
<td></td>
</tr>
<tr>
<td>Adonis</td>
<td>Florida Seed</td>
<td>8.1 j-q</td>
<td>430 d-k</td>
<td>552 d-i</td>
<td></td>
</tr>
<tr>
<td>Sunsweet</td>
<td>Sunseeds</td>
<td>9.0 e-l</td>
<td>442 c-j</td>
<td>552 d-i</td>
<td></td>
</tr>
<tr>
<td>Sugar Queen</td>
<td>Shamrock</td>
<td>8.0 k-r</td>
<td>480 b-g</td>
<td>548 d-j</td>
<td></td>
</tr>
<tr>
<td>Chula Vista</td>
<td>Petoseed</td>
<td>10.4 b-d</td>
<td>465 c-h</td>
<td>540 e-k</td>
<td></td>
</tr>
<tr>
<td>Sweet Dixie</td>
<td>Solar Seeds</td>
<td>8.1 j-p</td>
<td>401 f-l</td>
<td>525 e-l</td>
<td></td>
</tr>
<tr>
<td>Savannah Sweet</td>
<td>Petoseed</td>
<td>8.7 f-m</td>
<td>441 c-j</td>
<td>516 f-m</td>
<td></td>
</tr>
<tr>
<td>Sherita</td>
<td>Palmer Seed</td>
<td>7.9 k-r</td>
<td>304 lm</td>
<td>502 f-n</td>
<td></td>
</tr>
<tr>
<td>'Yellow Granex Imp.</td>
<td>Sunseeds</td>
<td>9.1 e-k</td>
<td>447 c-i</td>
<td>502 f-n</td>
<td></td>
</tr>
<tr>
<td>Reba</td>
<td>Palmer Seed</td>
<td>6.9 p-s</td>
<td>274 mn</td>
<td>481 g-n</td>
<td></td>
</tr>
<tr>
<td>Southern Belle</td>
<td>Palmer Seed</td>
<td>7.2 o-r</td>
<td>324 k-m</td>
<td>468 i-o</td>
<td></td>
</tr>
<tr>
<td>Rio Bravo</td>
<td>Solar Seeds</td>
<td>9.4 d-h</td>
<td>405 f-l</td>
<td>456 j-o</td>
<td></td>
</tr>
<tr>
<td>Mr. Max</td>
<td>Solar Seeds</td>
<td>8.3 h-o</td>
<td>390 f-l</td>
<td>451 k-o</td>
<td></td>
</tr>
<tr>
<td>Linda Vista</td>
<td>Petoseed</td>
<td>9.7 d-g</td>
<td>376 g-m</td>
<td>436 l-o</td>
<td></td>
</tr>
<tr>
<td>Granex 33</td>
<td>Asgrow</td>
<td>6.8 r-s</td>
<td>317 k-m</td>
<td>435 l-o</td>
<td></td>
</tr>
<tr>
<td>Southern Honey</td>
<td>Palmer Seed</td>
<td>7.2 o-r</td>
<td>307 lm</td>
<td>416 no</td>
<td></td>
</tr>
<tr>
<td>Rio Ringo</td>
<td>Solar Seed</td>
<td>6.8 q-s</td>
<td>181 n</td>
<td>305 p</td>
<td></td>
</tr>
</tbody>
</table>

* Mean separation by column by Duncan's Multiple Range Test, 5% level.
* Denotes standard variety for comparison purposes. (Olson, Vegetarian 98-09)
III. VEGETABLE GARDENING

A. Minor vegetable crops.

I gave this talk for Florida Master Gardeners attending the 1998 State continued training conference at Gainesville, August 11, 1998, and thought I would pass it on.

References

Vegetables Defined
Vegetables, like pornography, are usually known when seen, but are hard to define.

In 1893, the U.S. Supreme Court’s decision was that a tomato is a vegetable and not a fruit. Botanically it is a fruit, but that does not make it a fruit in common usage terms.

Most texts define vegetables this way:
- Herbaceous, or non-woody. Many exceptions: bamboo and palm cabbage.
- Consumed by humans.
- Eaten raw, cooked, or preserved.
- Eaten as main course or appetizer, not dessert. Exceptions: melons, strawberry.
- Intensively cultivated. Exceptions: weeds and plants gathered wild.

Many inconsistencies exist, such as herbs, condiments like horseradish, and the products of woody trees and shrubs. Potatoes and sweet potatoes are listed as agronomic in some countries.

So how many different vegetable crops are there?
The Kays and Dias list includes the following, (but leaves off such things as the fungi, woodies, and wild species like seaweeds):
- 390 crops worldwide
- 67 common crops in U.S.
- 52 minor crops in U.S.
- 85 rare crops in U.S.
- 69 crop families worldwide
- 223 genera worldwide

Keep in mind that the numbers on this list are not precise due to the possibility that a particular common name of a vegetable might be represented by several species, types, varieties, and strains.

Minor defined: the terms common, minor and rare are very subjective. Crops like Chinese cabbage which were little known a few years ago are quite popular today. As population and customs changes occur, so do changes in food habits and popularity of crops.

In Manual of Minor Vegetables, I have discussed (from a Florida perspective) 152 crops which could be called minor or rare as they occur here. Obviously there is some overlapping between these and the major ones most often seen in gardens or grown commercially.

Selected minor crops (by family grouping)
- Aizoaceae (New Zealand spinach family) - New Zealand spinach, ice plant
- Alliaceae (Alliums-onion family) - leek, shallot, onion, tree onion, raddish, Welsh onion, elephant garlic, garlic, chives
- Amaranthaceae (amaranth family) - amaranth, tamarilla, pigweed
- Apiaceae (celery family) - angelica, chervil, celery, celeriac, coriander, cilantro, carrot, Florence fennel, parsnip, water celery, root parsley, skirret
- Araceae (taro family) - malanga, dasheen, taro, calalou
- Asteraceae (endive family) - burdock, tarragon, chrysanthemum, endive, escarole, chicory, salsify, cardoon, globe artichoke, Jerusalem artichoke, celtuce, lettuce, romaine, scorzonera, dandelion
- Basellaceae (Malabar spinach family) - Malabar spinach
- Boraginaceae (borage family) - borage, comfrey
- Brassicaceae or Cruciferae (crucifers family) - horseradish, cress, mustard, rape, rutabaga, kale, Siberian kale, collards, cauliflower, cabbage, Brussels sprouts, broccoli, kohlrabi, Chinese cabbage, pak-choi, turnip, sea kale, roquette, watercress, radish, oriental radish, wasabi
- Cactaceae (prickly pear family) - prickly pear
- Campanulaceae (rampion family) - rampion
- Capparaceae (caper family) - capers
- Chenopodiaceae (beet or goosefoot family) - beet, chard, orache, Good King Henry, spinach
- Convolvulaceae (morning glory family) - sweet potato, kangkong
- Cucurbitaceae (wax gourds, watermelon, citron, gherkins, cantaloupe, mango melon, snake melon, honey dew, casaba, Persian melon, muskmelon, African horned cucumber, cucumber, pumpkin, gourds, squash, zucchini, bottle gourds, luffas, momordica, balsam pear, chayote, casabana, cucuzzi gourd, snake gourd
- Cyperaceae (nusedge family) - chufa, water chestnut (Eleocharis dulcis)
Dioscoreaceae (yam family) - cush-cush, true yams, aerial potato
Euphorbiaceae (cassava family) - cassava, chaya
Fabaceae or leguminosae (bean family) - peanut, pigeon pea, jack bean, sword bean, garbanzo, guar, soy, hyacinth bean, groundnut, lentil, alfalfa sprouts, velvet bean, yam bean, jicama, tepary bean, scarlet runner bean, lima bean, common bean, English pea, edible podded pea, winged bean, broad bean, moth bean, adzuki bean, black gram bean, mung bean, yardlong bean, southern peas
Lamiaceae (mint family) - basil, spearmint, marjoram, summer savory
Liliaceae (asparagus family) - asparagus
Malvaceae (okra or hibiscus family) - okra and roselle
Marantaceae (arrowroot family) - arrowroot
Nelumbonaceae (lotus family) - lotus root
Phytolaccaceae (poke family) - poke salad, poke weed
Poaceae (Gramineae - grass family) - bamboo shoots, sweet corn
Polygonaceae (rhubarb family) - rhubarb, sorrel, dock
Portulacaceae (purslane family) - purslane, talinum

Solanaceae (nightshade family) - tomato, potato, pepper, eggplant, chili, tree tomato, tomatillo, pepino, naranjillo, garden huckleberry
Trapaceae (chestnut family) - water chestnut
Tropaeolaceae - edible nasturtium
Valerianaceae - corn salad, lamb's lettuce
Zingiberaceae (ginger family) - ginger

(Stephens, Vegetarian 98-09)

Prepared by Extension Vegetable Crops Specialists

Dr. D. J. Cantliffe
Chairman

Dr. G. J. Hochmuth
Professor

Dr. D. N. Maynard
Professor

Dr. S. M. Olson
Professor

Dr. S. A. Sargent
Professor & Editor

Dr. W. M. Stall
Professor

Mr. J. M. Stephens
Professor

Dr. C. S. Vavrina
Assoc. Professor

Dr. J. M. White
Assoc. Professor

Dr. T. E. Crocker
Professor