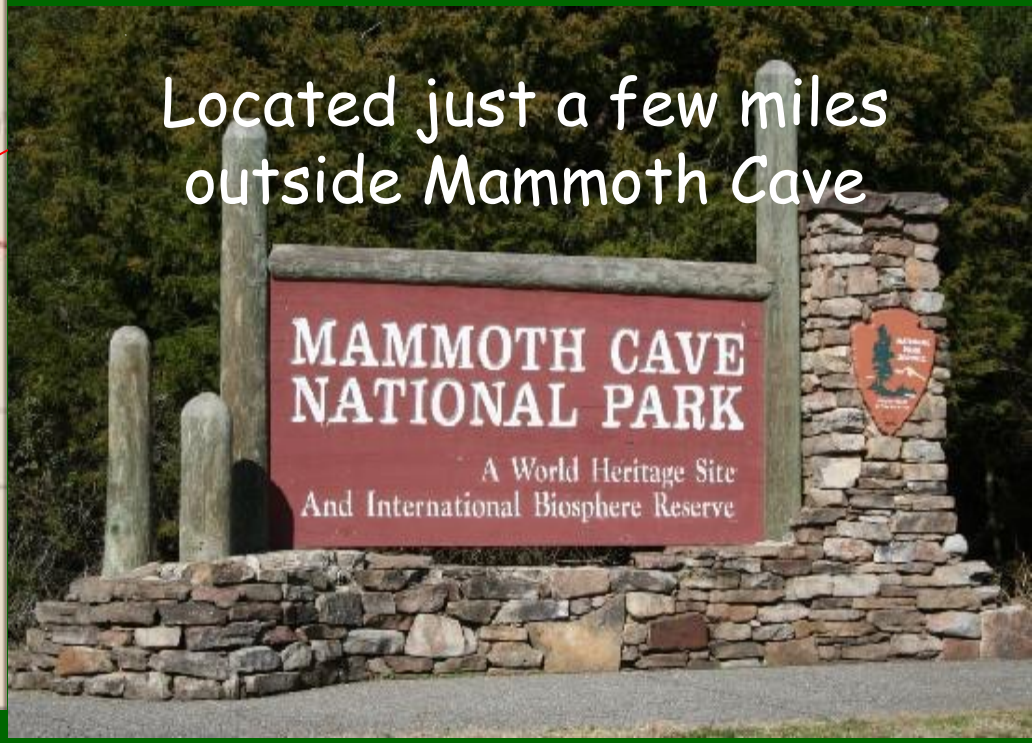
Paul Wiediger
Au Naturel Farm
was located in South
Central Kentucky.
Growing zone ~ 7a

Our farm



Located just a few miles
outside Mammoth Cave

Some things to consider if you're just beginning High Tunnel Production

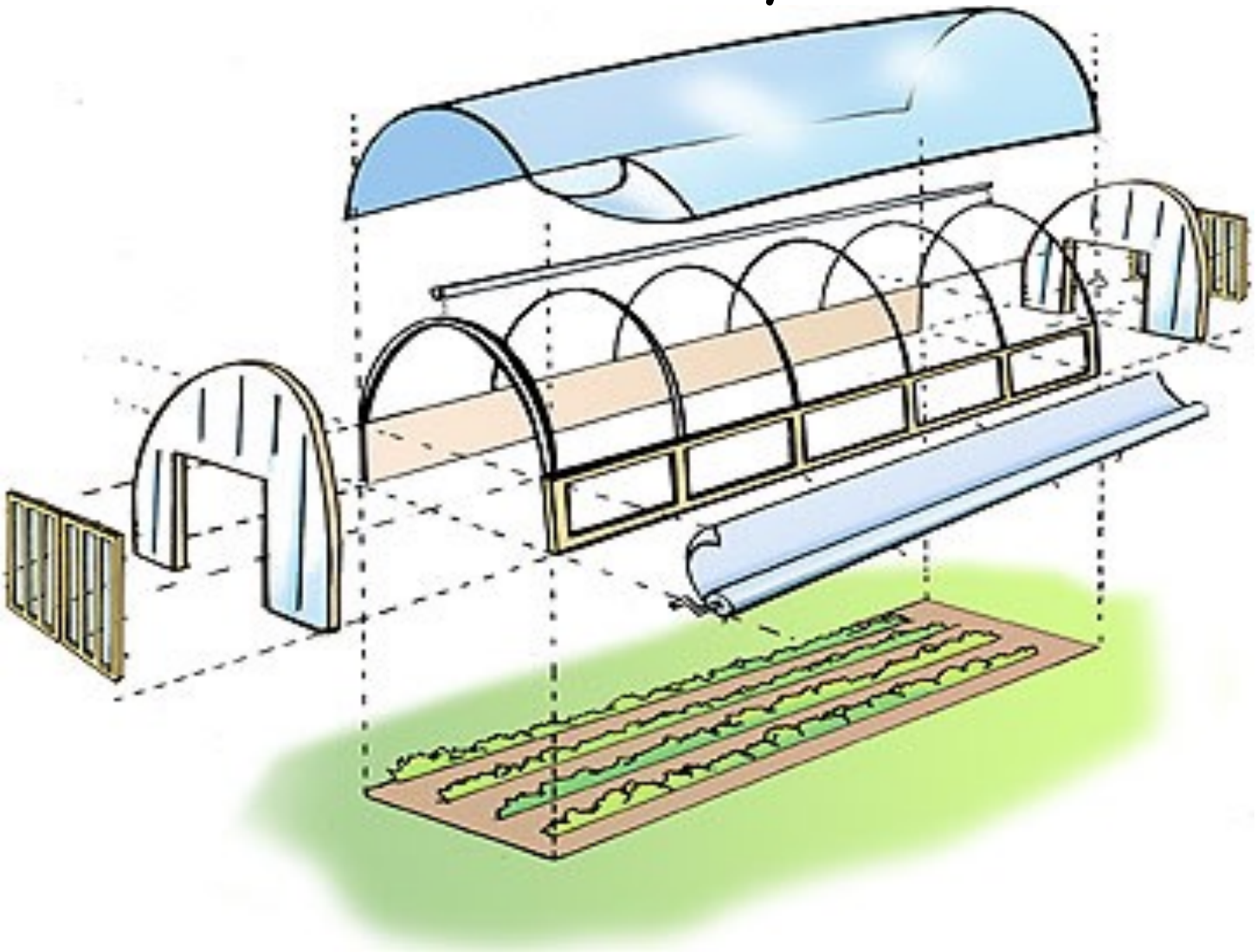

We started growing in a high tunnel
in 1995, added more as we went along
and grew in them for 20 years

Out of respect for others, please either turn your cell phone to vibrate or turn it off completely.

And if you need to take a call, please answer your phone out in the hall.

So let's get started!

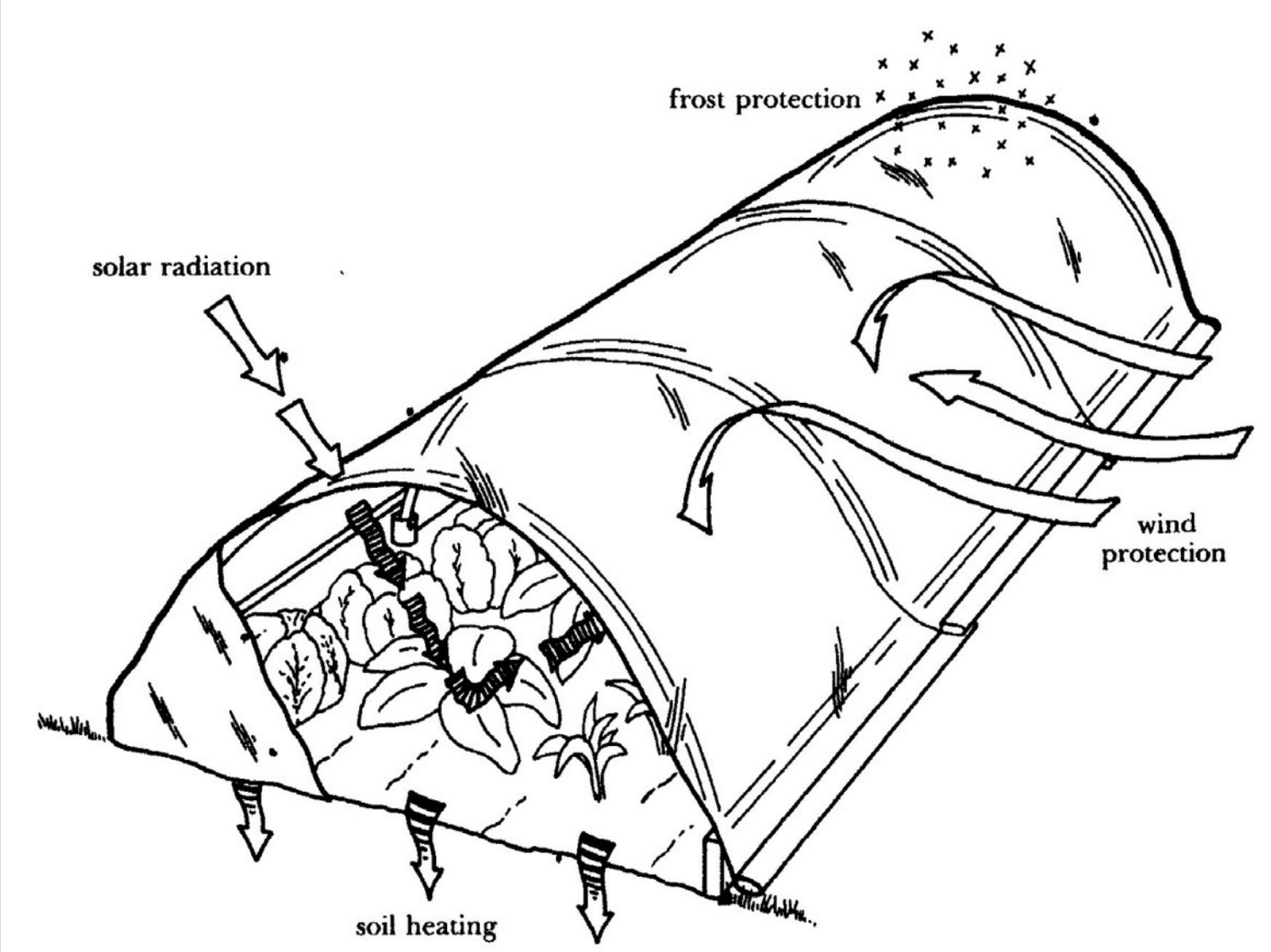
What is a high tunnel
&
What do they do…



High Tunnels

- Keep out rain ~ act as an 'umbrella'
- Reduce wind
- Offer frost protection
- Trap heat ~ the soil acts as a solar heat sink, absorbing heat during the day and releasing it during the night

So your High Tunnel is creating its own micro ecological niche or ecosystem




How can you make use of that micro ecological niche in your farm's marketing plan…
Photo:
L Jett WVU


KENTUCKY
$2.75 ea
some heirloom
Cherry Tomatoes

Ginger

Or perhaps late fall potatoes. These were planted in early September and harvested in December.

Marketing ~ it's all about Marketing!

Or

Don't plant a seed until you know how you're going to sell your produce!!!*

*Paul's first rule of profitable farming

Your marketing strategy will determine…

- What you are going to grow
- How much you are going to grow
- And when you are going to seed it

Good record keeping is CRITICAL if you are going to maximize your high tunnel production!

Some good information to record

What you are seeding or transplanting ~ variety
Seeding or transplant date
Planting rates ~ seeds/plants per foot or spacing
How many row feet or plants did you set out
First harvest date with yield
Other harvest dates and yields for cut and come again crops or crops such as tomatoes, peppers, cucumbers, etc.
Last harvest date

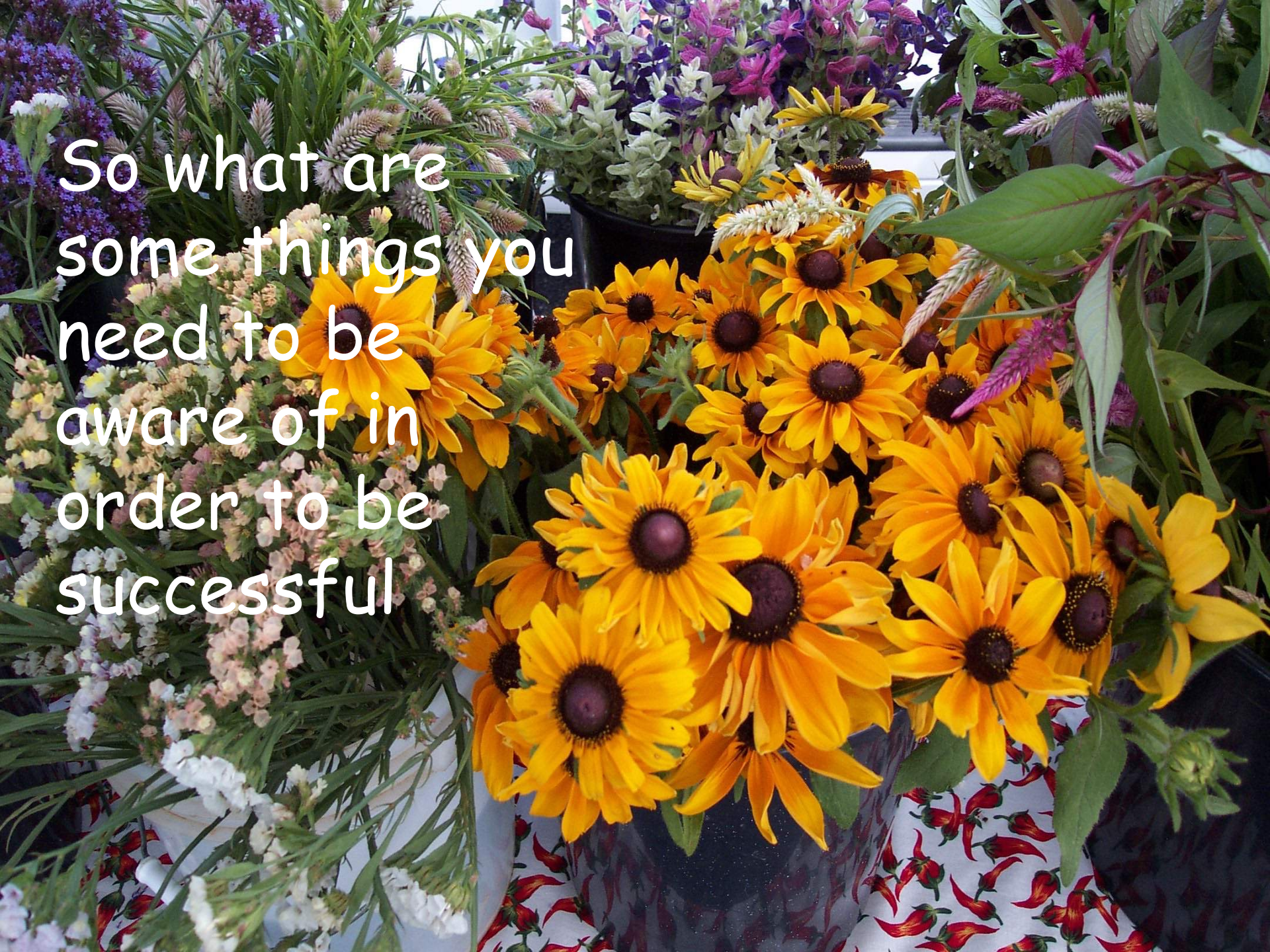
Critical comments ~ did something occur that affected yield
Observations
Assessments

Sales

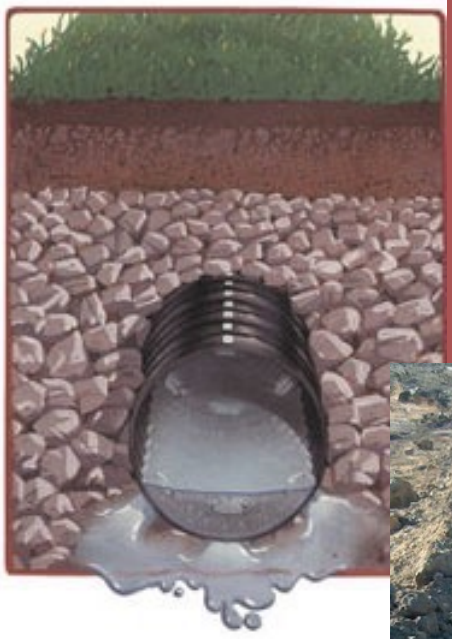
Date: May 1, 2021

Items	load out	Unit	back in	sold
Vegetables				
Kale - Russian	18	Bunches	3	15
Kale - Curly	24	Bunches	6	18
Swiss Chard	15	Bunches	7	8
Collards	12	Bunches	2	10
Pak Choi	24	Heads	22	2
Tatsoi	12	Heads	9	3
Chinese Cabbage	8	Heads	2	6
Broccoli	46	Heads	Sold out 10:20	46
Carrots	65	Bunches	Sold out 9:40	65
Radishes	36	Bunches	Sold out	36
Salad Turnips	24	Bunches	2	22
Green Leaf Lettuce	12	Heads	2	10
Red Leaf lettuce	8	Heads	3	5
Green Romaine	24	Heads	Sold out 10 AM	24
Red Romaine	12	Heads	3	9
Buttercrunch	24	Heads	Sold out	24
Red Cross	18	Heads	Sold out	18
Green Oak	12	Heads	5	7
Red Oak	12	Heads	5	7

Market Comments: Good weather, great crowd


So what are some things you need to be aware of in order to be successful

Drainage - a key consideration!



A 30 by 96 foot high tunnel will shed over 1725 gallons of water in a 1 inch rainfall. So a 3 inch rainfall means you're dealing with almost 5200 gallons of water!

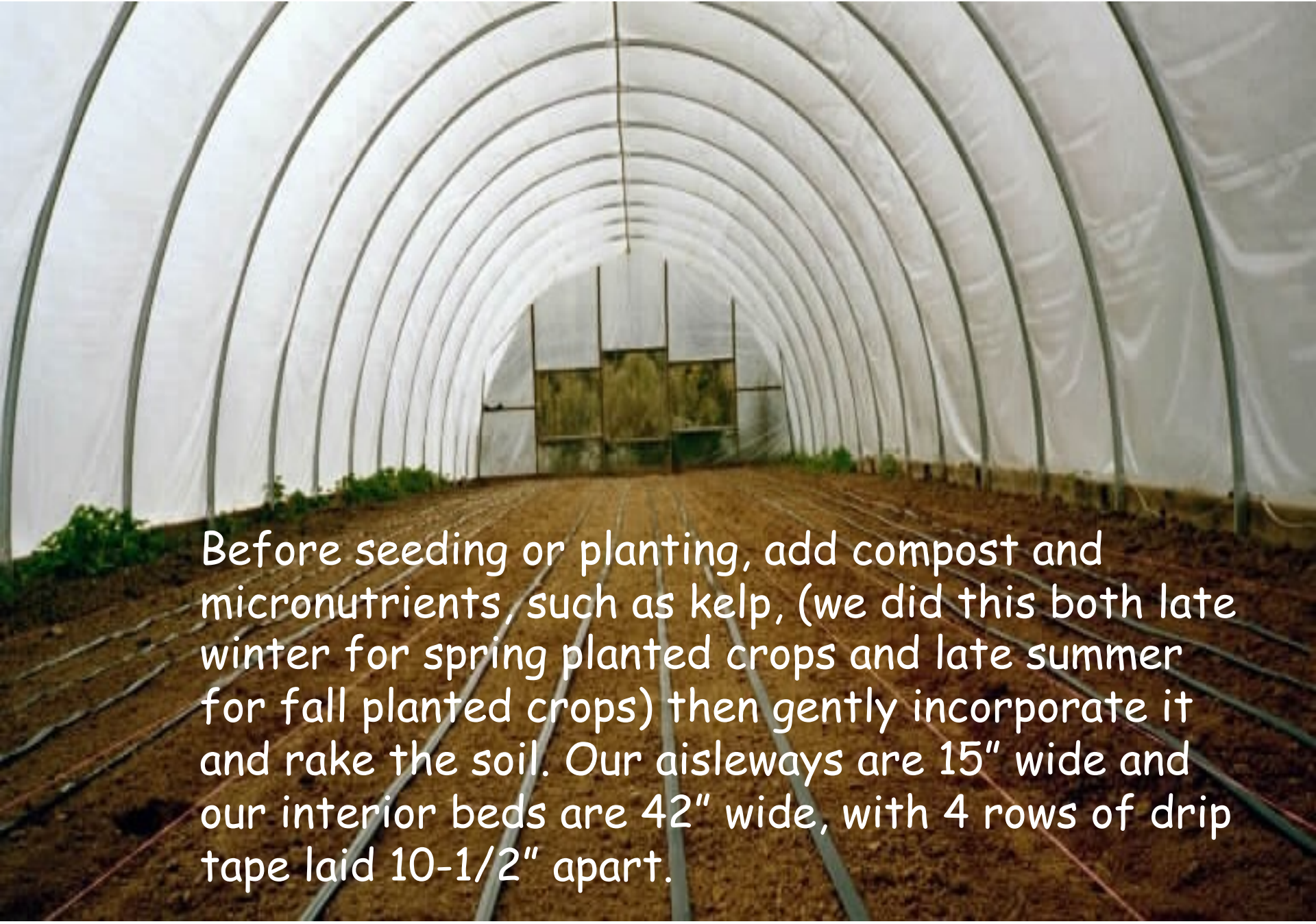

Maintaining Soil
fertility along with
organic matter in
order to grow
drop dead gorgeous,
delicious tasting,
nutrient dense crops,
season after season,
year after year
becomes a challenge!

Using plant based compost at the rate of about 2.5 to 5 cubic yards for a 30X96 foot high tunnel seems to bring good long term production results.

A basic recipe

1 part grass hay
1 part alfalfa hay
2 parts straw
2 parts wood shavings
2 parts leaves
1 part peat (optional)
1 part soil

Recipe from John Biernbaum, MSU


Before seeding or planting, add compost and micronutrients, such as kelp, (we did this both late winter for spring planted crops and late summer for fall planted crops) then gently incorporate it and rake the soil. Our aisleways are 15" wide and our interior beds are 42" wide, with 4 rows of drip tape laid 10-1/2" apart.

Water Management

Proper water management is critical for good seed germination and plant growth. After seeding, we water the seed in with a wand, then turn on the drip irrigation system, letting it run to get the bed wet enough so that it doesn't dry out for at least 48 to 72 hours. This ensures excellent seed germination. After seed has germinated, we only use drip and water every few days as soil condition dictates.

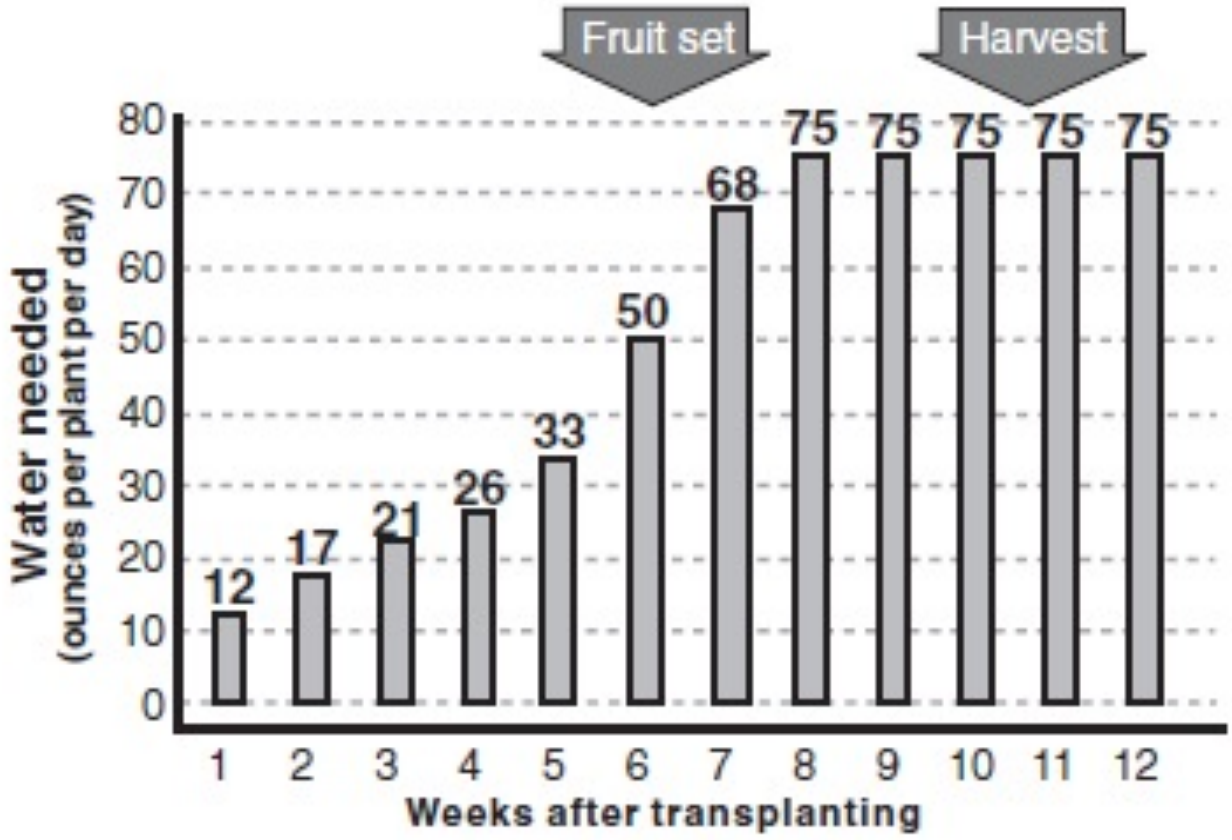


Figure 1. Water requirements of high tunnel tomatoes.

Watering and Fertilizing Tomatoes in a High Tunnel

Lewis W. Jett, Division of Plant Sciences
University of Missouri


Drip Irrigation

Easy way to Transplant


Ventilation

Next on our list is dealing with weeds.

That's Red Root Pigweed, only 3 to 4 inches tall and trying to set seed at the end of November.

And we have become aware of one of the vague laws of high tunnel production that says "High Tunnels create their own vacuum, sucking in any weed that has gone to seed on your farm!"

At this stage, weeds are easy to handle

Unchecked, they can look like this..


Scale appropriate tools

Effective weed control measures

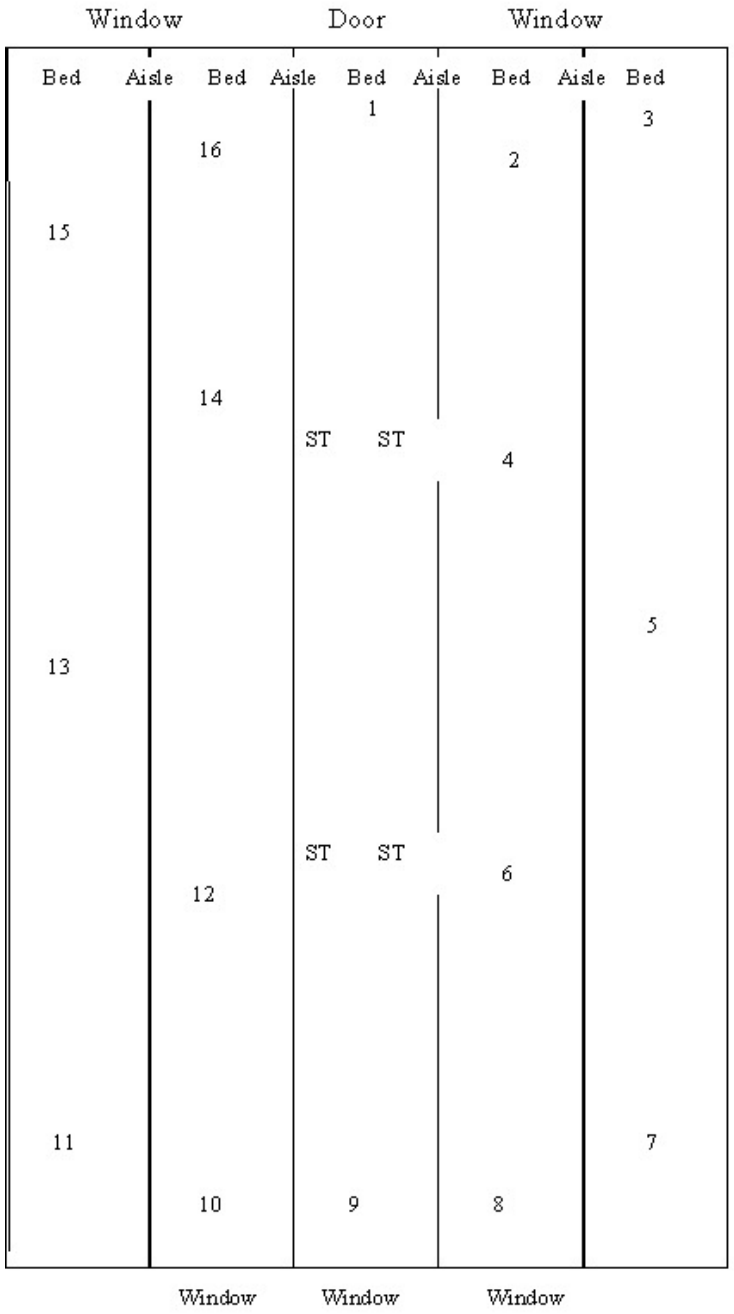
- Never allow any weeds to mature and set seed
- Keep weeds and grasses from maturing and setting seed around the outside of your high tunnel
- Use weed barriers (mulches) when practical
- Utilize strategies that eliminate or reduce the amount of cultivation needed to keep the crop weed free, such as flaming or solarization
- Before weeds become a problem, make the time to cultivate when they are young, or better yet, before they even emerge

Insects

Early **detection** through scouting, **recording** your observations, then accurate **identification** along with **having a plan** how you're going to deal with the problem are 4 key components to an effective program!

IPM Scouting Chart for 20 X 96 Hoophouse

Each # is a scouting location ST is a sticky trap



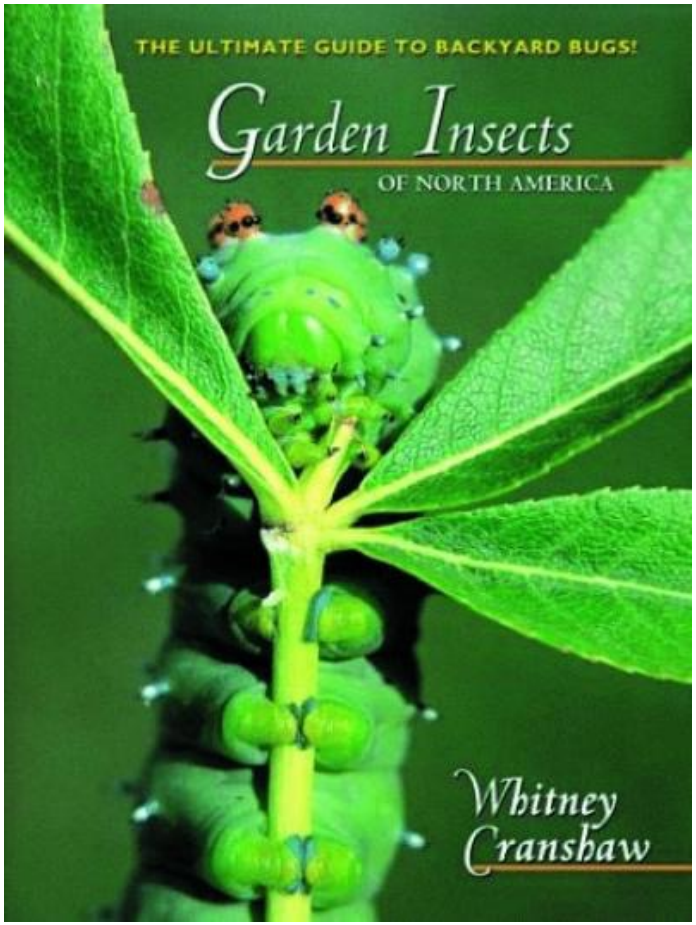
Sticky Yellow Trap

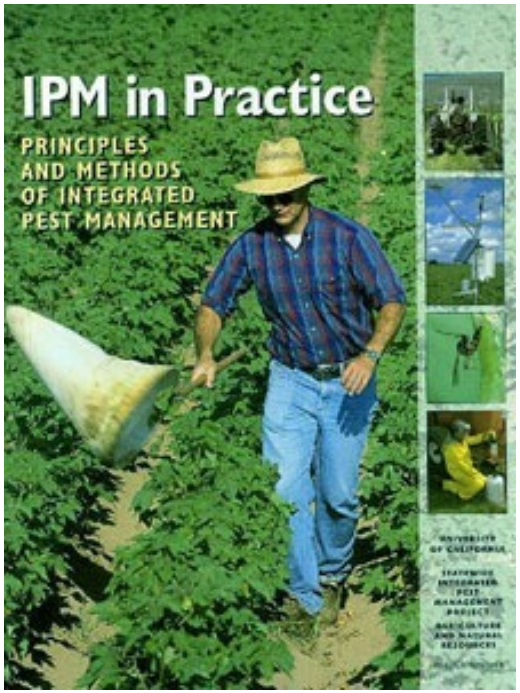
Scouting

- Establish a routine
- Carry a hand lens (10X or greater)
- Look at 3 or more plants per location
  - Record your observations
  - Are the number of insects increasing or decreasing?
  - Is foliage damage increasing?
- Establish a number of insects per plant as a threshold for corrective action
- Take pictures of insects and plant damage

Resources

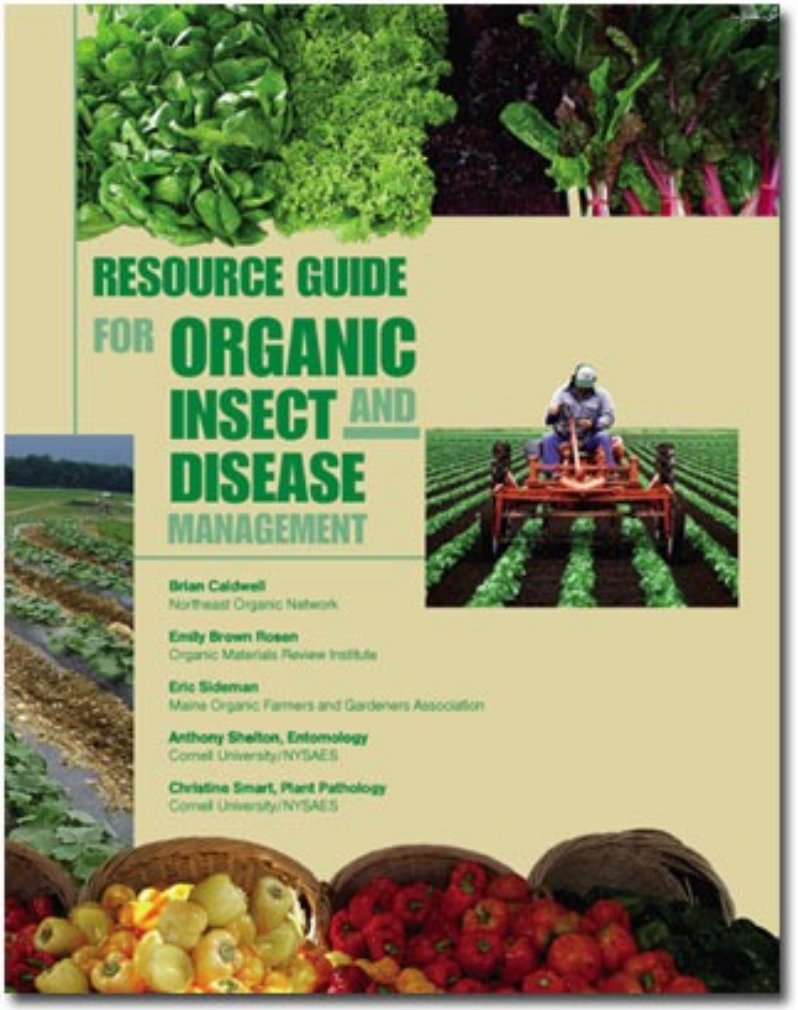
Or, if you don't know what you're looking at, how will you ever know what to do about it!?!





ATTRA ecological pest management

Cornell Universities
Resource Guide for
Organic Insect & Disease
Management
&
Growing Small Farms
NC Cooperative Ext



Lures and traps

Aphids on tomatoes

Aphids can devastate a winter greens crop

Yellowing Virus transmitted by Aphids on a spinach crop

So, why are aphids such a problem & why do they like my high tunnel?!

- Aphids reproduce parthenogenetically. They are almost all females, and here in the South, they give live birth to more females and newborns can reproduce in as little as 7 days! These newborns can reproduce 5 per day for 30 days!

- Dense plantings provide plenty of food & cover, as well as 'hot spots' of greater humidity and higher temperatures

- Poly covering excludes rainfall, so insects aren't disturbed by rain droplets and we don't have the insect diseases that are promoted by moisture.

- Aphids reproduce at lower temperatures than predators

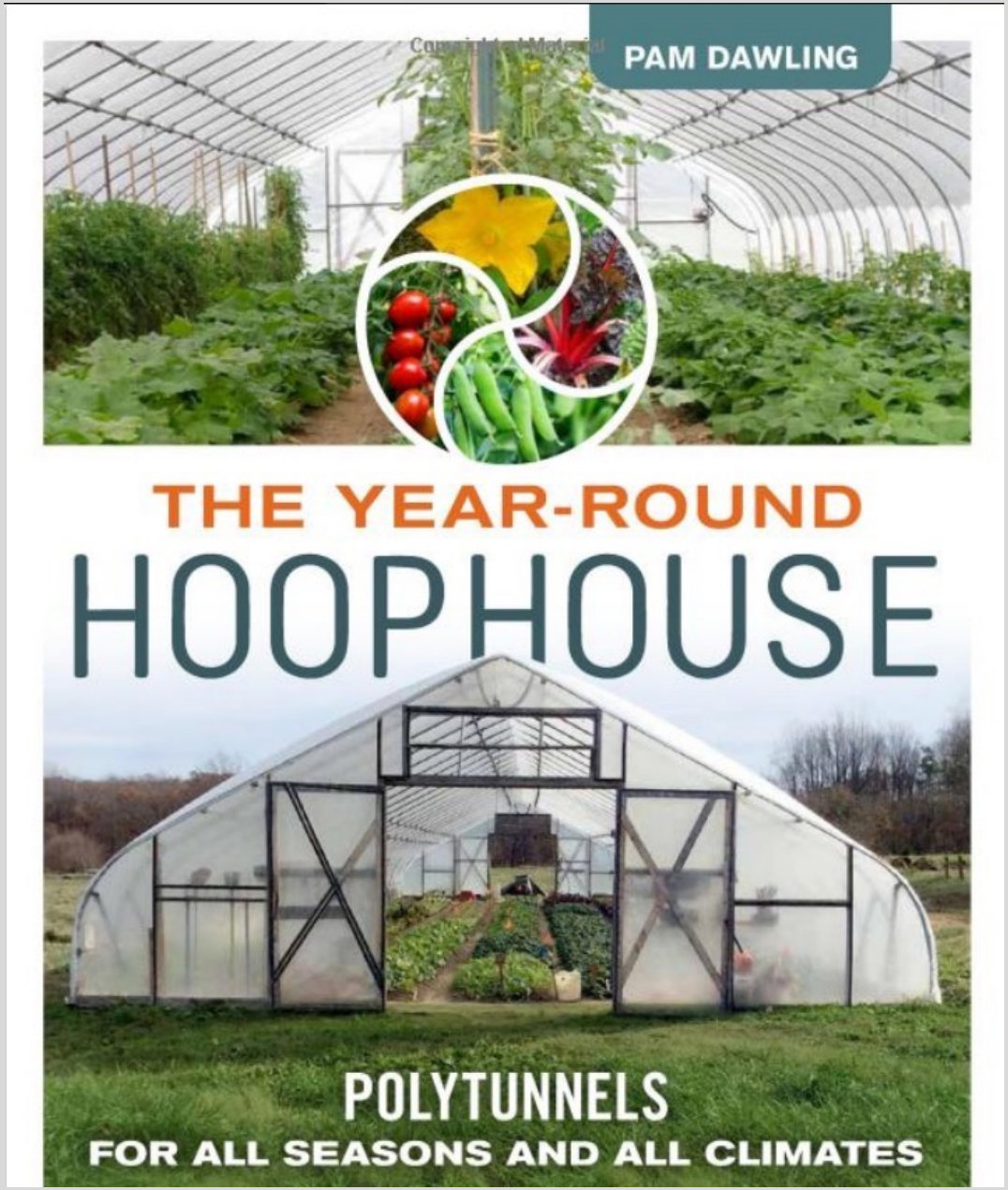
- Parasitoids can cause a worse problem on leafy greens

Best chance at Aphid control

- Early detection through scouting – NO ET
- Trap crops (they seem to like kale & mustard!)
- Remove infested vegetation (lower leaves)
- Insecticidal soap spray (underside of leaves)
- Neem based products
- Aphid Parasites*
- Lady Beetle release*
- Lacewings release*

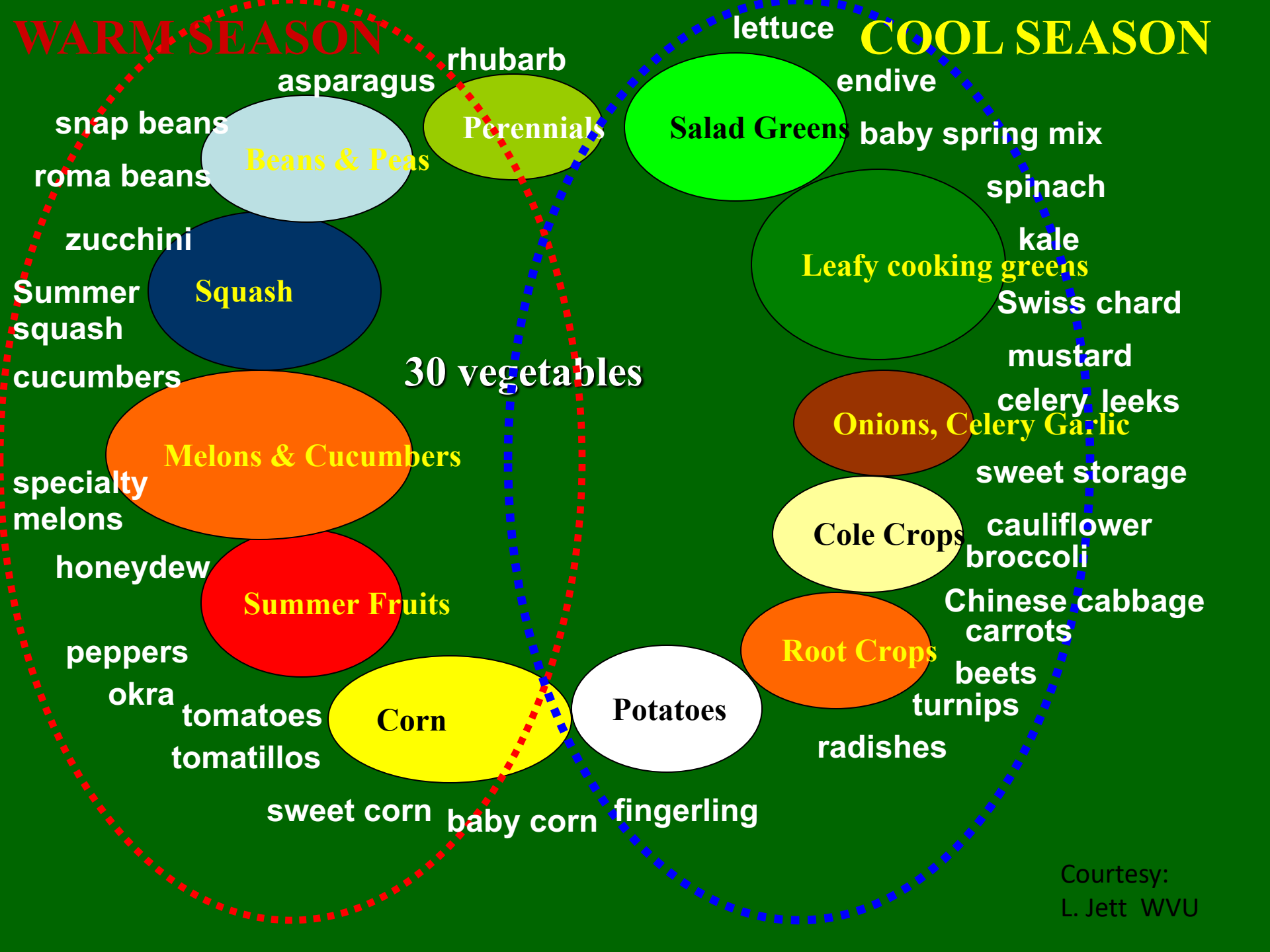
*effective only if done in warm weather!

The worst thing you can do is ignore them!



Additional Resources

Lots of GREAT websites
and
I highly recommend this book.
The author farmed in Virginia.



Courtesy:
L. Jett WVU


Thank you
and
good growing!