

Spider mites in corn and soybeans

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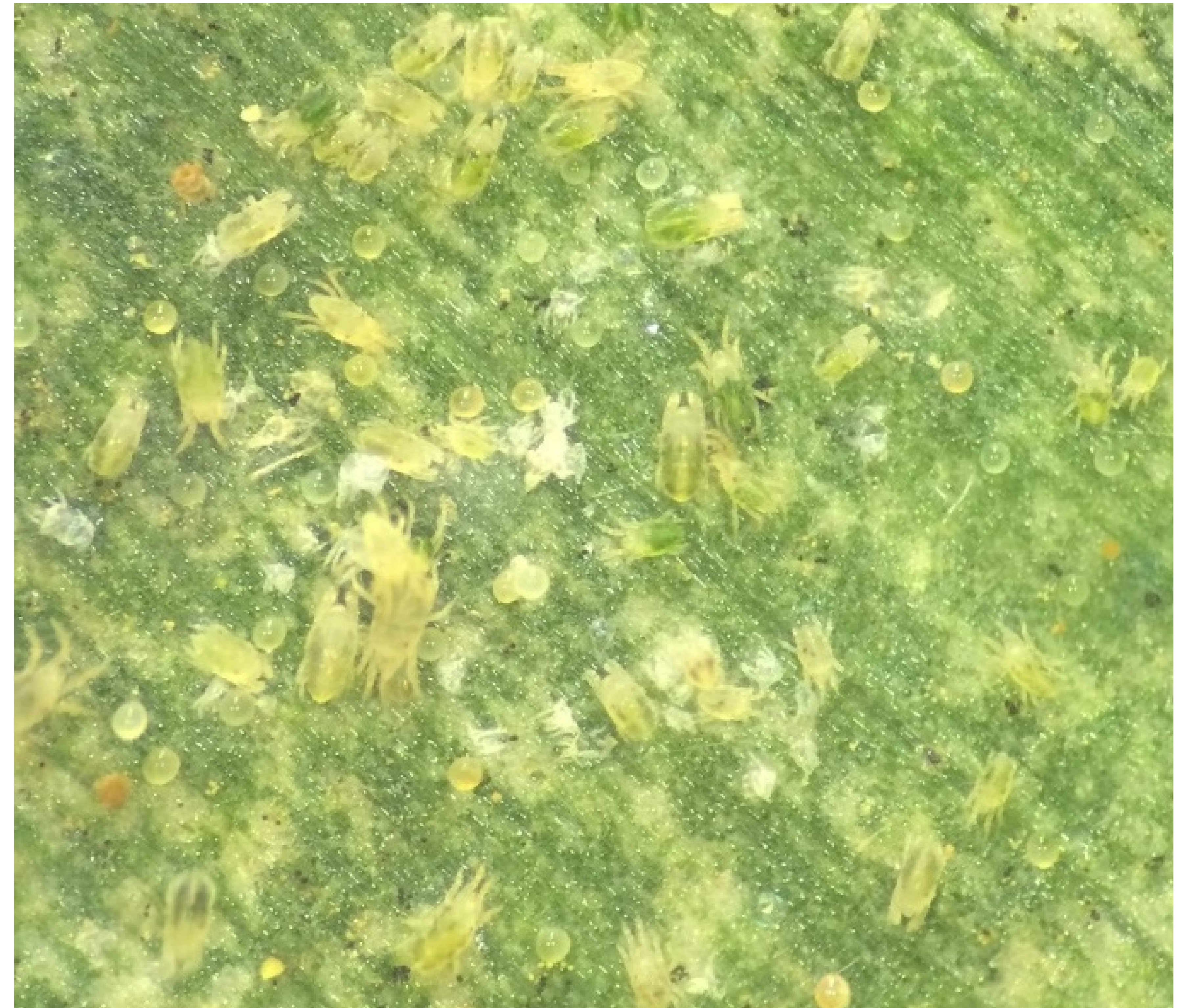
Nebraska Extension Entomology Specialists

Session Goals

1. Learn to identify spider mites found on Nebraska corn and soybeans
2. Recognize conditions that favor pest mite outbreaks
3. Understand management options for spider mites on Nebraska corn and soybeans

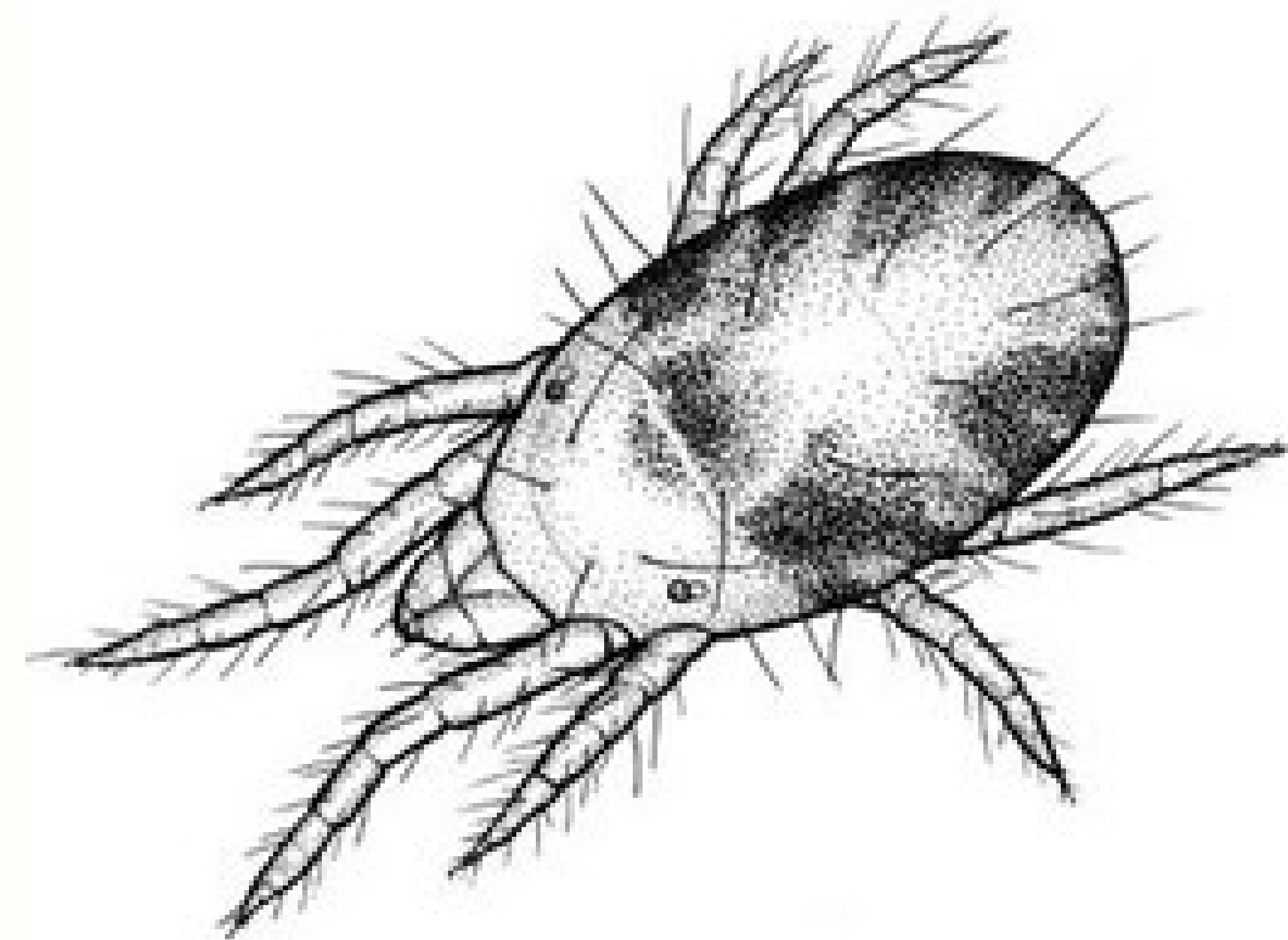
Spider mites in Nebraska

- Arachnids related to ticks and spiders
- Feed by piercing plant cells with their mouthparts and sucking the plant juices
- Infestations can be related to drought stress and pesticide use
- Two pest species found in NE:
 - Banks grass mite (corn)
 - Two-spotted spider mite (corn + soy)

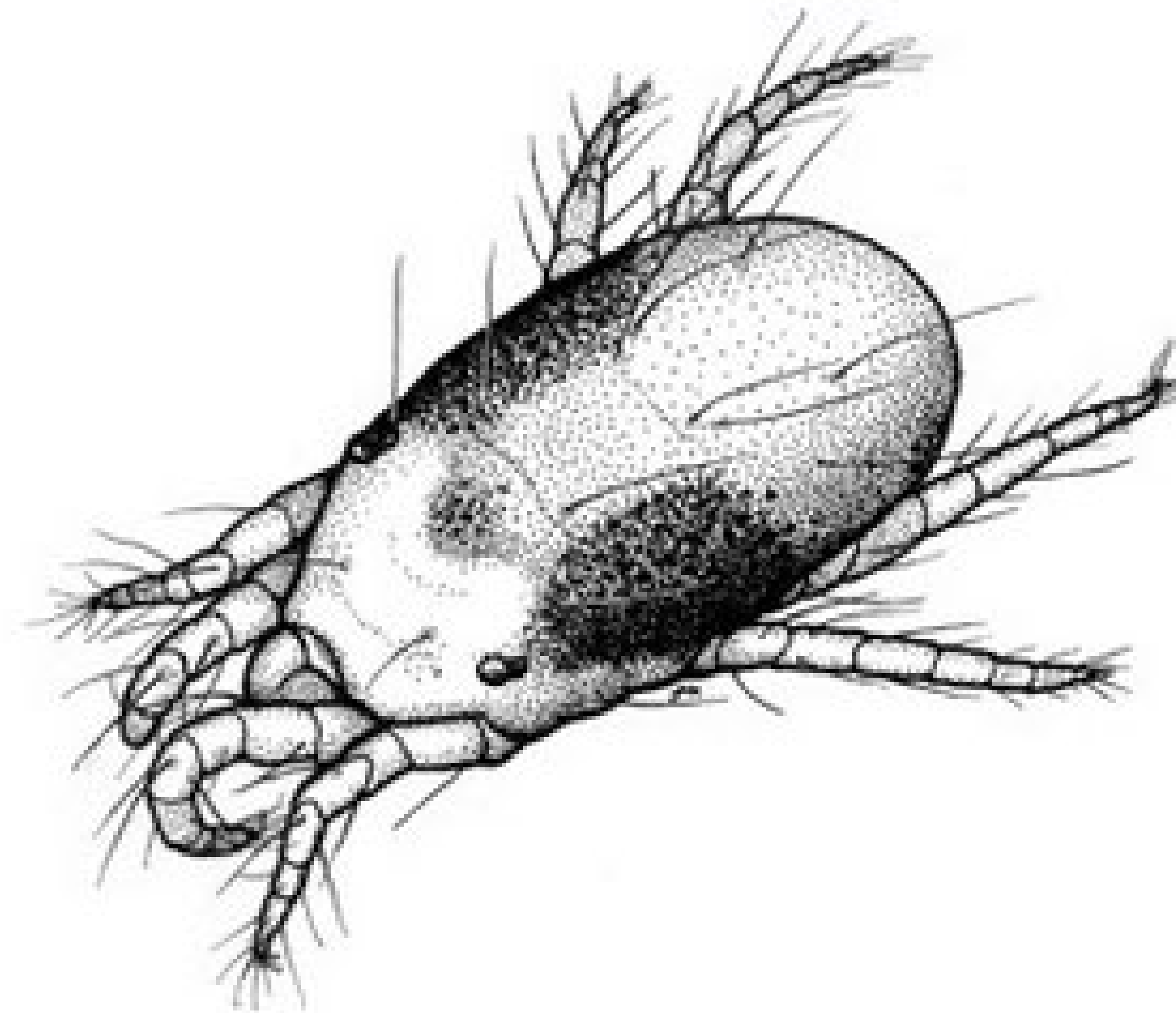


Banks grass vs. two-spotted

Appearance
(adult females)
Drawings by Jim
Kalisch



Dark green pigment spots extend down length of body; body is more elongate



Dark green pigment in two distinct spots on front 1/2 of body; body more rounded

Carmine mite



Banks grass vs. two-spotted

Webbing	Produces spider-like silk webbing	Produces spider-like silk webbing; tends to produce more webbing than BGM
Host Range	Almost exclusively grasses, such as corn and sorghum	Many grass species (corn, sorghum) plus soybeans, fruit trees, vegetables, and ornamentals
Timing	Appears earlier in the season	Tends to appear mid- to late-season

Banks grass vs. two-spotted

Location on Crop	Mostly lower leaves, moving upward as the infestation grows	Can feed over the entire plant
Overwintering Location	Primarily the crowns of winter wheat and native grasses	Primarily alfalfa and other broadleaf plants along crop field borders
Susceptibility to Insecticides	Moderately susceptible to many common miticides	Has developed resistance to some products; control is less consistent

Corn-specific considerations

- Which mite species is present?
- Sandy pivot with history of WBC/WCR insecticides?
- First evidence = yellow/whitish spotting on the top of the leaf
- Confirm presence of mites on undersides of leaves
 - Drought and disease can cause similar discoloration

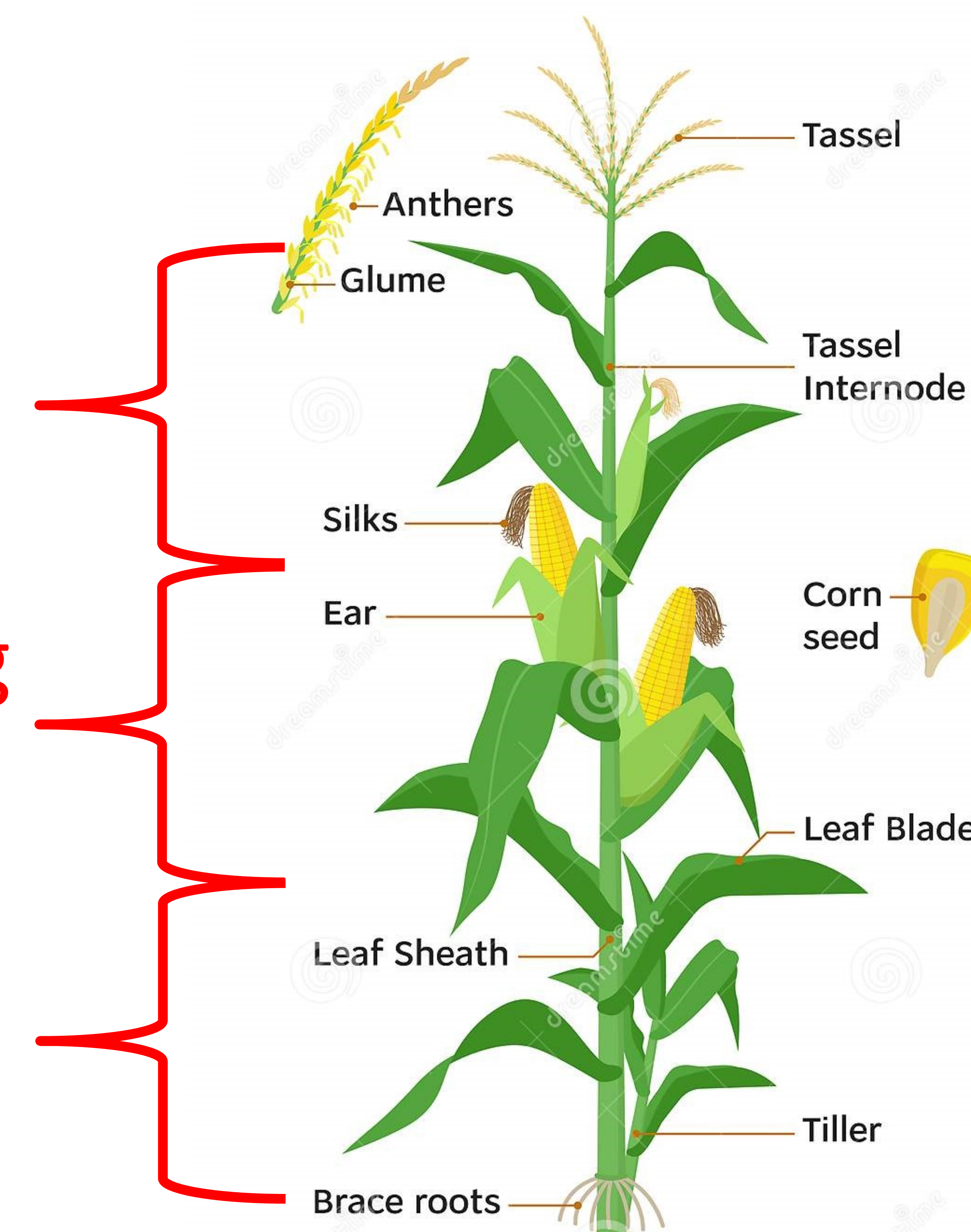


Economic threshold in corn

- In corn, ET = visible damage in the lower third of the plant with mite colonies present in the middle third
- Once the hard-dough (late R4) stage is reached, no economic benefit will result from treatment

Mites “pushing ear leaf”

Yellow/white stippling



Soybean-specific considerations

- Twospotted spider mites only species present
- Overwinter outside of field
- First colonize field on borders; watch south facing edges, water stressed areas of field for early damage symptoms and mites
- Damage produces yellow spots (stippling) on lower leaves, later moving higher up in canopy



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(Photo courtesy of Daren Mueller, Iowa State University, Bugwood.org)

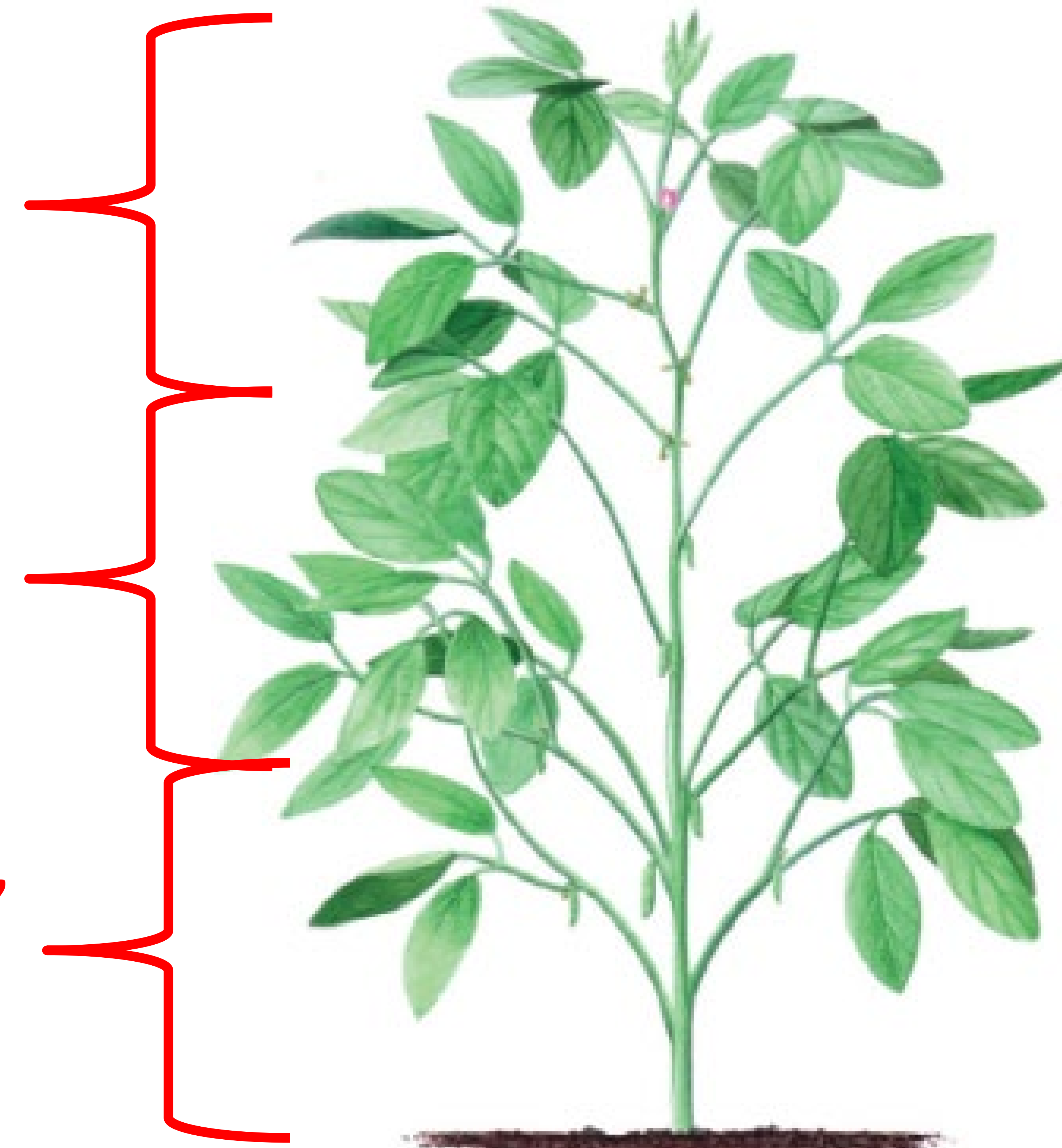
Economic threshold in soybeans

- In soybean, ET = heavy stippling on lower leaves with some stippling progressing into middle canopy; mites present in middle canopy with scattered colonies in upper canopy; lower leaf yellowing common and some lower leaf loss

Scattered mite colonies

Some stippling, mites present

Heavy stippling, leaf yellowing, some leaf loss



Crop injury in soybeans

- Like corn, damage from mites may be confused with drought and foliar diseases; **base treatment decisions on the presence of mites**
- Spot treatment can work for localized infestations, but check other areas (especially downwind) and extend into these areas if present
- Although late-season infestations may accelerate soybean senescence and increase pod shattering, caution should be used in deciding to treat with pesticides because many have 21-28 day PHI

Chemical applications

- Realistic goal is to slow the rate of population increase
- For effective control, spider mites must come into contact with the miticide
 - Since mites are found primarily on the underside of the leaves, they are difficult to reach with low volume applications
 - Using 3+ GPA by air and 15+ GPA by ground may increase effectiveness (check label!)
 - Applications are generally more effective very early morning/late evening to avoid the upward movement of sprays on hot rising air away from the plants



Miticide product options

Mode of Action	Active Ingredients	Product Names (examples)	Crops Labeled	Notes	Stages Targeted		
					Eggs	Immatures	Adults
1B: Organophosphates	Dimethoate	Dimethoate, Dimate	Corn + Soy	Difficult to kill mite eggs and removes natural enemies; infestations can recur in 7-10 days	X	✓	✓
	Chlorpyrifos	Lorsban*, Warhawk					
3A: Pyrethroids	Bifenthrin	Bifenture, Brigade, Sniper					
	Zeta-cypermethrin + bifenthrin	Hero					
1B + 3A combination products	Chlorpyrifos + gamma/lambda-cyhalothrin	Cobalt*, Cobalt Advanced*					
	Chlorpyrifos + bifenthrin	Tundra Supreme					

Miticide product options

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					Eggs	Immatures	Adults
6: Chloride channel activators	Abamectin	Agri-Mek	Soy	Targets active stages of mites	X	✓	✓
12C: Inhibitors of ATP synthesis	Propargite	Comite	Corn				
10B: Mite growth inhibitors	Etoxazole	Zeal	Corn + Soy	Active against eggs and immatures	✓	✓	X
23: Tetric/tetric acid derivatives	Spiromesifen	Oberon	Corn				✓
	Hexythiazox	Onager	Corn				X

Biological controls

- Many natural enemies prey on spider mites and play a major role in population suppression most years

Fungal disease



Predatory mites



Lady beetles



Six-spotted thrips



Minute pirate bugs



Flaring spider mites

- Many spider mite problems may be traced back to an earlier application of a broad-spectrum insecticide that reduced populations of these natural enemies
- Many products targeting western bean cutworm, corn rootworm, soybean defoliators, or soybean aphid could lead to mite flare-ups by removing the beneficial insects and allowing the pests to thrive

Take Home Points

- It is important to identify spider mite species in corn; management options differ depending on species
- Pesticides differ in their activity against different spider mite stages; important to understand this in pesticide selection
- Avoid unnecessary broad-spectrum insecticide applications early in the season which may encourage later season spider mite outbreaks by reducing natural enemy populations