

## Mite Management in Corn and Dry Beans in the Panhandle

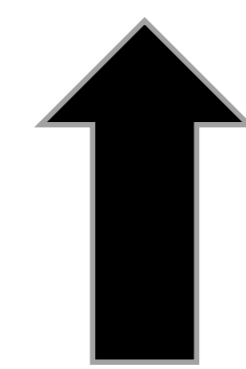
Jeff Bradshaw

Entomology Specialist

## In this session, you will ...

- Learn to identify common mites in corn and dry bean
- Recognize the conditions that favor pest mite outbreaks
- Understand tools, tactics, & strategies for pest mites IPM in corn and dry bean

# Crop Production Clinics



Two-spotted spider mite



Banks grass mite

~ 20 X  
magnification

# Crop Production Clinics



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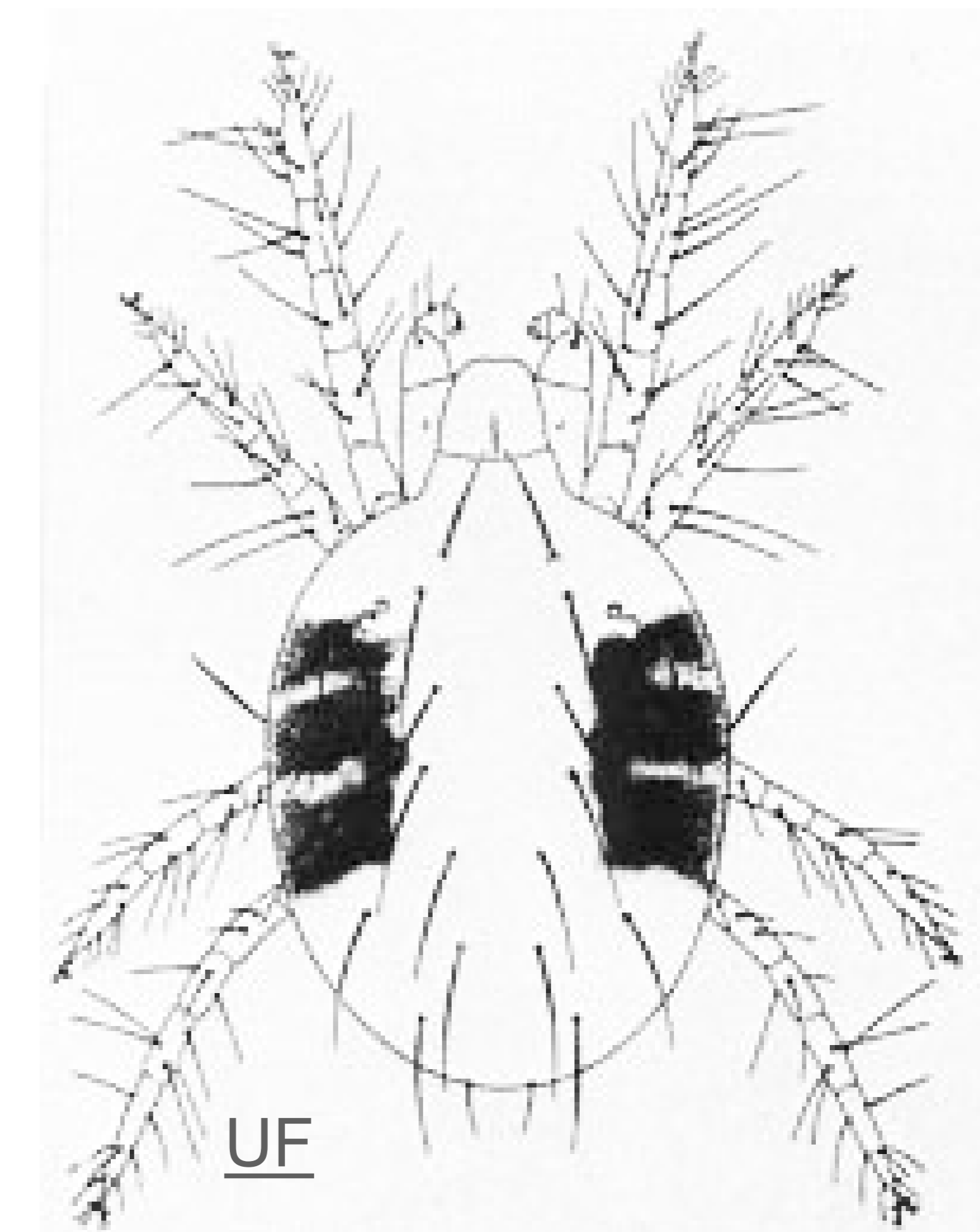
Two-spotted spider mite  
(TSSM) in dry bean

Injury



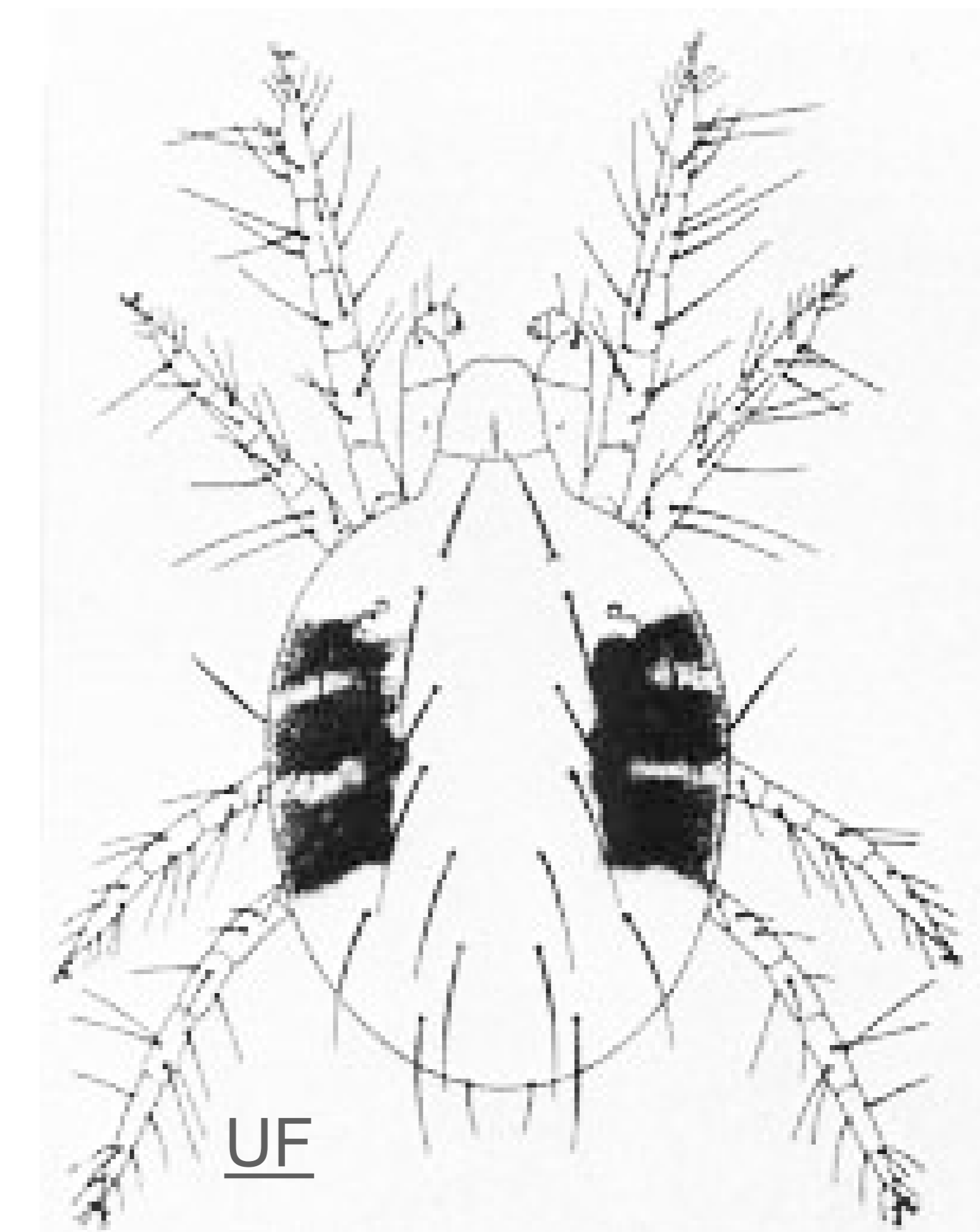
## TSSM Biology

- Hosts; are *many*
- Disperse from overwintering sites in mid-summer



## TSSM Life Stages

- Egg; oval and translucent
- Larvae; six-legged, translucent stage
- Protonymph; eight-legged stage
- Deutonymph; eight-legged stage
- Adult; eight-legged stage



## TSSM Development

- Development time is dependent on many factors, but temperature is most important
  - Development threshold range: ~ 53.6°F to 104°F
  - Female TSSM can lay a maximum of 12 eggs/day at 77 °F

**Relationship between temperature and development time (egg to adult) for two-spotted spider mite. (Sebelis 1981)**

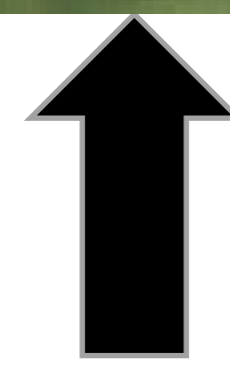
<b>Temperature (°F)</b>	<b>Days</b>
59	36.3
68	16.6
86	7.3

# Crop Production Clinics



**Banks grass mite (BGM)**  
**In corn**

**Injury**





## BGM Biology

- Hosts are primarily grasses: corn, sorghum, wheat and sugar cane
- Overwinter in late-season grasses such as winter wheat or grassy alternate hosts around fields
- Disperse in the spring and can build by late summer if conditions allow

Banks grass mite

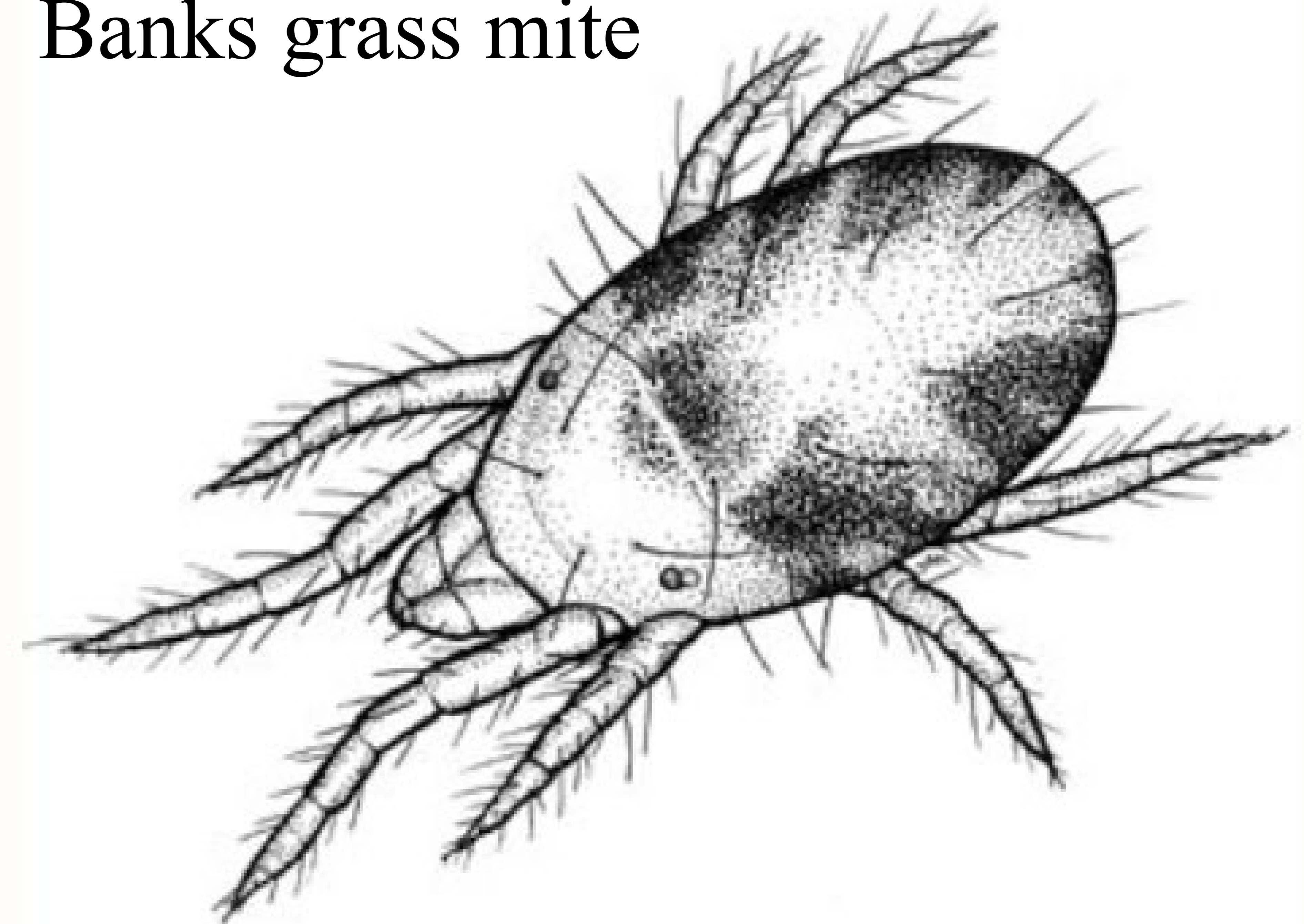


Illustration: Jim Kalisch

## BGM Life Stages (same as TSSM)

- Egg; oval and translucent
- Larvae; six-legged, translucent stage
- Protonymph; eight-legged stage
- Deutonymph; eight-legged stage
- Adult; eight-legged stage



## BGM Development

- Development time for BGM is roughly 7-14 days @ 70°F from egg to adult
- BGM emerge from overwintering sights earlier than TSSM

Banks grass mite injury in corn



## Pest Mite IPM

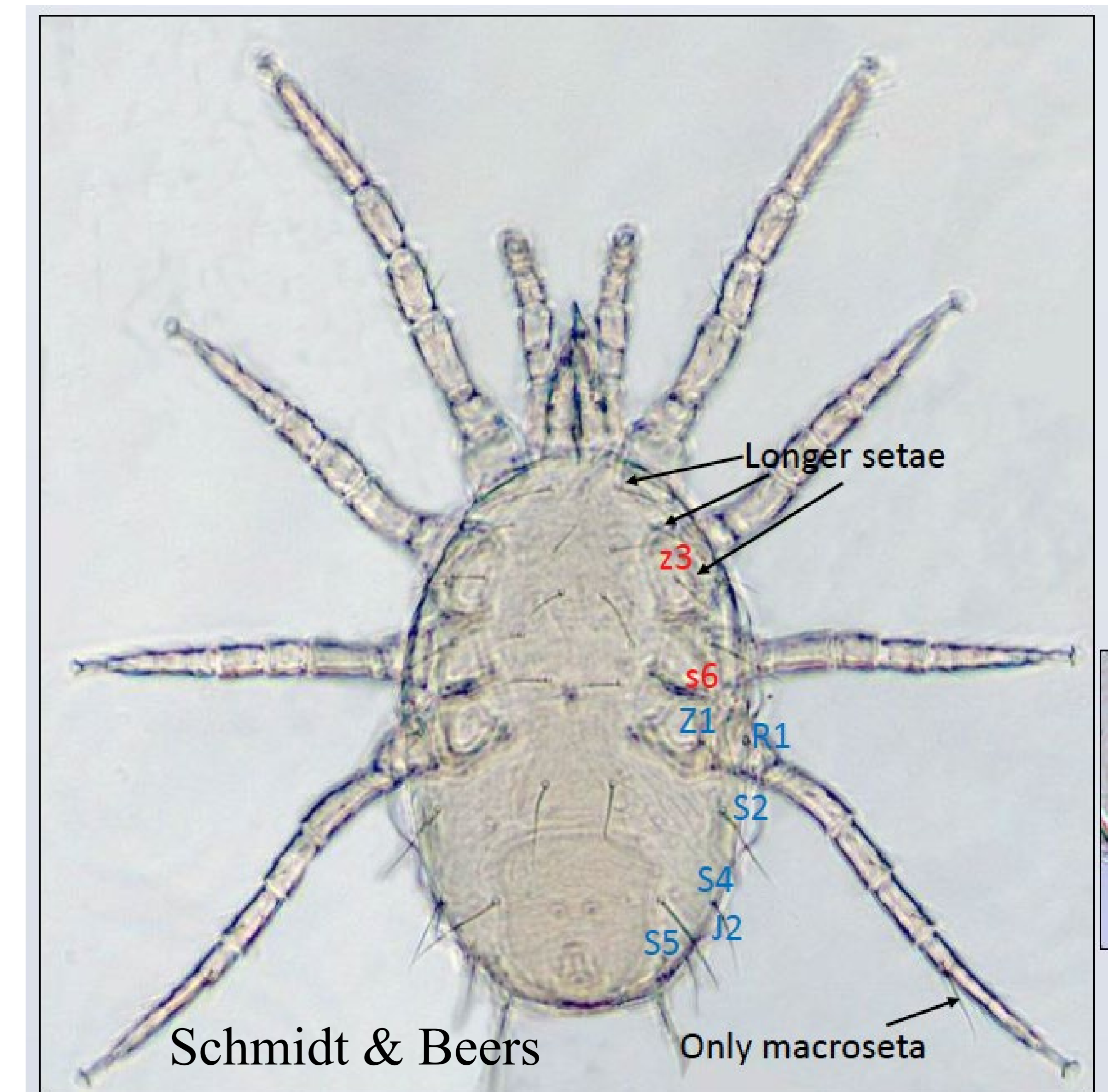
### Biological Control

- Know the good from bad mites
- There are *many* species, but TSSM & BGM are unique looking
- Some predatory mites are less productive under low humidity than TSSM
- *Neoseiulus fallacis* is a common predatory mite throughout the high plains; capable of reproducing at lower temperatures

Predatory mite  
(*Neoseiulus fallacis*)  
feeding on TSSM



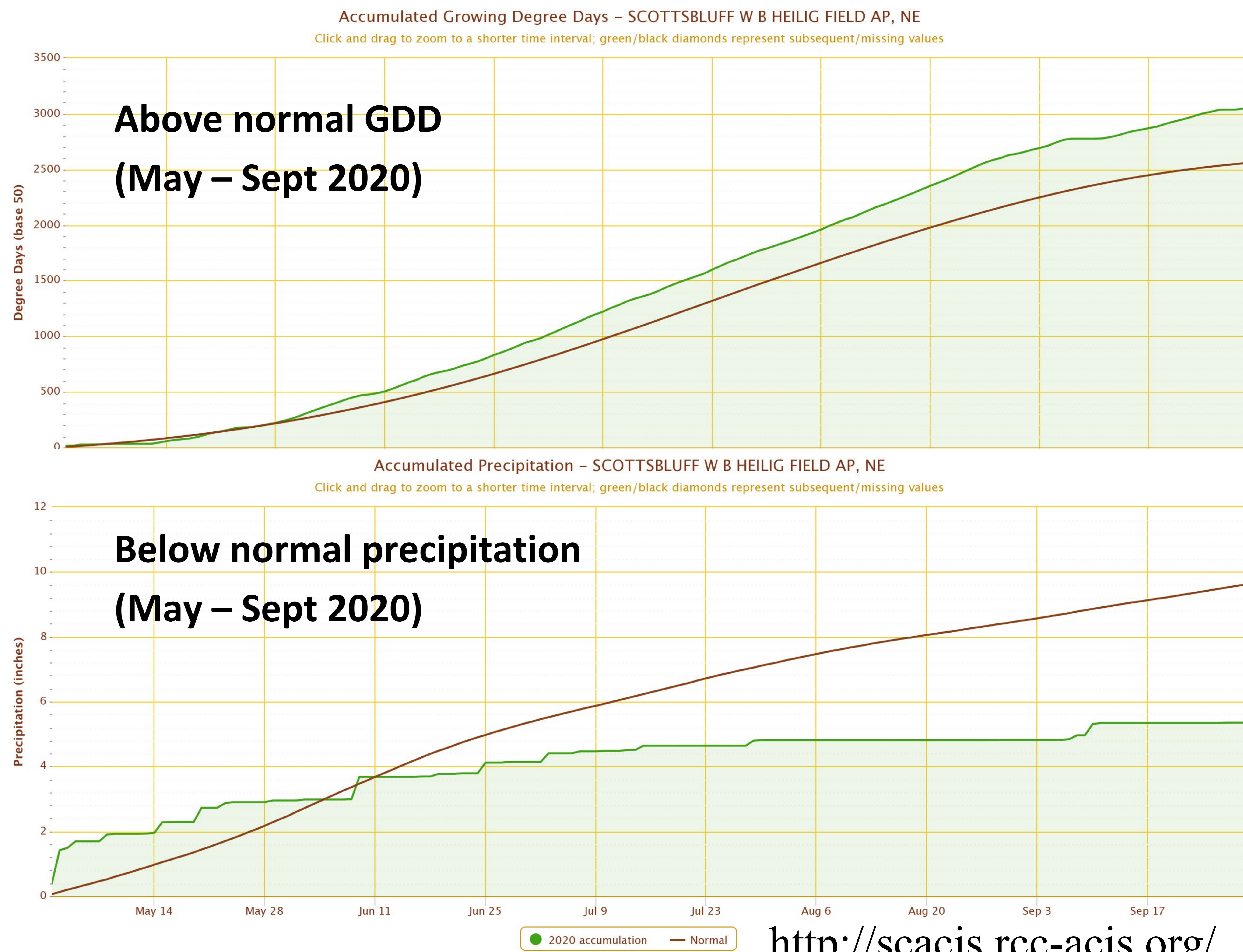
Slide mount of the predatory mite *Neoseiulus fallacis*



## Pest Mite IPM

### When is pest mite risk high?

- If temps are high ...
  - For example, August 2020 was the 2<sup>nd</sup> highest average mean temp on record at SCB airport station (76.5°F)
- ... and precipitation low
  - For example, August 2020 recorded 0 inches at SCB airport station
- \*Drought stress\*



## Pest Mite IPM

### When to act?

- BGM and TSSM in corn
  - Treat when injury to the lower 1/3 of canopy or small colonies in the middle canopy before hard dough stage
- TSSM in dry bean
  - No thresholds developed; consider treatment when stippling found in middle canopy or scattered colonies in the upper canopy

### Products for spider mite control in corn and dry bean (adapted from Wright, Peterson, and Hunt; CropWatch, July 22, 2020)

MOA Class	Chemical	Crop	Target stage
Organophosphate (1B)	Dimethoate	Corn & dry bean	Adults/nymphs
Pyrethroid (3A)	Bifenthrin	Corn & dry bean	Adults/nymphs
Chloride channel activators (6)	Abamectin	Dry bean only	Adults/nymphs
Chitin synthase inhibitor CHS1 (10B)	Etoxazole (Zeal)	Corn only	Nymphs/eggs
Mitochondrial ATP synthase inhibitor (12C)	Propargite (Comite)	Corn only	Adults/nymphs
Tetronic and tetramic acid derivatives (23)	Spiromesifen (Oberon)	Corn only	Nymphs/eggs
	Hexythiazox (Onager)	Corn & dry bean*	Nymphs/eggs
Combination Products			
3A + 3A	Zeta-cypermethrin + bifenthrin (Hero)	Corn & dry bean	Adults/nymphs
1B + 3A	Chlorpyrifos + bifenthrin (Tundra Supreme)	Corn	Adults/nymphs


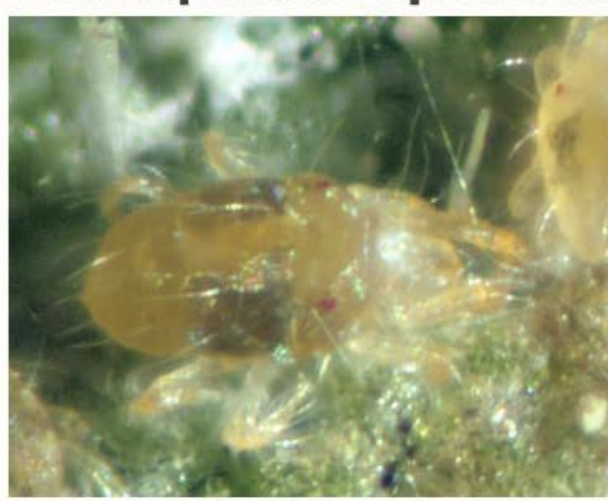
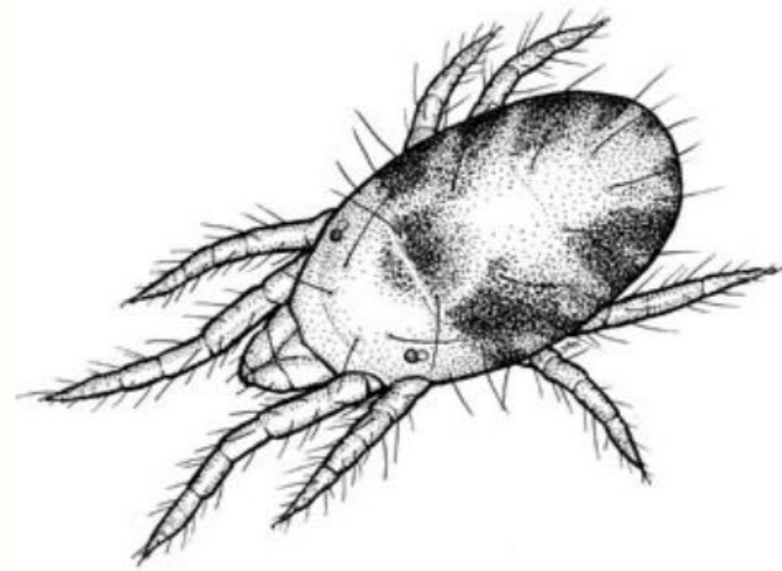
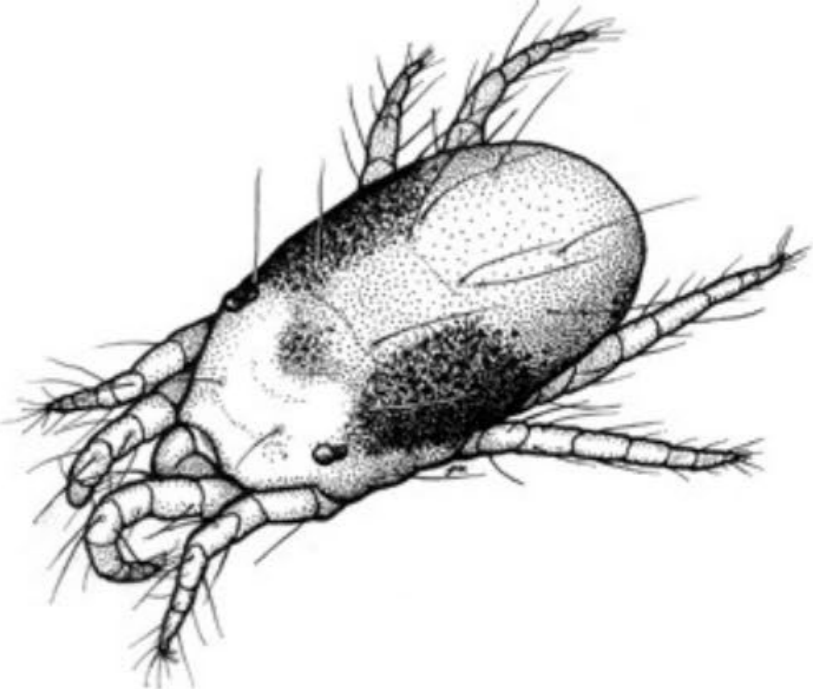
\* Only labeled for dry bean use in Nebraska west of US 281.

## Pest Mite IPM

### How to take action?

1. Limit drought stress if you have irrigation
2. Cautious use of Pyrethroids and organophosphates
3. Products that control nymph and egg stages may be better control options
4. Cold weather fronts can reduce spider mite population growth

Table 1. Comparison of mite species

	Banks grass mite (BGM) 	Two-spotted spider mite (TSM) 
<b>Appearance (adult females)</b> 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
<b>Webbing</b>	Produces spider-like silk webbing	Produces spider-like silk webbing; tends to produce more webbing than BGM
<b>Host Range</b>	Almost exclusively grasses, such as corn and sorghum	Many grass species (corn, sorghum) plus soybeans, fruit trees, vegetables, and ornamentals
<b>Timing</b>	Appears earlier in the season	Tends to appear mid- to late-season
<b>Location on Crop</b>	Mostly lower leaves, moving upward as the infestation grows	Can feed over the entire plant
<b>Overwintering Location</b>	Primarily the crowns of winter wheat and native grasses	Primarily alfalfa and other broadleaf plants along crop field borders
<b>Susceptibility to Insecticides</b>	Moderately susceptible to many common miticides	Has developed resistance to some products; control is less consistent

Source: UNL Department of Entomology

## What's New in Insect Management in the Panhandle?

Jeff Bradshaw

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# **Conserving Beneficial Insects in Panhandle Cropping Systems**

**Jeff Bradshaw**

**Entomology Specialist**

What are your most important crop insect management concerns that Nebraska Extension should address

- 1.
- 2.
- 3.

What are your most important crop weed management concerns that Nebraska Extension should address

- 1.
- 2.
- 3.

What are your most important crop disease management concerns that Nebraska Extension should address

- 1.
- 2.
- 3.

