Twospotted Spider Mite

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Twospotted Spider Mite

Identification:

- Not insects-arachnids: related to spiders and ticks

Adults

- Small, oval (1/60 in; 0.4 mm)
- Yellow to yellow-green to orange
- Eight legs
- Black spot on each side of abdomen
- Males smaller than females with pointed abdomen

Twospotted Spider Mite

Identification:

- Not insects-arachnids: related to spiders and ticks

Eggs

- Small, round (1/150 in; 0.14 mm)
- Clear to milky white
- On leaf surface (underside) or webbing

Twospotted Spider Mite

Identification:

- Not insects-arachnids: related to spiders and ticks

Immature stages

- Small, oval (1/50 in;)
- Three instars
- Larva-six legs
- Nymphs-eight legs
- Black spot on each side of abdomen; sometimes absent or indistinct

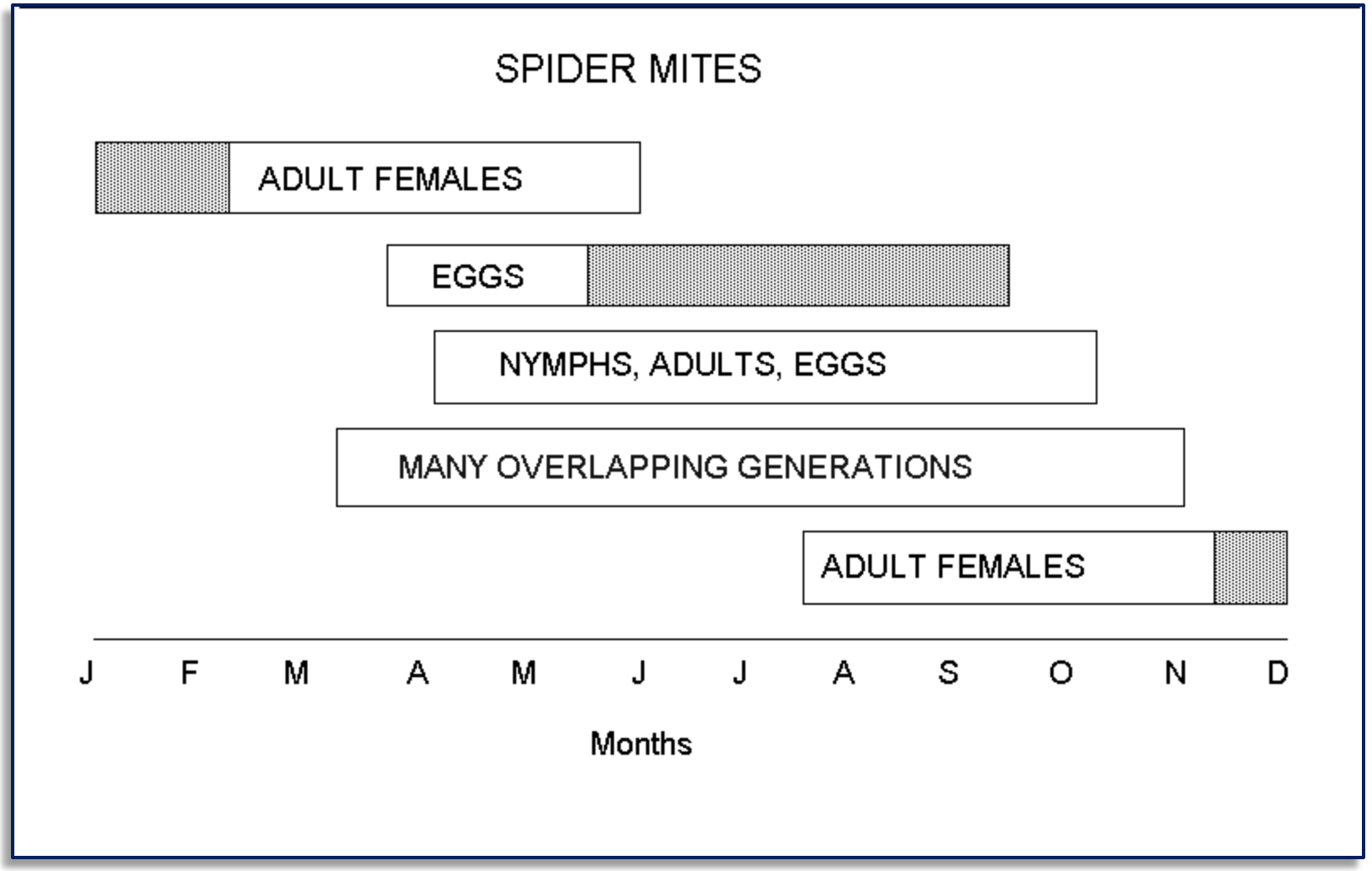
Twospotted Spider Mite

Biology and Life history

- Over winter as dormant, adult females
  - Plant crowns, cracks and crevices, other protected areas in and near fields
  - Emerge in spring
    - Begin feeding
    - Begin egg laying in 2-5 days
  - Up to 30 eggs per female per day
  - Larvae hatch in 2-10 days: 6 legs
  - Two additional molts: protonymph, deutonymph: 8 legs
  - Complete life cycle in 1 to 3 weeks
  - Five to 8 overlapping generations

Twospotted Spider Mite

Life cycle in southwest Idaho



Twospotted Spider Mite

Biology and Life history

- Wide host range
  - Feed on nearly 200 plant species
  - Many field, forage, horticultural and ornamental crops

… A partial list

- Dry beans, lima beans, snap beans, sweet corn, field corn…
- Alfalfa seed, clover seed, carrot seed, corn seed…
- sugar beets, hops, mint, potatoes…
- Apple, pear, apricot, cherry, peach, nectarines, prune, plum, grape, raspberry…

Twospotted Spider Mite in Dry Bean

Damage

- Adult and immature stages feed on leaves and pods
  - Pierce and remove juices from plant cells
  - Stippling and drying, bronzing of leaves
    - Reduce plant vigor
    - lower yields
  - Often begins on field edges
  - High population's during bloom and Pod fill are especially damaging
  - limas, kidneys, and small whites susceptible

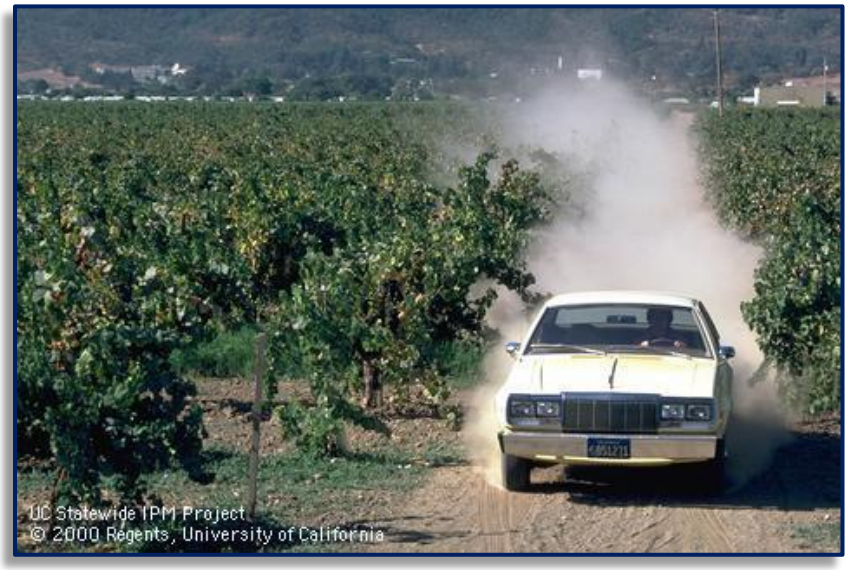
Twospotted Spider Mite in Dry Bean

Management

- Scouting
  - Check fields weekly
    - Begin during vegetative growth
    - Check lower leaves for mites, mite damage, webbing
    - Mite usually found on lower leaf surfaces
    - Damage visible on upper surfaces
  - No established economic threshold
  - Prevent damage during bloom and pod fill: Flower and pod drop, reduced bean size.

Twospotted Spider Mite in Dry Bean

Management



- Cultural control
  - Keep dust down
  - Reduce plant stress
  - Avoid excess nitrogen
    - Drought stress and high nitrogen make plants better hosts for spider mites
    - Increasing fecundity and growth rates
  - Sprinkler irrigated fields often have fewer mite problems than furrow irrigated fields

Twospotted Spider Mite in Dry Bean

Management

- Biological control
  - Natural enemies can slow or prevent mite problems, especially pre-flowering
    - Thrips
    - Predatory mites
    - Minute pirate bugs
    - Mite destroyers

  - Avoid broad spectrum insecticides: OP's, carbamates, pyrethroids:
    - Kill natural enemies
    - Increase reproductive rates

Twospotted Spider Mite in Dry Bean

Management

- Chemical control
  - Use broad spectrum pesticides only when necessary; then selectively if possible
    - Spot treat field edges and hot spots: slow/prevent in-field spread
    - Be prepared for mite flare-ups after treatment with broad spectrum pesticides (e.g. lygus, armyworm, cutworm treatments)
  - Use selective pesticides when possible: OP's, carbamates, pyrethroids:
    - Kill natural enemies
    - Increase mite reproductive rates

2012 and 2013 Spider Mite Trials in Dry Bean

Pesticide trial methods

- 0.01 acre plots (22 ft x 22 ft)
- Randomized complete block: 4 replicates
- 30 gpa @ 32 psi (tractor-drawn boom sprayer)
- 10 Trifoliate leaves/plot pre-trt and 1 week intervals after trt
    - Spider mite motile stages
    - Spider mite eggs
    - Spider mite predators
    - Bean yield (2013)
- Analyzed by ANOVA: split plot in time

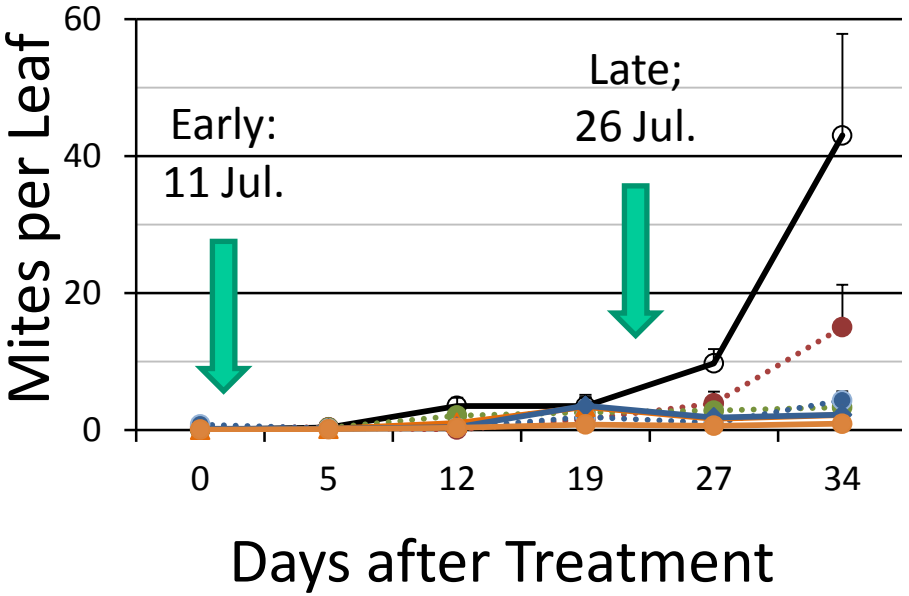
2012 Spider Mite Efficacy Trials

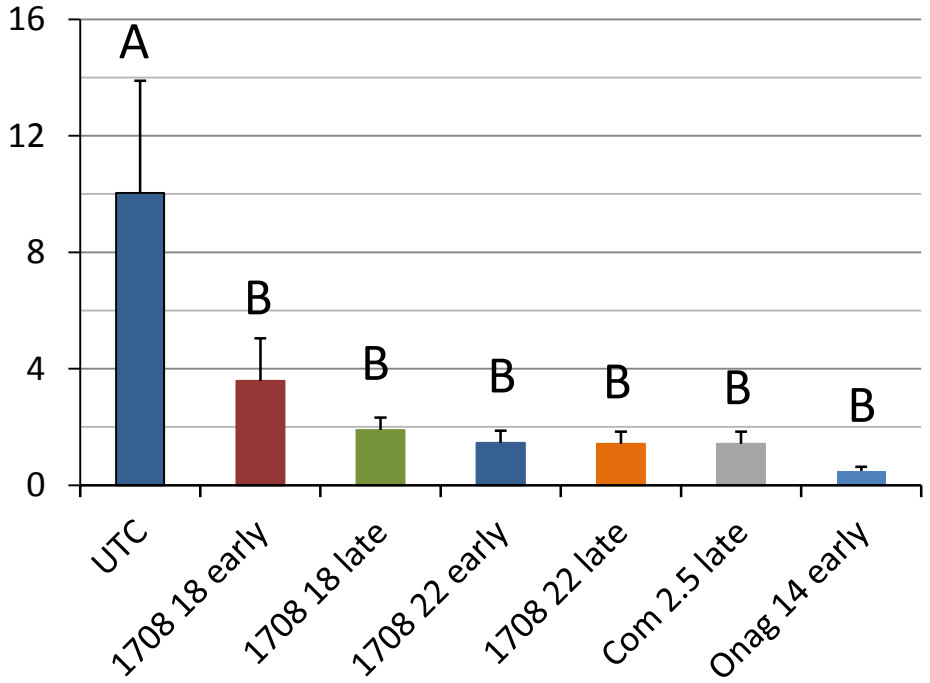
Fenazaquin early vs. late for spider mite control

No.	Treatment	ai	MOA/ IRAC group	Rate
1	GWN1708 early	fenazaquin	METI/ group 25	18 oz
2	GWN1708 late	fenazaquin		18 oz
3	GWN1708 early	fenazaquin	METI/ group 25	22 oz
4	GWN1708 late	fenazaquin		22 oz
5	Comite	propargite	ATP Syn. Inh./ group 12	40 oz.
6	Onager early	hexithiazox	MGR/ group 10A	14 oz.
5	UTC	n/a	n/a	n/a

2012 Spider Mite Control in Dry Bean

Mean number of spider mite motile stages per leaf on each sample day and over all sample days on treated and untreated plots

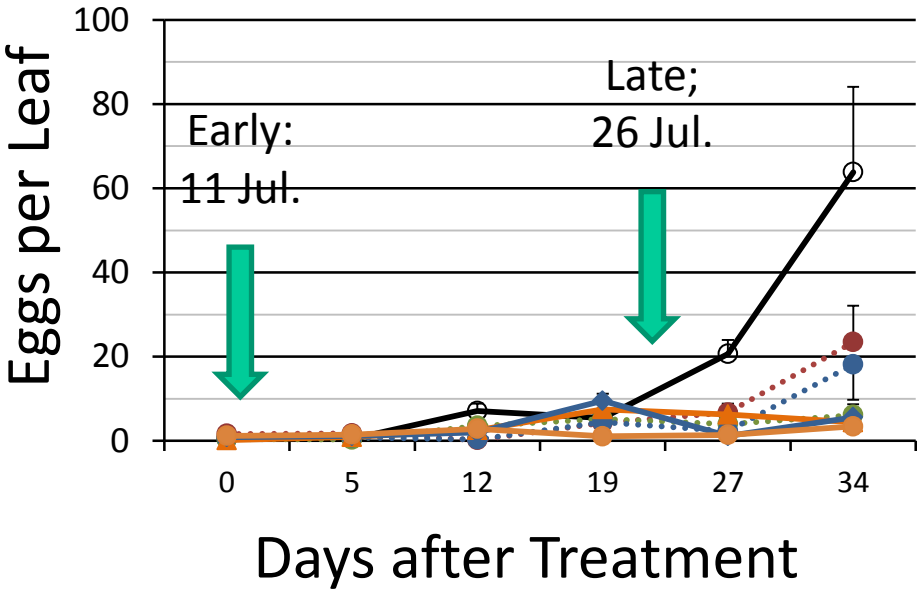


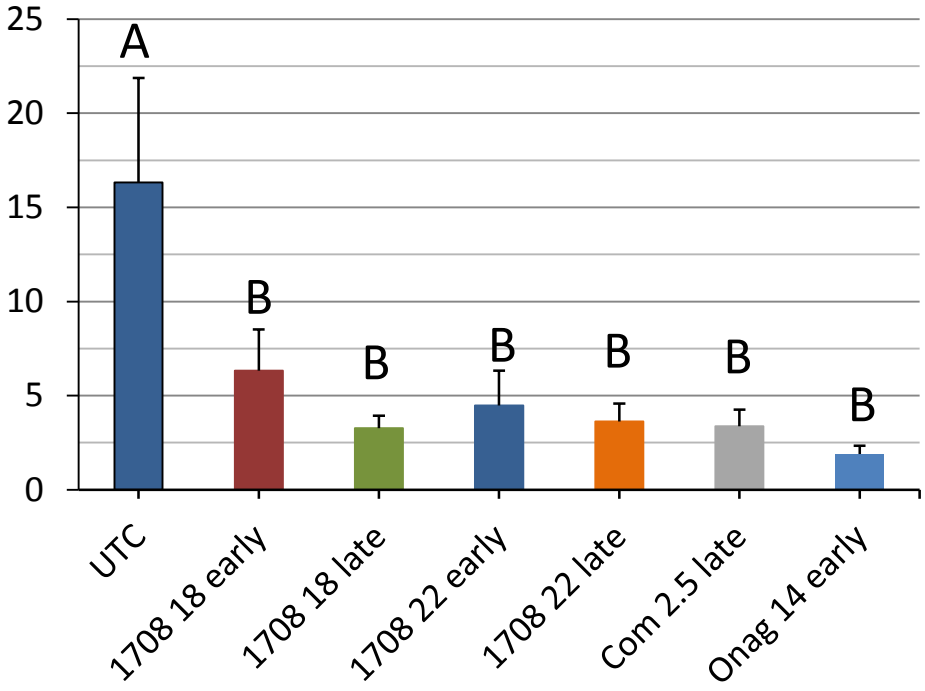


UTC
1708 18 early
1708 18 late
1708 22 early
1708 22 late
Com 2.5 late
Onag 14 early

2012 Spider Mite Control in Dry Bean

Mean number of spider mite eggs per leaf on each sample day and over all sample days on treated and untreated plots





UTC
1708 18 early
1708 18 late
1708 22 early
1708 22 late
Com 2.5 late
Onag 14 early

2013 Spider Mite Efficacy Trials

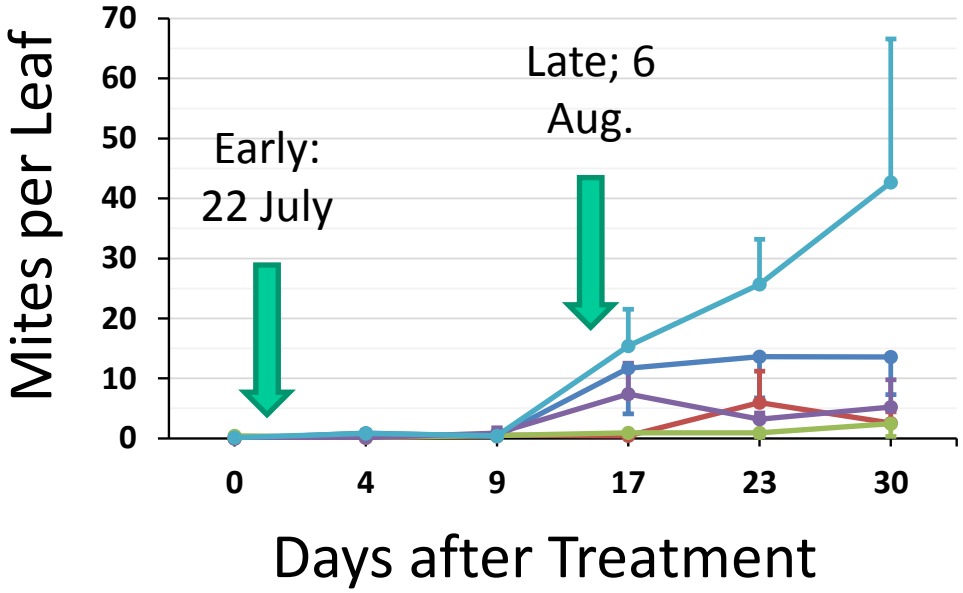
Onager and Magister for spider mite control

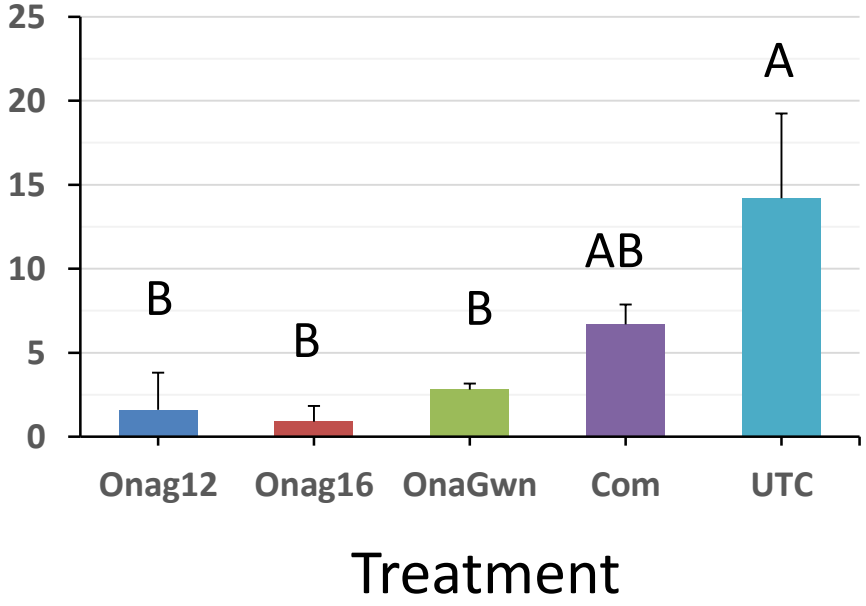
No.	Treatment	ai	MOA/ IRAC group	Rate
1	Onager, early	hexythiazox	MGR/ group 10A	12 oz
2	Onager, early	hexythiazox		16 oz
3	Onager + Magister, late	hexythiazox fenazaquin	METI/ group 25	12 oz
4	Comite, late	propargite	ATP Syn. Inh./ group 12	40 oz
5	UTC	n/a	n/a	n/a

6 oz. organosilicone surfactant in all treatments

2013 Spider Mite Control in Dry Bean

Mean number of spider mite motile stages per leaf on each sample day and over all sample days on treated and untreated plots



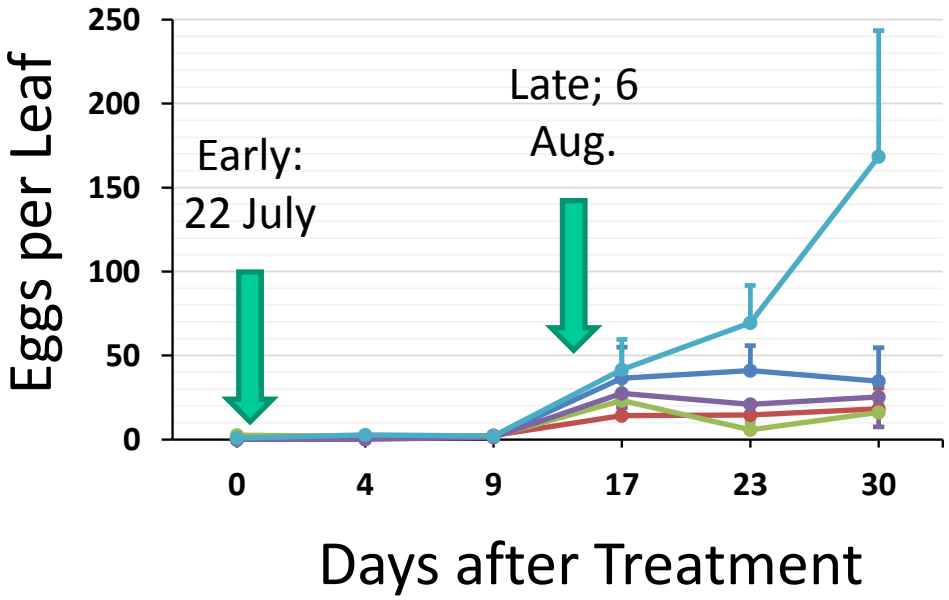


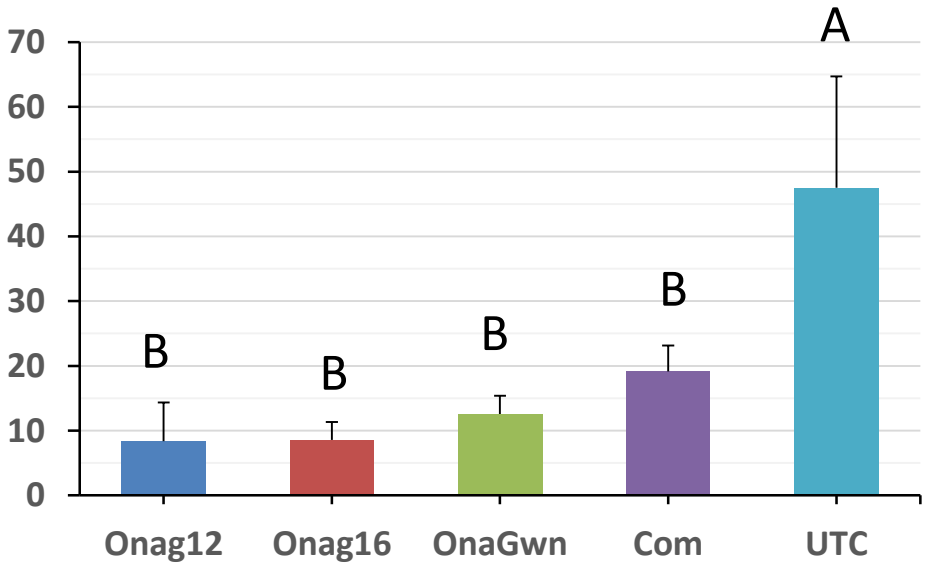
Onag12 Onag16 OnaGwn

Com UTC

2013 Spider Mite Control in Dry Bean

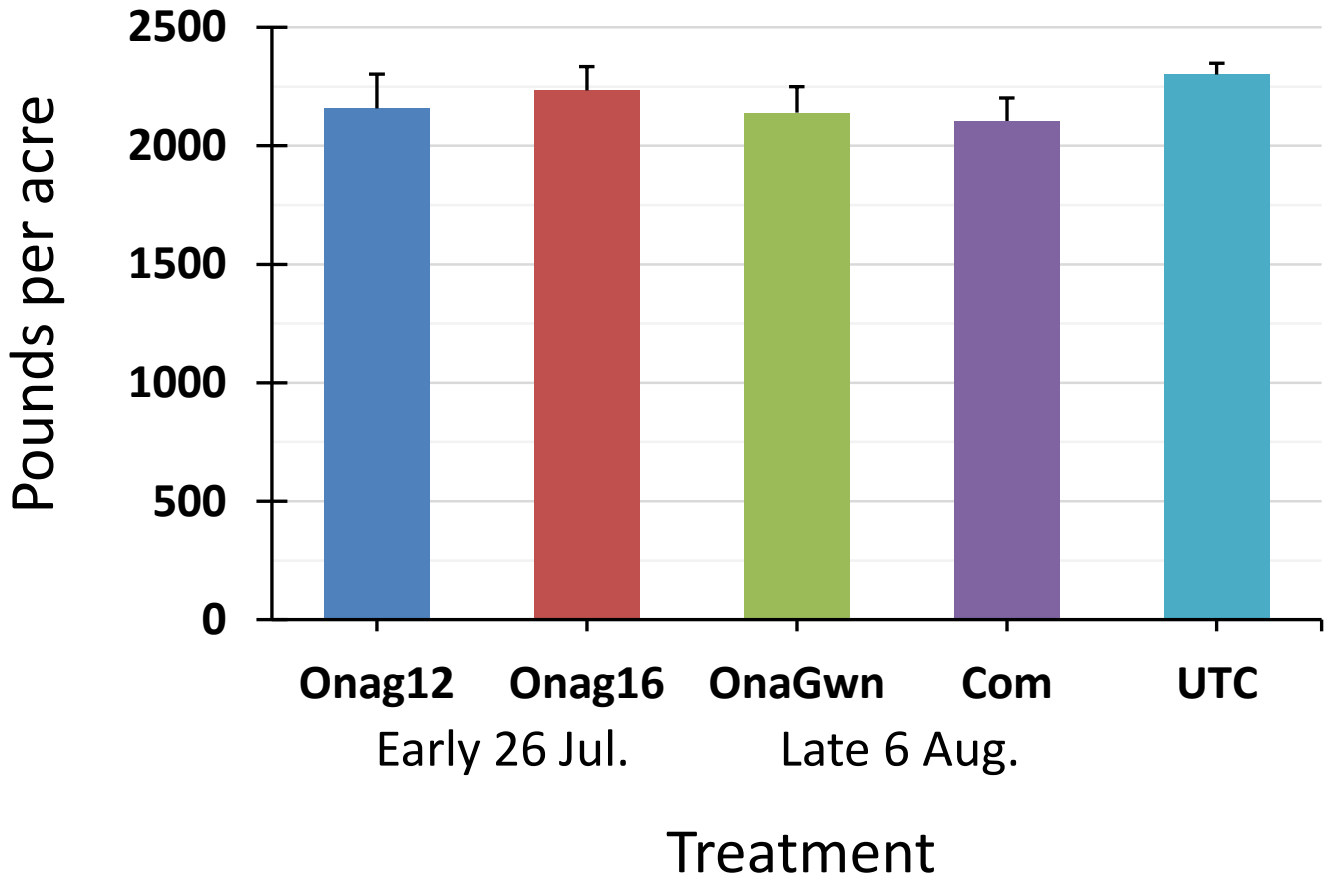
Mean number of spider mite eggs per leaf on each sample day and over all sample days on treated and untreated plots





2013 Spider Mite Control in Dry Bean

Mean dry bean field-yield on treated and untreated plots



Conclusions

- Lower nos. of motile mite stages and mite eggs on treated plots than on control plots
- No difference between mite and mite egg numbers among miticide treatments
- Onager and Magister treated plots performed at least as well as Comite-treated plots
- No impact of miticides on dry bean yield: mite nos. low until well into pod fill

Thanks to:

Noemi Fernandez, Karen Barbour and Rebecca Blanscet

For their help conducting this work

Gowan Co.

For providing materials for miticide trials

Questions?