Update on Pest Management for for Control of the Banded Sunflower Moth in North Dakota

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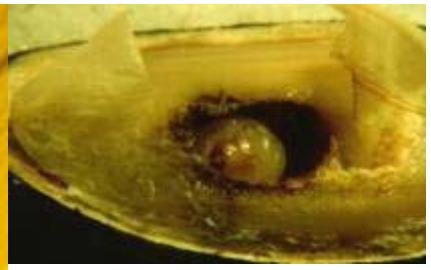
Sunflower Head Insect Damage to Seed

- Banded sunflower moth


- Red sunflower seed weevil

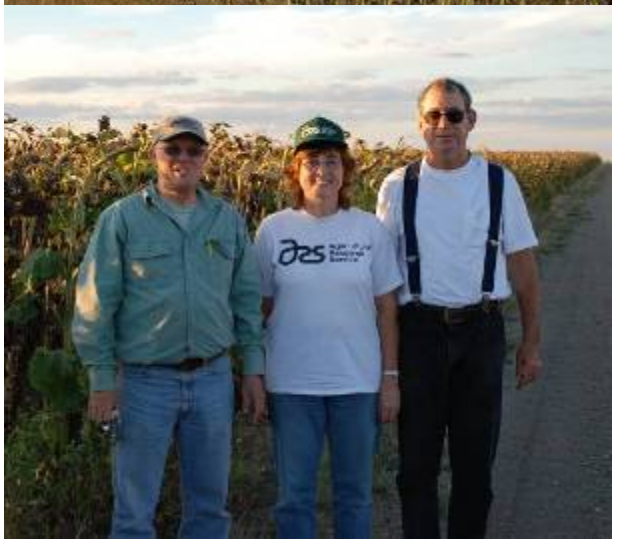
- Lygus bug


Project Objectives

- Compare effectiveness of treating edge versus whole field for control of seed infesting insects in both oil and confection sunflower fields
- Early (prior to mid-May) versus late planted fields (late May to June)
- Seed damaged caused by banded sunflower moth, red sunflower seed weevil and Lygus bug (in confection sunflower only)

Methods

- Bottineau-Renville-McHenry Counties in 2006, NC Region
- Treated fields were sprayed by air
  - Asana at 9 fl oz/a
  - Baythroid at 2.8 fl oz/a
  - Timing for late egg eclosion and early instar of larvae of BSM
  - Oil - edge + whole field spray applications
  - Confections – two whole field spray applications
- Fields were monitored for insect pests.



Methods

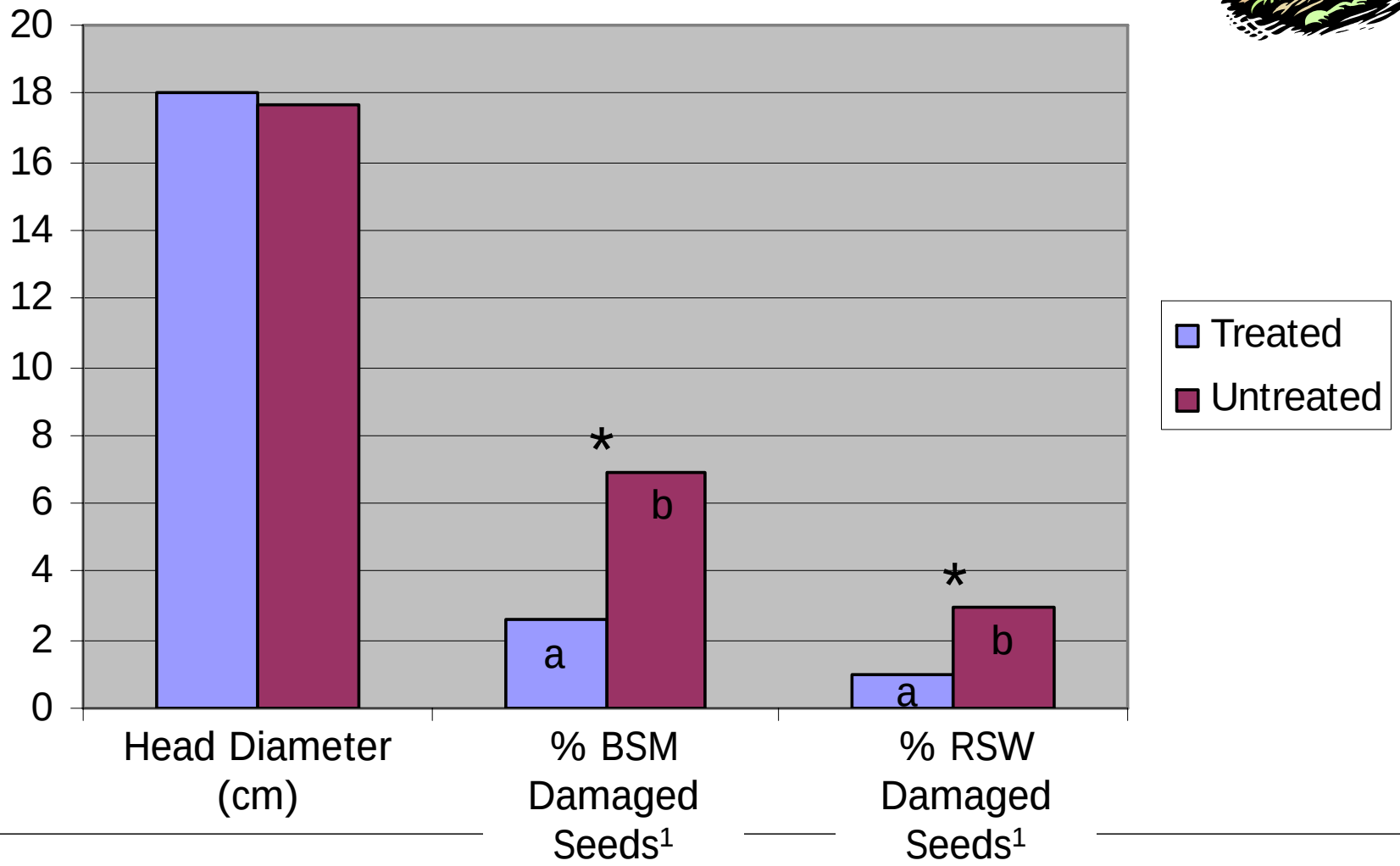
- Fields sampled on 25-26 Sept. 2006
- 10 heads each were collected at the edge, 40m & 150m into the field from two sides (60 heads per field)
- Heads returned to the lab
  - Dried, threshed, and evaluated for % seed damage from insects

Number of Fields Sampled

- Confection
  - Early
    - Sprayed =3
    - Not sprayed = 3
  - Late
    - Sprayed = 3
    - Not sprayed = 3
- Oil
  - Early
    - Sprayed =3
    - Not sprayed = 2
  - Late
    - Sprayed = 3
    - Not sprayed = 3

Total number of fields sampled = 23

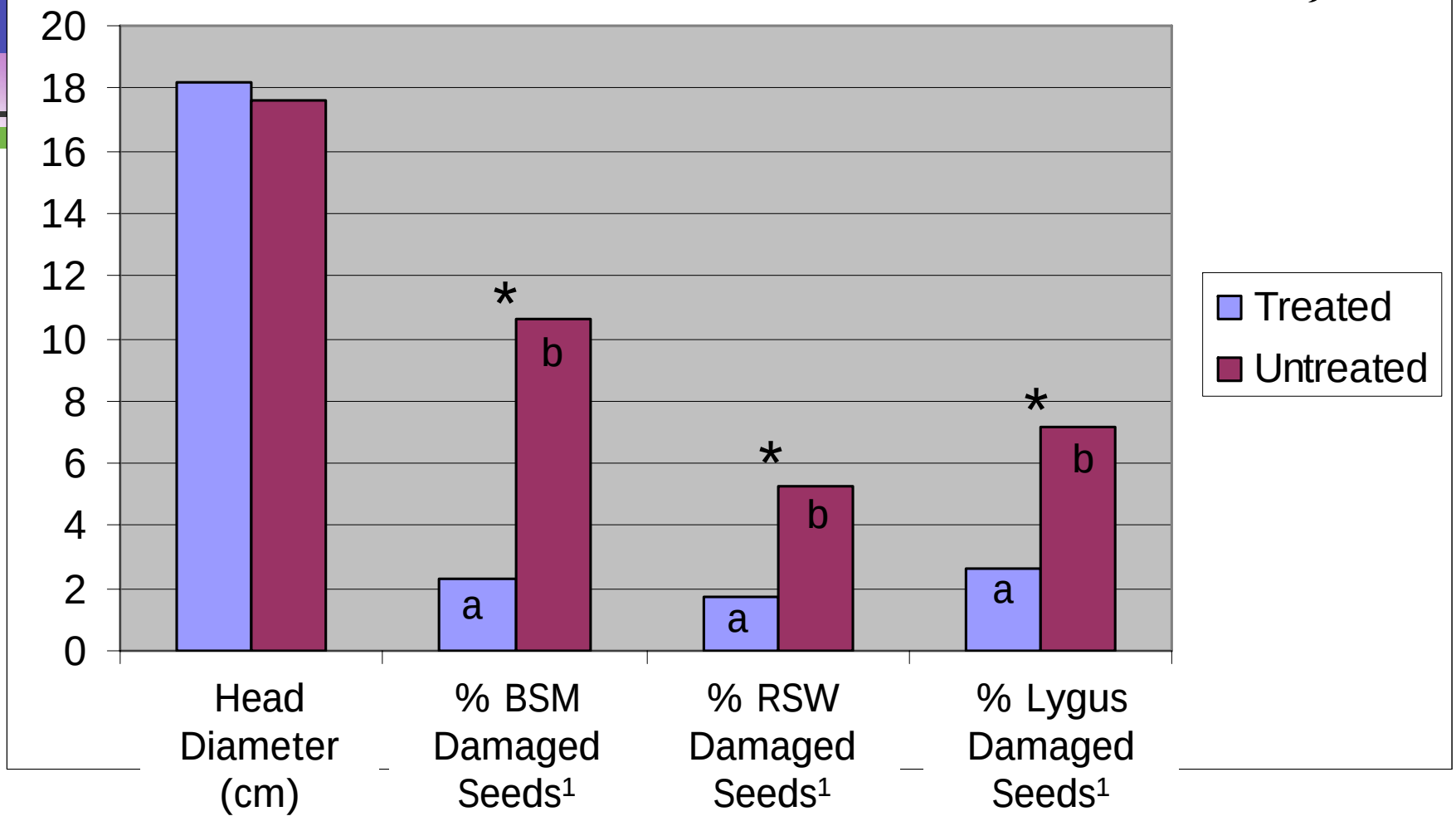
Treated vs. Untreated Sunflower Fields



Means within a column followed by the same letter are not significantly different (P<0.05), Fisher's Protected LSD.

[1]Data transformed using square root, untransformed data presented.

Treated vs. Untreated - Confection Sunflower Fields



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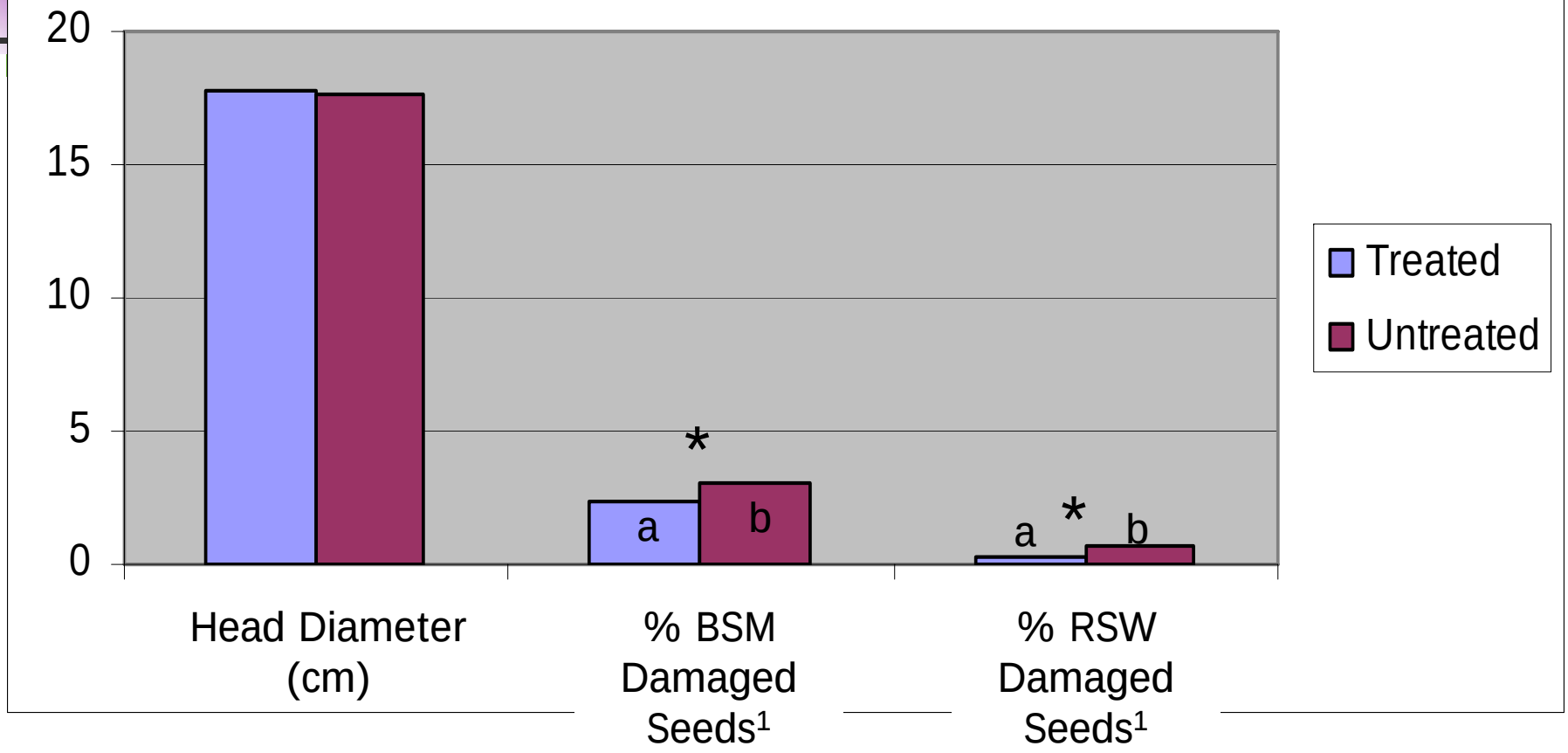
Treated vs. Untreated Oil Sunflower Fields



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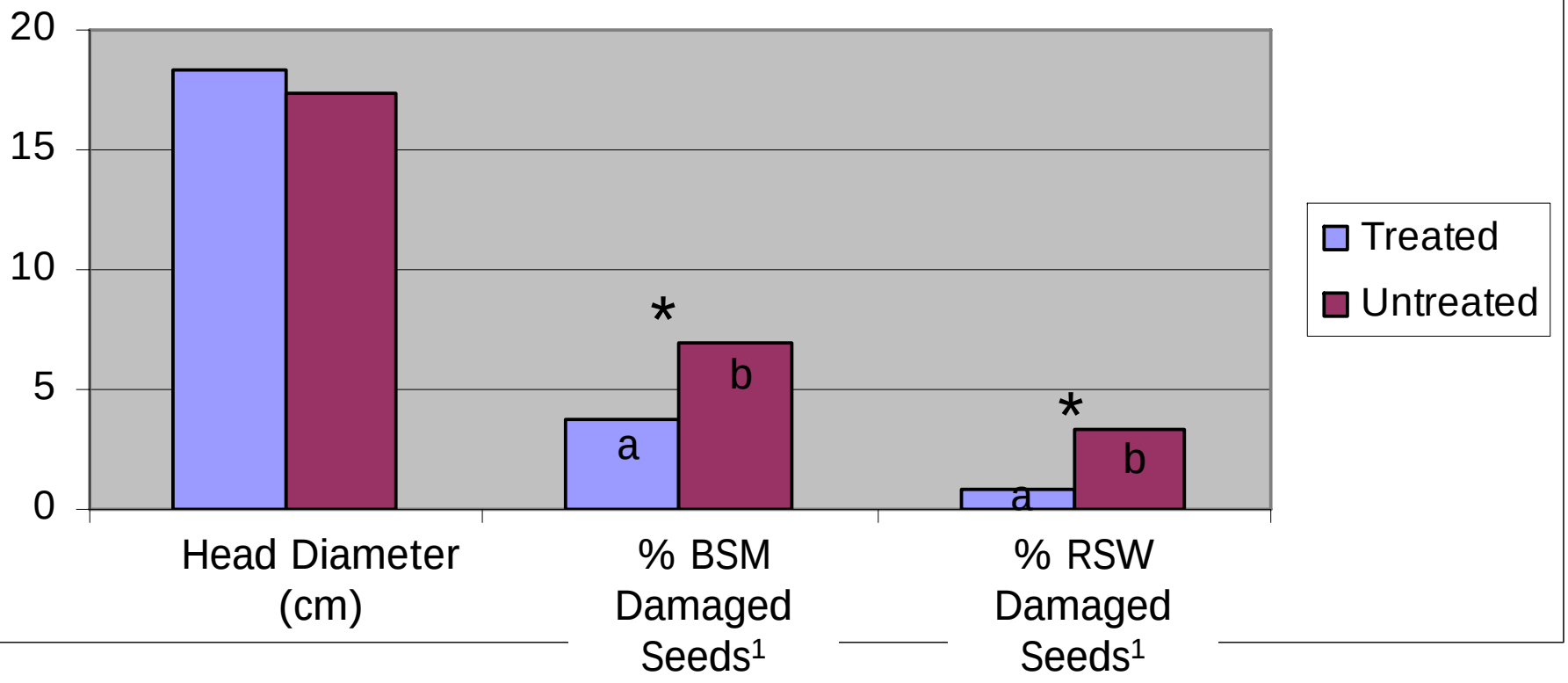
Treated vs. Untreated Early Planted Sunflowers



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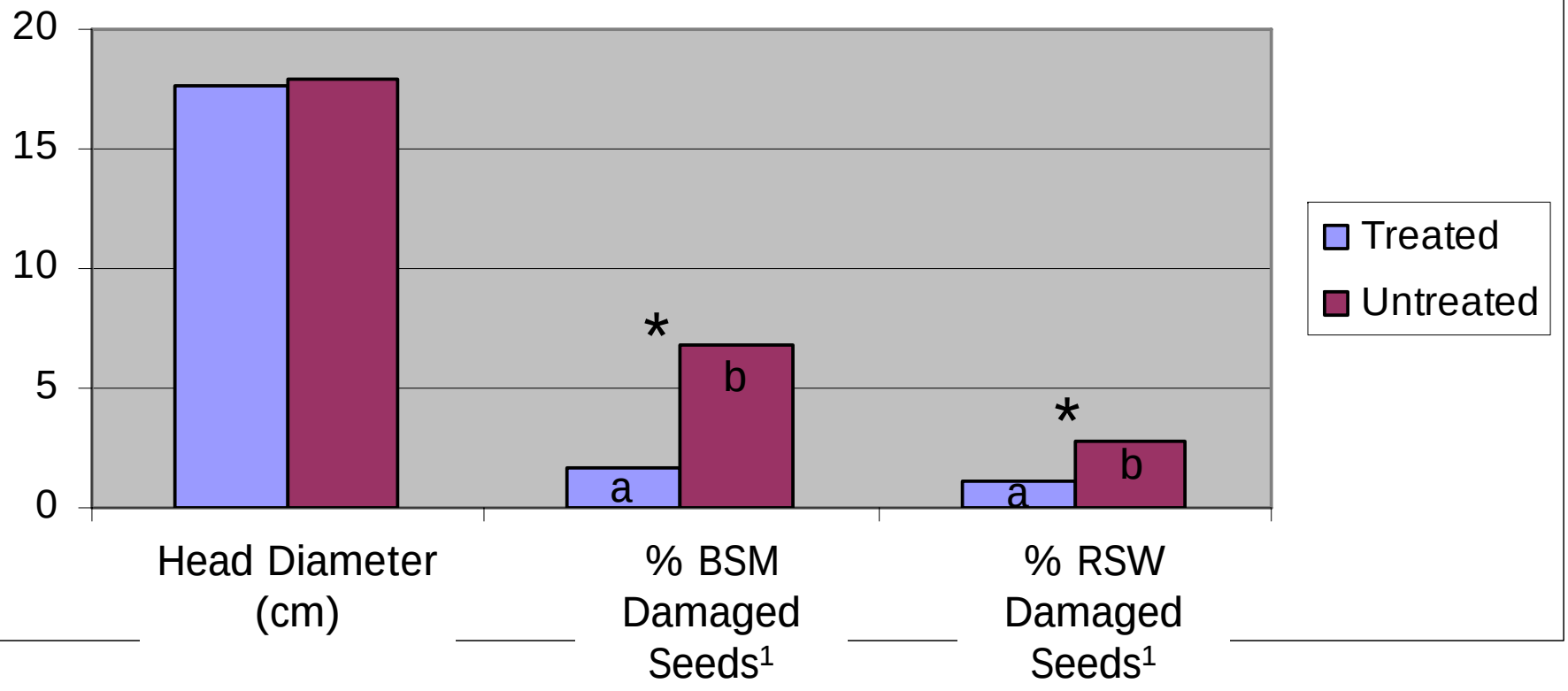
Treated vs. Untreated Late-planted Sunflowers



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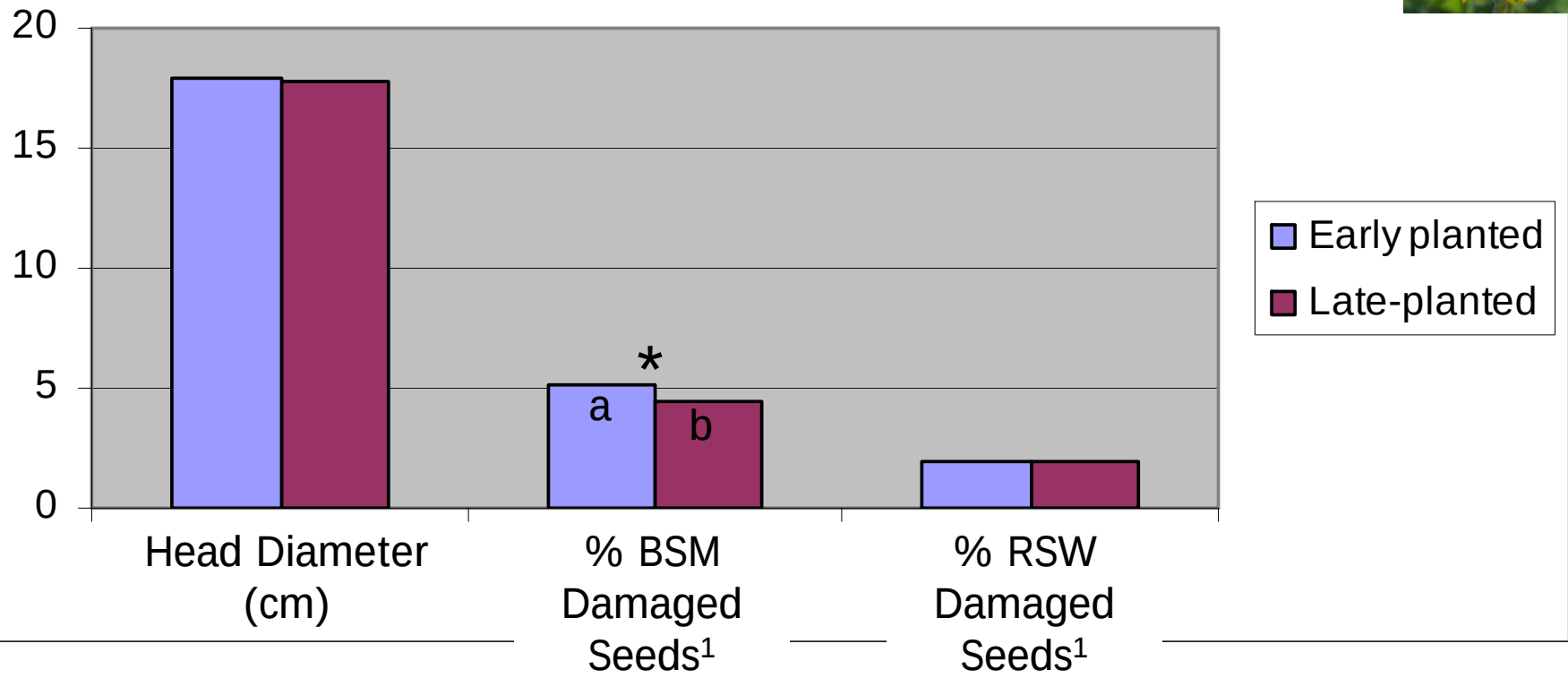
Early vs. Late-planted Sunflowers



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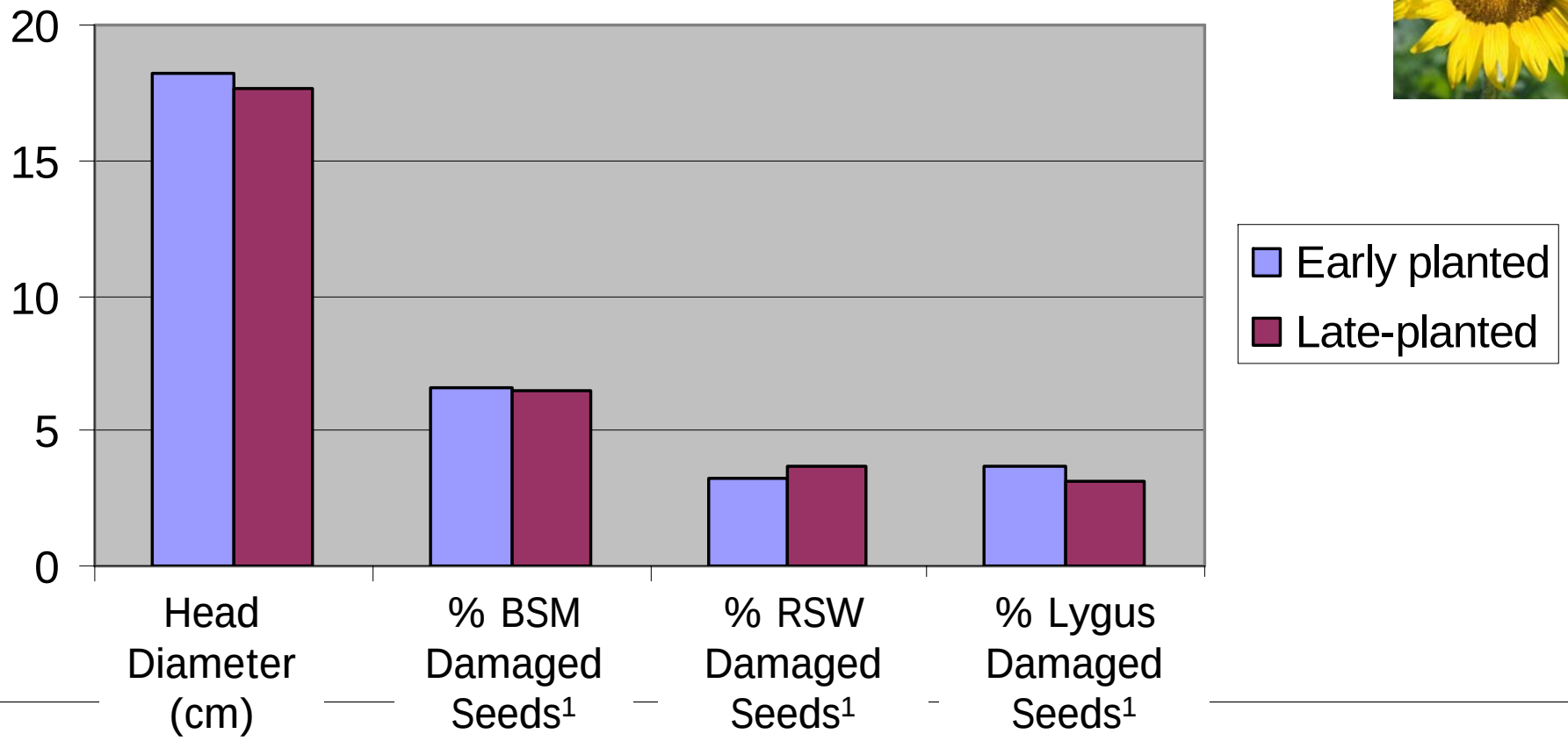
Early vs. Late-planted Confection Sunflowers



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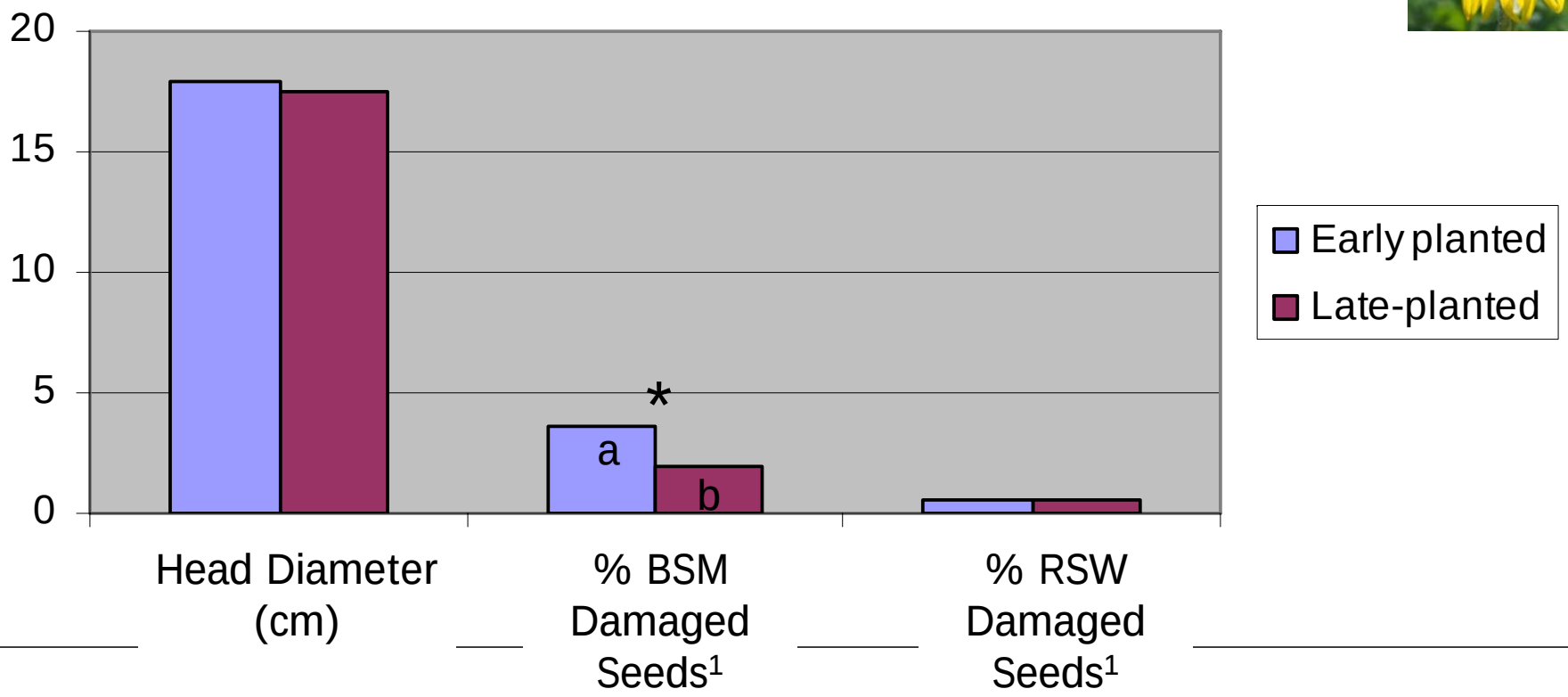
Early vs. Late-planted Oil Sunflowers



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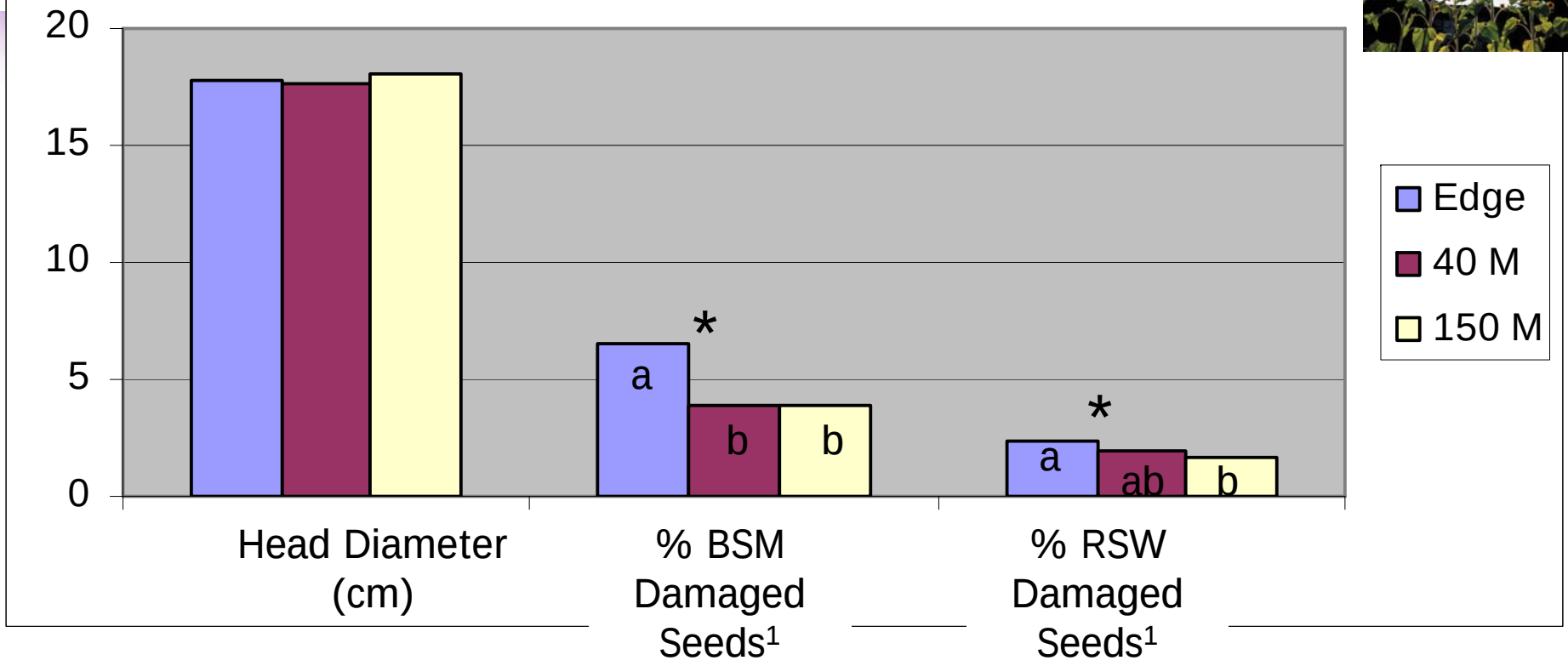
Sampling Locations within Sunflower Fields



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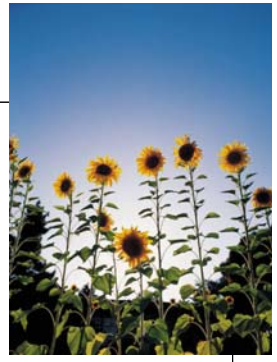
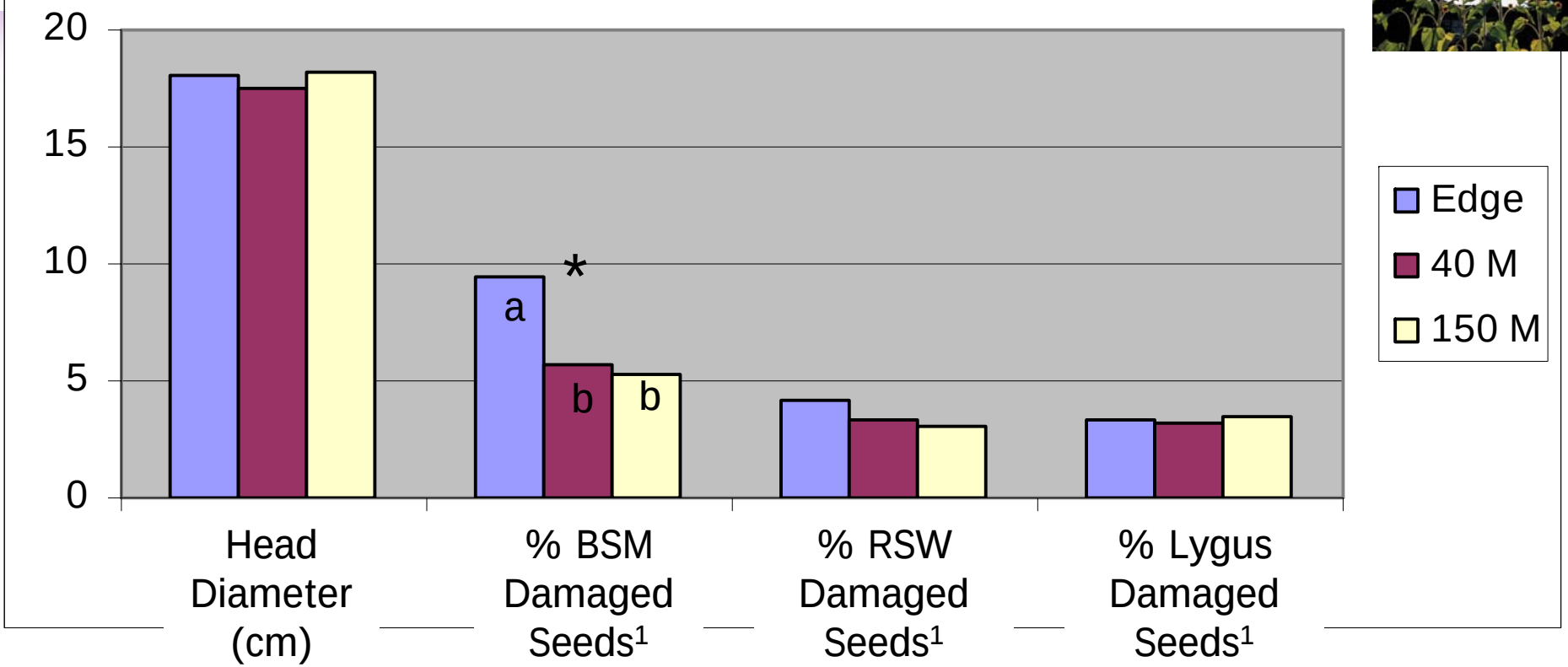


Sampling Locations within Confection Sunflowers



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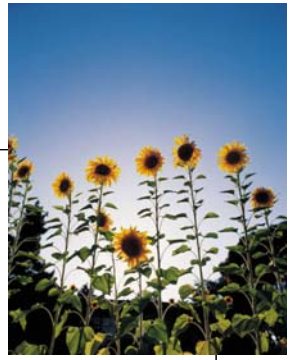
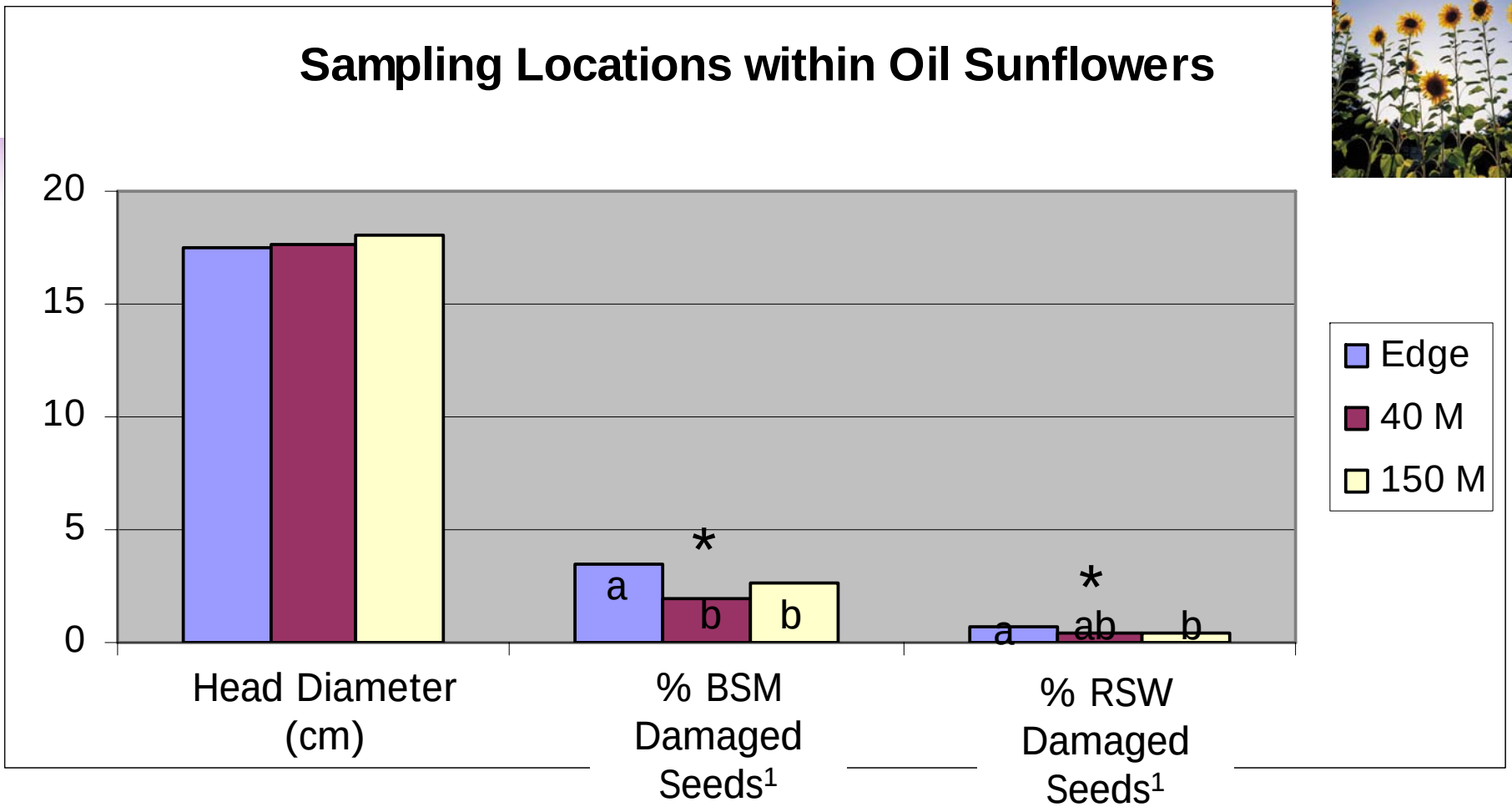


Sampling Locations within Oil Sunflowers



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Conclusion

- Whole field spraying was effective controlling BSM, RSW, and Lygus bugs when insect population densities were at moderate-high pressures in confection and oil sunflowers.
- Early planting dates had higher percent damaged seed than late planting dates for BSM, especially in oilseed sunflowers.

Conclusions

- Edges had significantly higher % BSM damaged seeds than 40 m and 150 m samples in field regardless of type of sunflower
- Edges had significantly higher % RSW damaged seed than 150 m samples, but not always for 40 m samples
- No differences for % Lygus damaged seed (confection sunflowers)
- No differences in head diameter

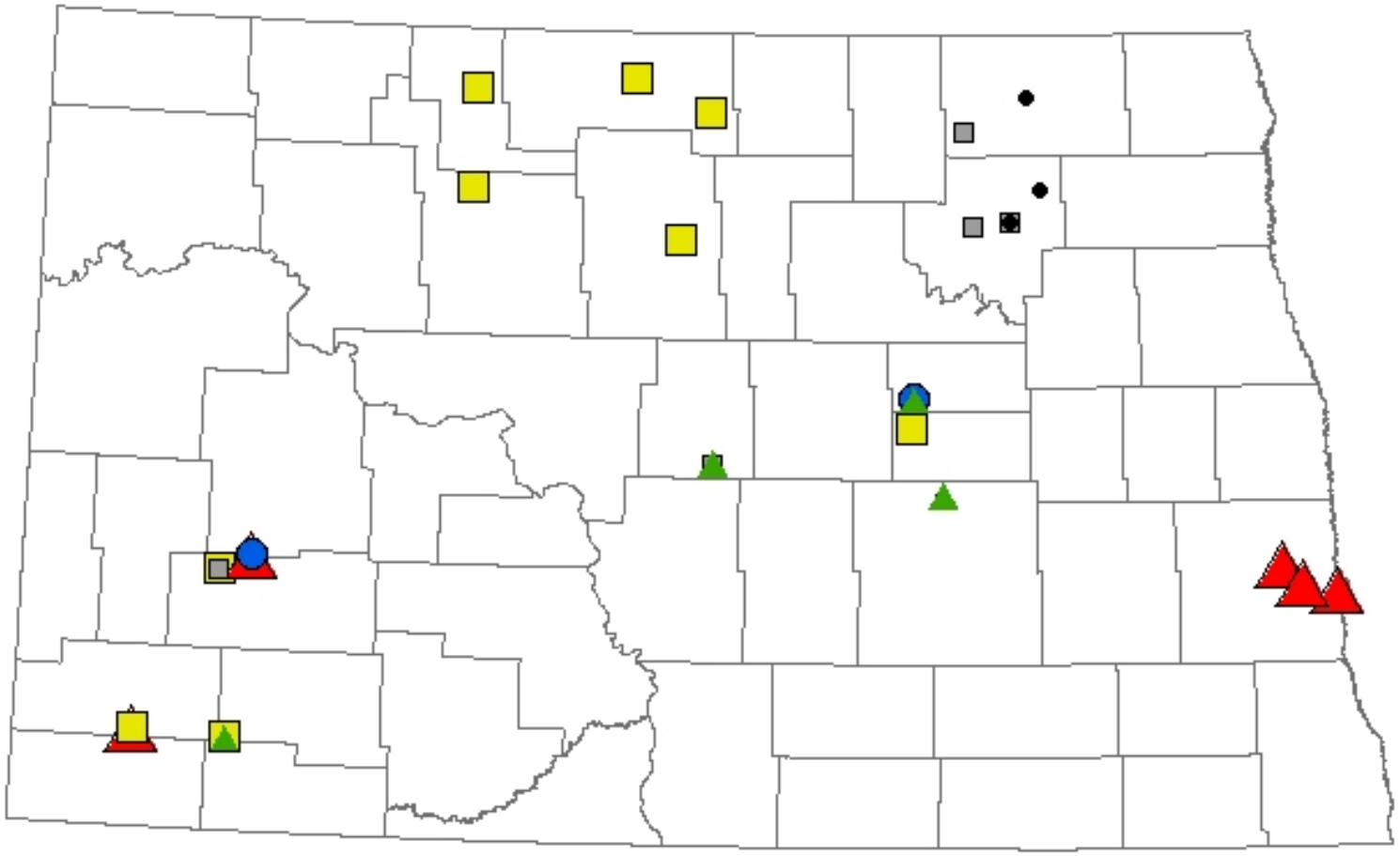
Current Project 2007

- Compare effectiveness of different insecticide spraying patterns (edge versus whole) of both oil and confection sunflowers and in early and late planted fields.
  - Commercial fields sampled in Bottineau, Renville & McHenry counties on 25-26 Sept. 2007
  - % damage by banded sunflower moth, red sunflower seed weevil, & lygus bug
- Use of pheromone traps to monitor banded sunflower moth and to develop a degree-day model

21 traps in
14 counties

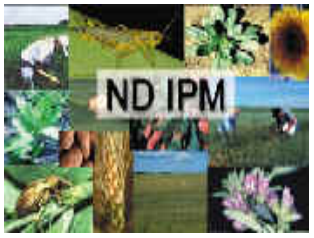
Adult Banded Sunflower Moth Trap Catch

Field Season 2007

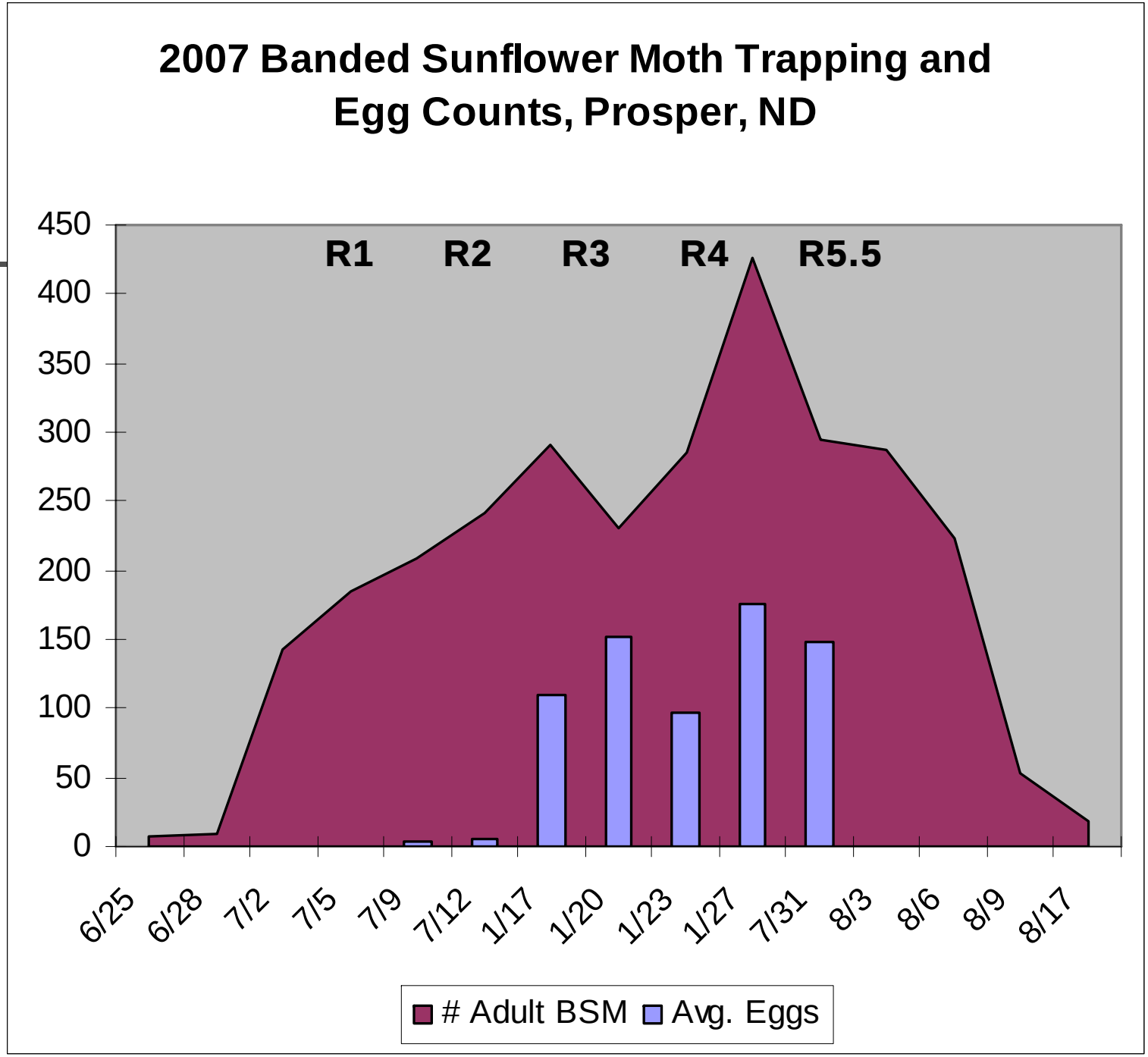


Number of Adult Moth per trap per week

● 0 ■ 1-10 ▲ 11-25 ⬢ 26-50 ■ 51-100 ▲ >100



NDSU Extension Service
North Dakota State University


2007 Banded Sunflower Moth Trapping and Egg Counts, Prosper, ND
R1
R2
R3
R4
R5.5
450
400
350
300
250
200
150
100
50
0
6/25
6/28
7/2
7/5
7/9
7/12
1/17
1/20
1/23
1/27
7/31
8/3
8/6
8/9
8/17
Adult BSM
Avg. Eggs

Thank you!

Lovely Bottineau County sunset!

- USDA-ARS
  - Theresa Gross
  - Bruce Goren
- Cooperators
  - Kristen Kersten
  - Shane Lestor
  - Mitch Siverson
  - Numerous growers (H. Wymans, L. Romine, Ballantyne Farms, J. Cook, T. Henry, J. Henry, Tonneson Bros. Witteman Farms, D. Ommedal, Kersten Brothers, ...)

2007 Sunflower Insecticide Trial, Prosper ND