


USA
Sunflower Survey



2010 National Sunflower Association Survey


Partnership of
University, USDA & Industry

Project Leader:
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NDSU Crop Science Department


2010 Sunflower Survey

- Approximately one field stop per 10,000 Acres
- Fields in 2005 - 146
- Fields in 2006 - 162
- Fields in 2007 - 158
- Fields in 2008 - 162
- Fields in 2009 - 177
- Fields in 2010 - 207*

* Highest # Surveyed




2010 Sunflower Survey- # Fields



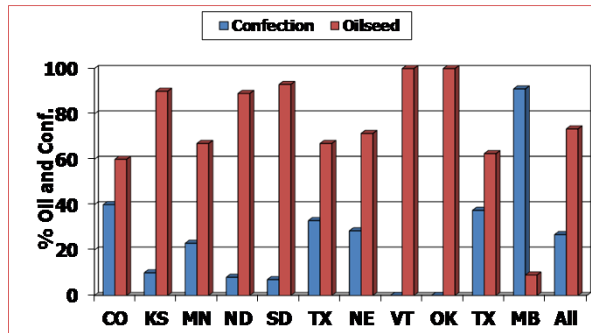
- North Dakota-96
- Minnesota-15
- South Dakota-36
 - Kansas-9
 - Colorado-13
 - Nebraska-7
 - Manitoba-11
 - Oklahoma-2
 - Texas-8
 - Vermont-10
- **TOTAL- 207**

2010 Sunflower Crop Survey Teams



• North Dakota	9 teams
• South Dakota	6 teams
• Kansas	1 team
• Colorado	2 teams
• Minnesota	2 teams
• Nebraska	1 team
• Texas	1 team
• Manitoba	1 team
• Vermont	1 team
• Oklahoma	1 team
• Texas	1 team
<hr/>	
Total of	26 teams

% Confection and Oilseed Sunflower-2010 Survey



2010 Sunflower Yield and Management Practices							
Team # _____ County _____ Field # _____ Oil (1) _____ Conf (2) _____							
GPS North _____		GPS West _____		Dryland (1) _____		Irrigated (2) _____	
Field Data:		Plants / Pop.	Head Diameter	Seed Size	% Good Seed	Center Seed Set	Previous Crop
1st count							
2nd count							
Average							
Calculation:							
2450 x	x	x	x	x	x	x	=
Plant Population multiplier	Head Diameter multiplier	Seed Size multiplier	% Good Seed	Center Seed Set	Bird Damage Multiplier		Est. Yield
Management		Row Spacing		20" or less - 1 _____		21" or Greater - 2 _____	
Special Notes:							

Counting plants per acre



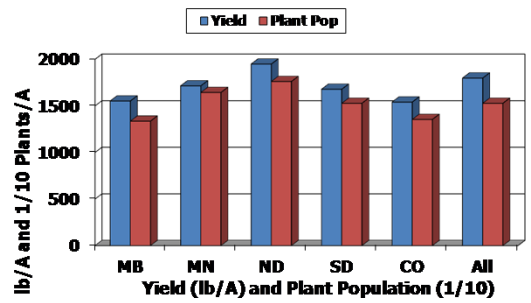
Measuring Head Diameter



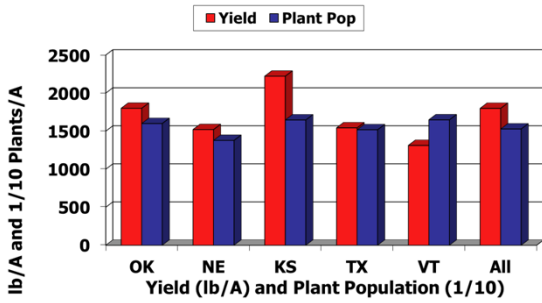
Head fill and seed size



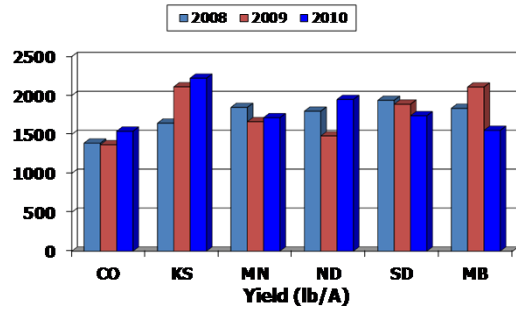
Sunflower Yield and Plant Population: 2010



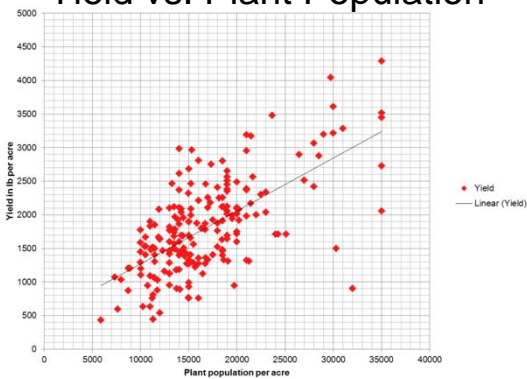
Sunflower Yield and Plant Population: 2010



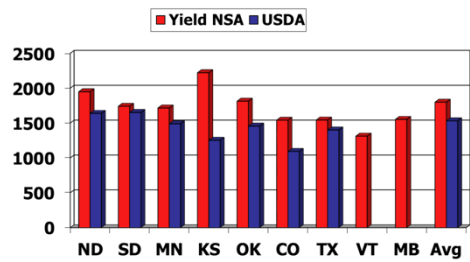
Sunflower Yield : lb/a 2008, 2009 and 2010



Yield vs. Plant Population



NSA estimate vs Ag Statistic 2010

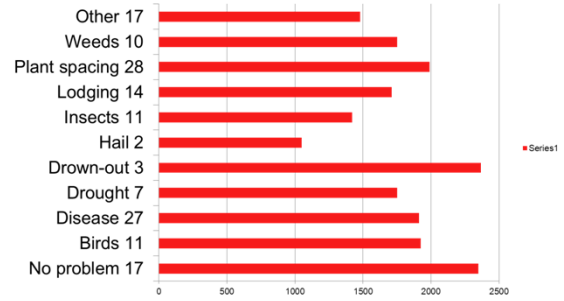


2010# 1 Yield Limiting Factors (207 Fields)

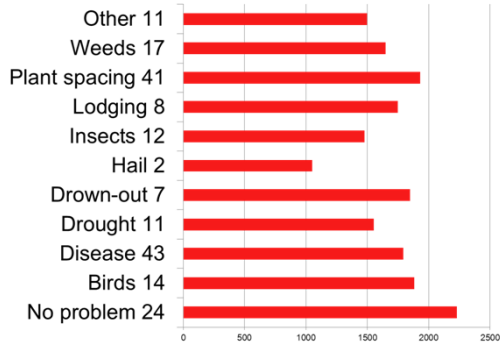
- Disease 20.7%
- Plant spacing within row 18.4%
- Lodging 8.7%
- Weeds 9.7%
- Birds 6.8%
- Insects 6.3%
- Drought 4.8%
- Drown out 3.4%
- Hail 1%
- Other 8.7% (many mentioned population)
- No Problem 11.6%



Yield Limiting factor and Yield 2010 Oil hybrids



Yield Limiting factor and Yield 2010



**2010# 2 Yield Limiting Factors
(202 Fields)**

- Plant spacing within row 14.9%
- Weeds 11.4%
- Insects 10.4%
- Disease 8.4%
- Birds 5.4%
- Lodging 4.5%
- Birds 5.4%
- Drown out 2.5%
- Drought 1.5%
- Hail 1%
- Other 4.9%
- No Problem 35.1%



**2010 # 2
Yield Limiting Factors- N. Dak. (91 Fields)**

- Insect 14
- Plant spacing 11
- Disease 10
- Weeds 8
- Birds 7
- Lodging 7
- Hail 1
- Drown out
- No Problem 32



**2010# 1 Yield Limiting Factors-
North Dakota
(96 Fields)**

- Plant spacing 17
- Disease 15
- Lodging 12
- Birds 10
- Weeds 6
- Insects 5
- Drown out 4
- Hail 2
- Other 12 (many mentioned population)
- No Problem 13



**2010 # 1 and #2
Yield Limiting Factors- MN. (15 Fields)**

#1 factors:

- Disease 11
- Lodging 1
- Plant spacing 1
- Weeds 1
- No Problem 1

2 factors:

- Plant spacing 3
- Disease 3
- Insect 3
- Birds 1
- Drown out 1
- No Problem 4

**2010 # 1 and #2
Yield Limiting Factors- South Dakota
(36 Fields)**

1 Factor

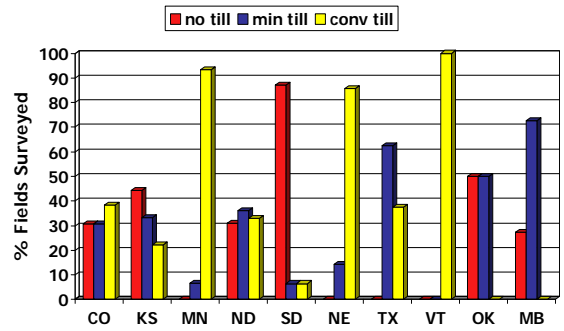
- Plant Spacing 14
- Lodging 4
- Insects 4
- Weeds 3
- Disease 3
- Drought 2
- Drown out 1
- Birds 1
- Other 2
- No problem 2

2 Factor

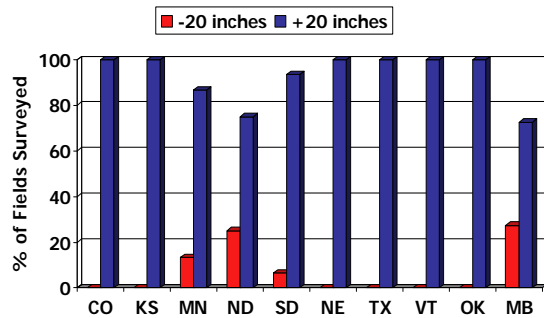
- Plant spacing 11
- Weeds 5
- Disease 1
- Drown out 1
- Lodging 2
- Other 8
- No Problem 8



Tillage: 2010 Sunflower Survey

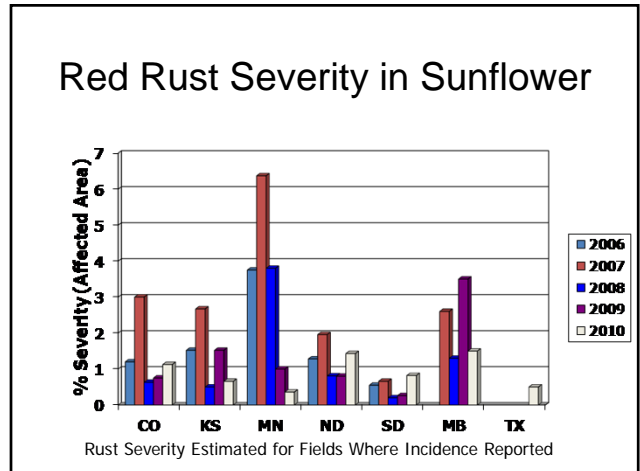
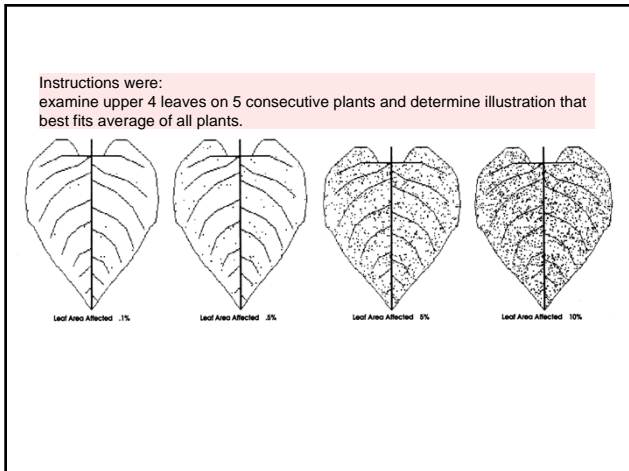
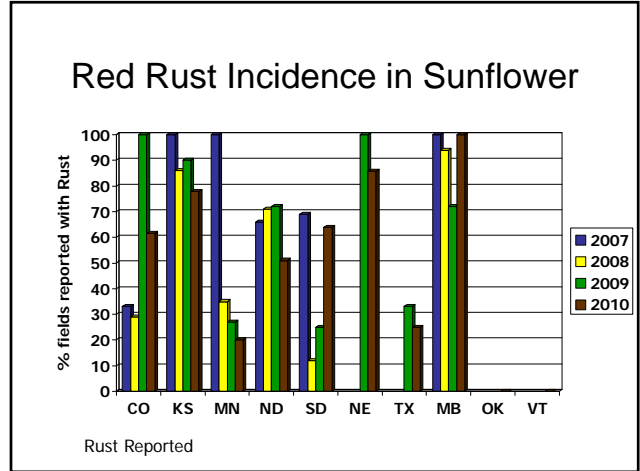


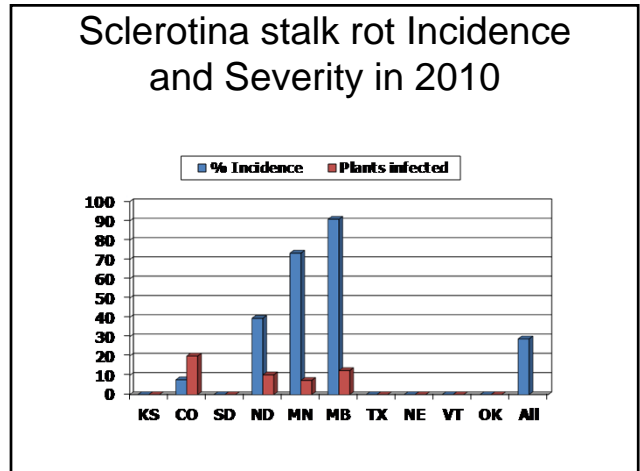
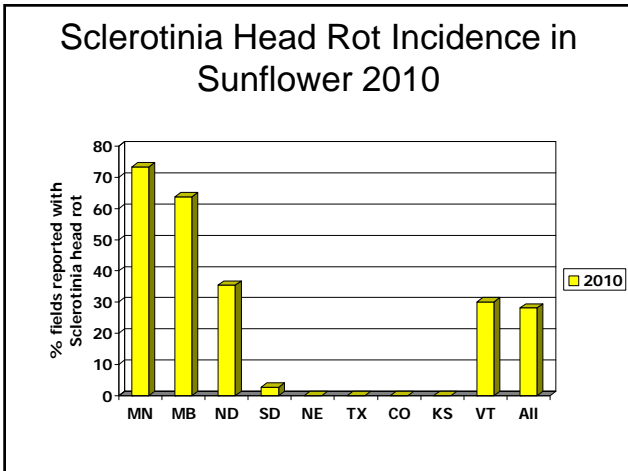
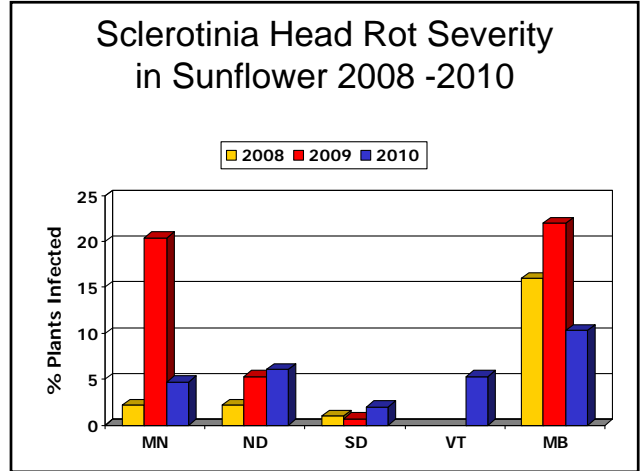
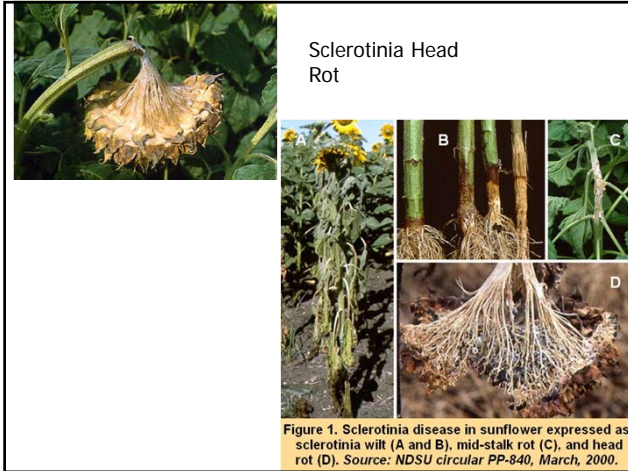
Row Spacing Sunflower-2010

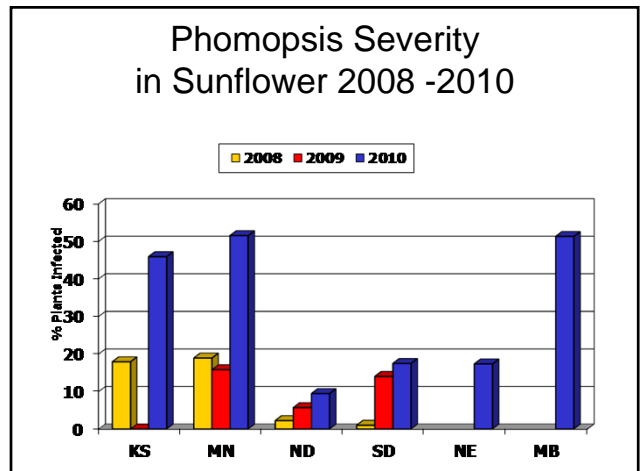
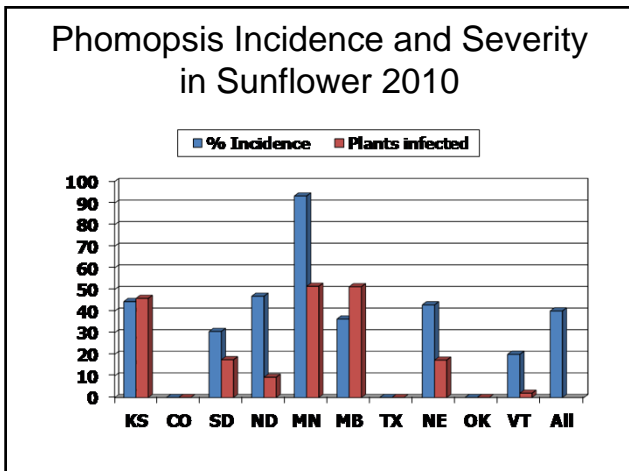
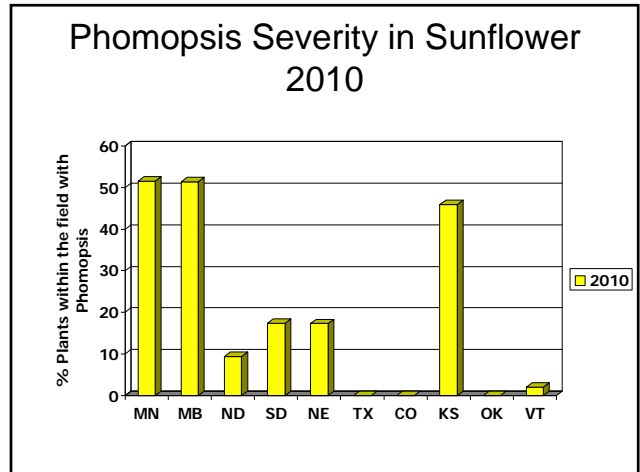
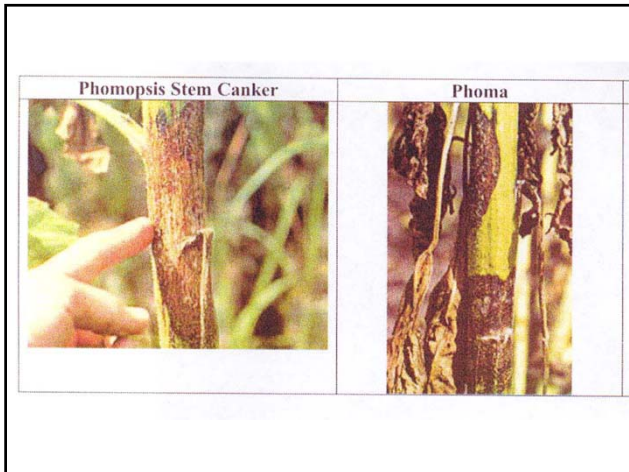


Rust in Sunflower

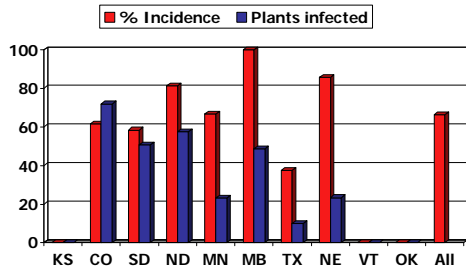




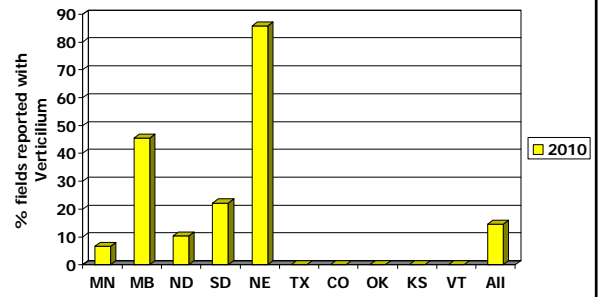




Phoma Incidence and Severity in 2010

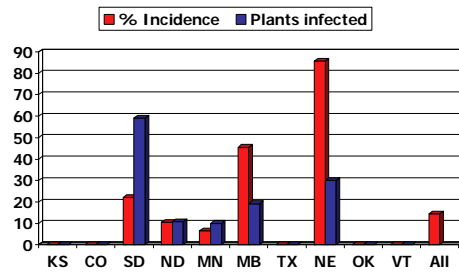


Verticillium Incidence in Sunflower 2010



Interveinal yellowing (chorosis) leading to interveinal necrosis, starting on the lower leaves of a *Verticillium* infected sunflower plant.

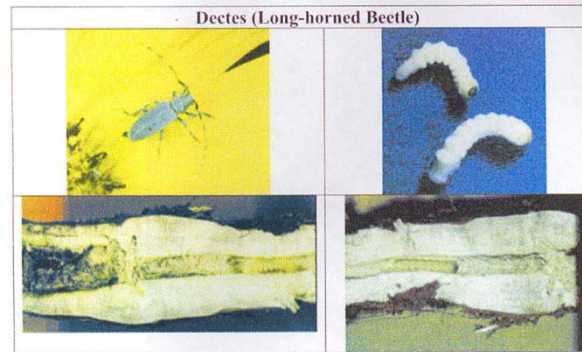
Verticillium Incidence and Severity in 2010



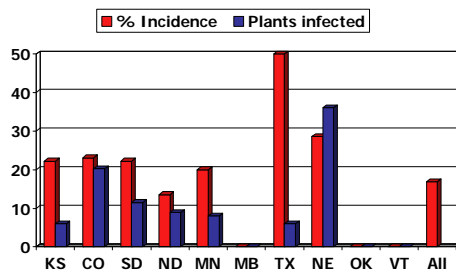


Rhizopus

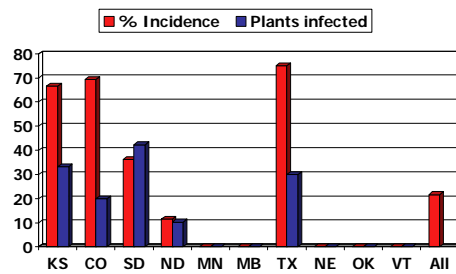
Dectes



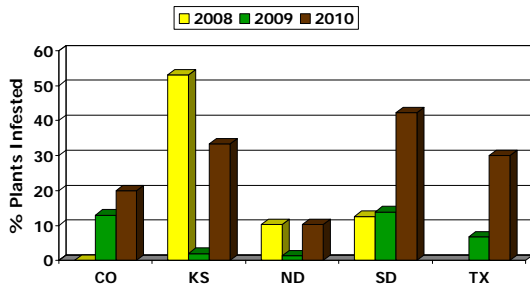
Rhizopus Incidence and Severity in 2010



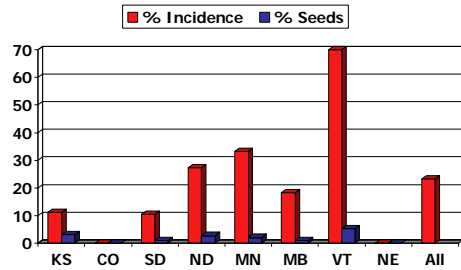
Long Horned Beetle Incidence and Severity in 2010



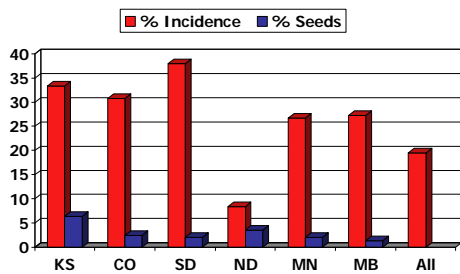
**Insect: Long Horned Beetle
Severity 2008-2010**



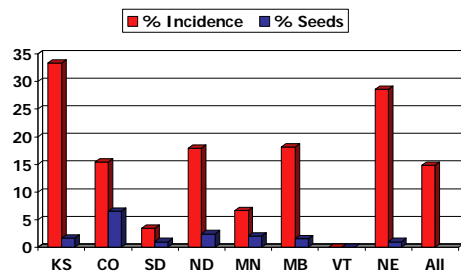
**Banded Sunflower Moth
Incidence and Severity in 2010**



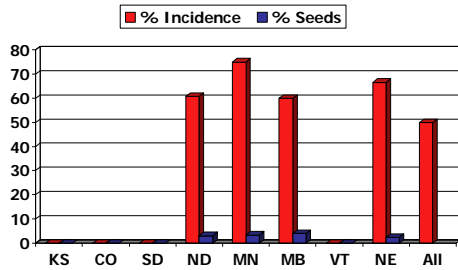
**Seed Weevil Incidence and
Severity in 2010**



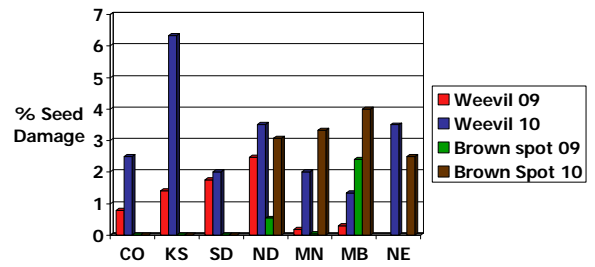
**Sunflower Moth Incidence and
Severity in 2010**



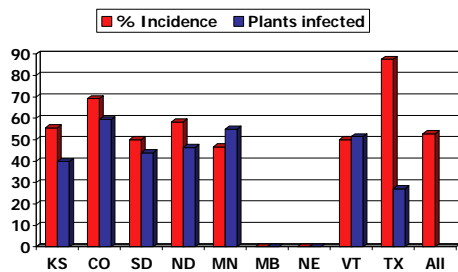
Brown Spot Incidence and Severity in 2010 (confectionary)



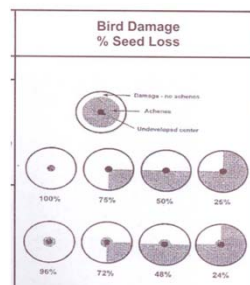
Insect Seed Damage-2009 - 2010



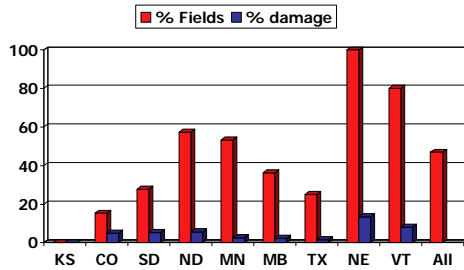
Heads with Webbing Incidence and Severity in 2010



Recording observations



Bird Incidence and Severity in 2010

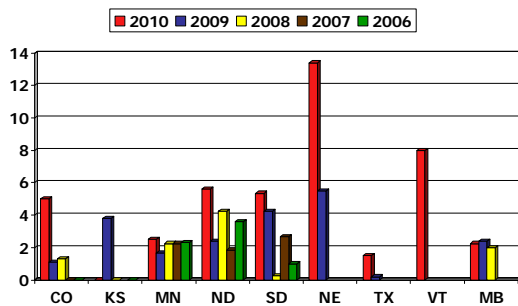


Top Weeds Observed: 2010

- **North Dakota**
 - Canada Thistle
 - RR Pigweed
 - Volunteer grain
 - Green Foxtail
 - Kochia
 - Wild Buckwheat
 - Yellow Foxtail
 - Lambsquarter
 - Biennial wormwood
- **Minnesota**
 - Wormwood
 - Wild Mustard
 - Redroot pigweed



%Bird Damage in fields with birds 2006-2010

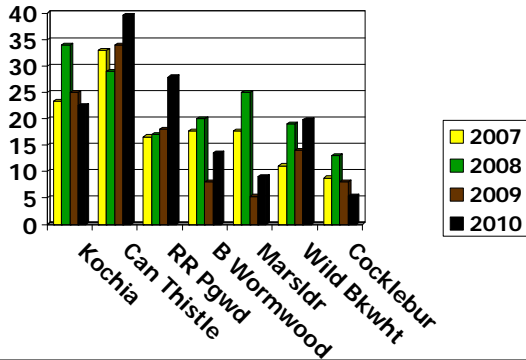


ND Top Weeds Observed: 2009-2010

- **North Dakota 2009**
 - Canada Thistle
 - Kochia
 - RR Pigweed
 - Volunteer grain
 - Wild Buckwheat
 - Green foxtail
 - Biennial wormwood
- **North Dakota 2010**
 - Canada Thistle
 - RR Pigweed
 - Volunteer grain
 - Green Foxtail
 - Kochia
 - Wild Buckwheat
 - Yellow Foxtail
 - Lambsquarter
 - Biennial wormwood



Incidence of Broadleaf Weeds ND/MN 2007, 2008 & 2009

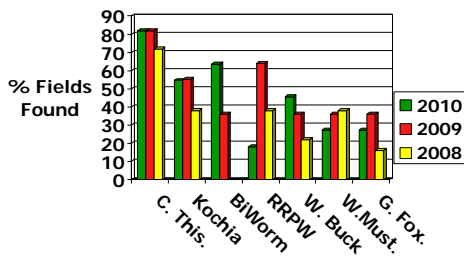


Top Five Weeds in South Dakota 2009 -2010

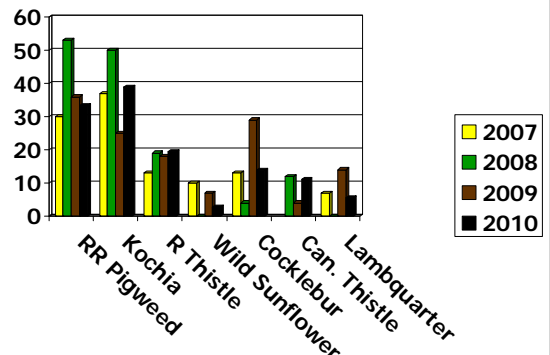
- | 2009 | 2010 |
|-------------------|-------------------|
| • Redroot pigweed | • Green foxtail |
| • Kochia | • Kochia |
| • Cocklebur | • Redroot pigweed |
| • Russian thistle | • Russian thistle |
| • Green foxtail | • Cocklebur |



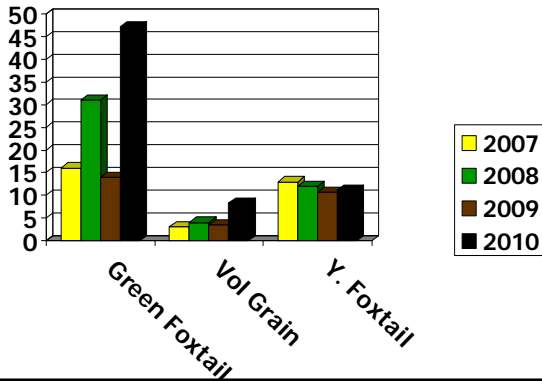
Incidence of Weeds Observed in Manitoba 2008-2010



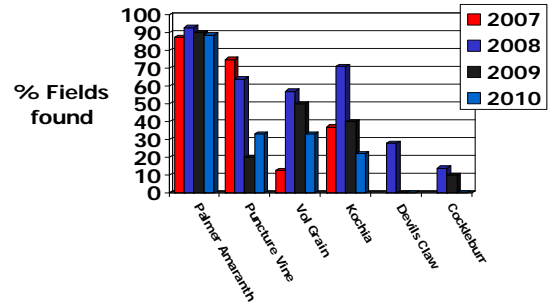
Incidence of Broadleaf Weeds South Dakota 2007 -2010



Incidence of Grassy Weeds South Dakota 2007 - 2010



Incidence of Weeds in Kansas



Top Weeds Observed: 2010

• Colorado weeds

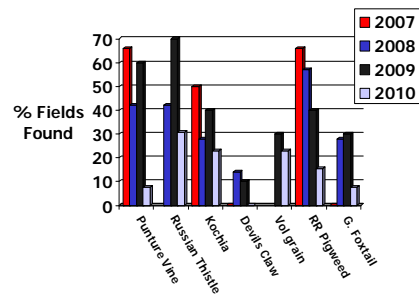
- Russian Thistle
- Kochia
- Volunteer Grain
- Lance leaf sage

• Kansas Weeds

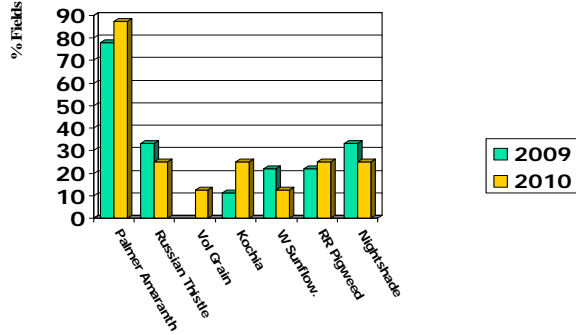
- Palmer Amaranth
- Puncture vine
- Volunteer grain
- Kochia



Incidence of Weeds in Colorado 2007-2010



Incidence of Weeds in Texas



Conclusions and Summary of 2010 National Sunflower Survey

- Plant spacing, drought and weeds were holding back yields Kansas and CO.
- Drought and weeds were holding back yields in Colorado.
- ND had the most sunflower planted in narrow row spacings while SD led all states with No-till plantings.



Conclusions and Summary of 2010 National Sunflower Survey

- Yield limiting factors in ND were plant spacing (within the row), diseases, lodging, birds and weeds.
- Yields limiting factors in SD were plant spacing, lodging, and variety of other problems.
- Minnesota also had issues with diseases.



Conclusions and Summary of 2010 National Sunflower Survey

- Rust incidence was higher in both SD and Manitoba than in 2009.
- ND rust incidence was lower than the past 2 years whereas, SD and MN incidence was higher in 2010.
- Sclerotinia Head rot was higher in ND and Lower in MN and Manitoba compared with 2009.



Conclusions and Summary of 2010 National Sunflower Survey

- Phomopsis was high in Minnesota, Manitoba, North and South Dakota.
- Phoma incidence ranged from 0% in Kansas to over 90% in Manitoba.
- Verticillium was high in Nebraska, Manitoba and South Dakota.



Conclusions and Summary of 2010 National Sunflower Survey

- Long horned beetle damage appeared to be much greater in 2010 with highest severity in TX, SD, CO, KS and ND.
- Bird Damage reported was higher than the previous year and was around 5% in fields where birds were doing damage in NE, ND, SD and VT and CO.



Conclusions and Summary of 2010 National Sunflower Survey

- Banded moth incidence was highest in MN followed by ND, Manitoba and SD.
- Sunflower moth incidence was high in Kansas.
- Seed weevil incidence was highest in SD followed by CO.
- Brown spot damage in Conf. Sunflower was most severe in MN followed by ND and Manitoba.



Conclusions and Summary of 2010 National Sunflower Survey

- Broadleaf weeds continue to be more of a problem than most grassy weed species.
- Palmer Amaranth is a major problem weed in Kansas and Texas



