2010 National Sunflower Association Survey

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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 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 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

Total of 26 teams
% Confection and Oilseed
Sunflower-2010 Survey

![Bar chart showing the percentage of confection and oilseed for different states and the total (All). The chart includes states like CO, KS, MN, ND, SD, TX, NE, VT, OK, TX, MB, and All.]
# 2010 Sunflower Yield and Management Practices

<table>
<thead>
<tr>
<th>Team #</th>
<th>County</th>
<th>Field #</th>
<th>Oil (1)</th>
<th>Conf (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPS North</td>
<td>GPS West</td>
<td>Dryland (1)</td>
<td>Irrigated (2)</td>
<td>Center</td>
</tr>
<tr>
<td>Plants / Pop.</td>
<td>Head Diameter</td>
<td>Seed Size</td>
<td>% Good Seed</td>
<td>Center Seed Set</td>
</tr>
<tr>
<td>1st count</td>
<td>2nd count</td>
<td>Average</td>
<td>Calculation:</td>
<td>2450 x</td>
</tr>
<tr>
<td>Plant Population multiplier</td>
<td>Head Diameter multiplier</td>
<td>Seed Size multiplier</td>
<td>% Good Seed</td>
<td>Center Seed Set</td>
</tr>
<tr>
<td>Management Practices:</td>
<td>Row Spacing</td>
<td>20&quot; or less - 1</td>
<td>21&quot; or Greater - 2</td>
<td></td>
</tr>
</tbody>
</table>
Counting plants per acre
Measuring Head Diameter
Head fill and seed size
Sunflower Yield and Plant Population: 2010

- Yield (lb/A) and Plant Population (1/10)
Sunflower Yield and Plant Population: 2010

![Graph showing sunflower yield and plant population per acre for different regions. The x-axis represents regions (OK, NE, KS, TX, VT, All), and the y-axis represents yield (lb/A) and plant population (1/10). The bars are color-coded, with red for yield and blue for plant population.]
Sunflower Yield: lb/a
2008, 2009 and 2010
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

- Other: 17
- Weeds: 10
- Plant spacing: 28
- Lodging: 14
- Insects: 11
- Hail: 2
- Drown-out: 3
- Drought: 7
- Disease: 27
- Birds: 11
- No problem: 17
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# 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 # 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 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
Row Spacing Sunflower-2010

% of Fields Surveyed

CO  KS  MN  ND  SD  NE  TX  VT  OK  MB

-20 inches  +20 inches
Tillage: 2010 Sunflower Survey

[Bar chart showing the percentage of fields surveyed for no till, min till, and conv till across different states.]

- CO
- KS
- MN
- ND
- SD
- NE
- TX
- VT
- OK
- MB
Rust in Sunflower
Instructions were: examine upper 4 leaves on 5 consecutive plants and determine illustration that best fits average of all plants.
Red Rust Incidence in Sunflower

Rust Reported

% fields reported with Rust

2007
2008
2009
2010

CO  KS  MN  ND  SD  NE  TX  MB  OK  VT
Red Rust Severity in Sunflower

Rust Severity Estimated for Fields Where Incidence Reported
Figure 1. Sclerotinia disease in sunflower expressed as sclerotinia wilt (A and B), mid-stalk rot (C), and head rot (D). Source: NDSU circular PP-840, March, 2000.
Sclerotinia Head Rot Incidence in Sunflower 2010

% fields reported with Sclerotinia head rot

MN    MB    ND    SD    NE    TX    CO    KS    VT    All

2010
Sclerotinia Head Rot Severity in Sunflower 2008 - 2010

% Plants Infected

- MN
- ND
- SD
- VT
- MB

2008 2009 2010
Phomopsis Incidence and Severity in Sunflower 2010

% Incidence  Plants infected

KS  CO  SD  ND  MN  MB  TX  NE  OK  VT  All

100 90 80 70 60 50 40 30 20 10 0

KS  CO  SD  ND  MN  MB  TX  NE  OK  VT  All
Phomopsis severity in Sunflower 2010

% Plants within the field with Phomopsis

- MN
- MB
- ND
- SD
- NE
- TX
- CO
- KS
- OK
- VT

[Graph showing % plants with Phomopsis in different states for 2010]
Phomopsis Severity in Sunflower 2008 - 2010

\( \text{% Plants Infected} \)

- **KS**
- **MN**
- **ND**
- **SD**
- **NE**
- **MB**

Legend:
- Yellow: 2008
- Red: 2009
- Blue: 2010
Phoma Incidence and Severity in 2010

% Incidence

Plants infected

KS CO SD ND MN MB TX NE VT OK All

0 20 40 60 80 100

KS CO SD ND MN MB TX NE VT OK All
Interveinal yellowing (chorosis) leading to interveinal necrosis, starting on the lower leaves of a *Verticillium* infected sunflower plant.
Verticilium Incidence and Severity in 2010

- KS
- CO
- SD
- ND
- MN
- MB
- TX
- NE
- OK
- VT
- All

% Incidence
Plants infected

KS: 0%
CO: 0%
SD: 50%
ND: 20%
MN: 10%
MB: 40%
TX: 0%
NE: 80%
OK: 0%
VT: 0%
All: 30%
Rhizopus
Rhizopus Incidence and Severity in 2010
<table>
<thead>
<tr>
<th>Dectes (Long-horned Beetle)</th>
</tr>
</thead>
</table>

- ![Image of Dectes](image1.png)
- ![Image of Dectes Larvae](image2.png)

Dectes
Long horned beetle Incidence and Severity in 2010

![Graph showing Incidence and Severity of Long horned beetles across different states in 2010.](image-url)
Insect: Long Horned Beetle Severity 2008-2010
Seed Weevil Incidence and Severity in 2010

![Graph showing Incidence and Seeds for different states: KS, CO, SD, ND, MN, MB, and All. The graph indicates the percentage of Incidence and Seeds for each state.](chart.png)
Banded Sunflower Moth
Incidence and Severity in 2010
Sunflower Moth Incidence and Severity in 2010

% Incidence

% Seeds

KS, CO, SD, ND, MN, MB, VT, NE, All

KS: 35
CO: 15
SD: 5
ND: 20
MN: 10
MB: 15
VT: 0
NE: 25
All: 20

% Incidence

% Seeds
Brown Spot Incidence and Severity in 2010 (confectionary)
Heads with Webbing Incidence and Severity in 2010

% Incidence  Plants infected

KS CO SD ND MN MB NE VT TX All
Recording observations
Bird Incidence and Severity in 2010

% Fields vs % damage for KS, CO, SD, ND, MN, MB, TX, NE, VT, and All.
%Bird Damage in fields with birds 2006-2010
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
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
Express herbicide tolerant sunflower

Kochia  Can  RR Pgwd  B Wormwood  Marsldr  Wild Bkwht  Cocklebur

2007 2008 2009 2010
Incidence of Weeds Observed in Manitoba 2008-2010
Top Five Weeds in South Dakota 2009 - 2010

2009
• Redroot pigweed
• Kochia
• Cocklebur
• Russian thistle
• Green foxtail

2010
• Green foxtail
• Kochia
• Redroot pigweed
• Russian thistle
• Cocklebur
Incidence of Broadleaf Weeds
South Dakota 2007 -2010
Incidence of Grassy Weeds
South Dakota 2007 - 2010

- Green Foxtail
- Vol Grain
- Y. Foxtail

Year:
- 2007
- 2008
- 2009
- 2010
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 Kansas

% Fields found

- Palmer Amaranth
- Puncture Vine
- Vol Grain
- Kochia
- Devils Claw
- Cocklebur

Year:
- 2007
- 2008
- 2009
- 2010
Incidence of Weeds in Colorado 2007-2010
Incidence of Weeds in Texas

% Fields

- Palmer Amaranth
- Russian Thistle
- Vol. Grain
- Kochia
- W Sunflow.
- RR Pigweed
- Nightshade

2009
2010
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

• 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

• 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.
- Verticilium was high in Nebraska, Manitoba and South Dakota.
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

• 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

• 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
2010 Sunflower Survey
Sponsored by the National Sunflower Association