2010 National Sunflower Association Survey

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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
  • T0TAL- 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

Total of 26 teams
### 2010 Sunflower Yield and Management Practices

<table>
<thead>
<tr>
<th>State</th>
<th>County</th>
<th>Field #</th>
<th>Dryland (1)</th>
<th>Irrigated (2)</th>
<th>Oil (1)</th>
<th>Confection (2)</th>
<th>% Center</th>
<th>Previous Crop</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>KS</td>
<td>MN</td>
<td>ND</td>
<td>SD</td>
<td>TX</td>
<td>NE</td>
<td>VT</td>
<td>OK</td>
</tr>
<tr>
<td>GPS North</td>
<td>GPS West</td>
<td>Plants / Pop.</td>
<td>Head Diameter</td>
<td>Seed Size</td>
<td>% Good Seed</td>
<td>Center Seed Set</td>
<td>Bird Damage</td>
<td>Multiplier</td>
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**Calculations:**

2450 x Plant Population multiplier x Head Diameter multiplier x Seed Size multiplier x % Good Seed x Center Seed Set x Bird Damage Multiplier = Est. Yield

**Management Zones:**

Row Spacing: 20" or Less: 1, 20" or Greater: 2

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**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 4.6%
- Drown out 3.4%
- Hail 1%
- Other 8.7% (many mentioned population)
- No Problem 11.6%

Yield Limiting factor and Yield 2010 Oil hybrids
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%
- 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:  # 2 factors:

- Disease 11  - Plant spacing 3
- Lodging 1   - Disease 3
- Plant spacing 1 - Insect 3
- Weeds 1     - Birds 1
- No Problem 1 - Drown out 1
- No Problem 4

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

# 1 Factor
• Plant Spacing 14
• Lodging 4
• Insects 4
• Weeds 3
• Disease 3
• 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

Tillage: 2010 Sunflower Survey

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

Red Rust Severity in Sunflower

Rust Reported
Sclerotinia Head Rot Incidence in Sunflower 2010

Sclerotinia Head Rot Severity in Sunflower 2008 - 2010

Sclerotina stalk rot Incidence and Severity in 2010
Phomopsis Incidence and Severity in Sunflower 2010

Phomopsis Severity in Sunflower 2008 - 2010
Phoma Incidence and Severity in 2010

Verticilium Incidence in Sunflower 2010

Verticilium Incidence and Severity in 2010

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

Heads with Webbing Incidence and Severity in 2010

Insect Seed Damage-2009 - 2010

Recording observations
Bird Incidence and Severity in 2010

% 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**
  - Canada Thistle
  - RR Pigweed
  - Volunteer grain
  - Green Foxtail
  - Kochia
  - Wild Buckwheat
  - Yellow Foxtail
  - Lambsquarter
  - Biennial wormwood

Top Five Weeds in South Dakota 2009 -2010
- Redroot pigweed
- Kochia
- Cocklebur
- Russian thistle
- Green foxtail

Incidence of Weeds Observed in Manitoba 2008-2010

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

Incidence of Weeds in Kansas

Incidence of Weeds in Colorado 2007-2010

Top Weeds Observed: 2010

- **Colorado weeds**
  - Russian Thistle
  - Kochia
  - Volunteer Grain
  - Lance leaf sage

- **Kansas Weeds**
  - Palmer Amaranth
  - Puncture vine
  - Volunteer grain
  - Kochia
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.

- 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.

- 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.

- 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.

- 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