2010 National Sunflower Association Survey

Project Leader:

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NDSU Crop Science Department

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 Survey

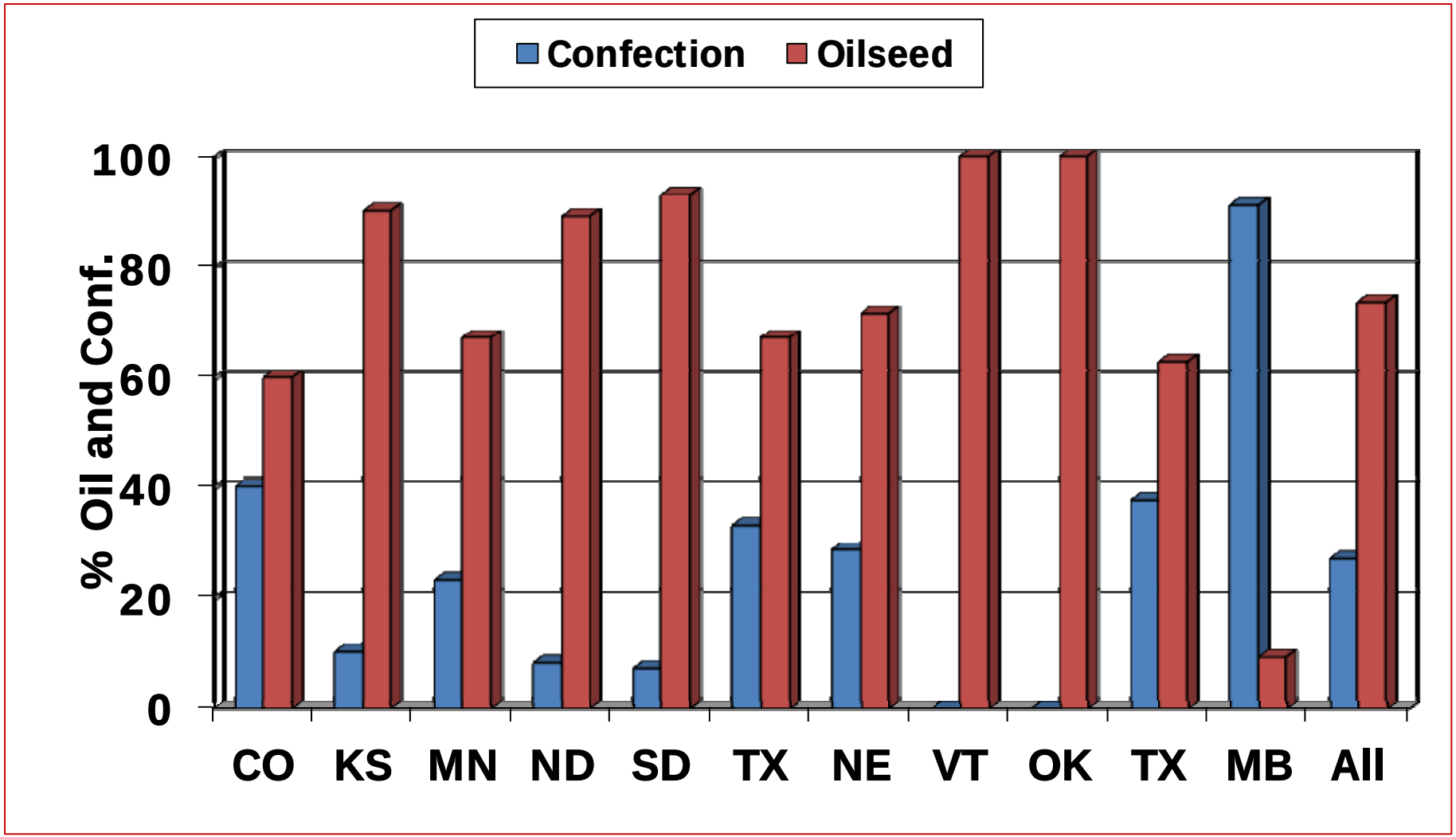
- Approximately one field stop per 10,000 Acres
- Fields in 2005 - 146
- Fields in 2006 - 162
- Fields in 2007 - 158
- Fields in 2008 - 162
- Fields in 2009 - 177
- Fields in 2010 - 207*

* 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



2010 Sunflower Yield and Management Practices

Team #_____ County _____ Field # _____ Oil (1) ____ Conf (2) _____.

GPS North_____ GPS West _____ Dryland (1) _____ Irrigated (2) _____.

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

Management Practices:

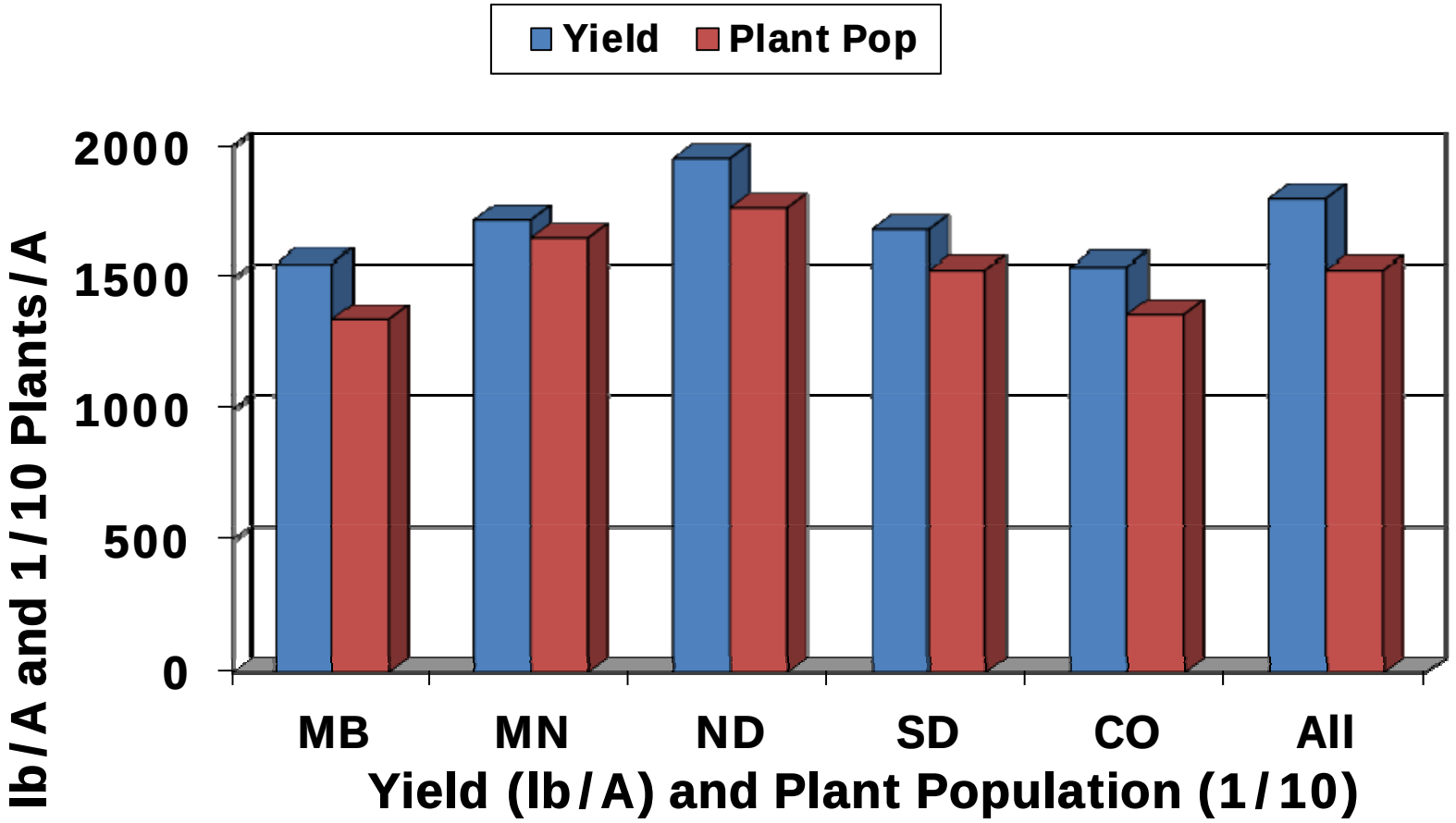
Row Spacing 20" or less - 1 _____ 21" or Greater - 2_____

Counting plants per acre

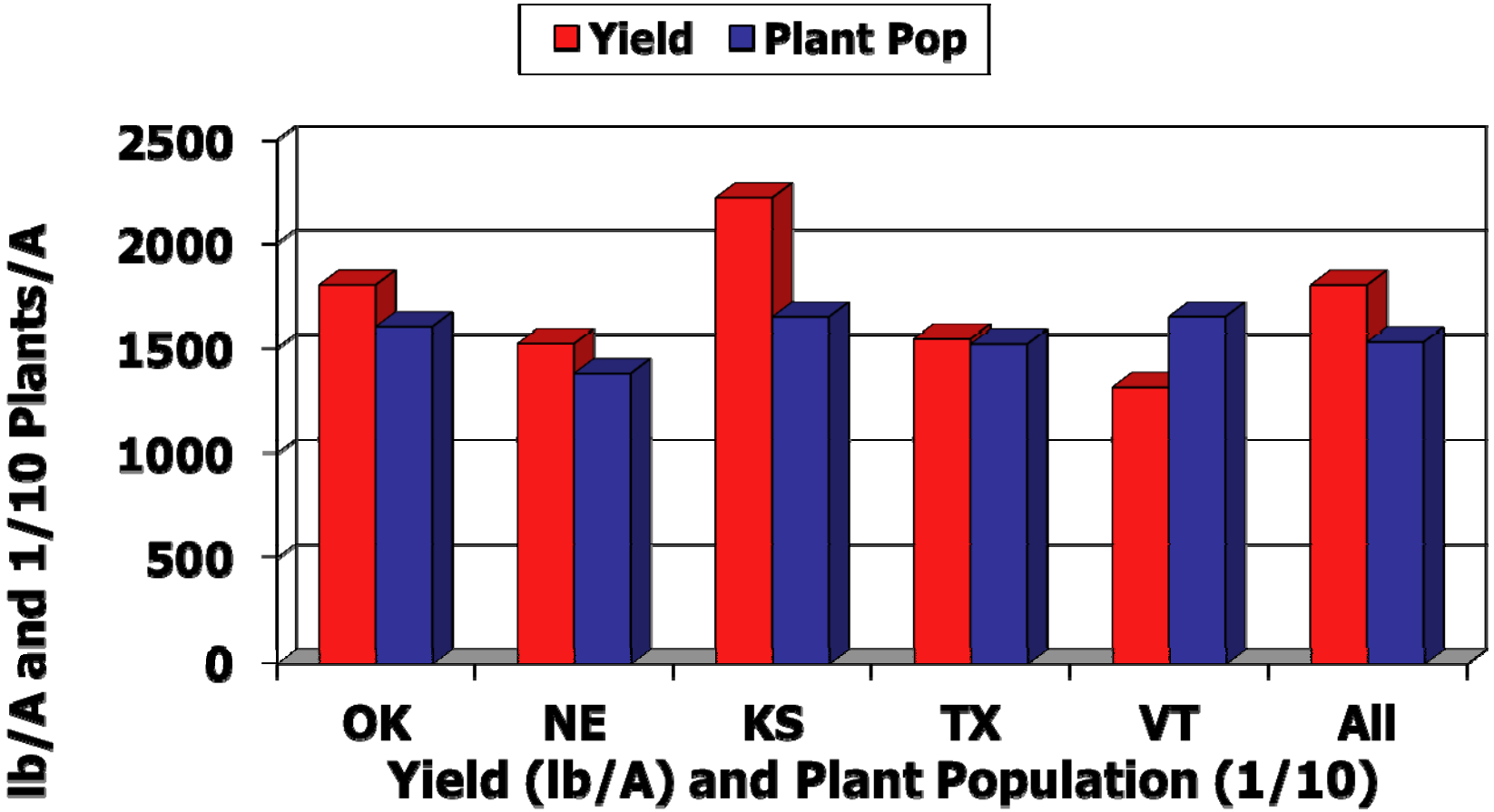
Measuring Head Diameter

Head fill and seed size

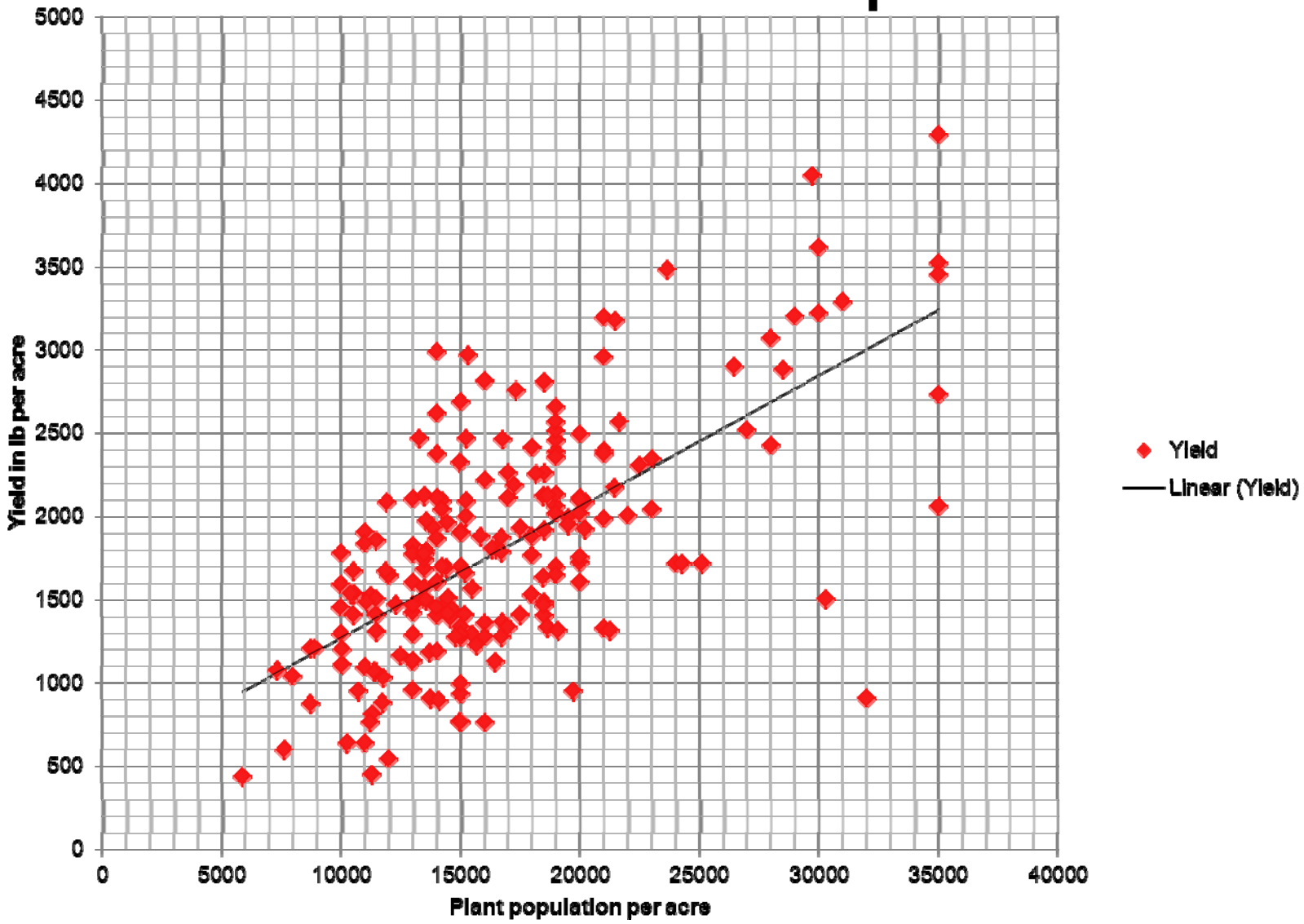
Sunflower Yield and Plant Population: 2010



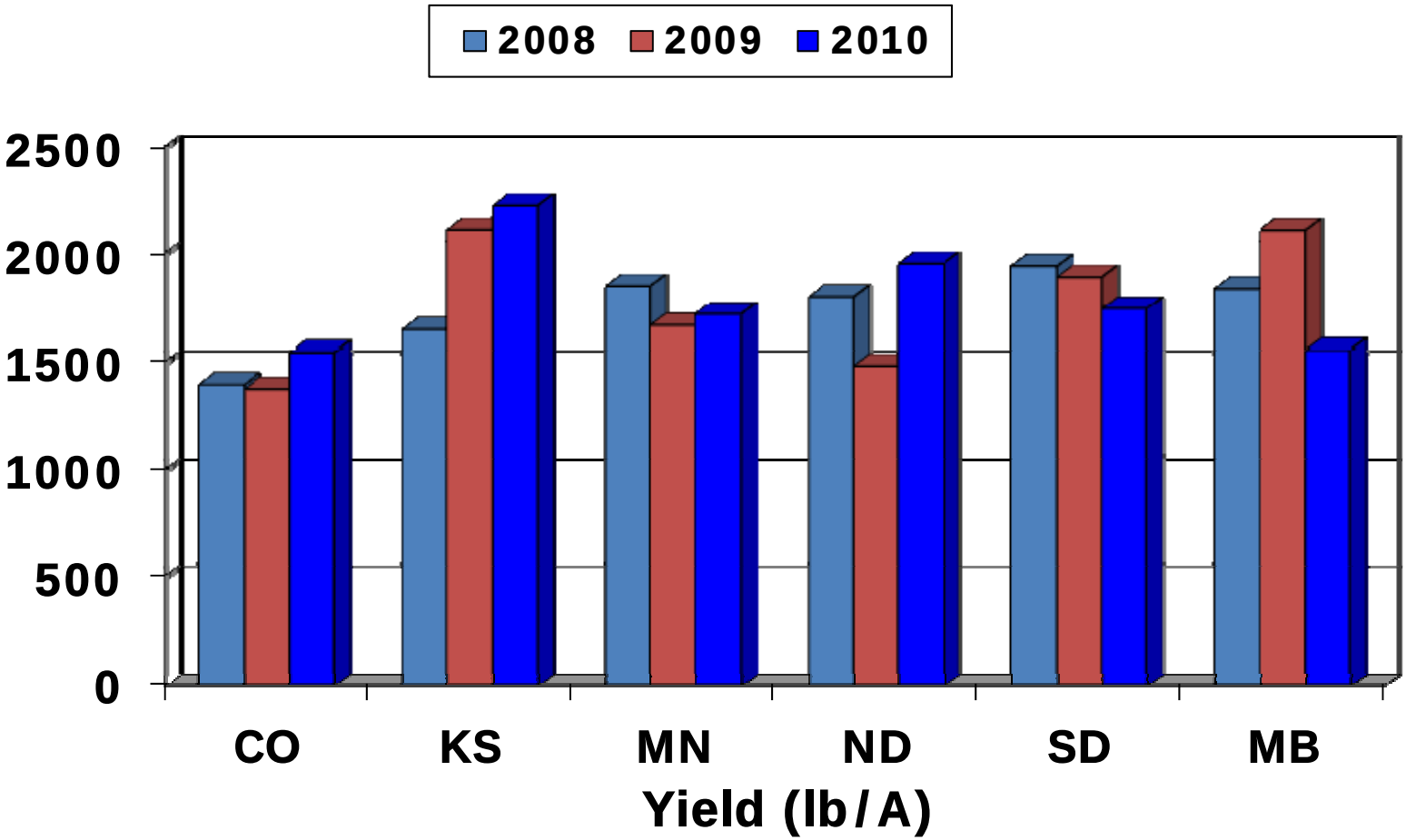
Sunflower Yield and Plant Population: 2010



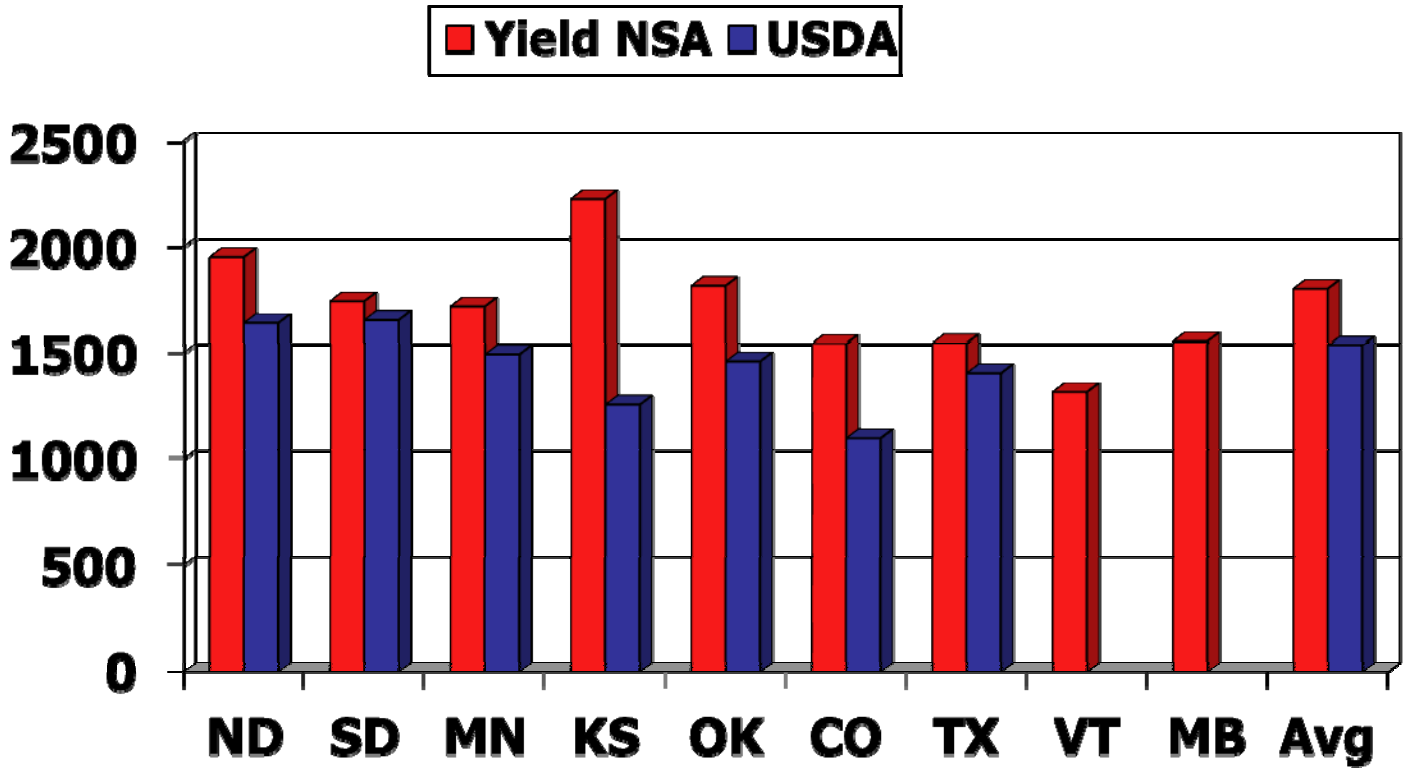
Yield vs. Plant Population



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%

USA Sunflower Survey

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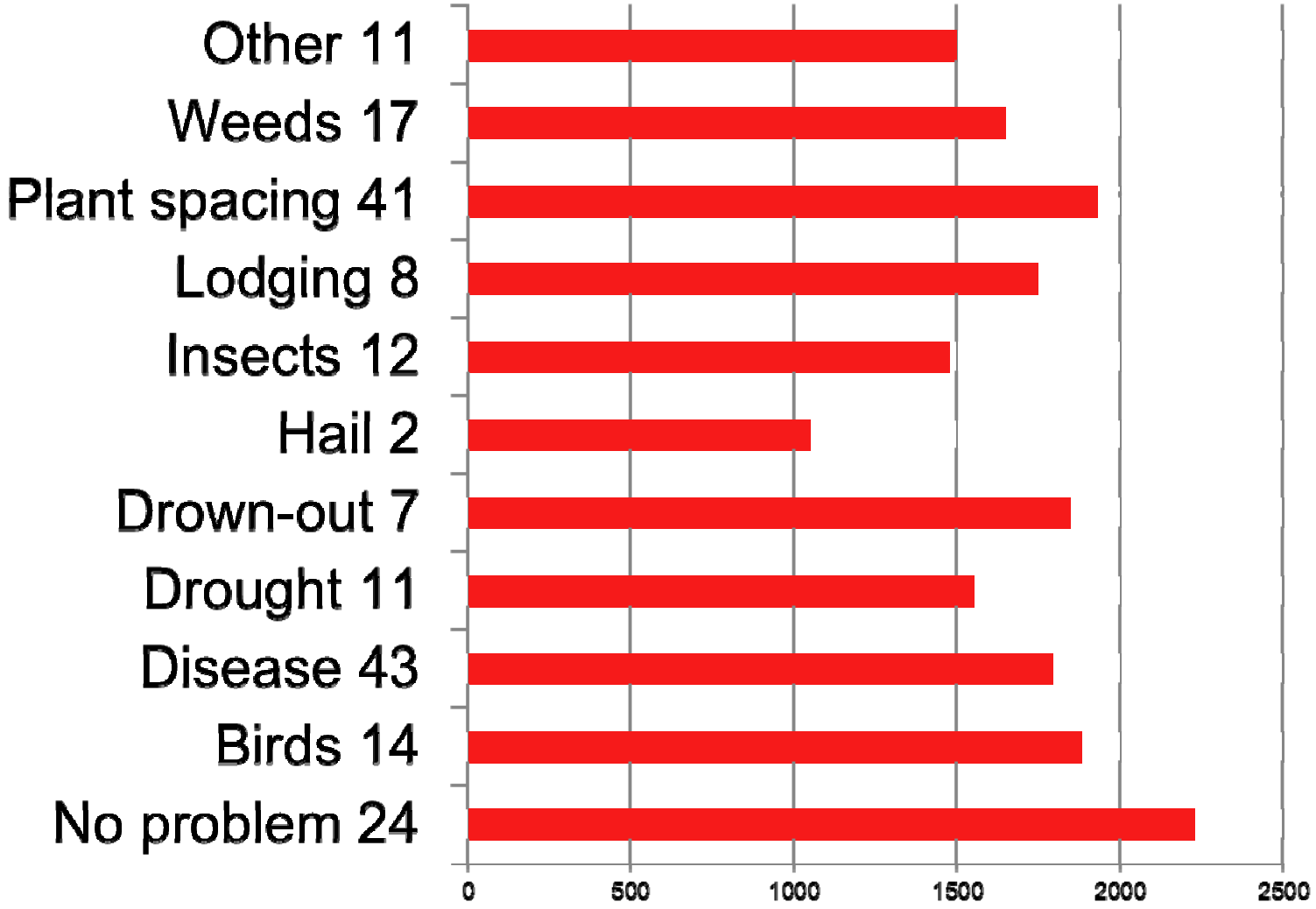
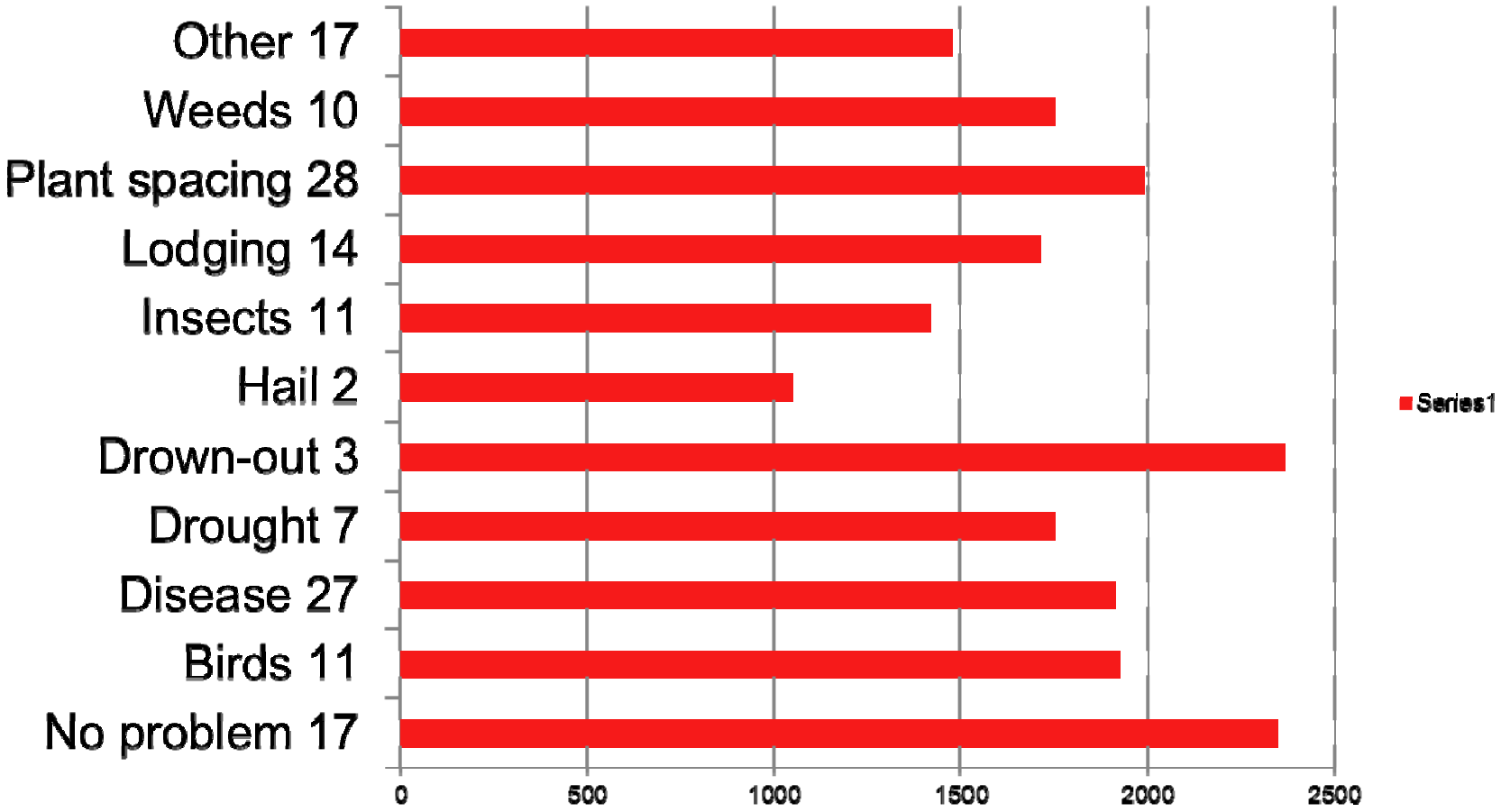
Yield Limiting factor and Yield 2010



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%
- Birds 5.4%
- Drown out 2.5%
- Drought 1.5%
- Hail 1%
- Other 4.9%
- No Problem 35.1%

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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

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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

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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

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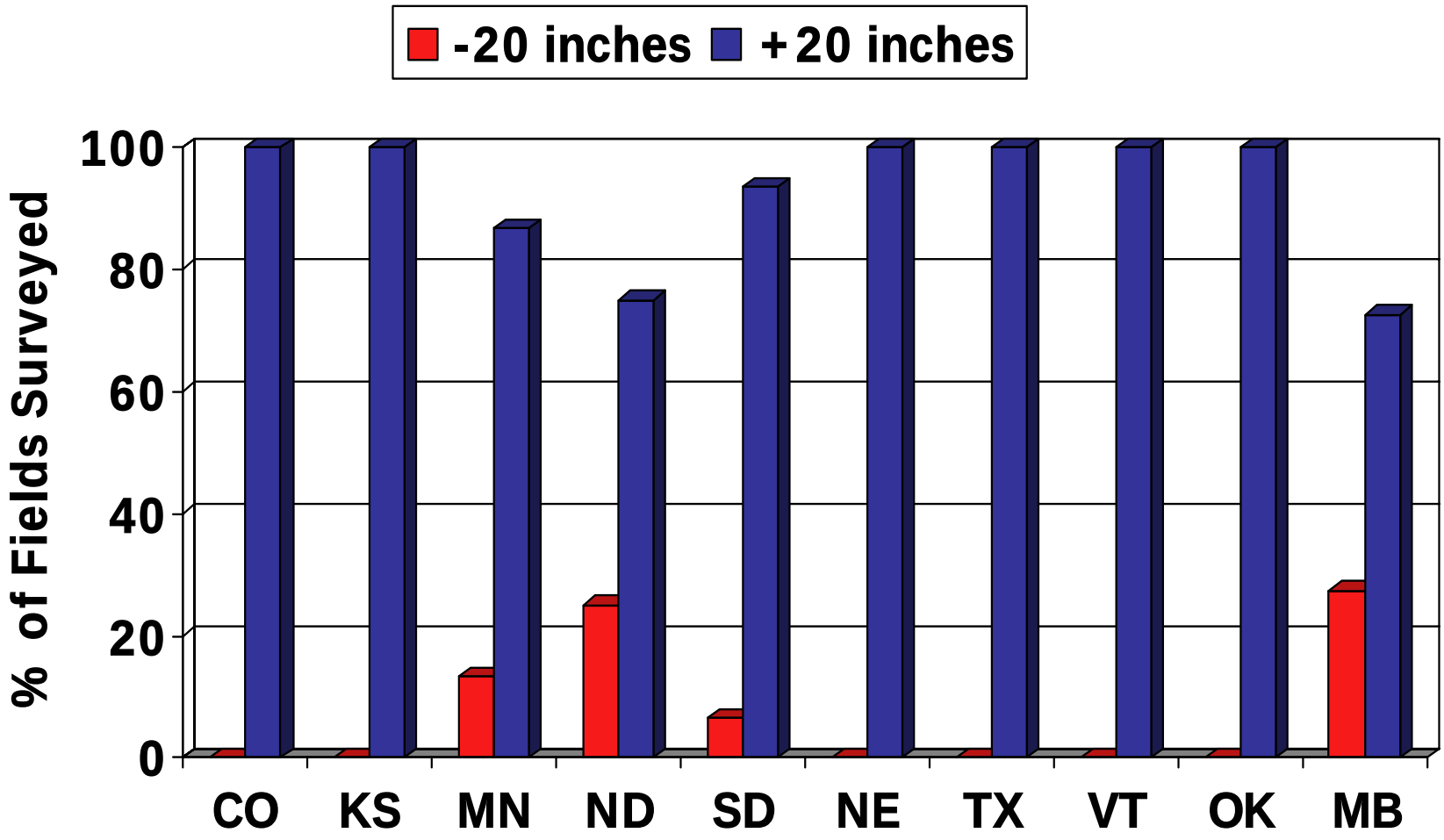
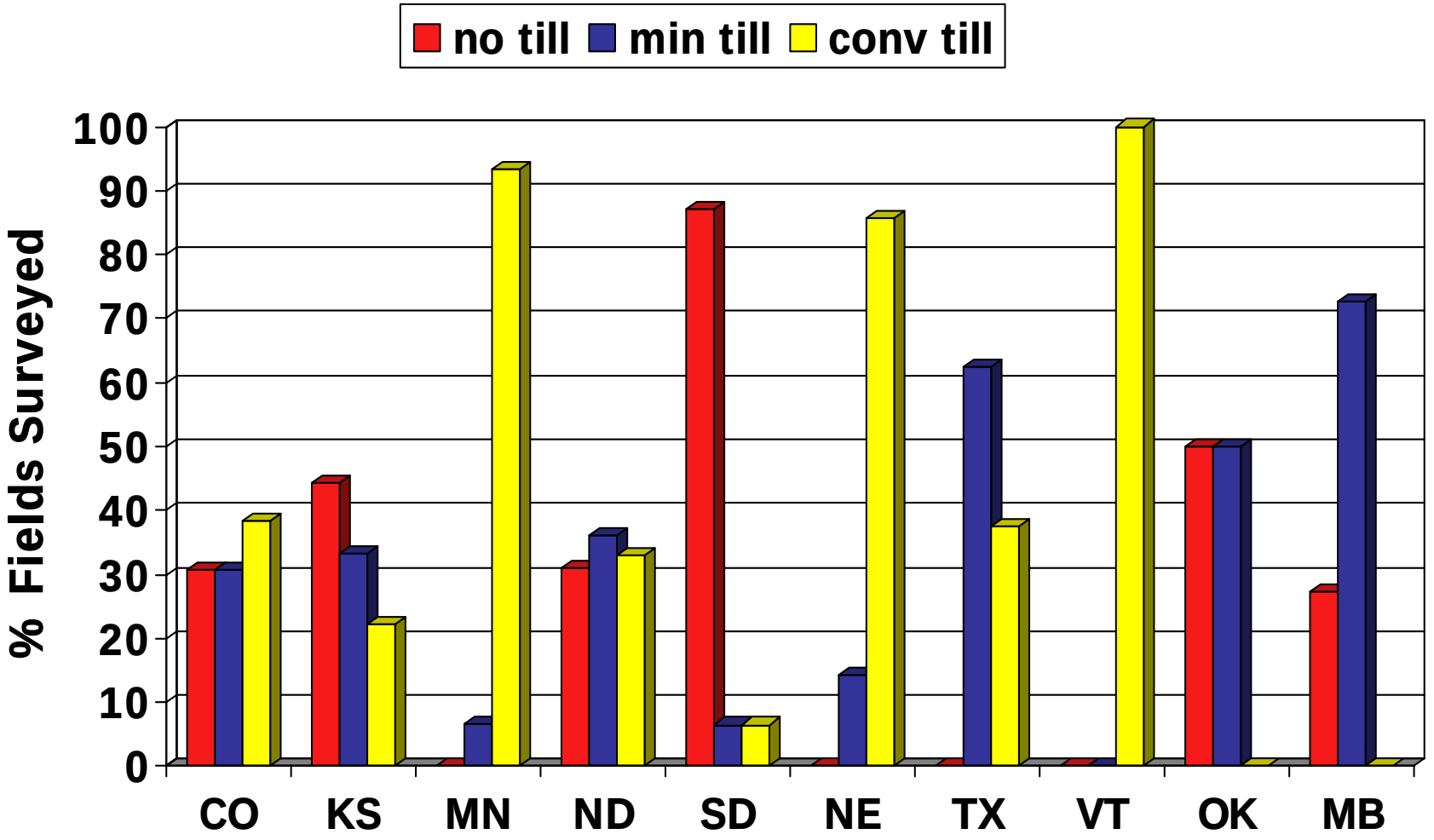
Row Spacing Sunflower-2010

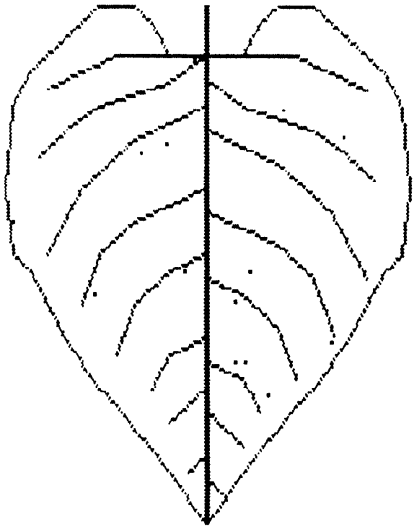


Tillage: 2010 Sunflower Survey

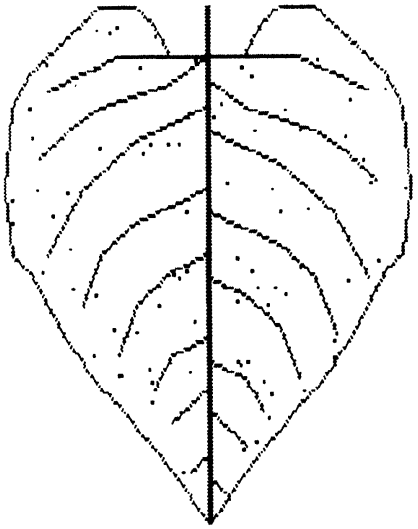


Rust in Sunflower

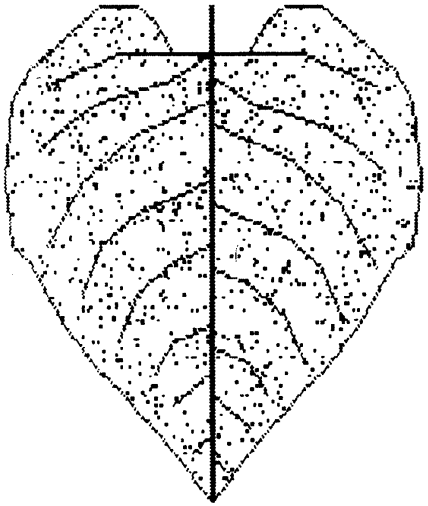
Instructions were:
examine upper 4 leaves on 5 consecutive plants and determine illustration that best fits average of all plants.



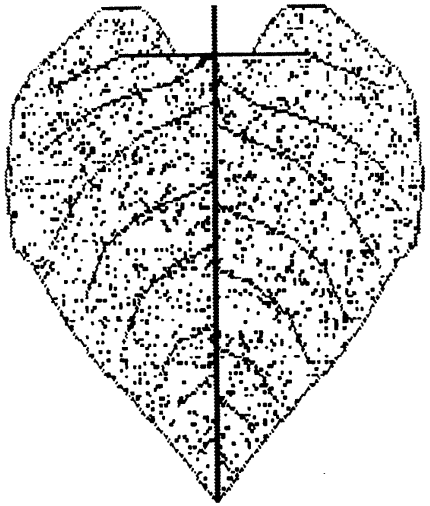
Leaf Area Affected .1%



Leaf Area Affected .5%

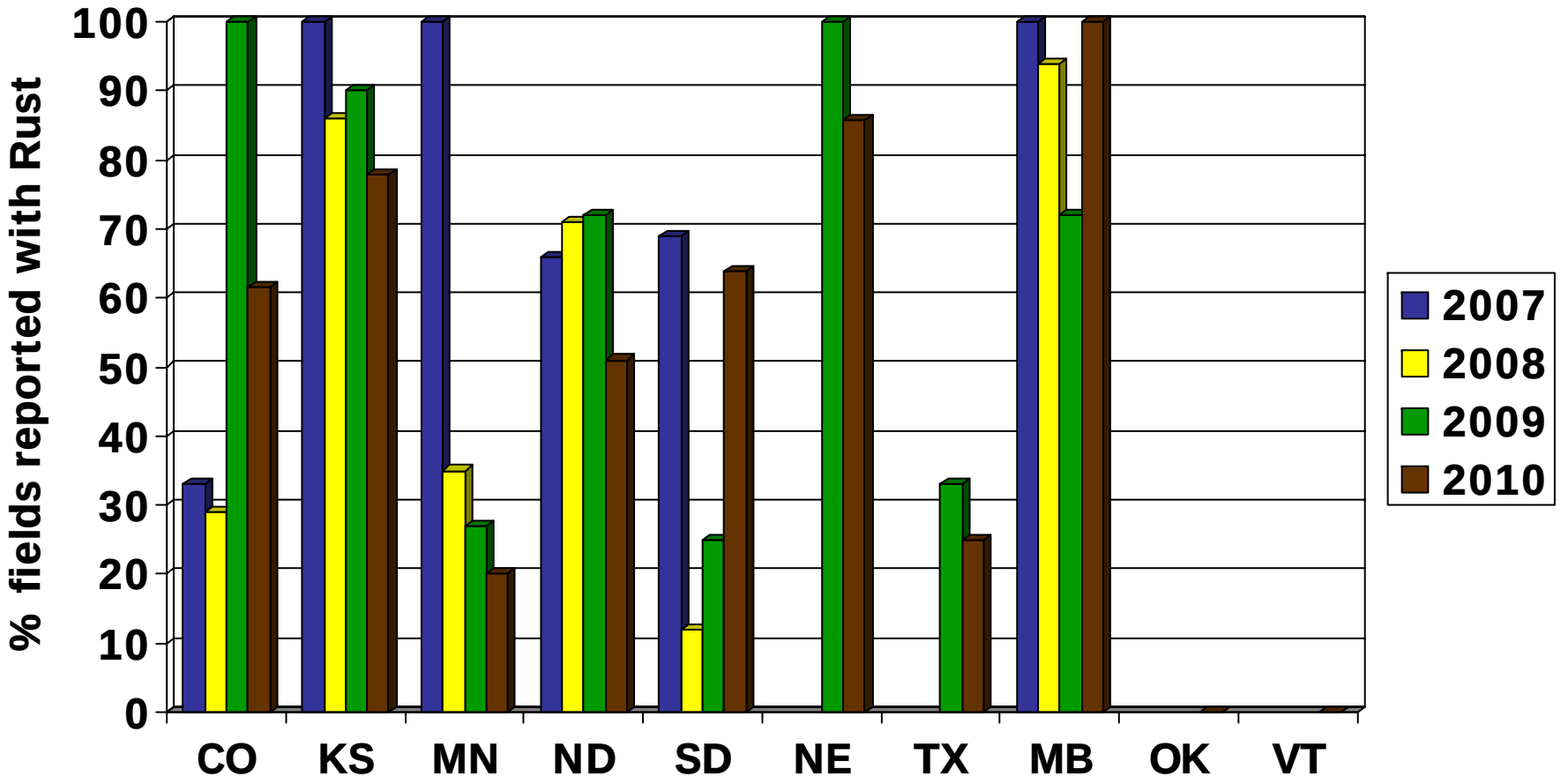


Leaf Area Affected 5%



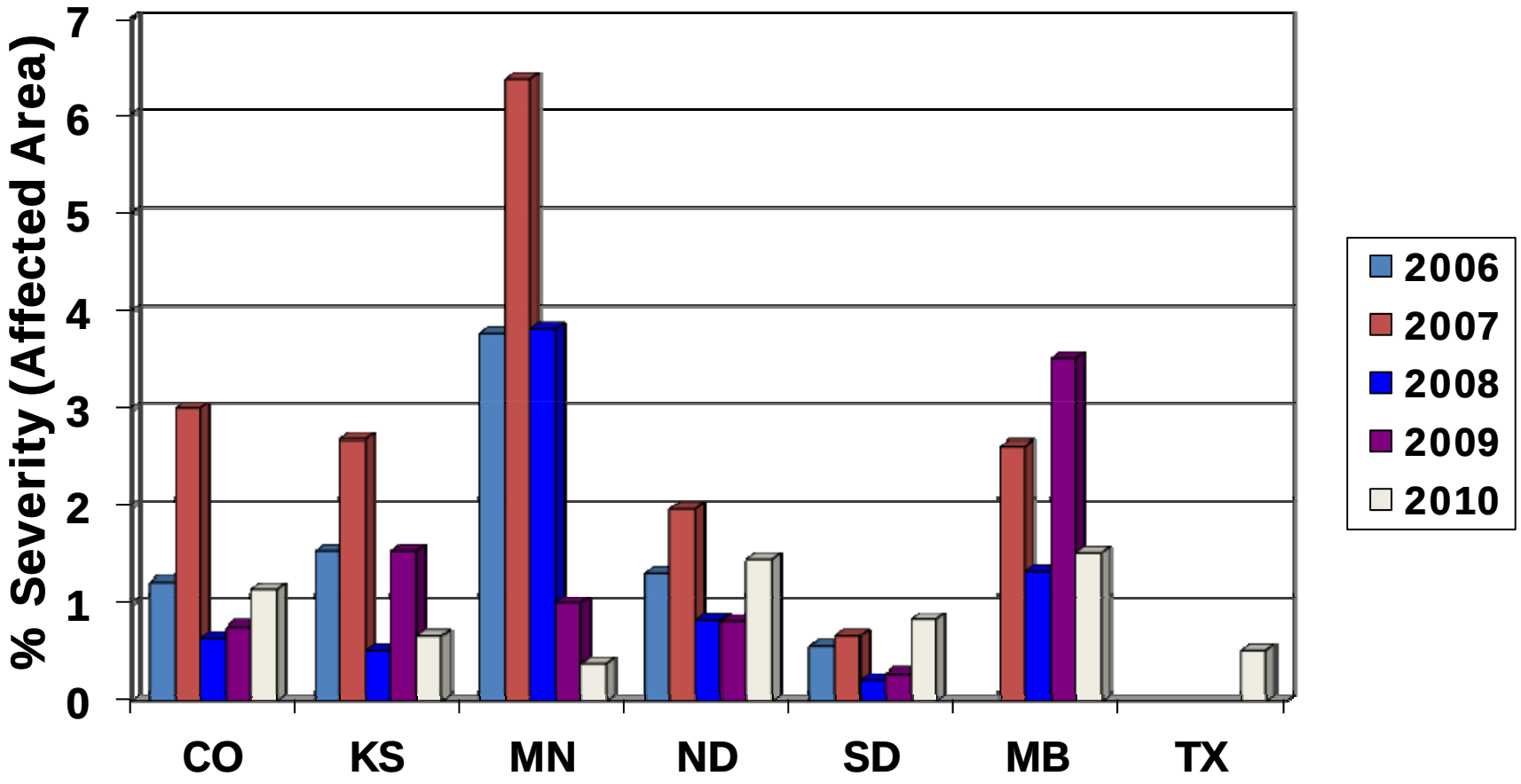
Leaf Area Affected 10%

Red Rust Incidence in Sunflower



Rust Reported

Red Rust Severity in Sunflower



Rust Severity Estimated for Fields Where Incidence Reported

Sclerotinia Head Rot

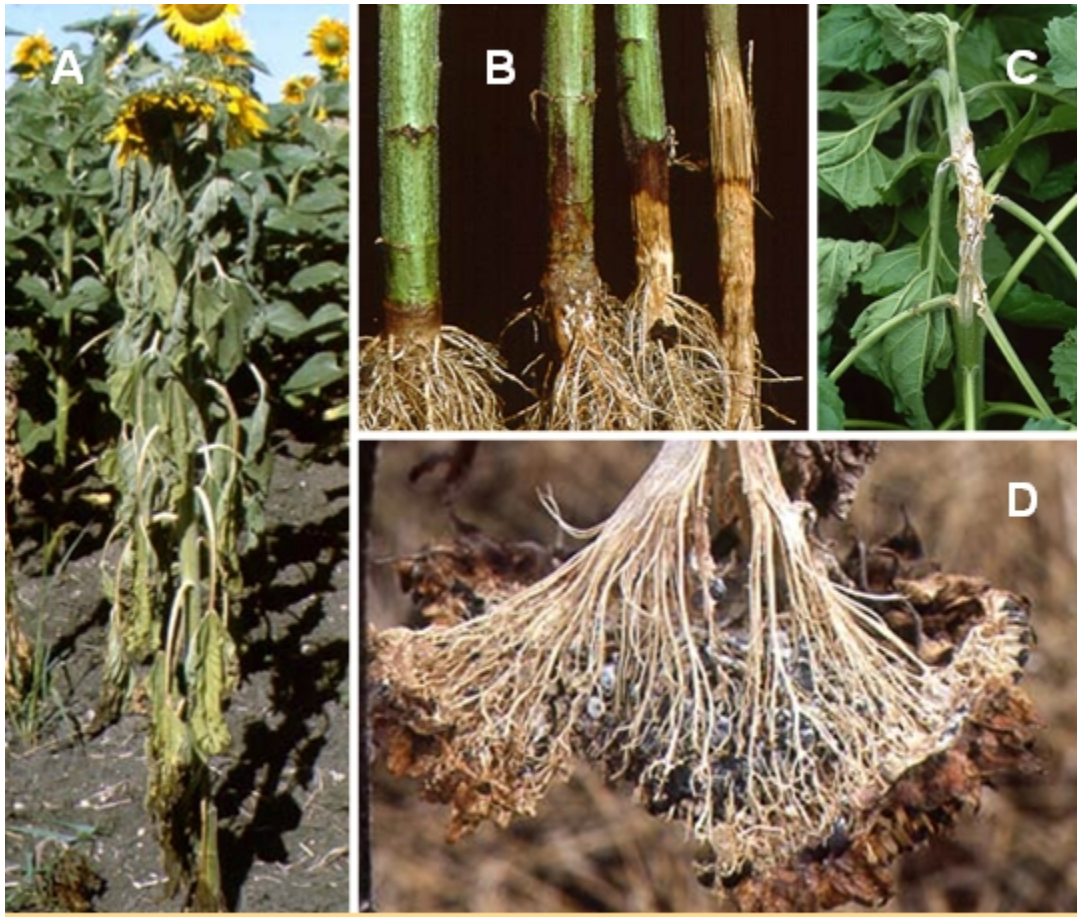
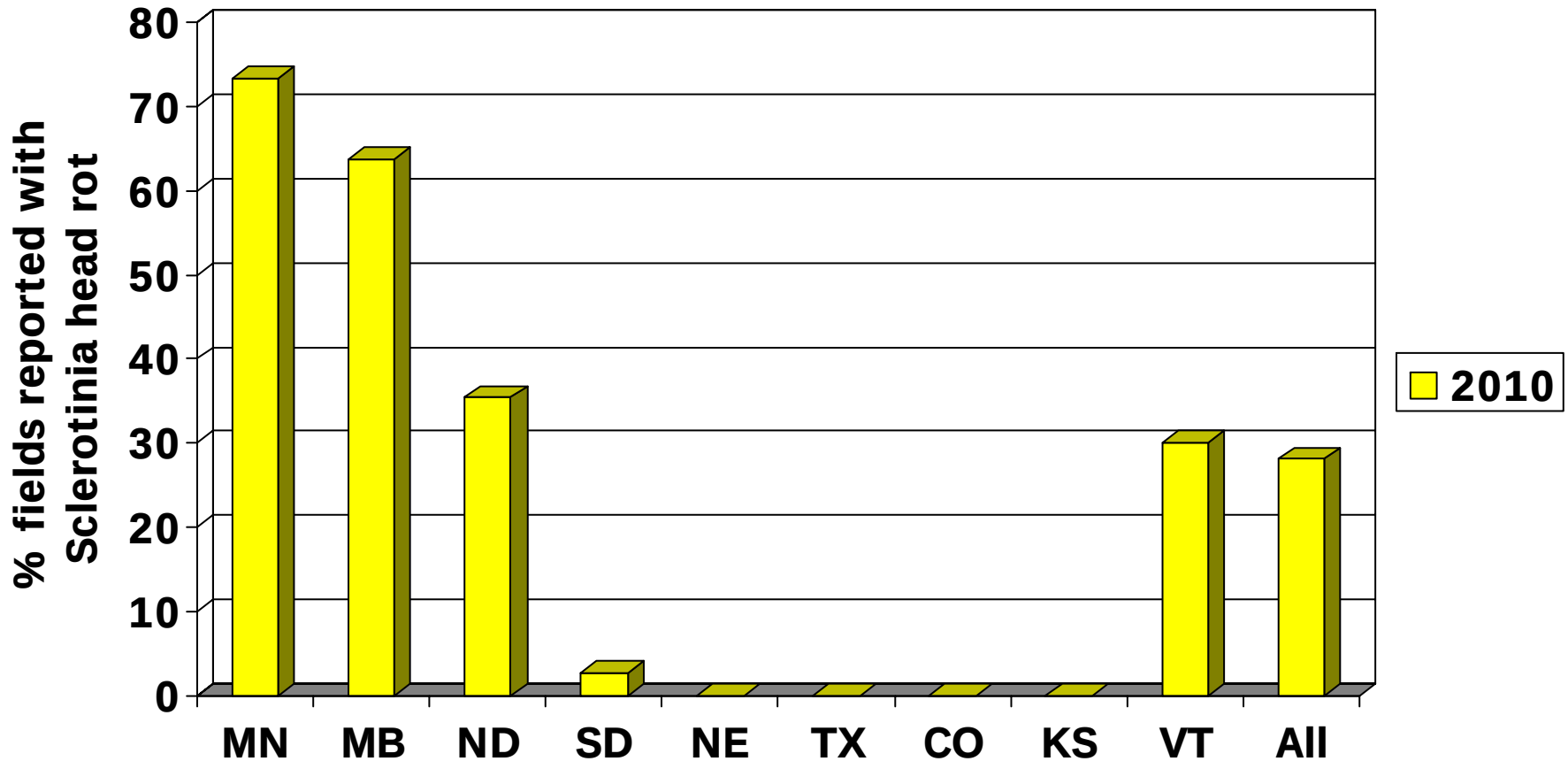
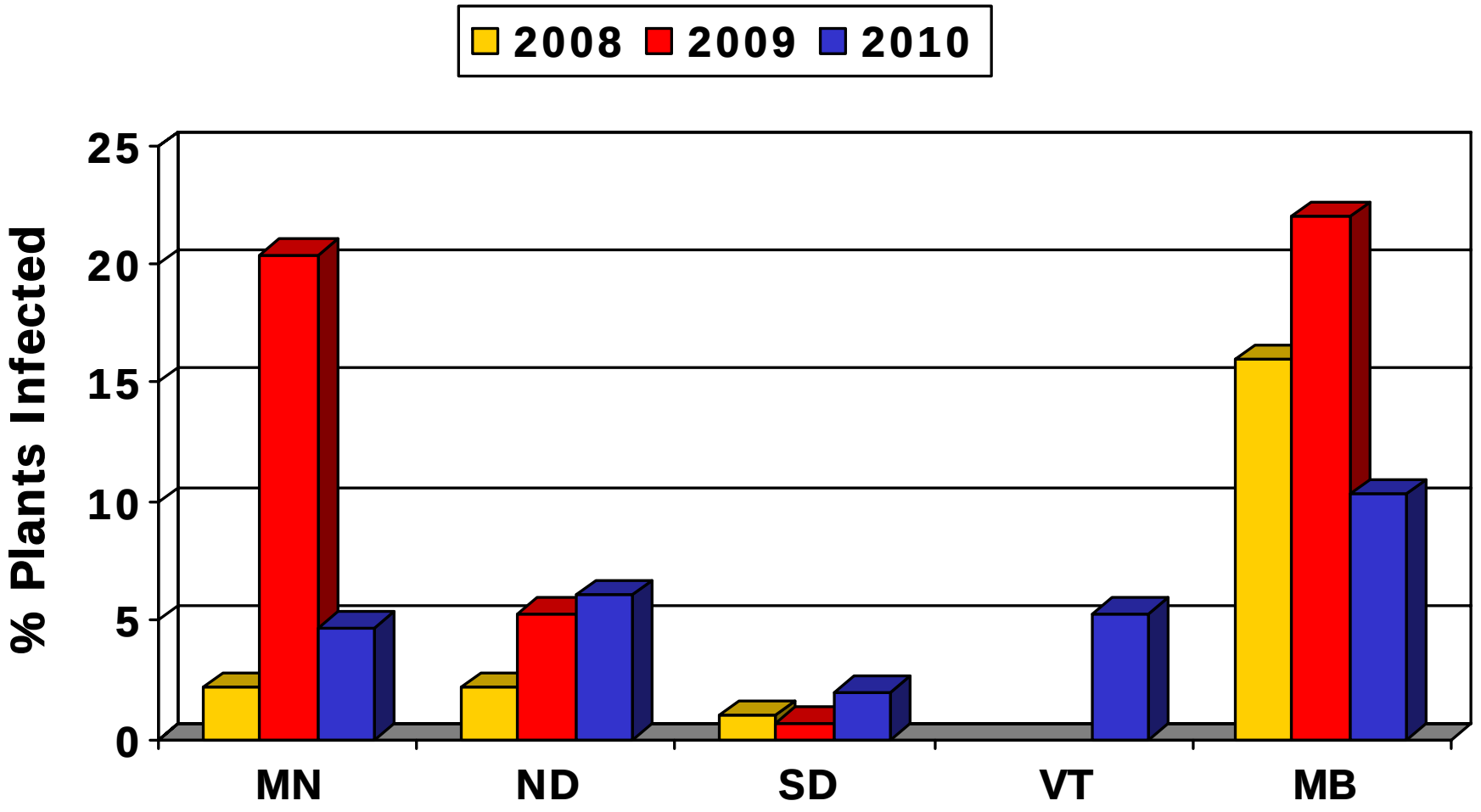


Figure 1. Sclerotinia disease in sunflower expressed as sclerotinia wilt (A and B), mid-stalk rot (C), and head rot (D). *Source: NDSU circular PP-840, March, 2000.*

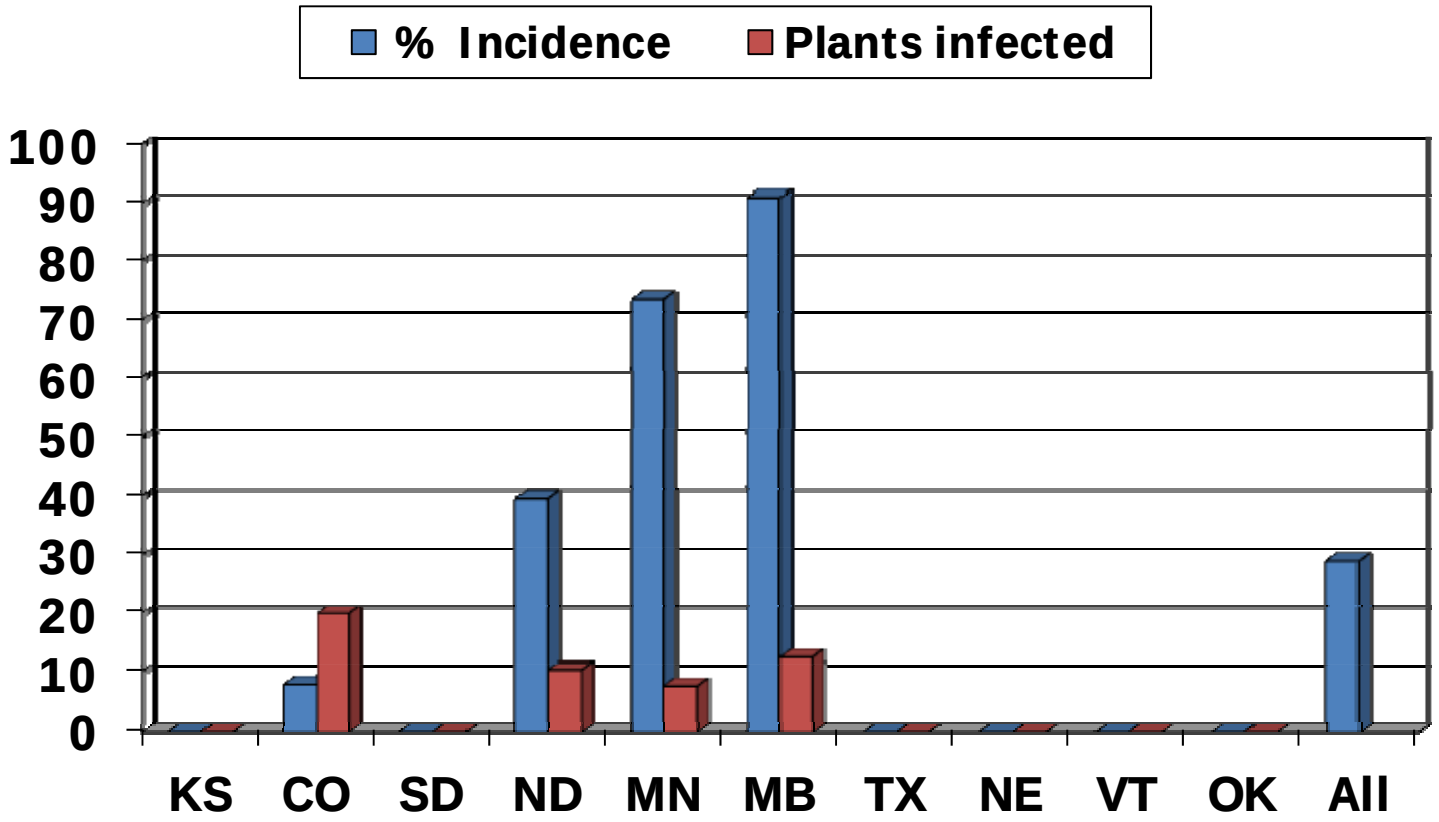
Sclerotinia Head Rot Incidence in Sunflower 2010



Sclerotinia Head Rot Severity in Sunflower 2008 -2010

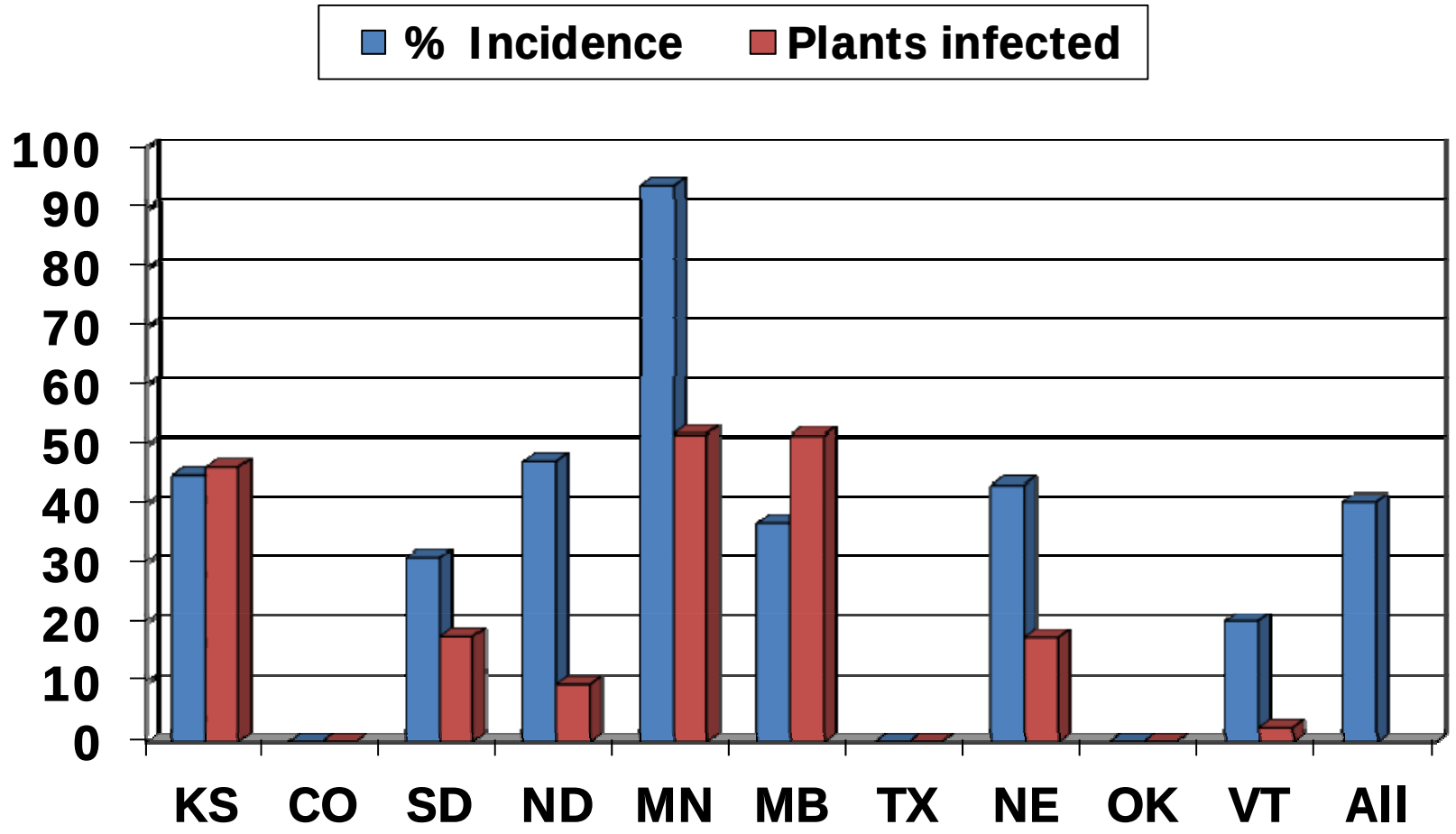


Sclerotina stalk rot Incidence and Severity in 2010

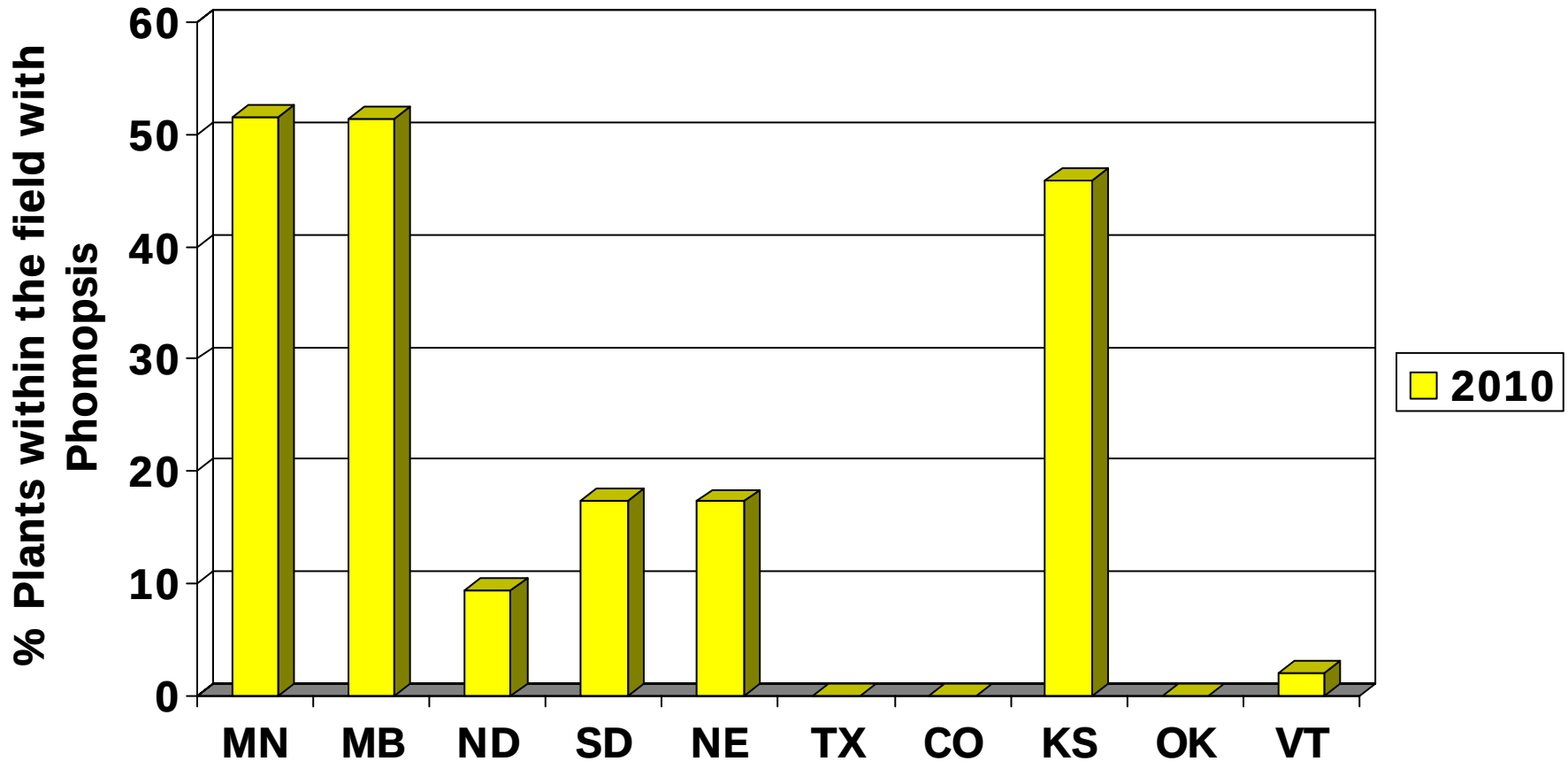


Phomopsis Stem Canker	Phoma
	

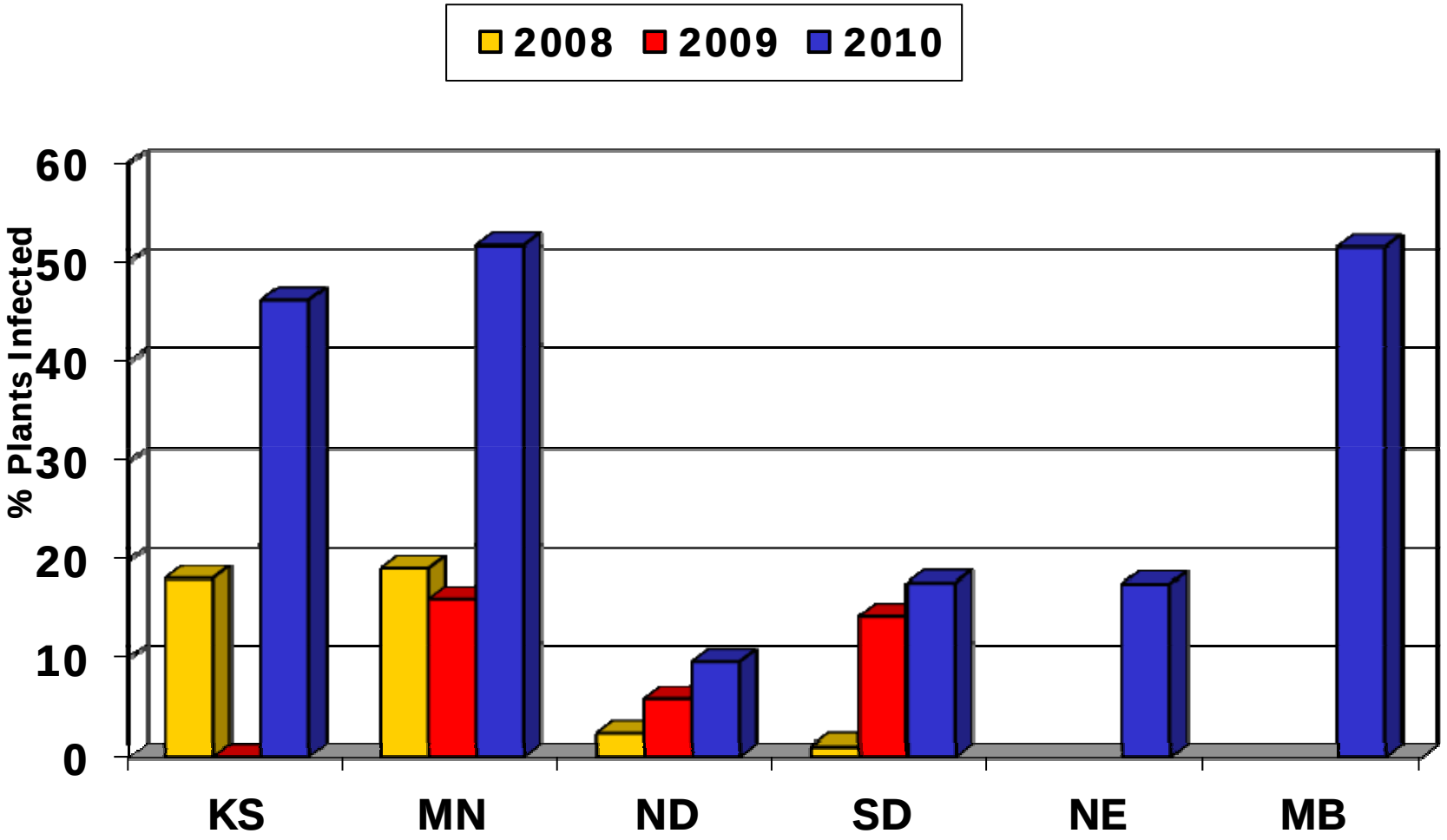
Phomopsis Incidence and Severity in Sunflower 2010



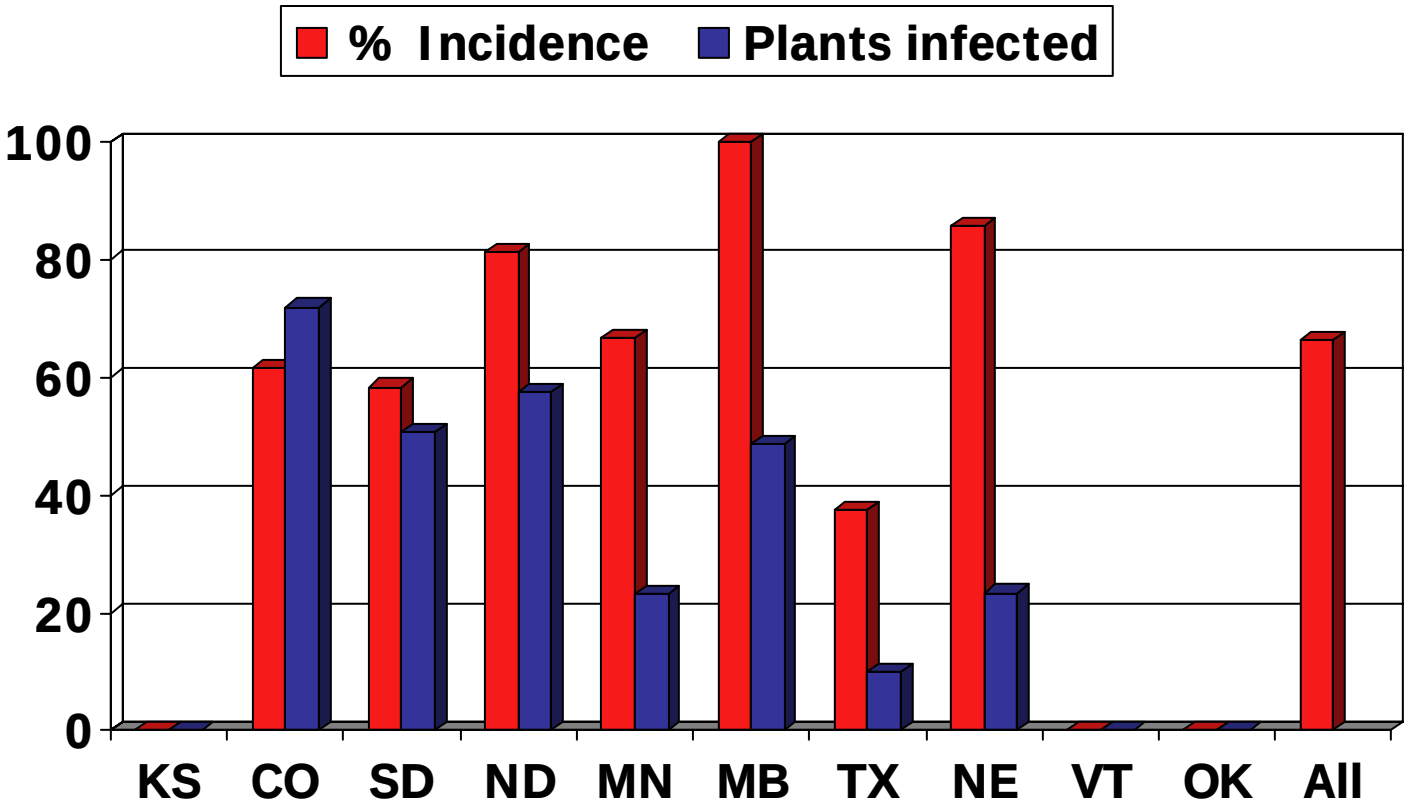
Phomopsis severity in Sunflower 2010



Phomopsis Severity in Sunflower 2008 -2010

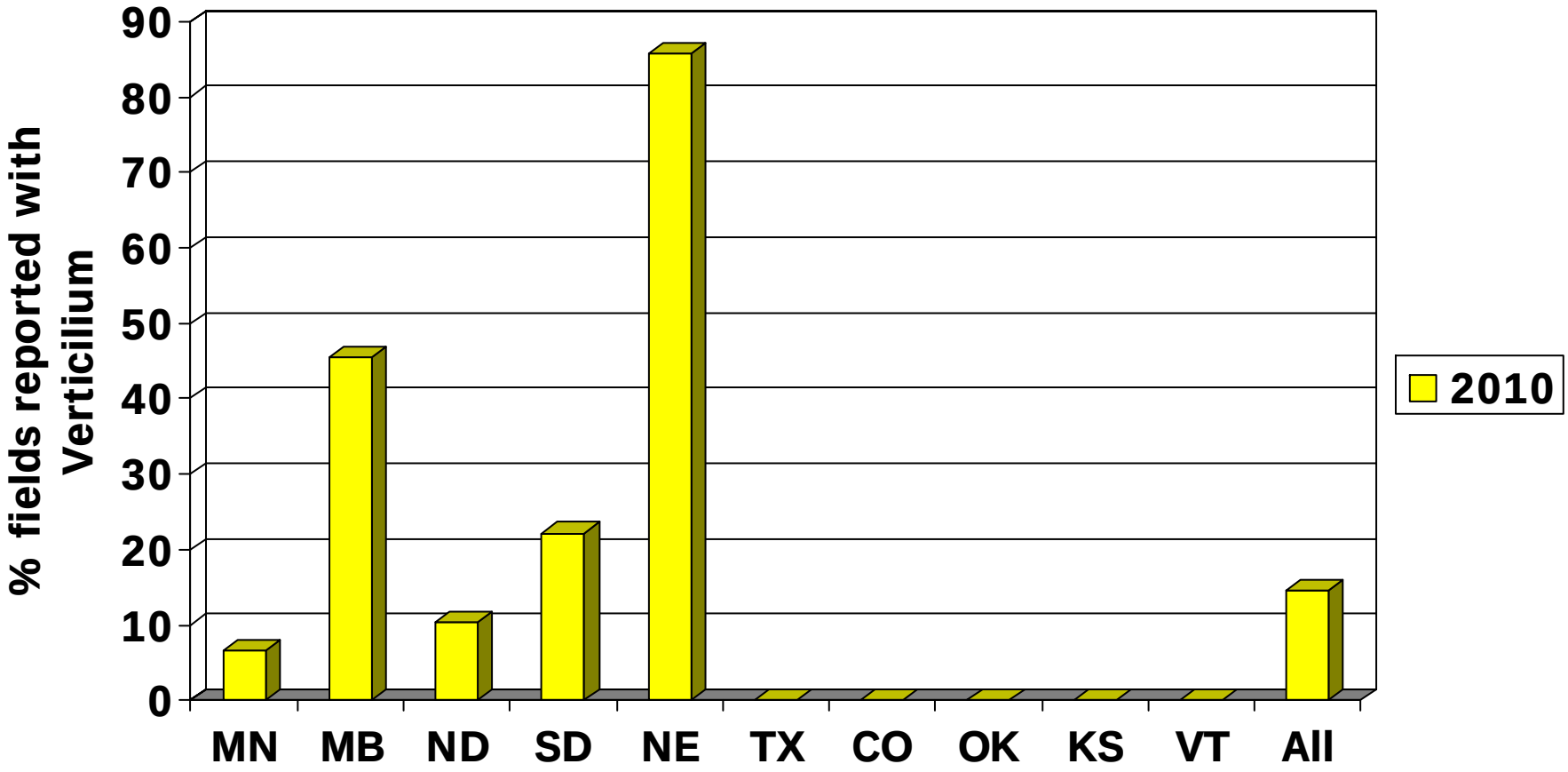


Phoma Incidence and Severity in 2010

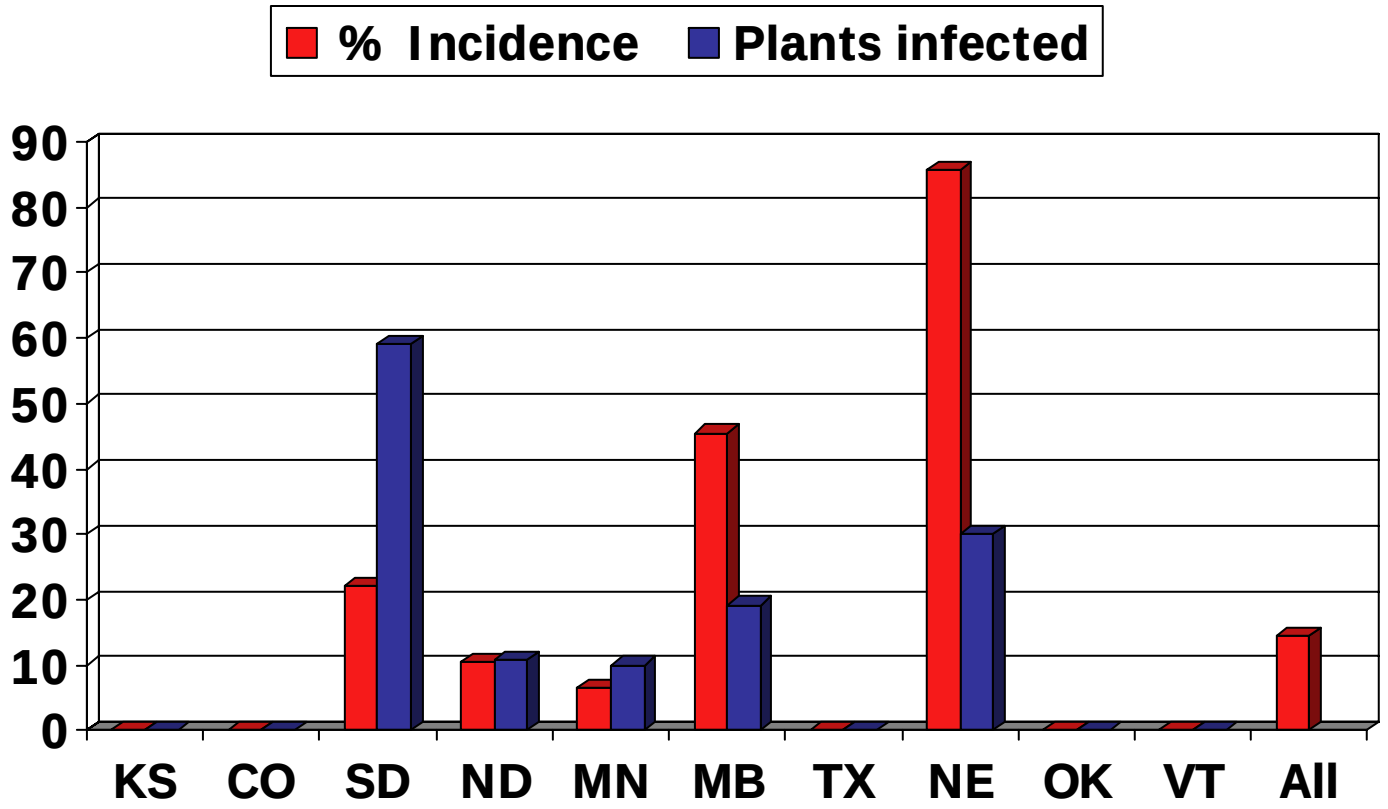


Interveinal yellowing (chorosis) leading to interveinal necrosis, starting on the lower leaves of a *Verticillium* infected sunflower plant.

Verticilium Incidence in Sunflower 2010

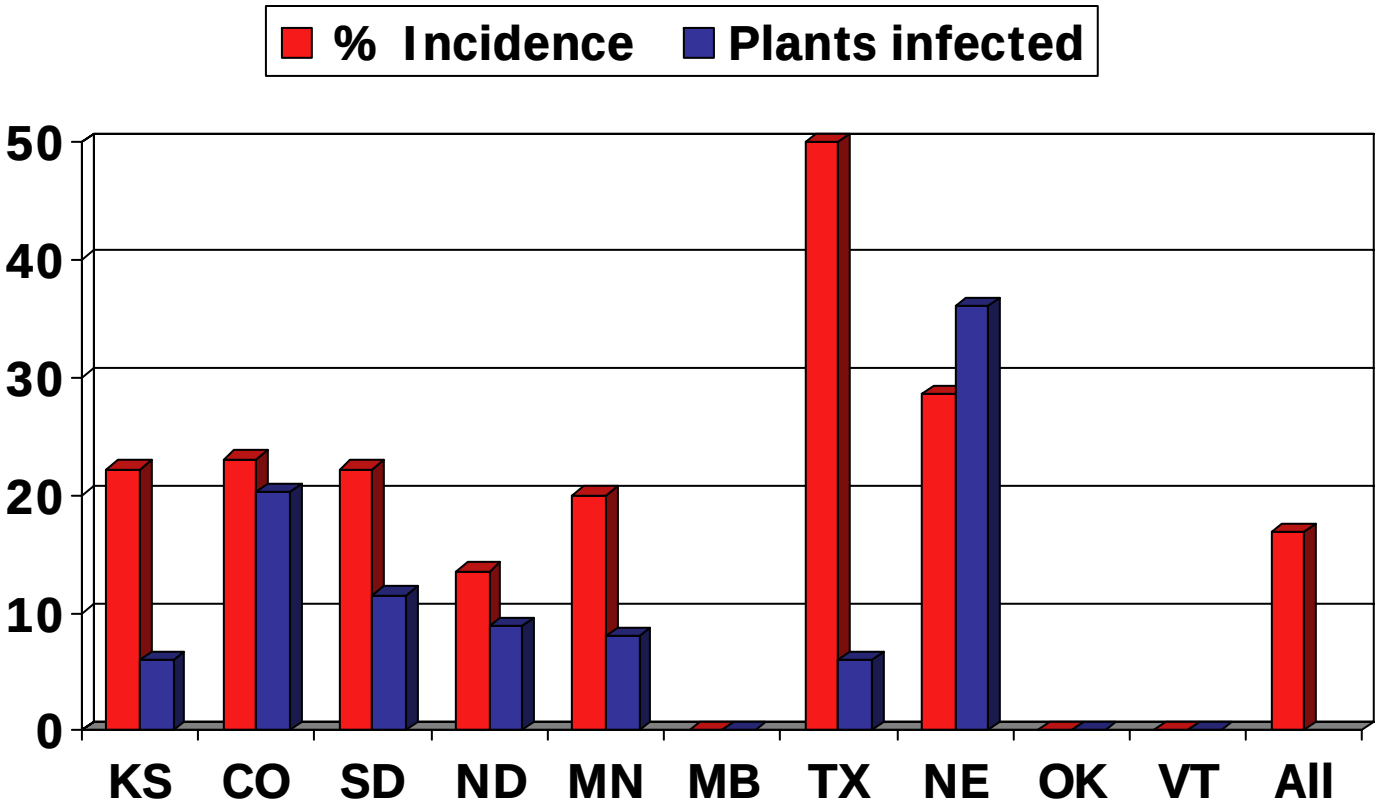


Verticilium Incidence and Severity in 2010

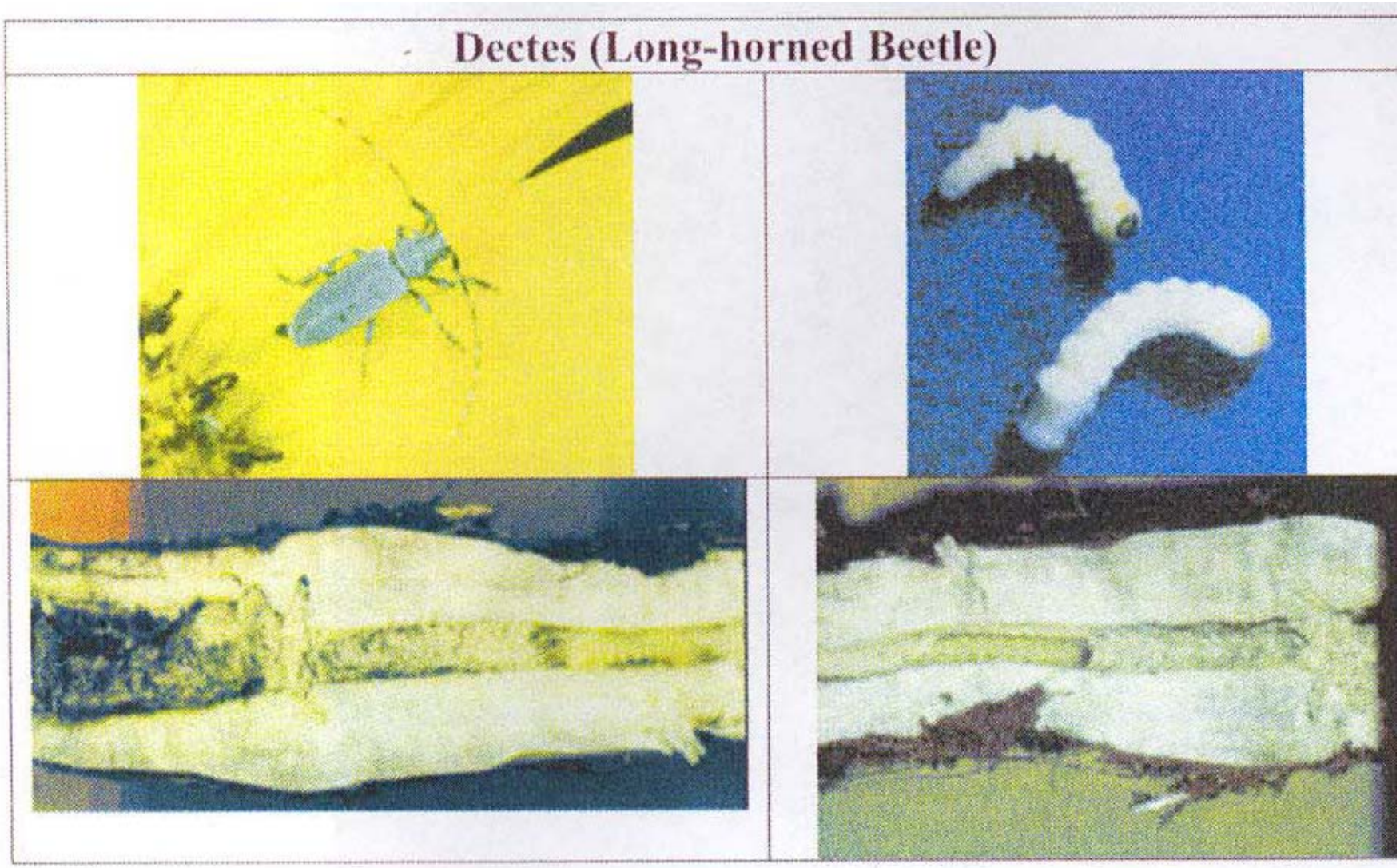


Rhizopus

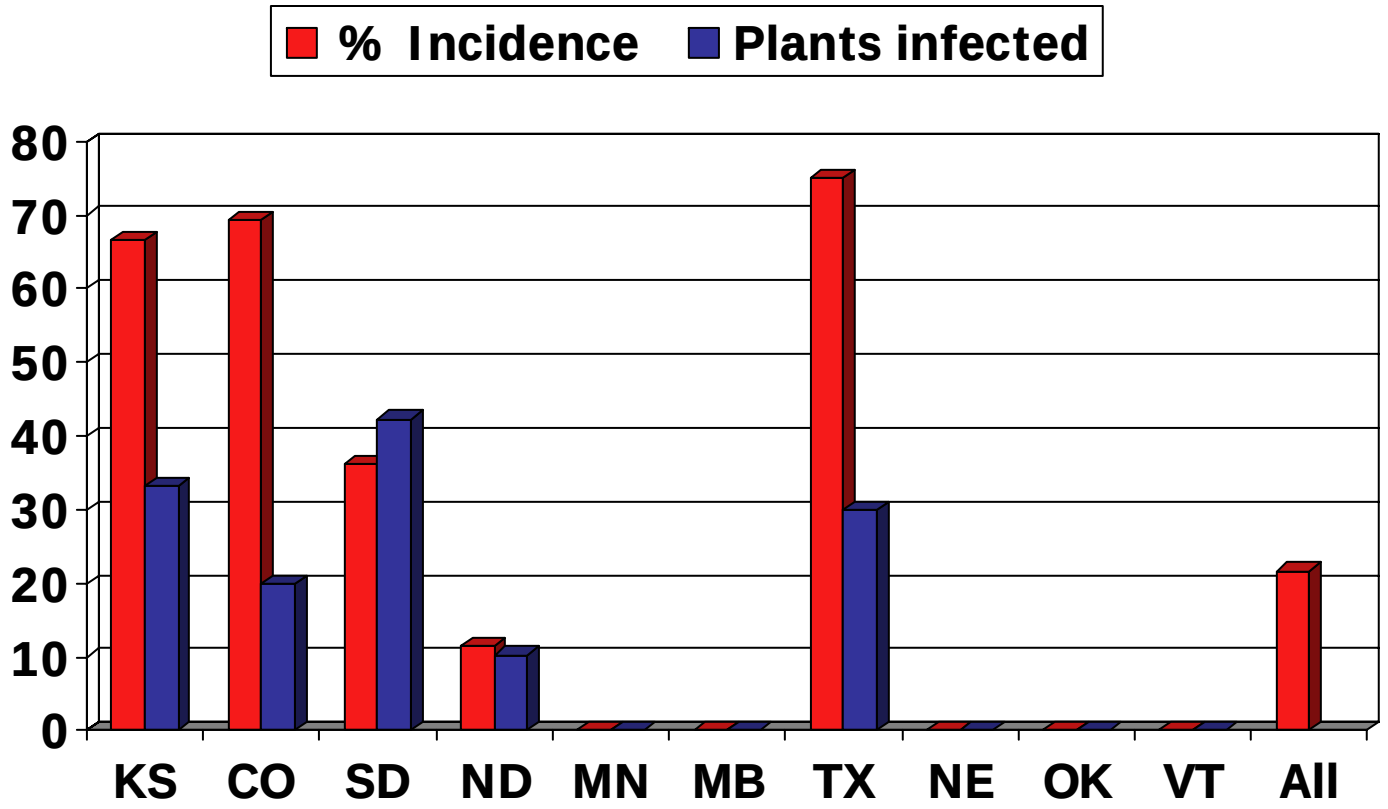
Rhizopus Incidence and Severity in 2010



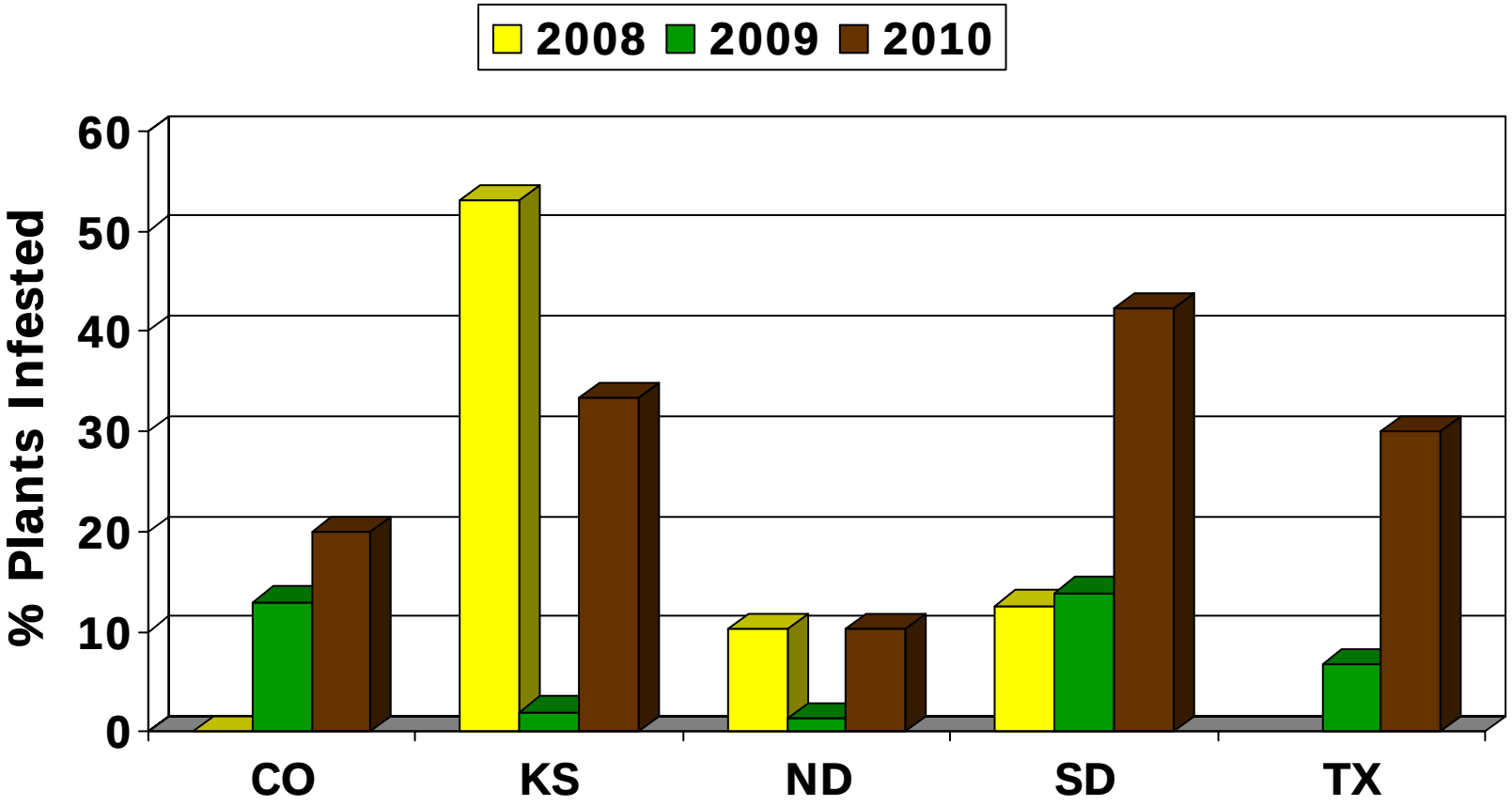
Dectes



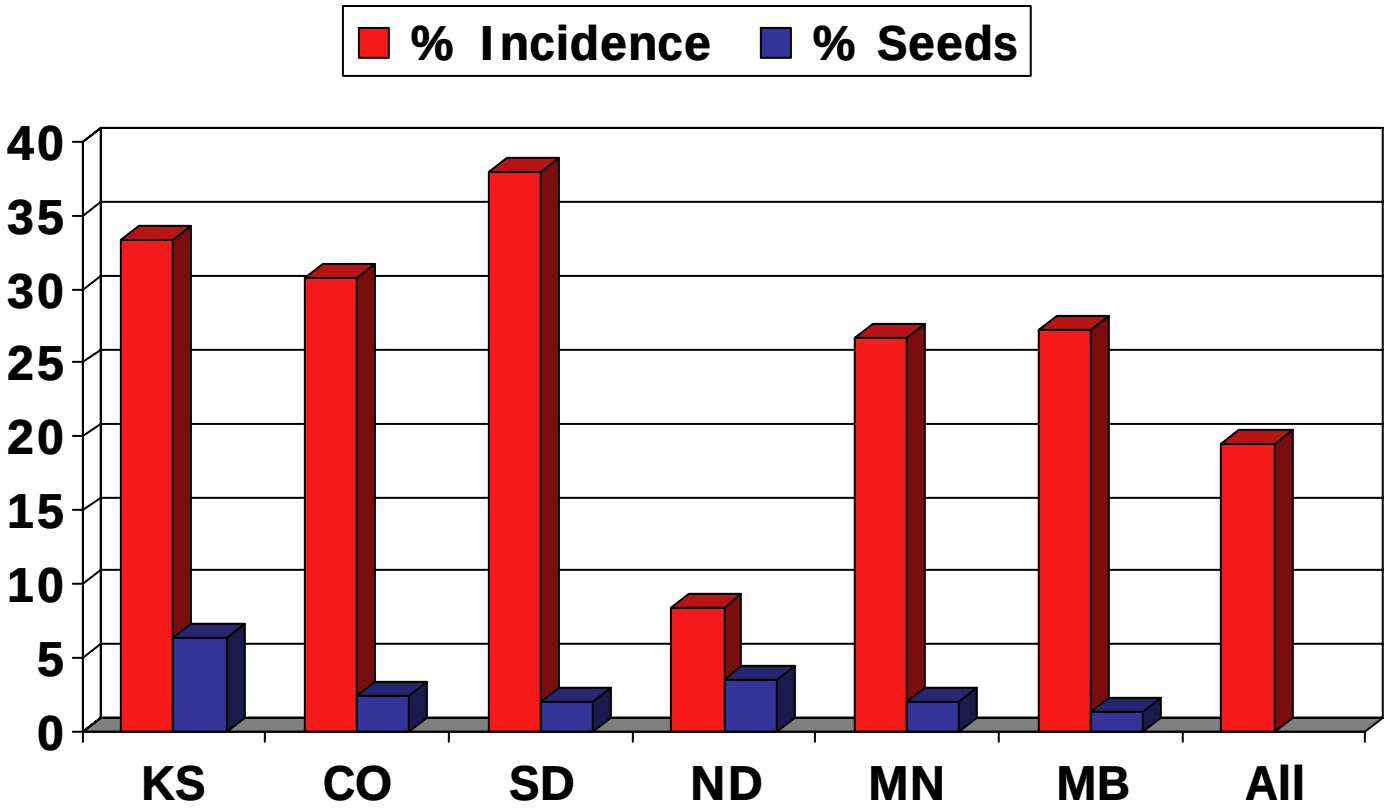
Long horned beetle Incidence and Severity in 2010



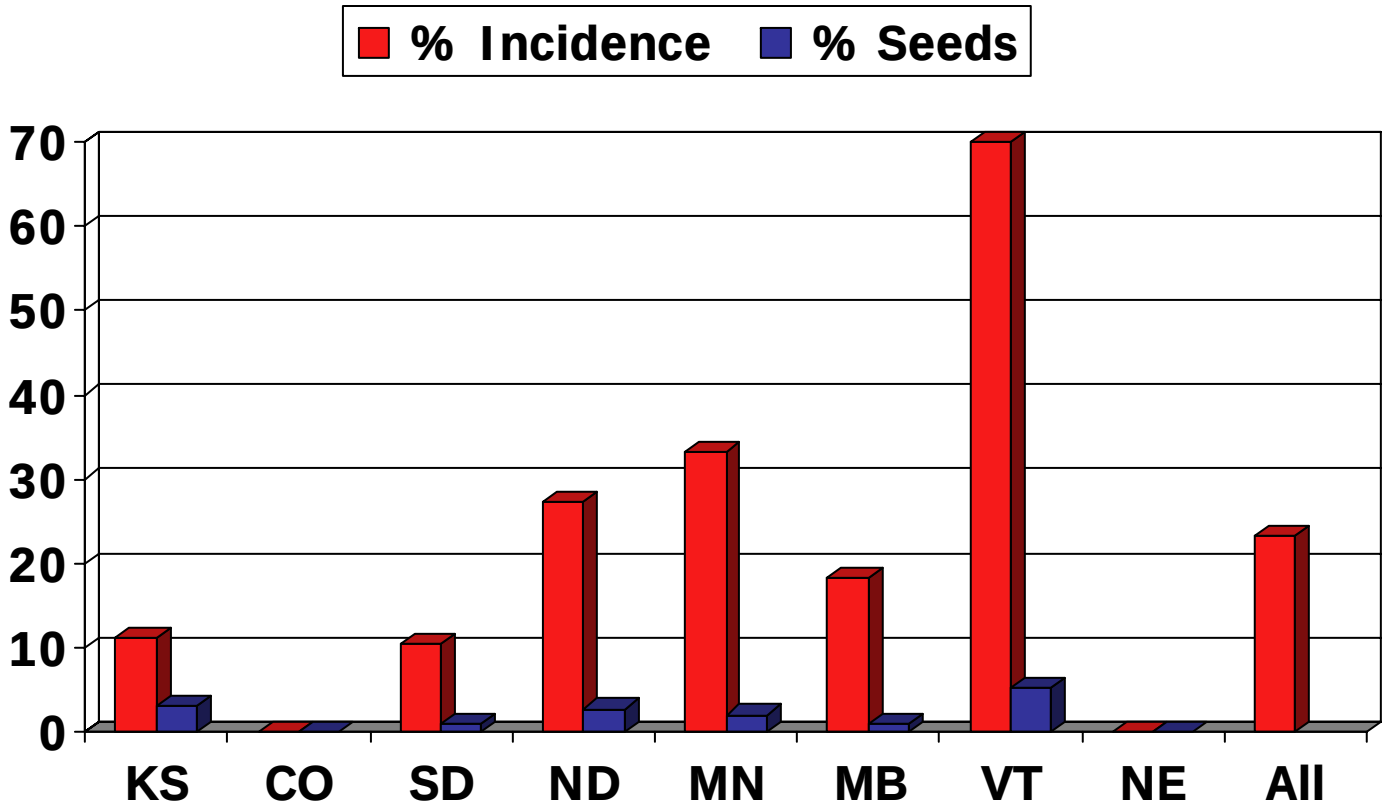
Insect: Long Horned Beetle Severity 2008-2010



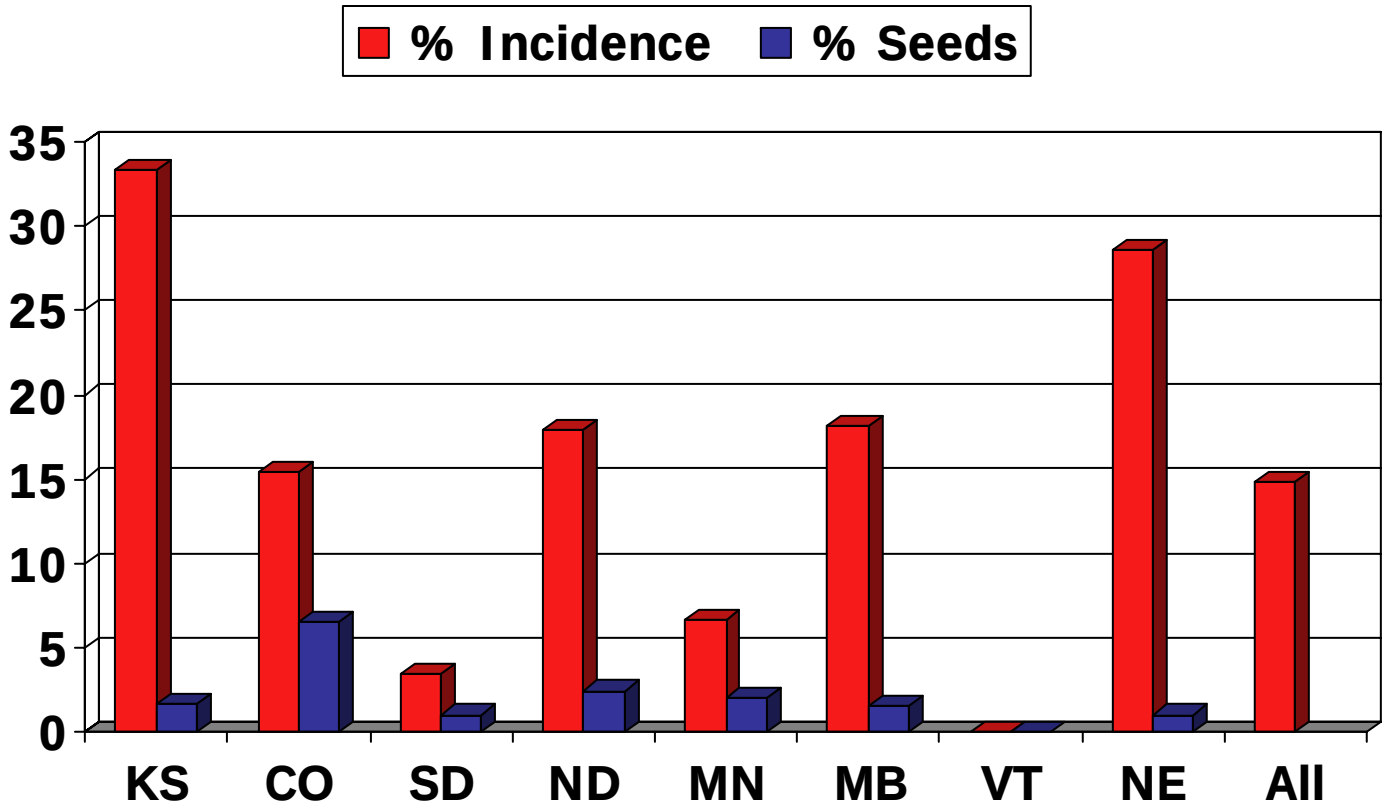
Seed Weevil Incidence and Severity in 2010



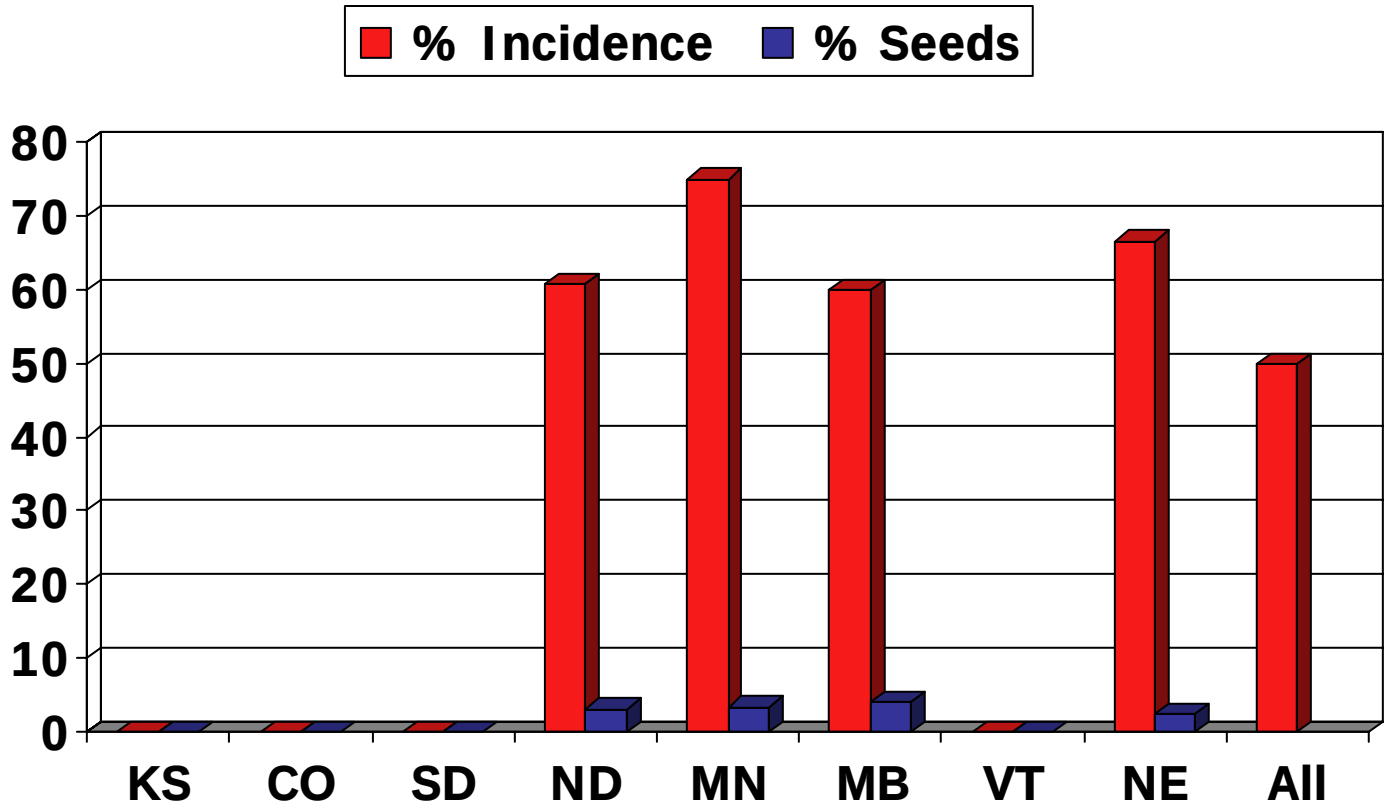
Banded Sunflower Moth Incidence and Severity in 2010



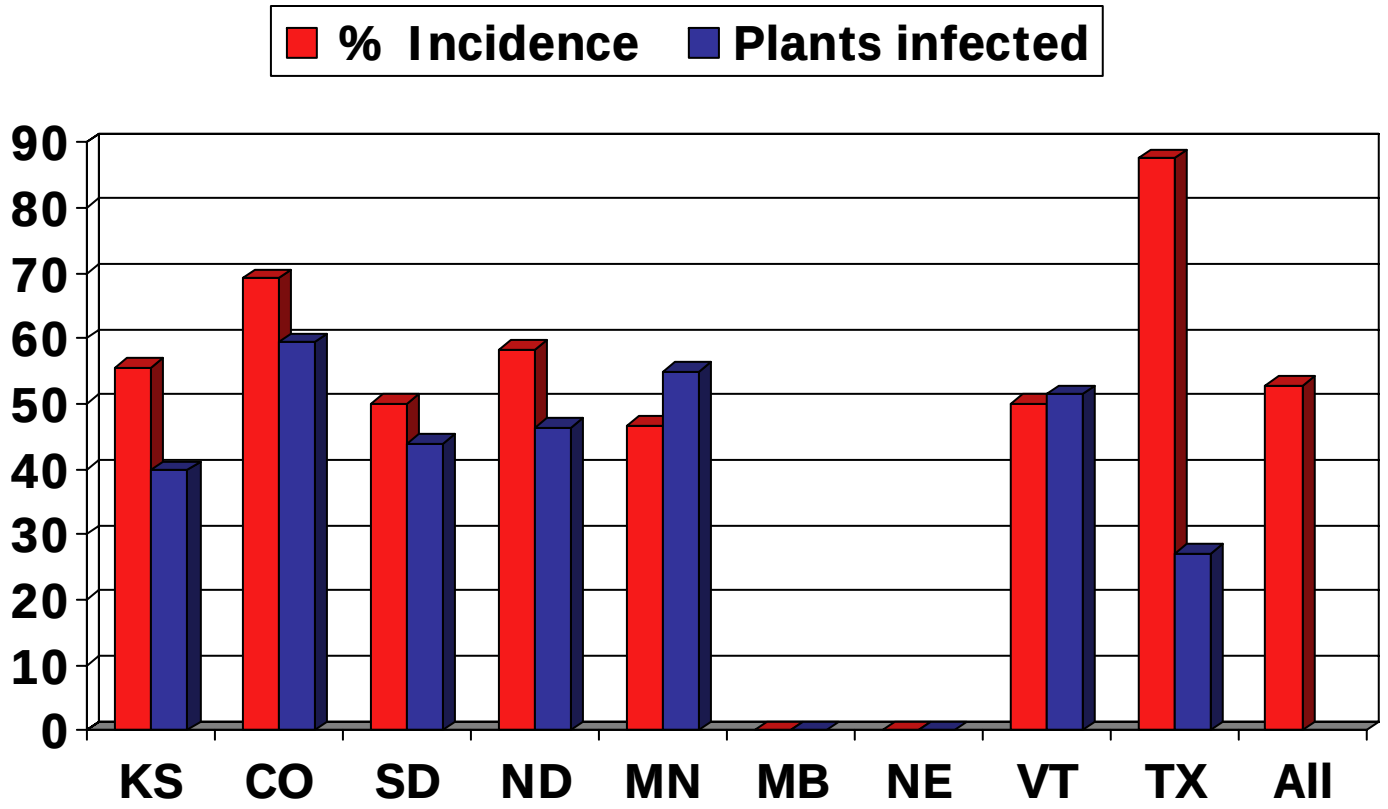
Sunflower Moth Incidence and Severity in 2010



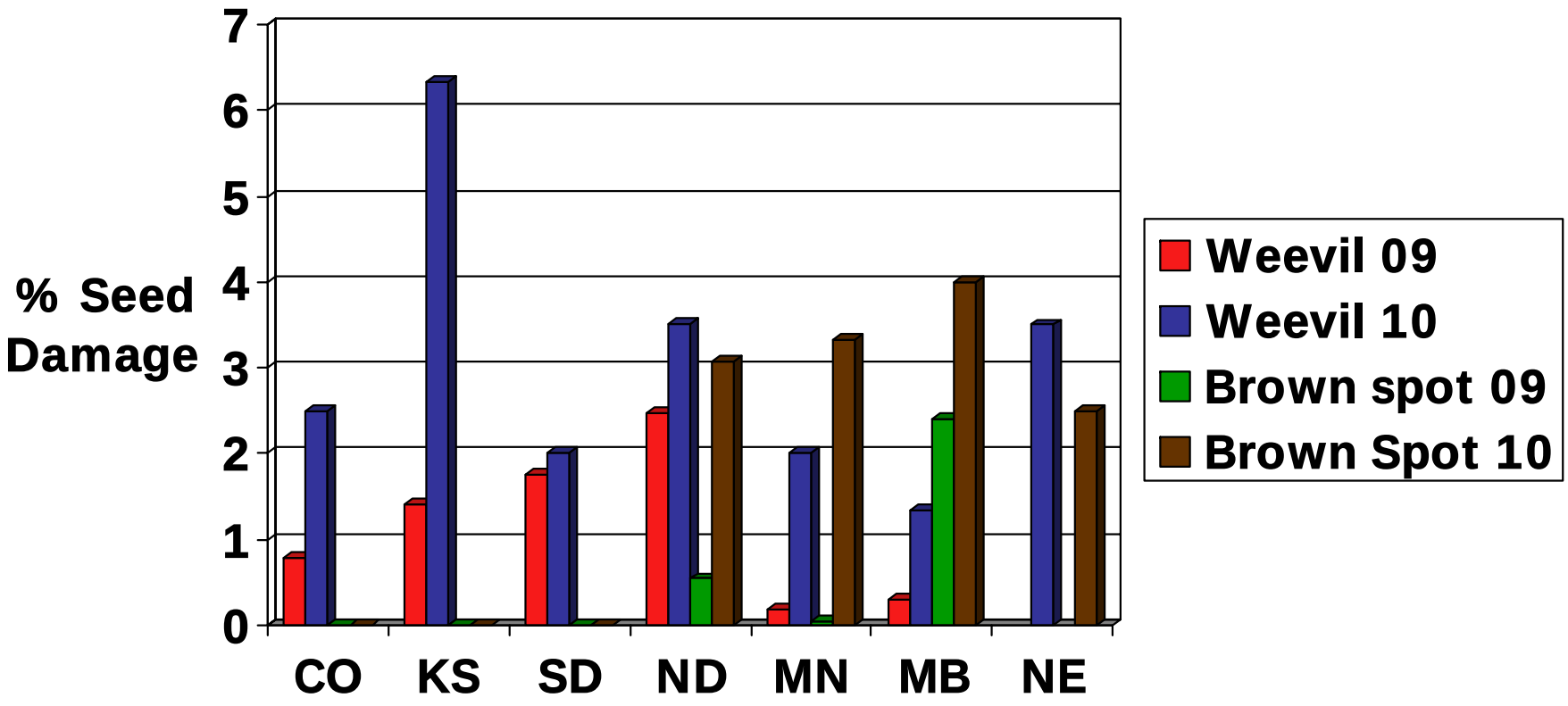
Brown Spot Incidence and Severity in 2010 (confectionary)



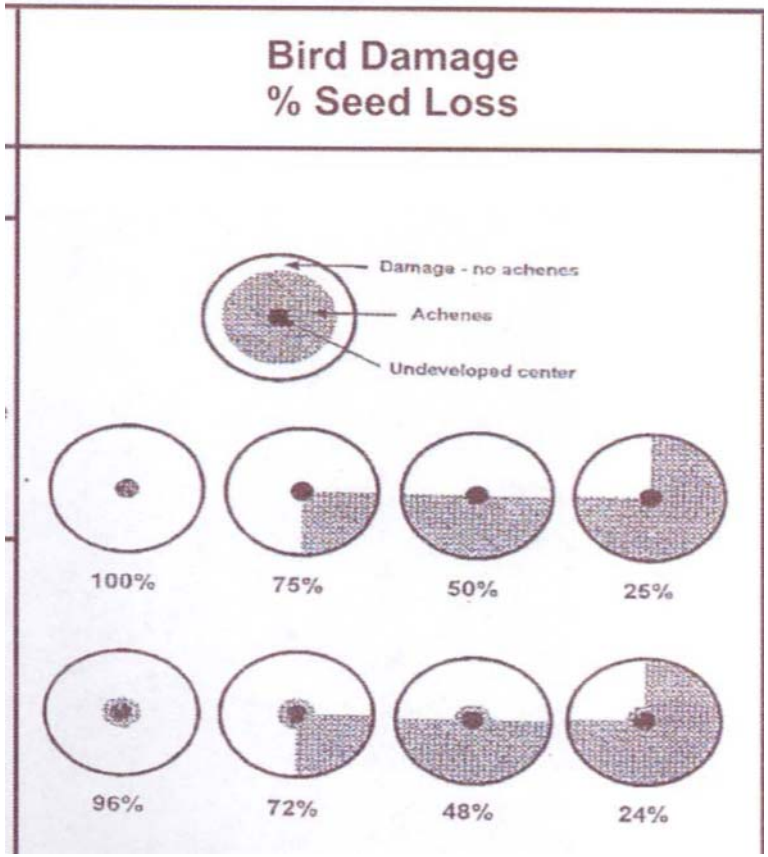
Heads with Webbing Incidence and Severity in 2010



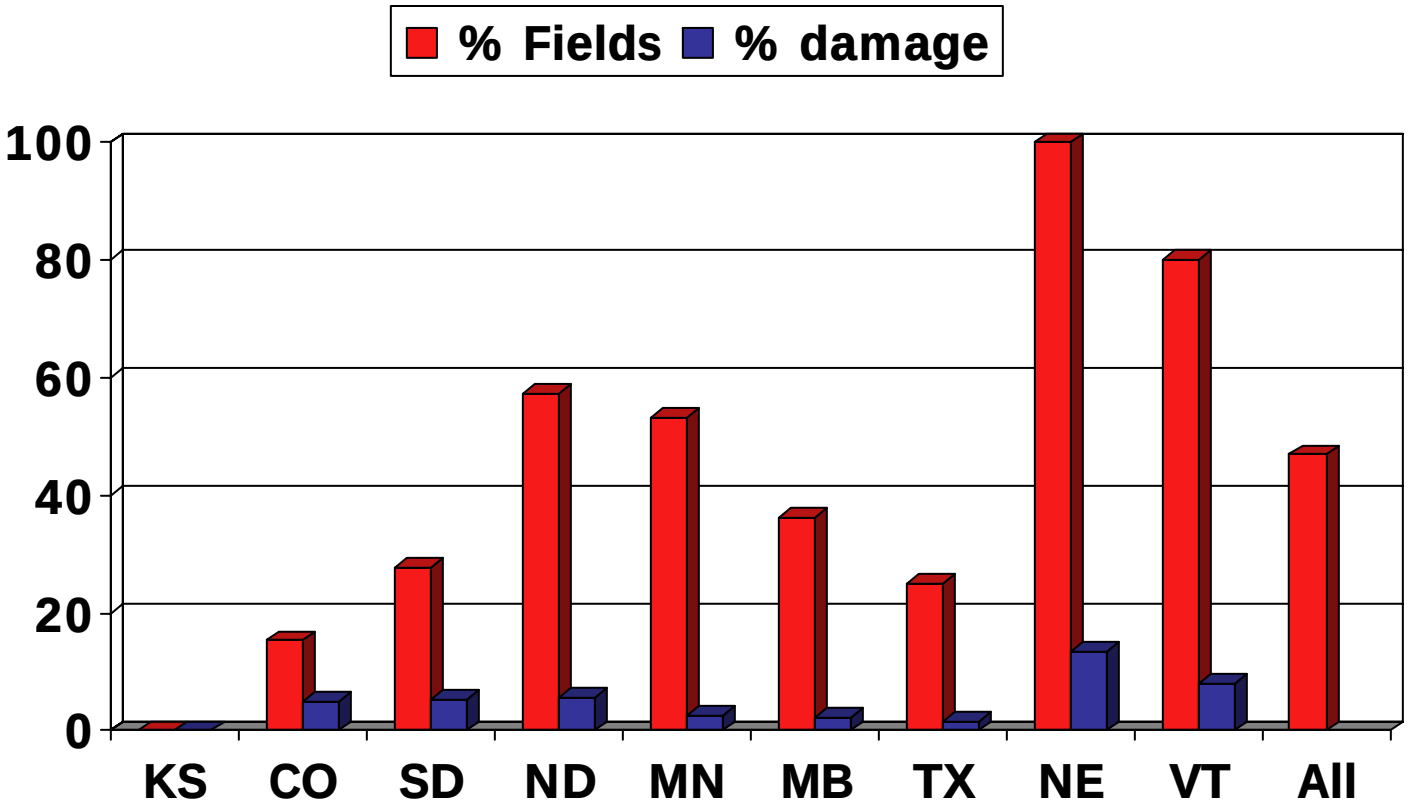
Insect Seed Damage-2009 - 2010



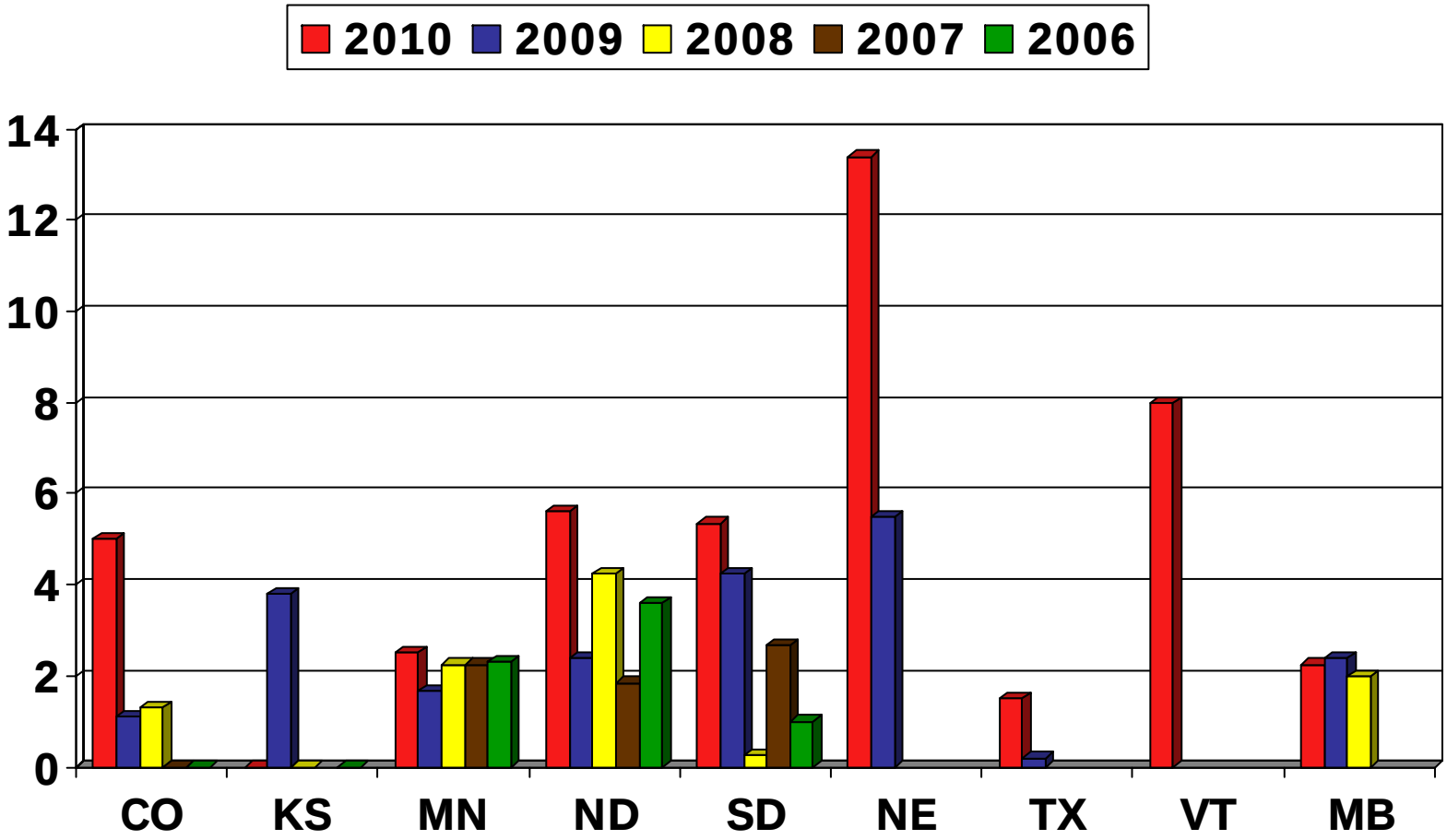
Recording observations



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

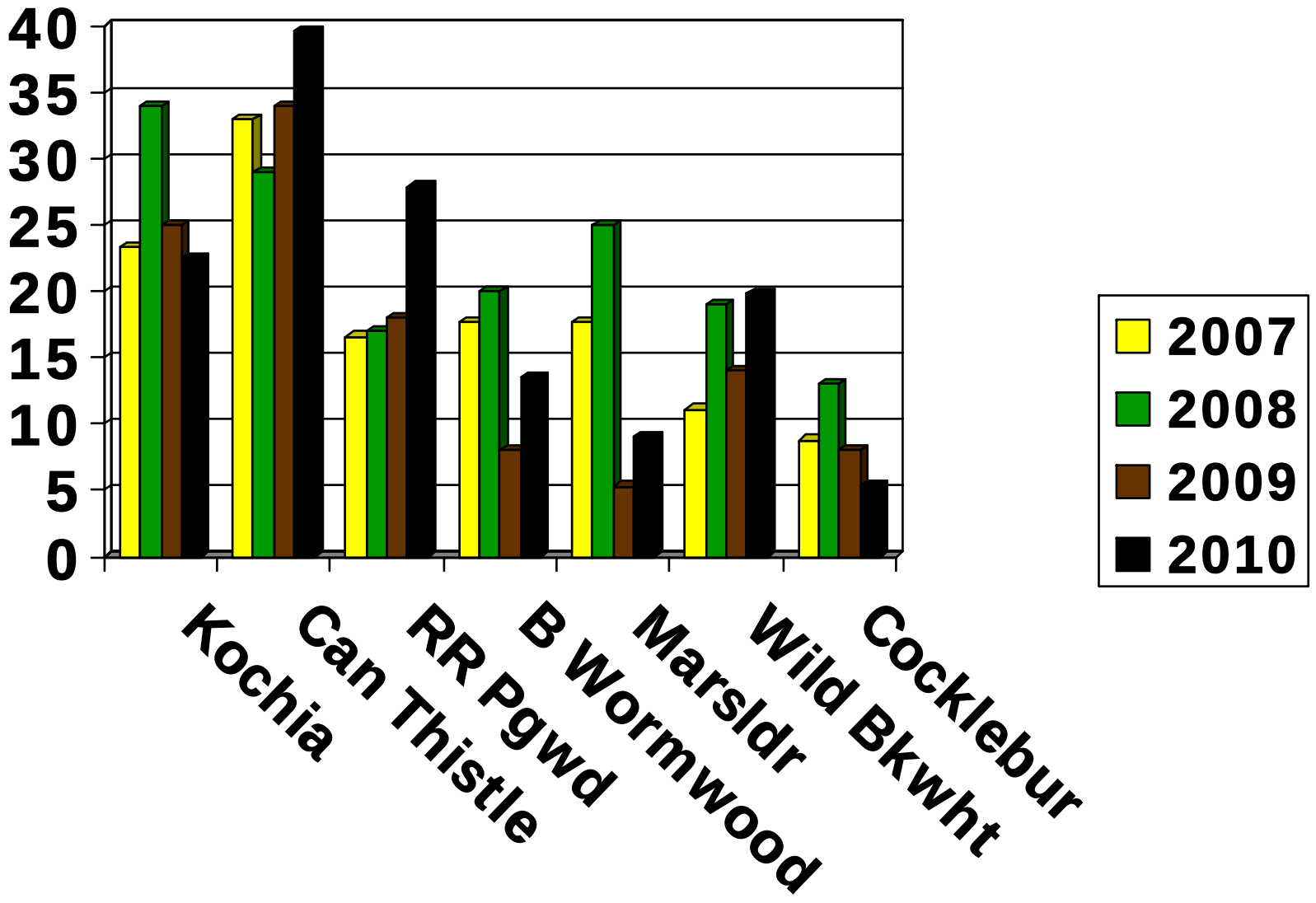
ND Top Weeds Observed: 2009-2010

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

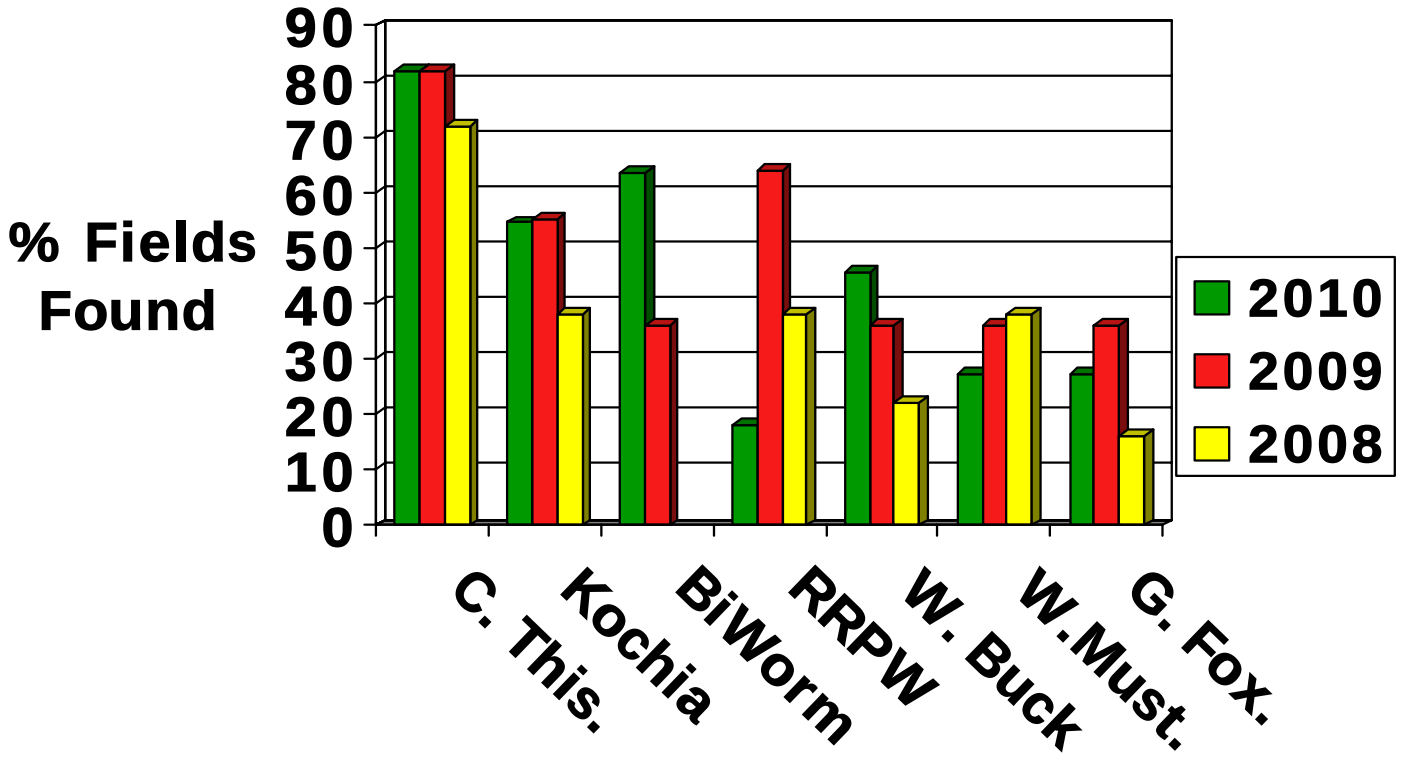
- **North Dakota**
- **2010**
- Canada Thistle
- RR Pigweed
- Volunteer grain
- Green Foxtail
- Kochia
- Wild Buckwheat
- Yellow Foxtail
- Lambsquarter
- Biennial wormwood

Express herbicide tolerant sunflower

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



Incidence of Weeds Observed in Manitoba 2008-2010



Top Five Weeds in South Dakota 2009 -2010

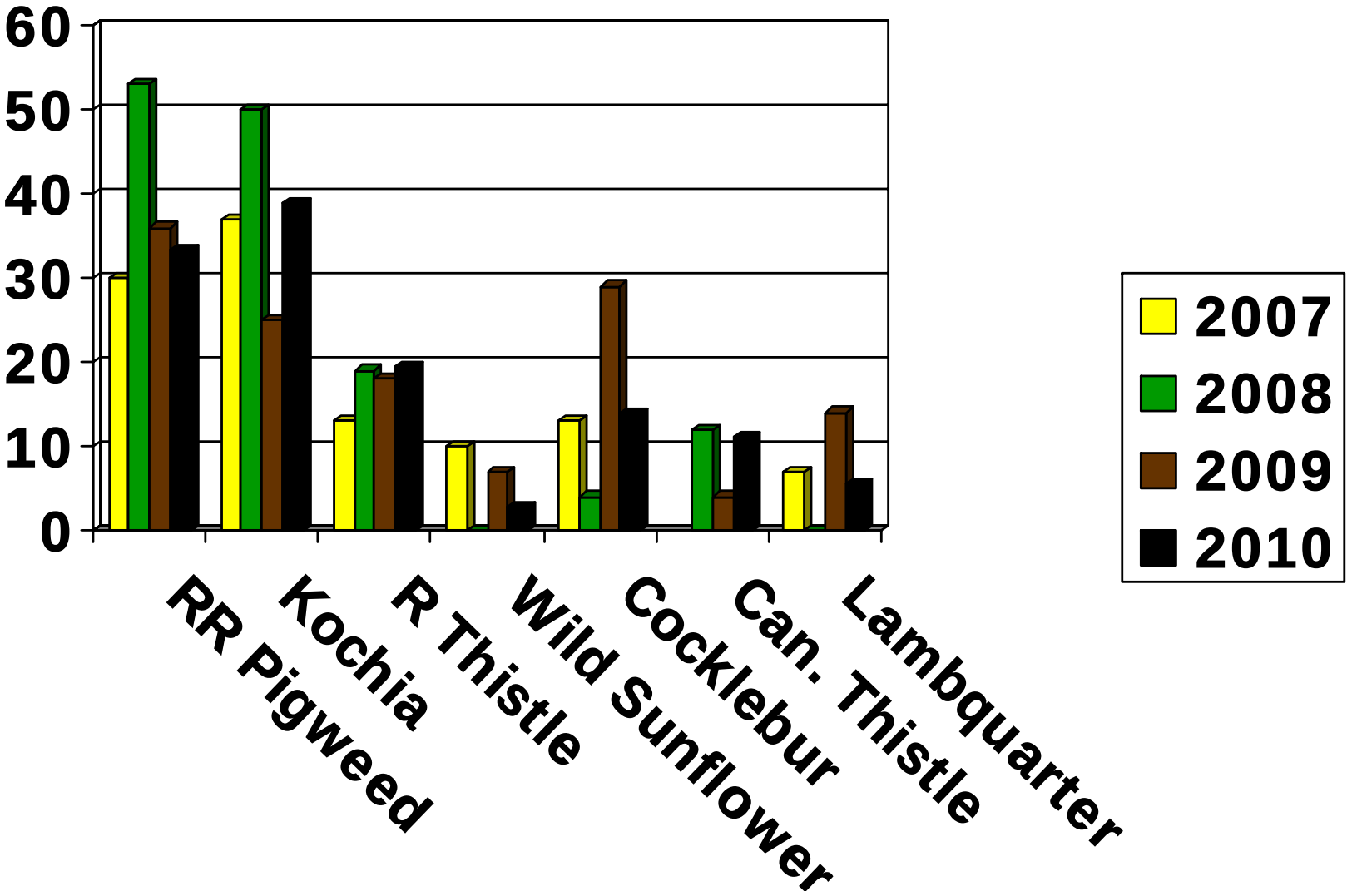
2009

- Redroot pigweed
- Kochia
- Cocklebur
- Russian thistle
- Green foxtail

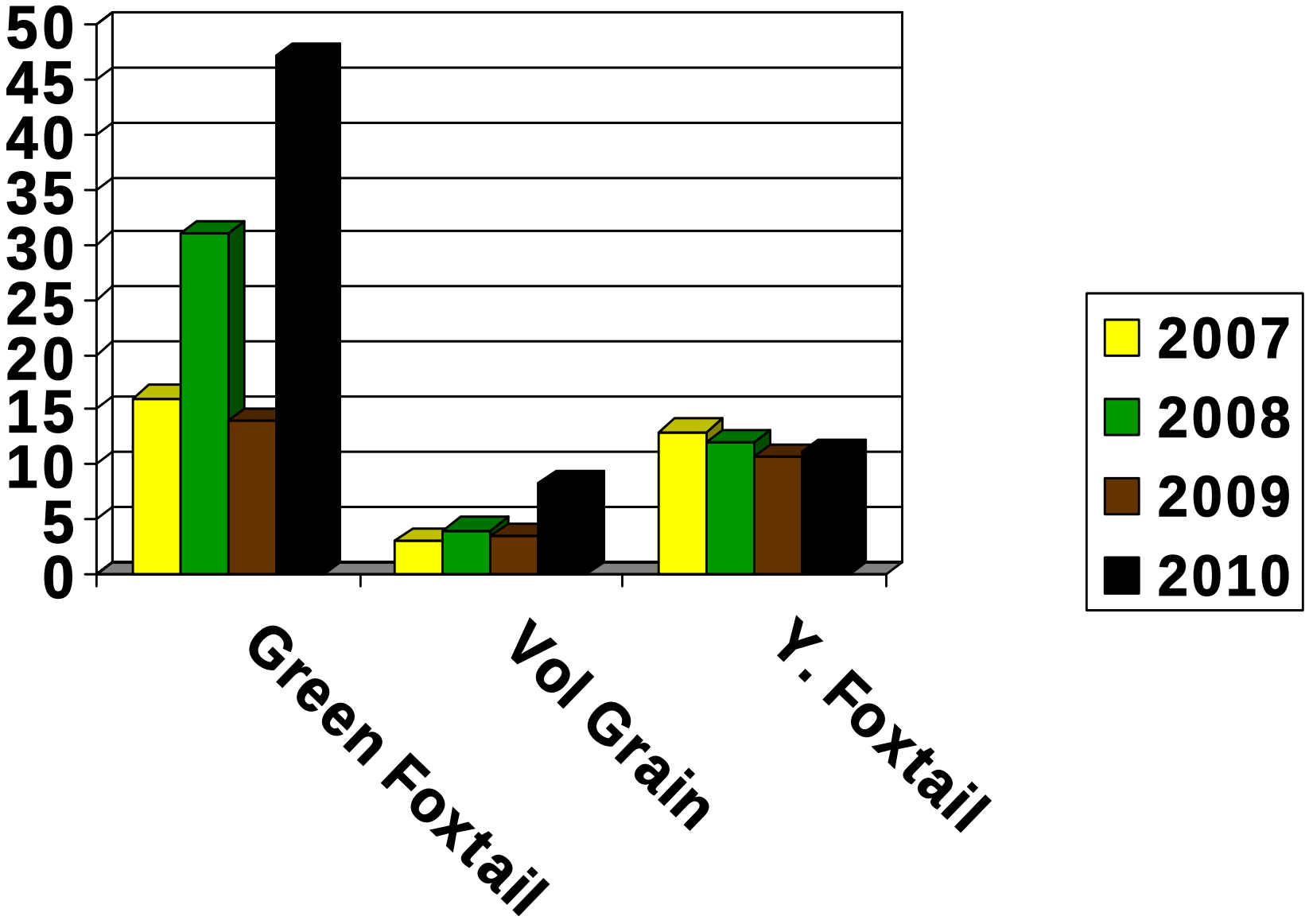
2010

- Green foxtail
- Kochia
- Redroot pigweed
- Russian thistle
- Cocklebur

Incidence of Broadleaf Weeds South Dakota 2007 -2010



Incidence of Grassy Weeds South Dakota 2007 - 2010



Top Weeds Observed: 2010

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

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

USA Sunflower Survey

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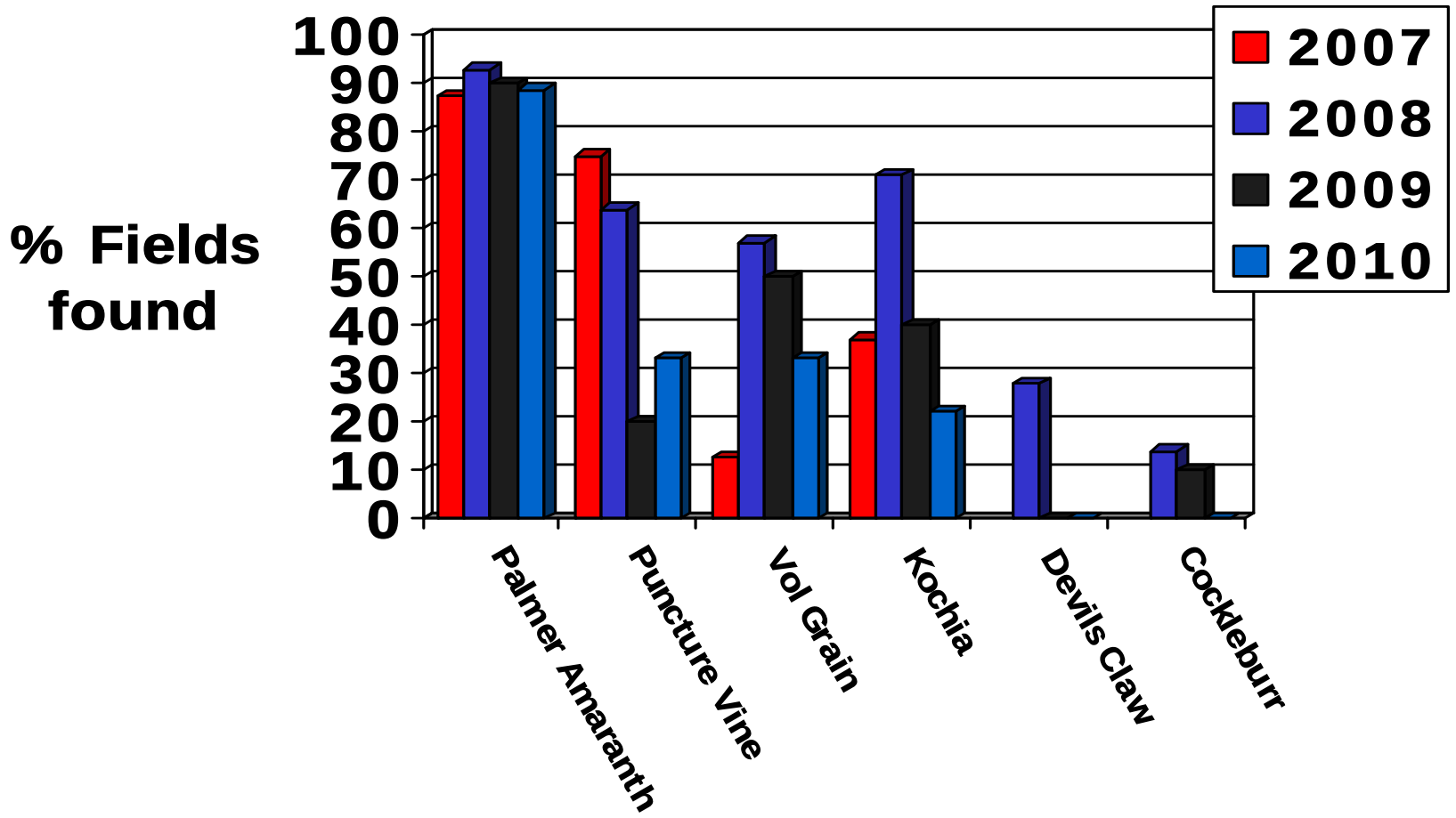
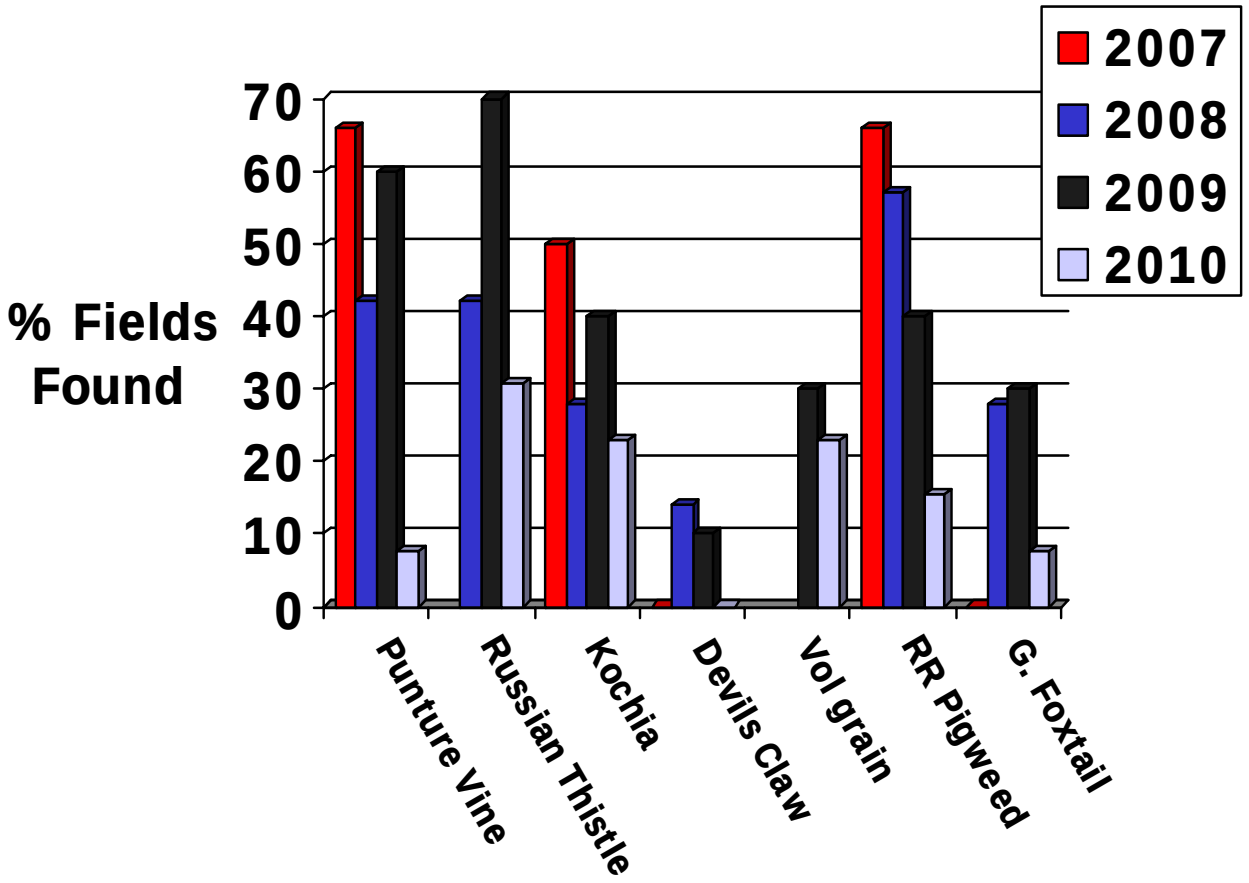
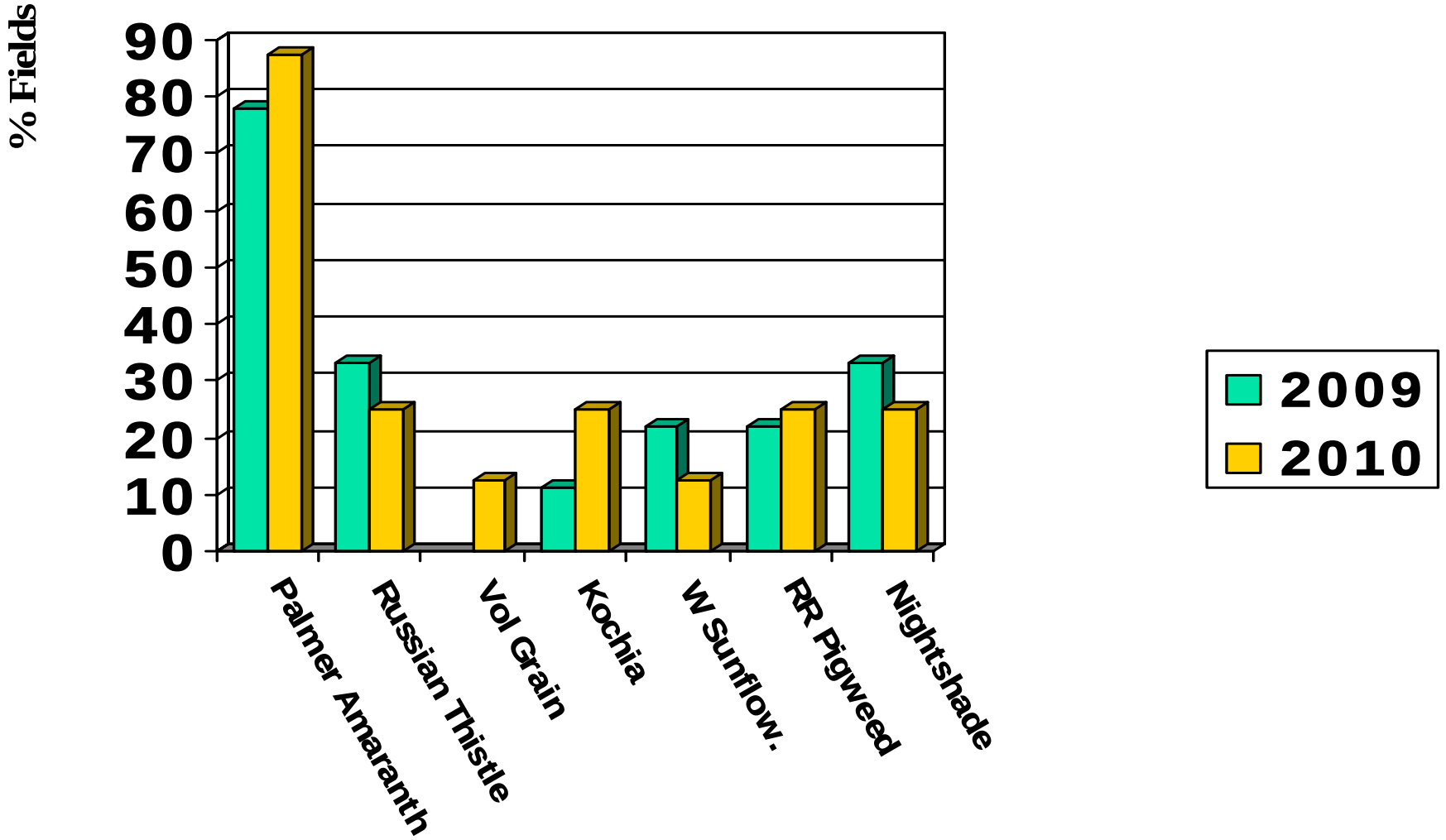
Incidence of Weeds in Kansas



Incidence of Weeds in Colorado 2007-2010



Incidence of Weeds in Texas



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 al 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.

USA Sunflower Survey

Partnership of University, USDA & Industry

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.

USA Sunflower Survey

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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.

USA Sunflower Survey

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Conclusions and Summary of 2010 National Sunflower Survey

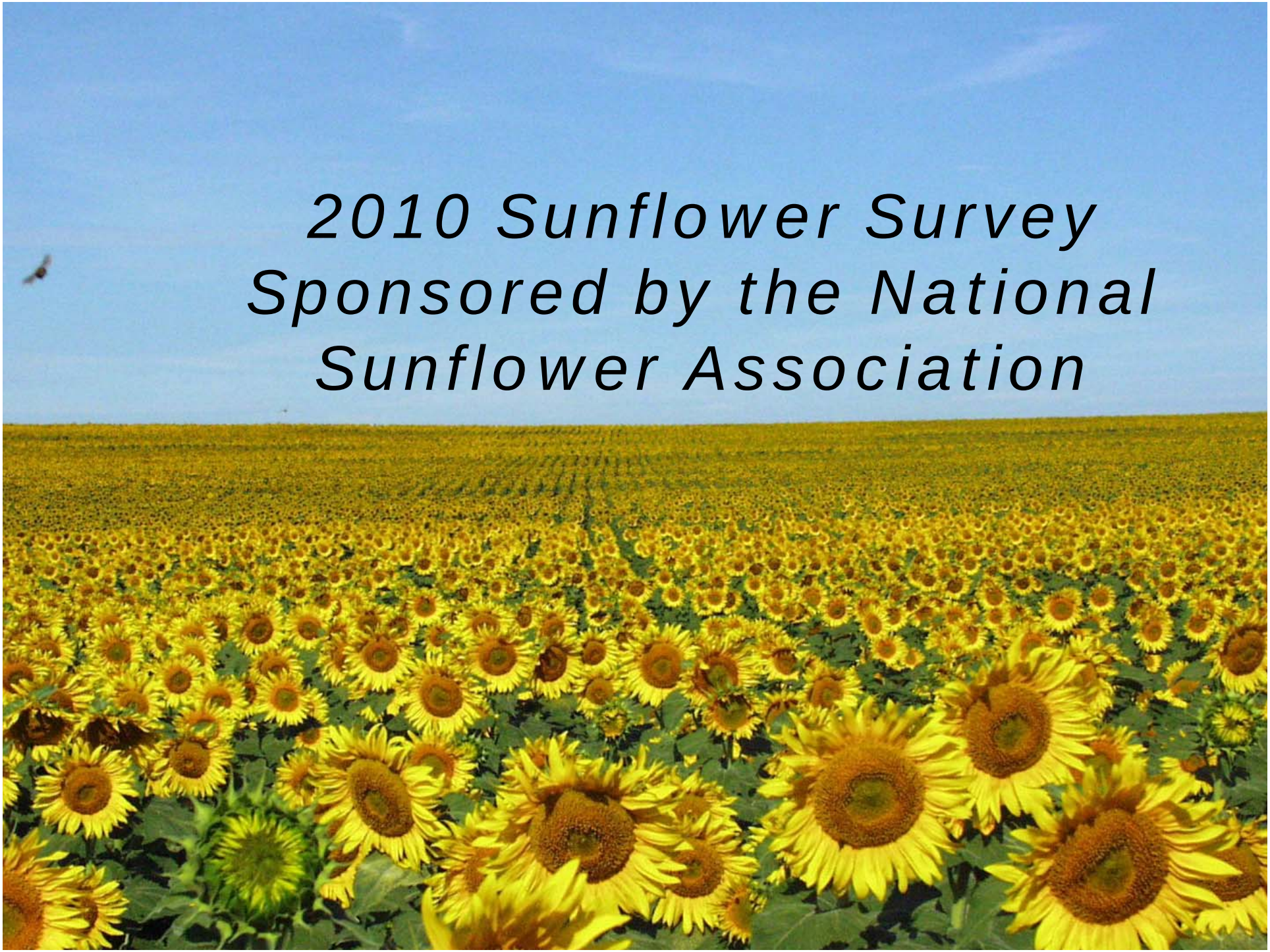
- Long horned beetle damage appeared to be much greater in 2010 with highest severity in TX, SD, CO, KS and ND.
- Bird Damage reported was higher than the previous year and was around 5% in fields where birds were doing damage in NE, ND, SD and VT and CO.

USA Sunflower Survey

Partnership of University, USDA & Industry

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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