

USA
Sunflower Survey



*Partnership of
University, USDA & Industry*

2012 National Sunflower Association Survey

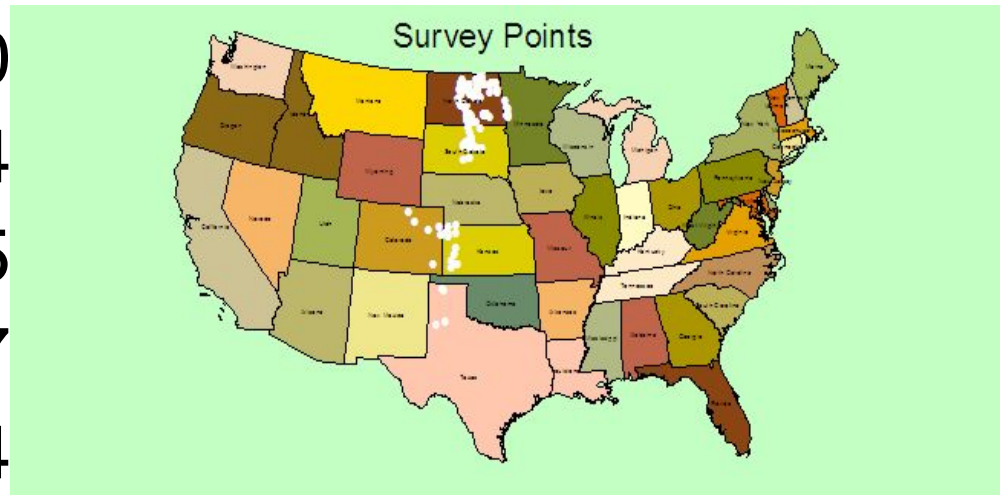
Project Leader:

**Hans Kandel Extension Agronomist
NDSU Crop Science Department**

2012 Sunflower Survey - # Fields

- North Dakota 97
- Minnesota 10
- South Dakota 54
- Kansas 5
- Colorado 7
- Nebraska 4
- Manitoba 11
- Texas 8
- Vermont 15

TOTAL - 211



2012 Sunflower Survey

(Approximately one field stop per 10,000 Acres)

- Fields in 2005 - 146
- 2006 - 162
- 2007 - 158
- 2008 - 162
- 2009 - 177
- 2010 - 207
- 2011 - 155
- 2012 - 211*

*Highest # Surveyed



2012 Sunflower Crop Survey Teams

- North Dakota 10
- South Dakota 8
- Minnesota 2
- Colorado 1
- Kansas 1
- Nebraska 1
- Texas 1
- Manitoba 1
- Vermont 1
- Texas 1

Total of 27 teams



2012 Sunflower Yield and Management Practices

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

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

		Plants / Pop.	Head Diameter	Seed Size	% Good Seed	Center Seed Set	Previous Crop
Yield Data:							
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 _____
	No-till - 1 _____	Min-till - 2 _____	Conv-till- 3 _____

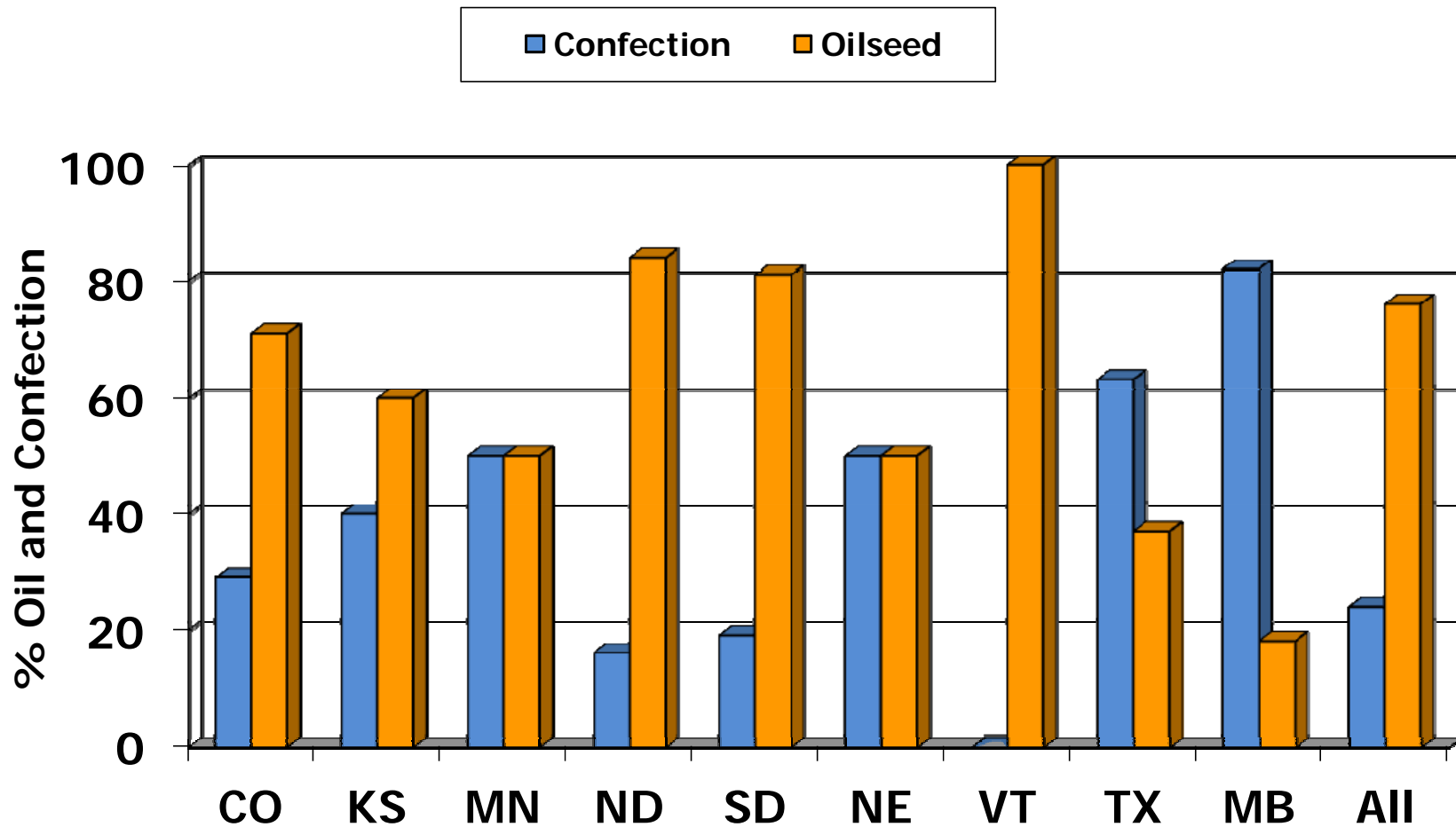
Western North Dakota



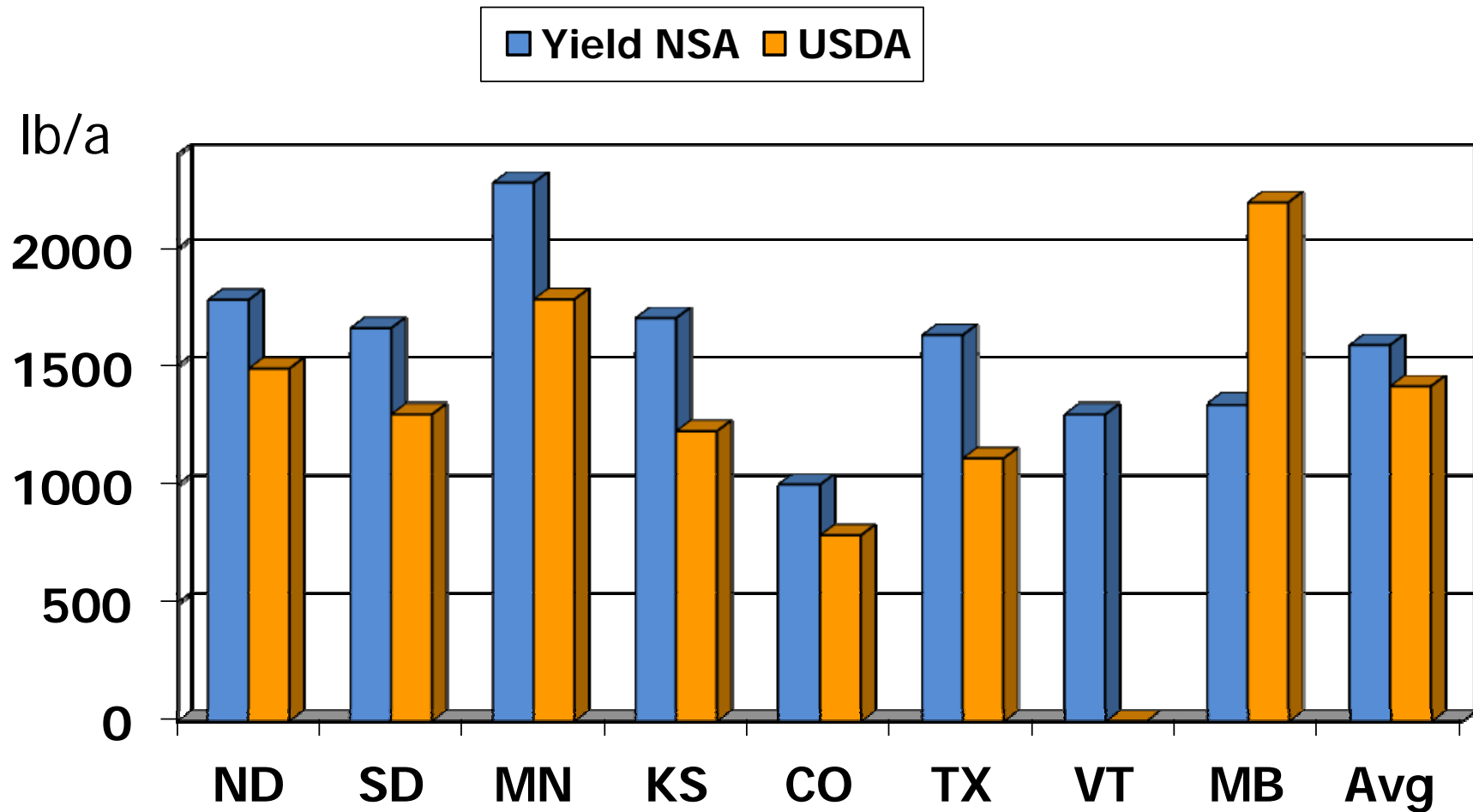
Counting plants per acre



% Confection and Oilseed Sunflower fields-2012 Survey



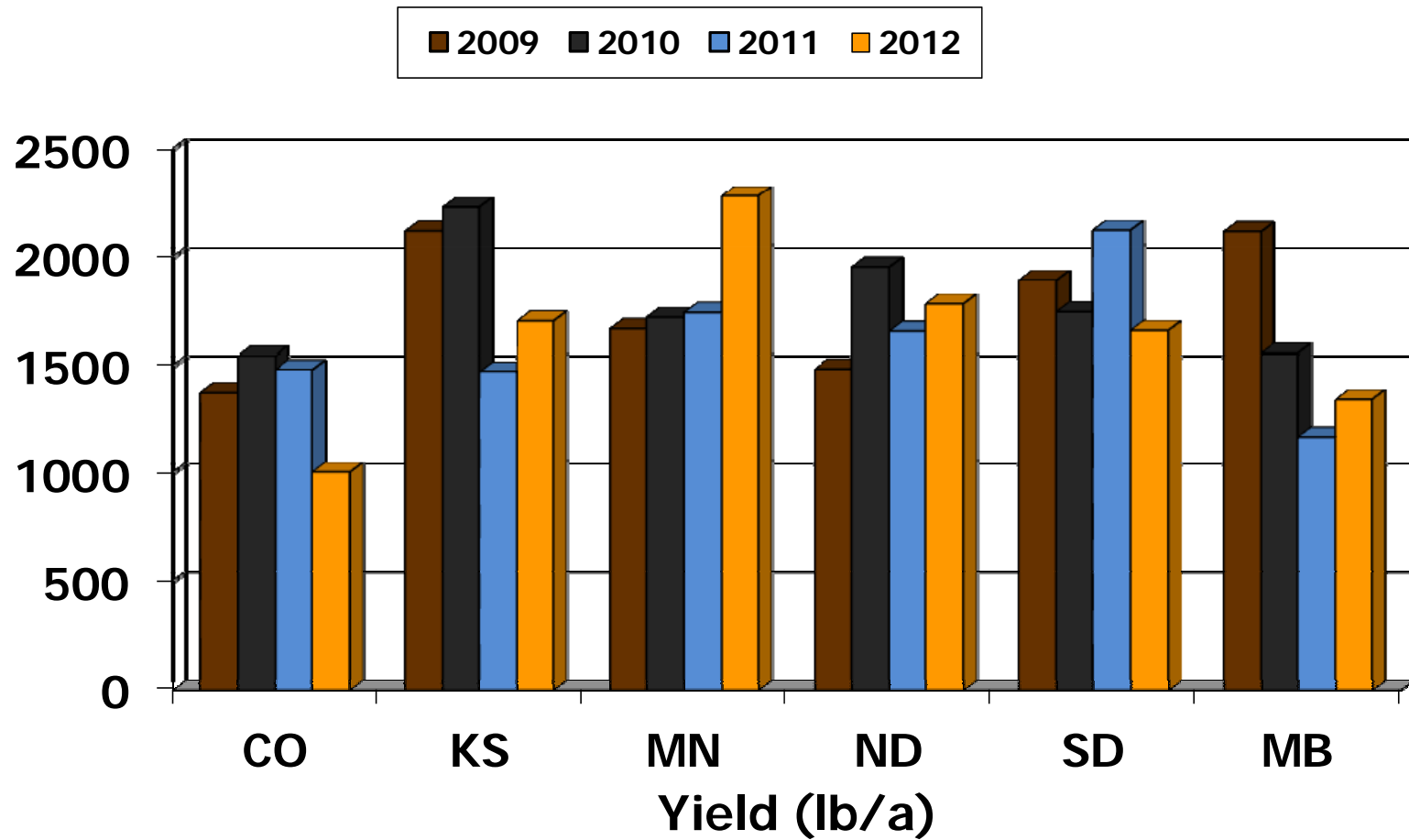
NSA estimate vs. Ag Statistic 2012



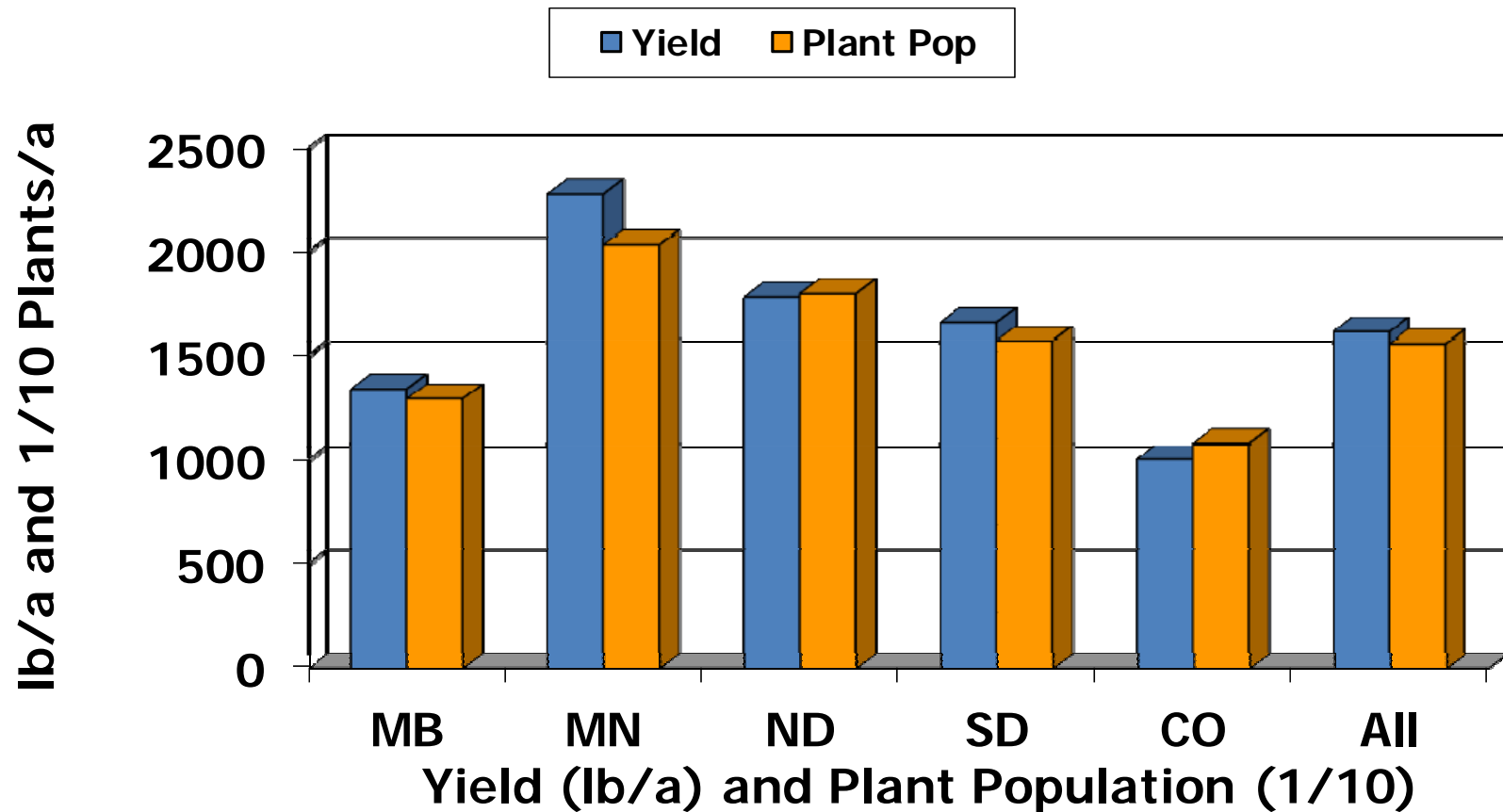
Manitoba data supplied by National Sunflower Association of Canada

Sunflower Yield : lb/a

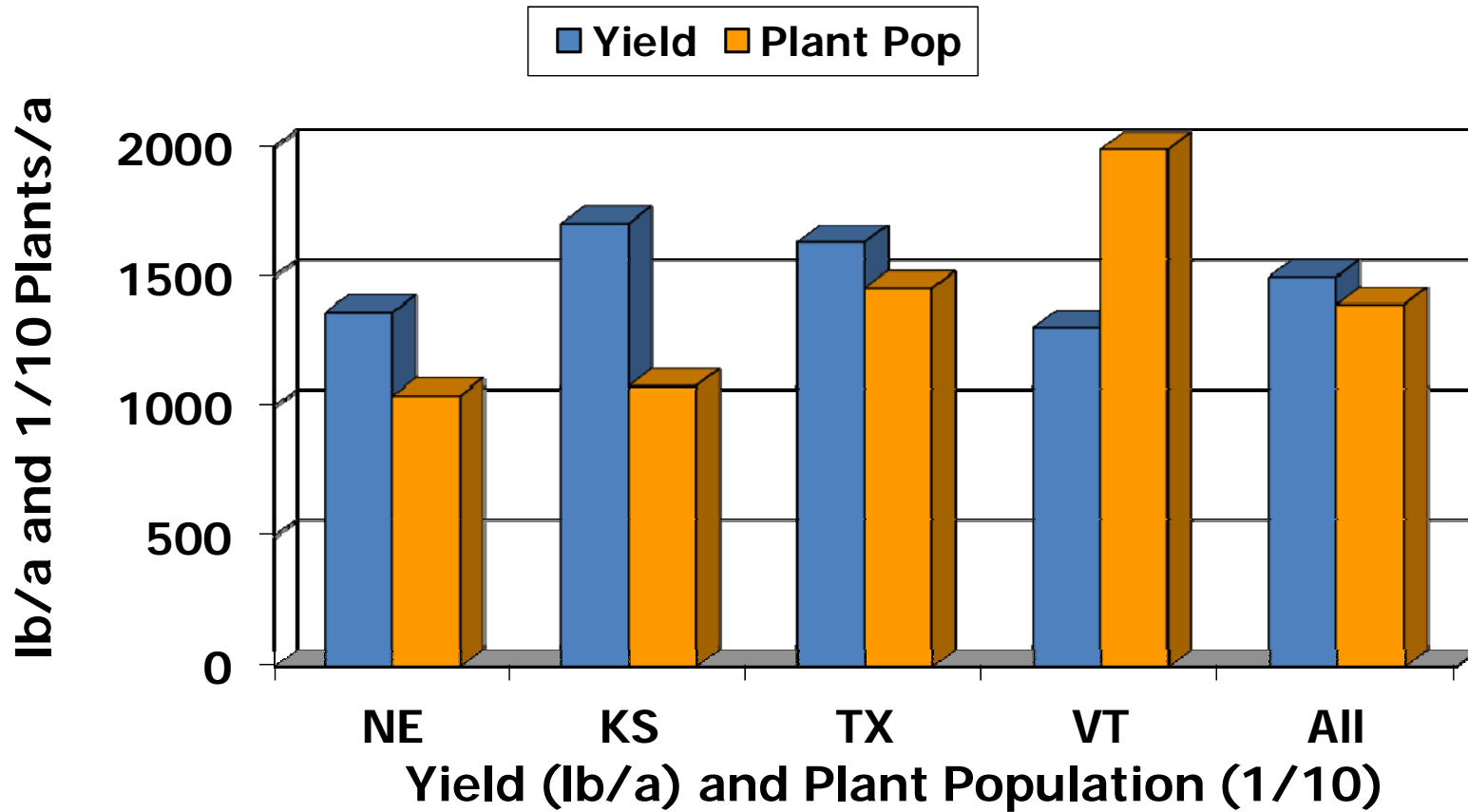
2009-2012



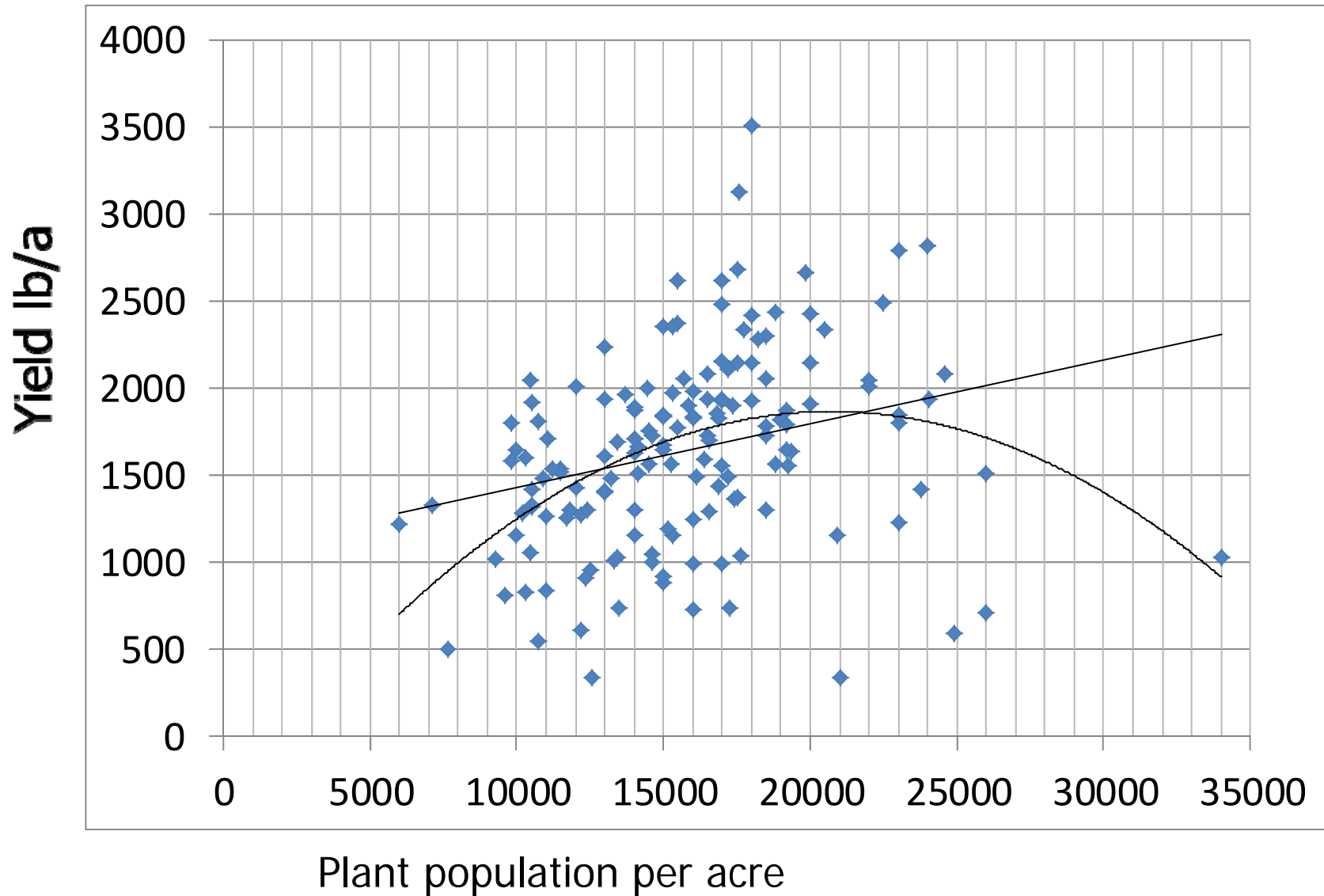
Sunflower Yield and Plant Population: 2012



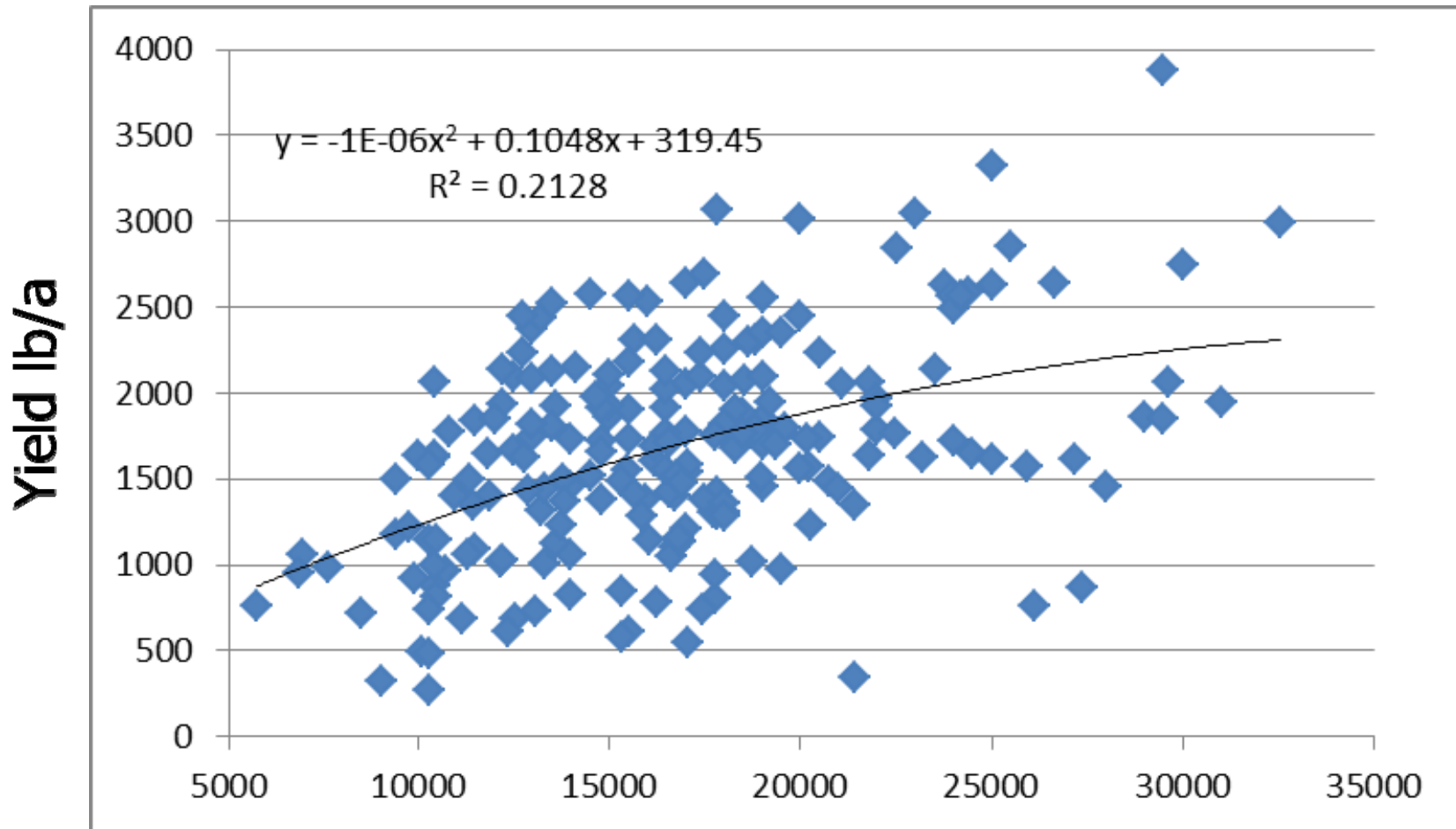
Sunflower Yield and Plant Population: 2012



2011 Yield vs. Plant Population

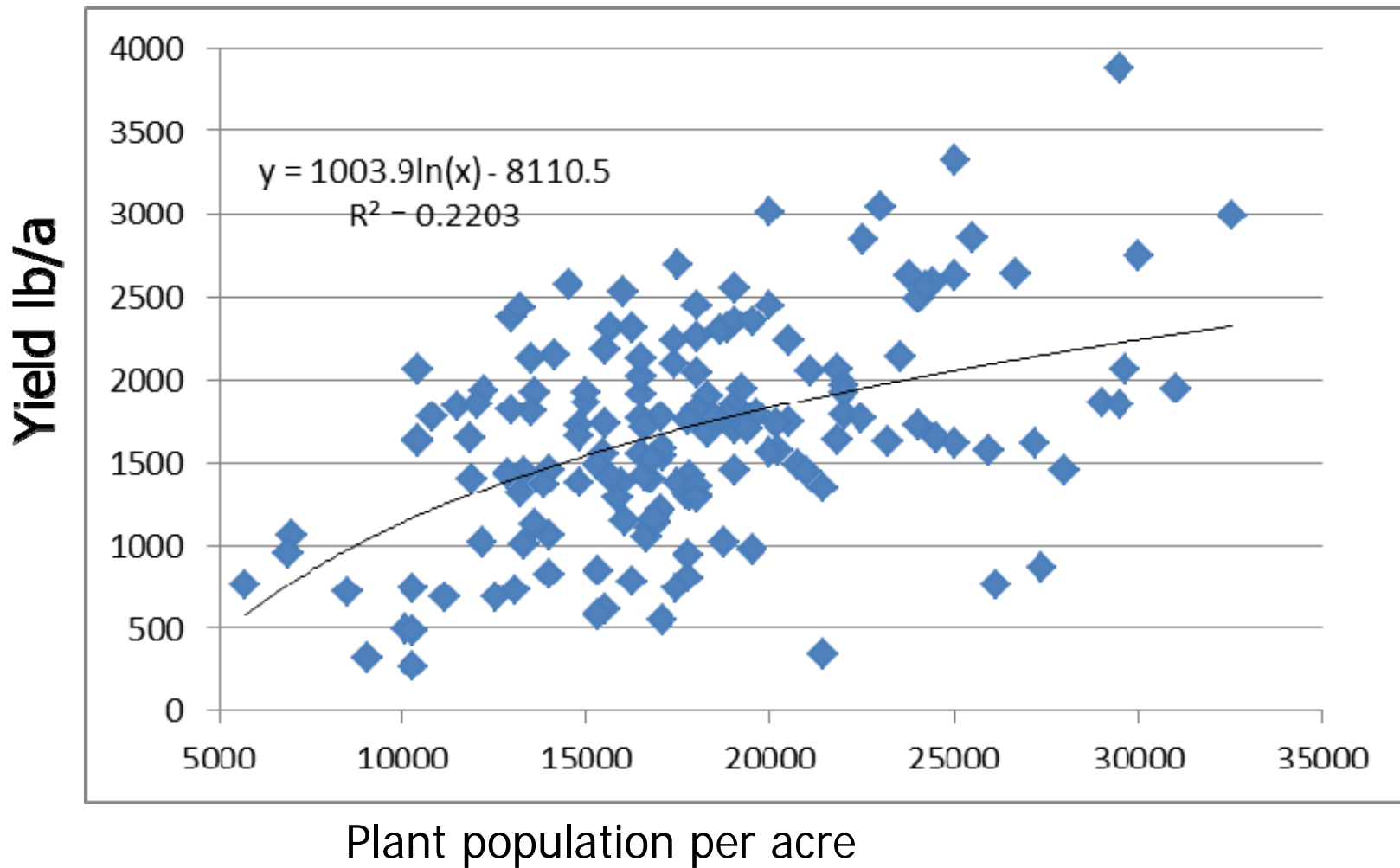


2012 Yield vs. Plant Population

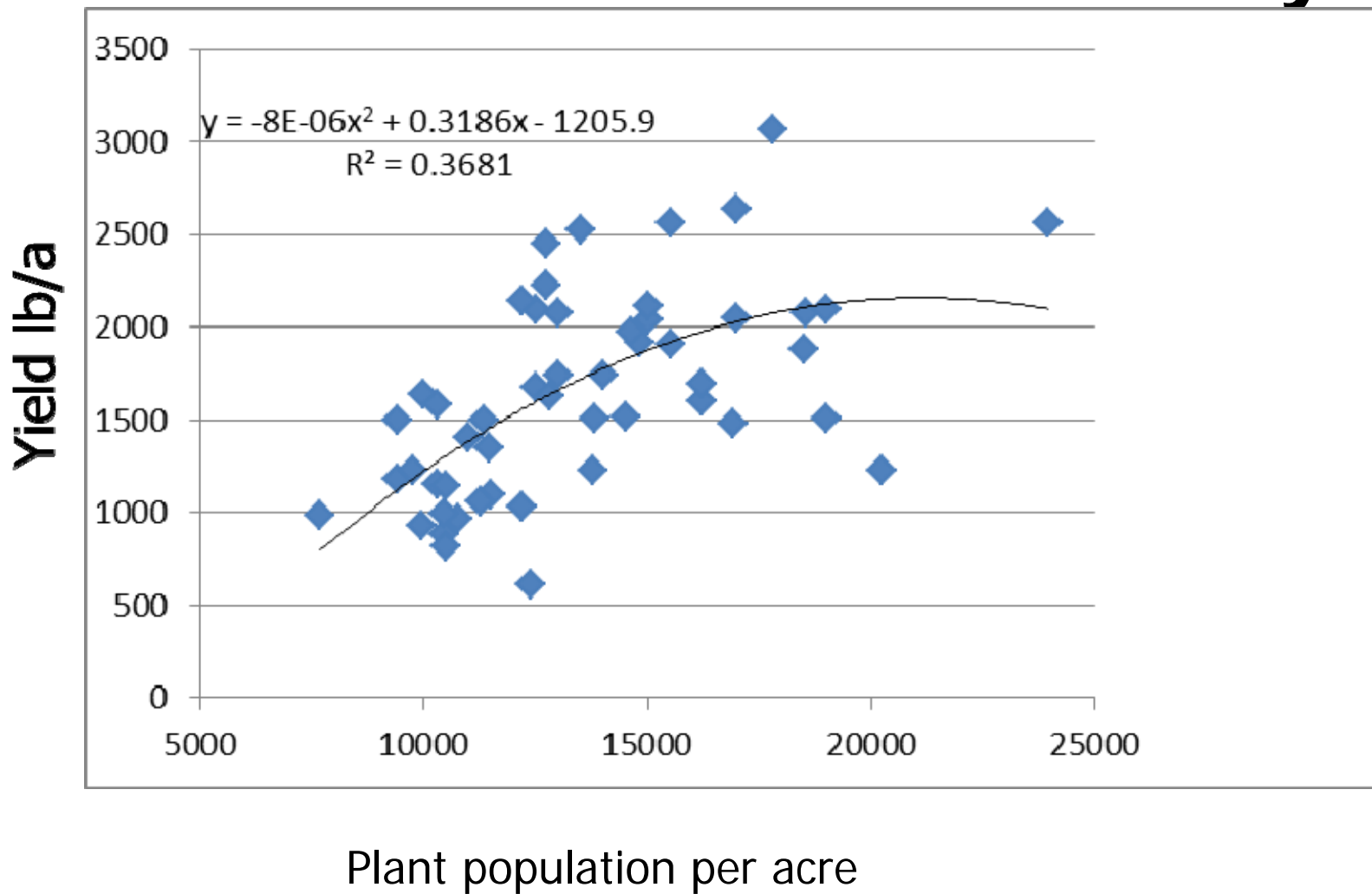


Plant population per acre

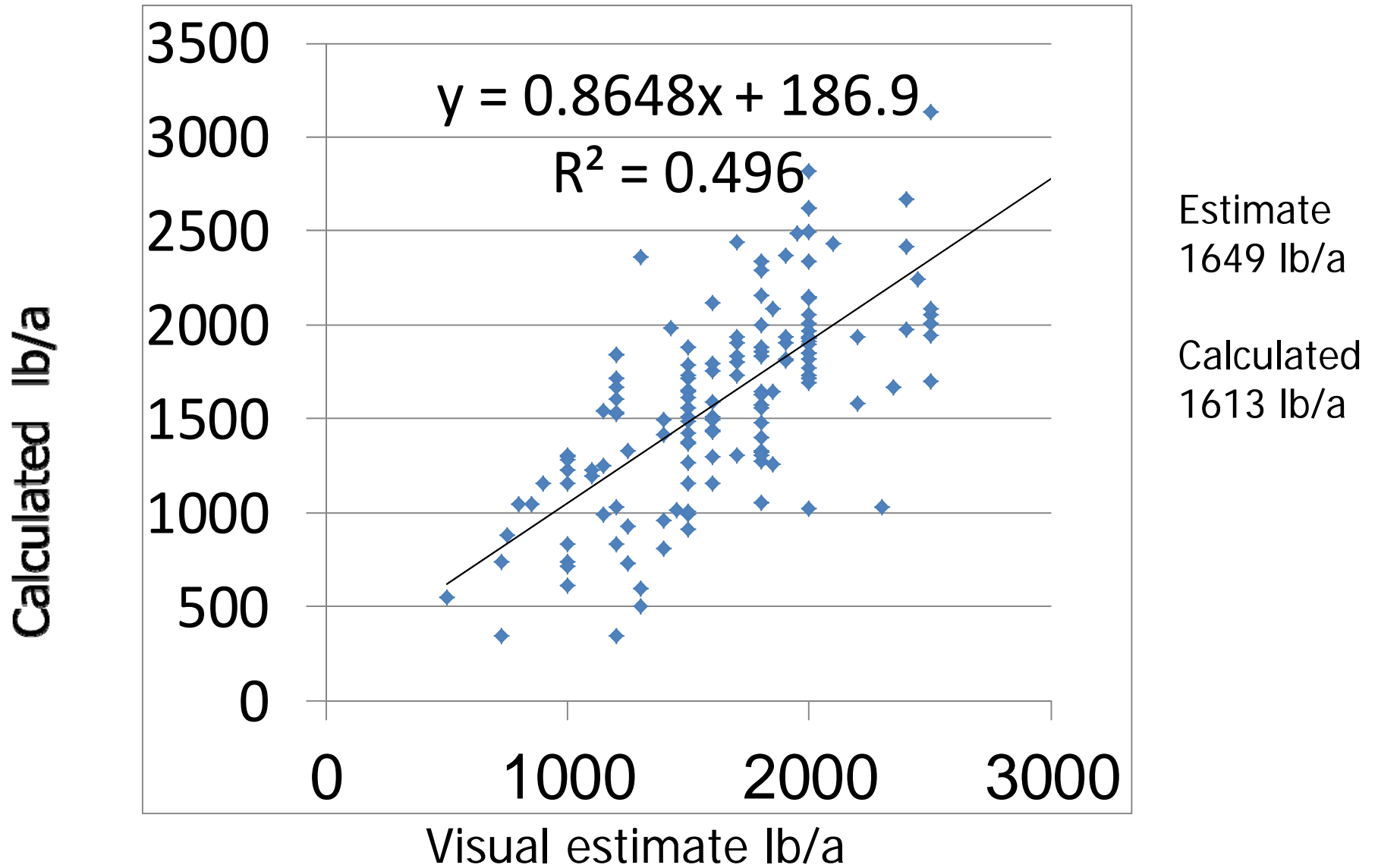
2012 Yield vs. Plant Population Oil Sunflower only



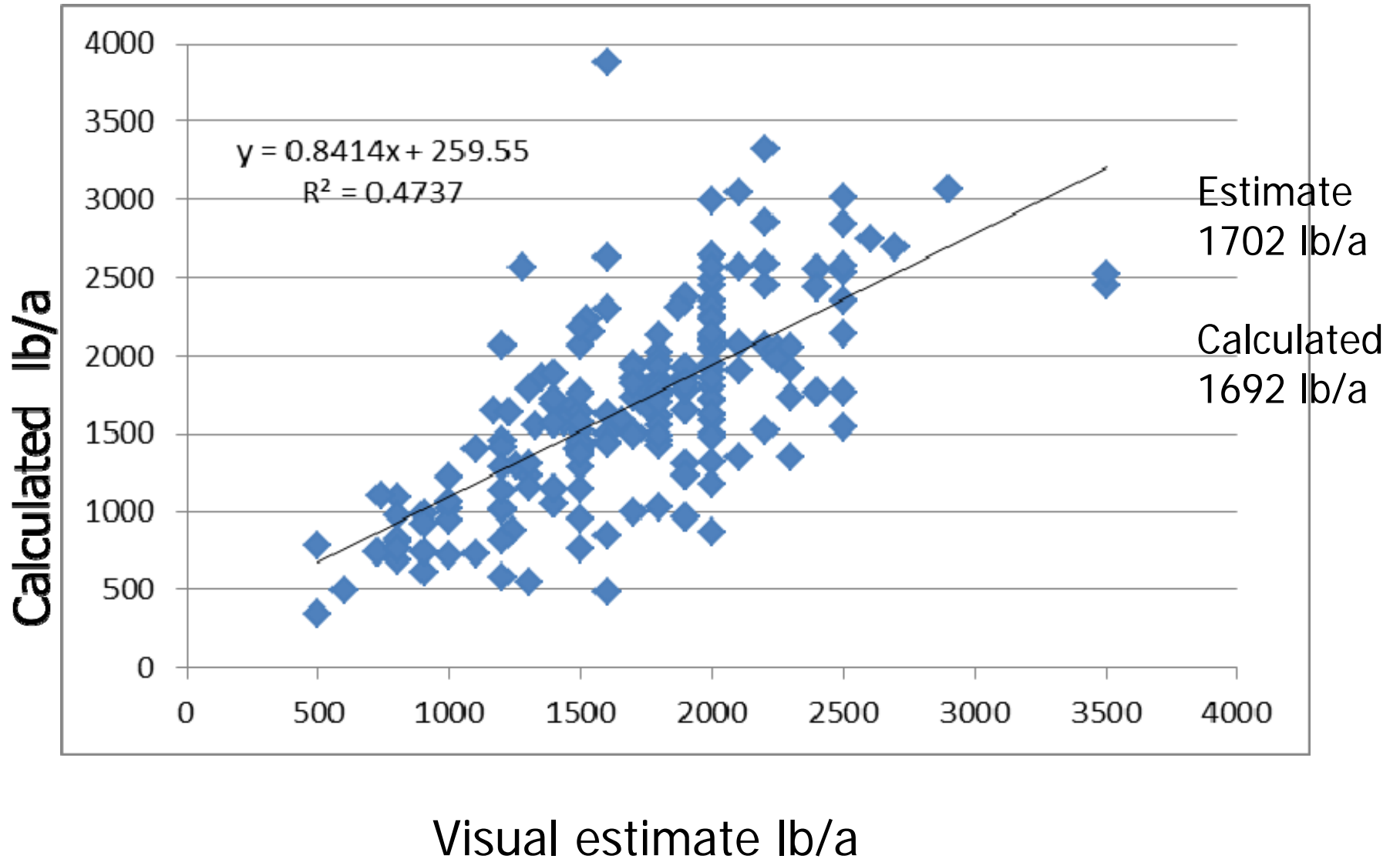
2012 Yield vs. Plant Population Confection Sunflower only



Yield 2011 Survey



Yield 2012 Survey



2010 #1 Yield Limiting Factors - combined (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	1.0%
• Other (many population)	8.7%
• No Problem	11.6%



2011 #1 Yield Limiting Factors - combined (155 Fields)

• Disease	15.5%
• Plant spacing within row	18.1%
• Lodging	10.3%
• Weeds	8.4%
• Birds	8.4%
• Insects	5.2%
• Drought	8.4%
• Hail	2.6%
• Uneven plant growth	3.2%
• Other (including population)	6.5%
• No Problem	13.5%



2012 #1 Yield Limiting Factors - combined (211 Fields)

• Disease	7.1%
• Plant spacing within row	17.5%
• Lodging	2.8%
• Weeds	8.5%
• Birds	6.6%
• Insects	4.7%
• Drought	29.4%
• Hail	0.9%
• Uneven plant growth	2.5%
• Other	6.6%
• No Problem	13.3%



2011 #2 Yield Limiting Factors- combined (155 Fields)

- Plant spacing within row 16.8%
- Uneven plant growth 0.6%
- Weeds 9.7%
- Insects 3.9%
- Disease 10.3%
- Birds 3.2%
- Lodging 7.7%
- Drought 3.2%
- Other 14.2%
- No Problem 30.3%



2012 #2 Yield Limiting Factors - combined (211 Fields)

• Plant spacing within row	14.2%
• Uneven plant growth	5.2%
• Weeds	10.9%
• Insects	6.6%
• Disease	7.1%
• Birds	4.7%
• Lodging	1.9%
• Drought	6.6%
• Hail	0.9%
• Other	7.1%
• No Problem	34.6%



Table. Top Most Limiting Factors 2010 - 2012 Sunflower Surveys.

Limiting factor	Limiting factor 2010 ¹		Limiting factor 2011 ¹		Limiting factor 2012 ¹	
	1st	2nd	1st	2nd	1st	2nd
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2012 #1 Yield Limiting Factors - North Dakota (97 Fields)

- Plant spacing 16.5%
- Disease 13.4%
- Lodging 3.1%
- Drought 20.6%
- Uneven plant growth 4.1%
- Birds 9.3%
- Weeds 8.2%
- Insects 5.2%
- Hail 1.0%
- Other 8.2%
- No Problem 10.3%



2012 #2 Yield Limiting Factors - North Dakota (97 Fields)



2012 #1 and #2 Yield Limiting Factors - Minnesota (10 Fields)

#1 Factor

- No problem 50%
- Plant spacing 40%
- Birds 10%

#2 Factor

- No Problem 80%
- Insects 20%

2012 # 1 and #2

Yield Limiting Factors - South Dakota (54 Fields)

#1 Factor

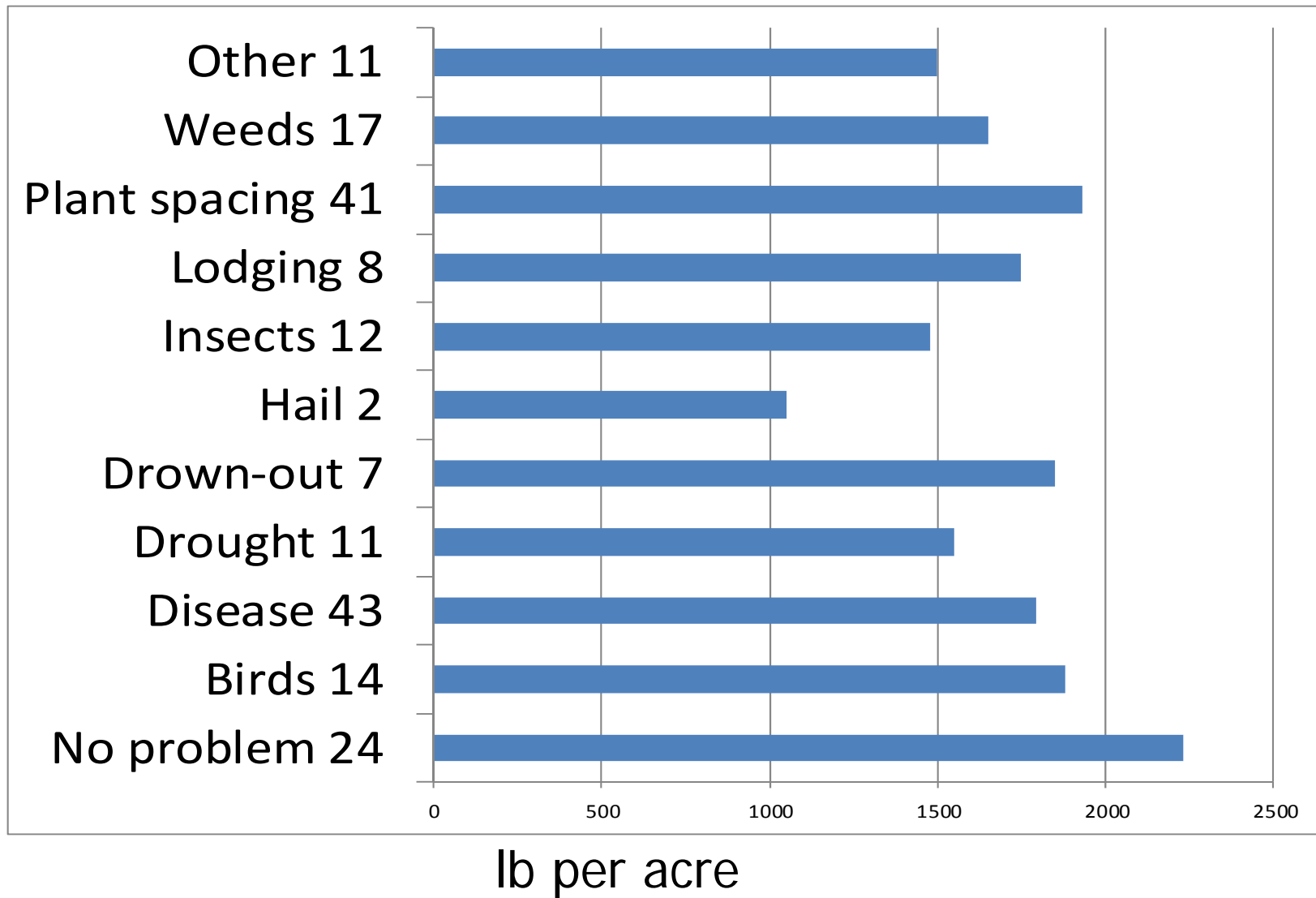
- Plant Spacing 30.4%
- Disease 13.0%
- Drought 4.4%
- Uneven plant growth 4.4%
- Lodging 13%
- Other 4.4%
- No problem 30.4%

#2 Factor

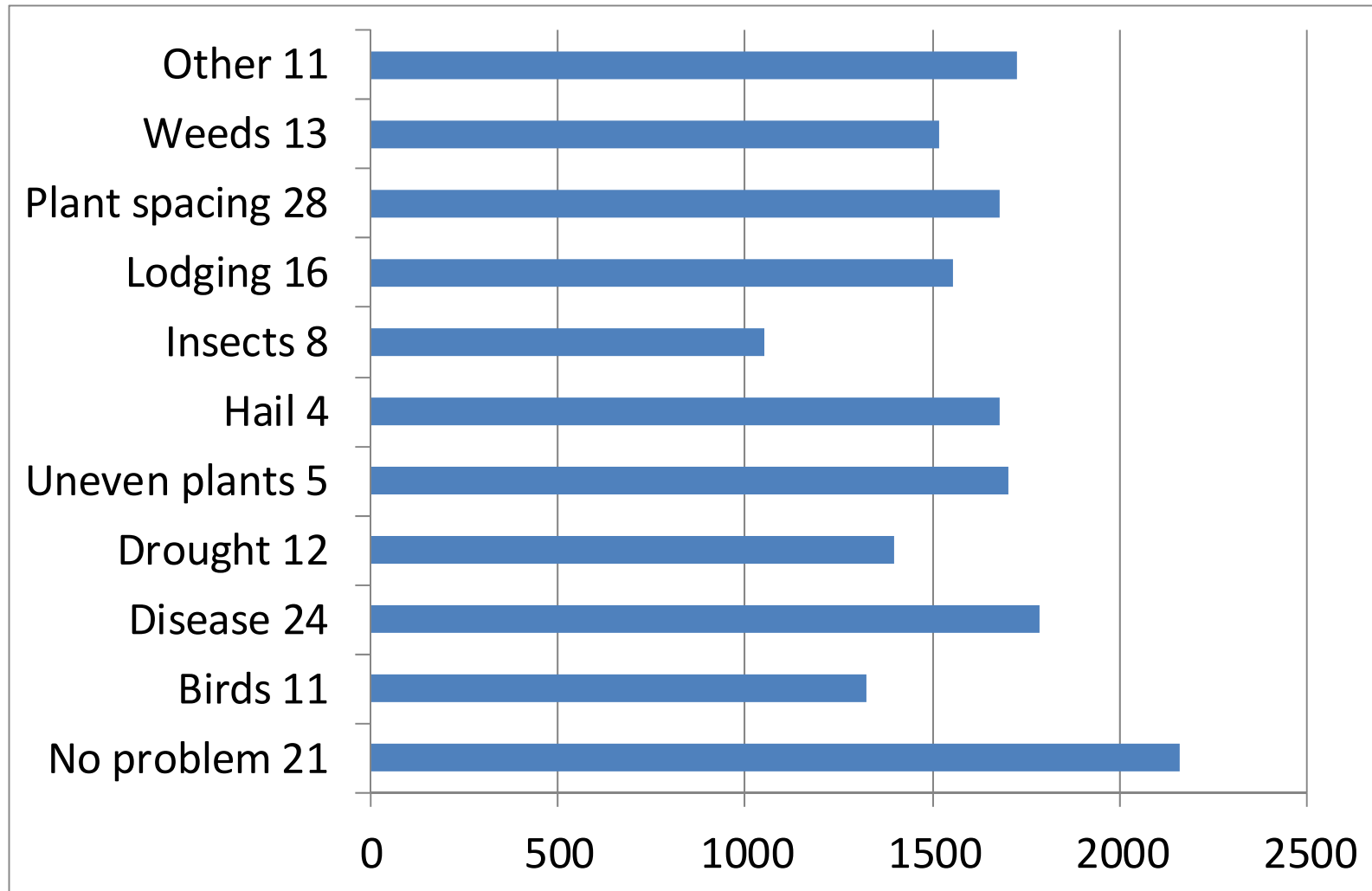
- Plant spacing 13.0
- Birds 8.7
- Disease 4.4
- Drought 8.7
- Insects 4.4
- Lodging 13.0
- Weeds 4.4
- Other 8.7
- No Problem 34.8



Yield Limiting factor and Yield 2010

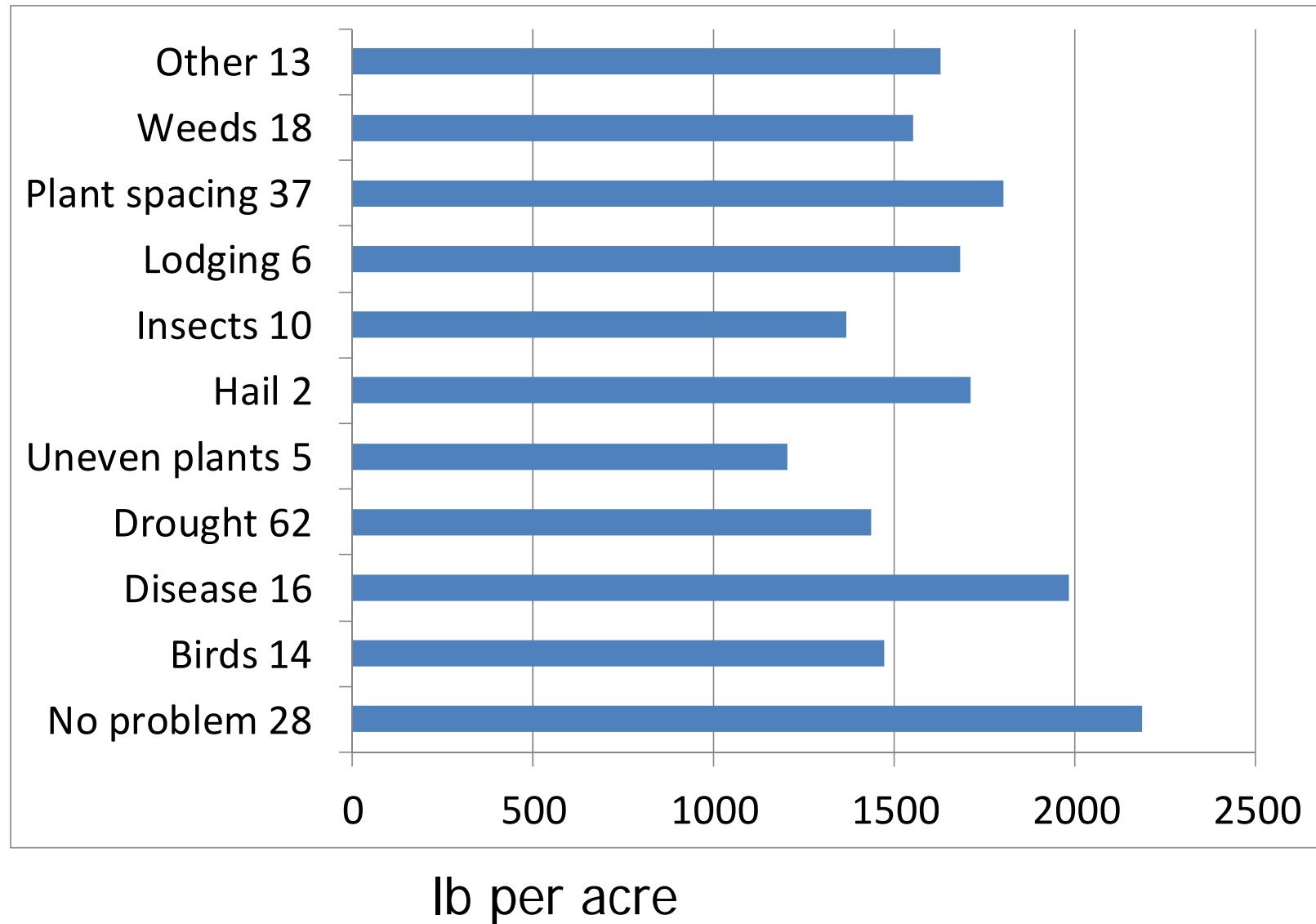


Yield Limiting factor and Yield 2011

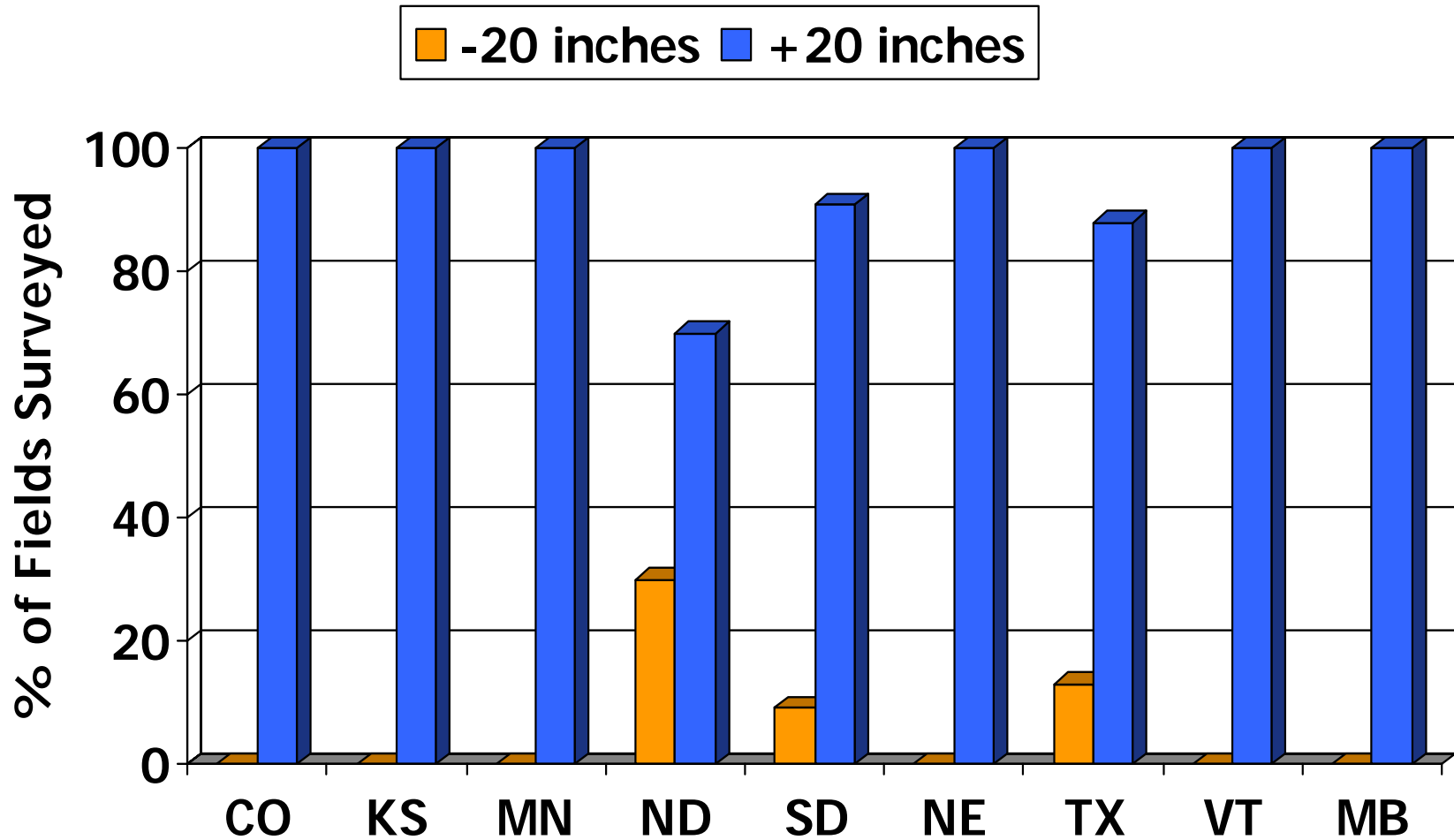


lb per acre

Yield Limiting factor and Yield 2012

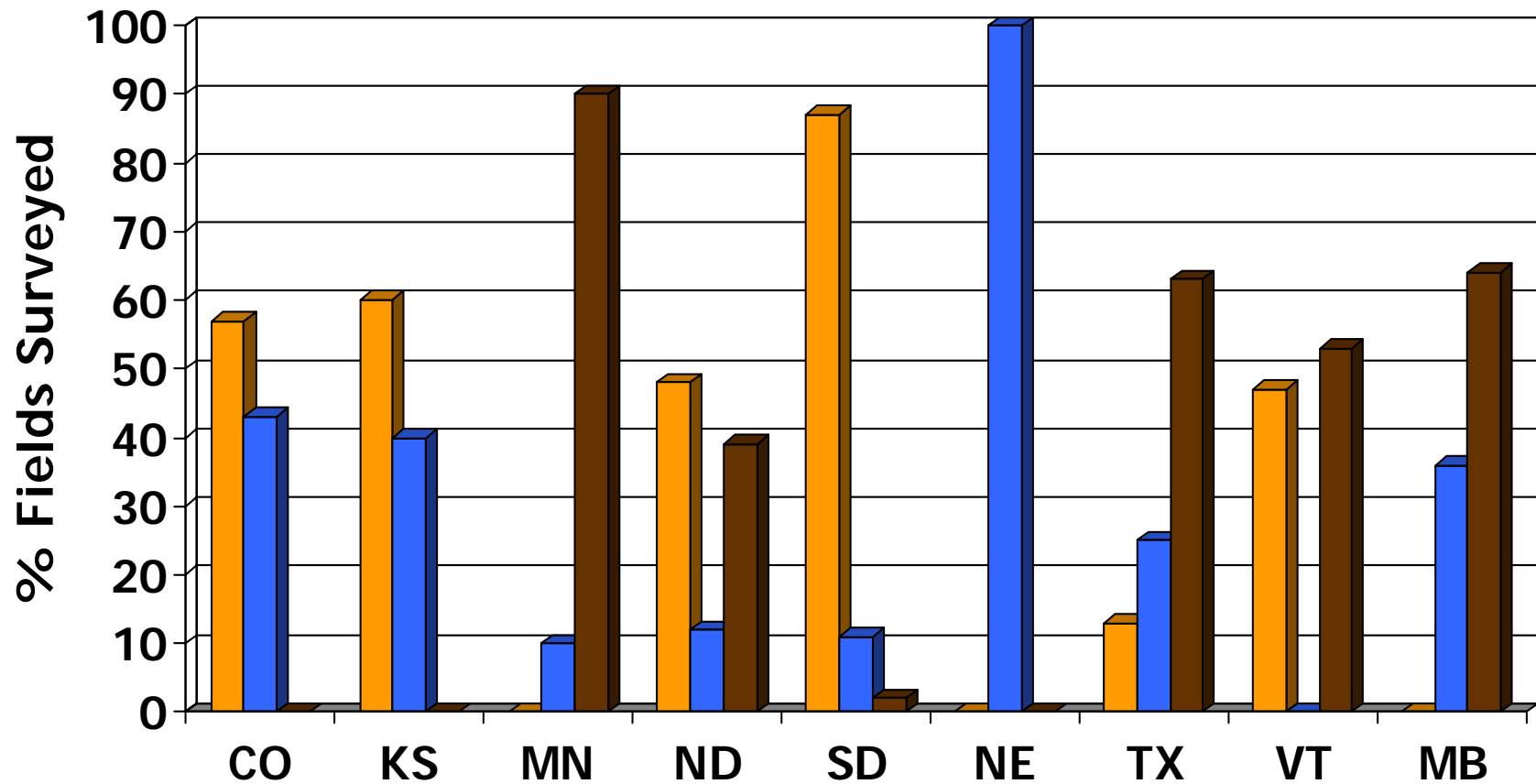


Row Spacing in Sunflower - 2012



Tillage in Sunflower - 2012

■ No till ■ Min till ■ Conv till

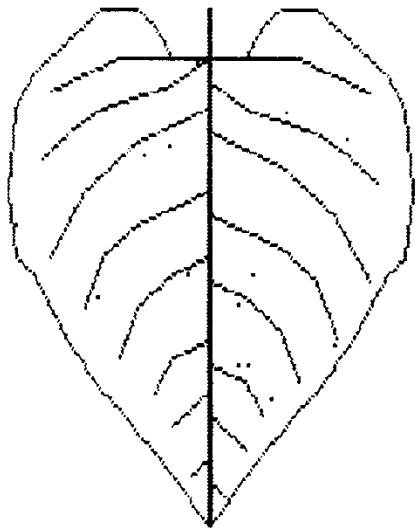


Rust in Sunflower

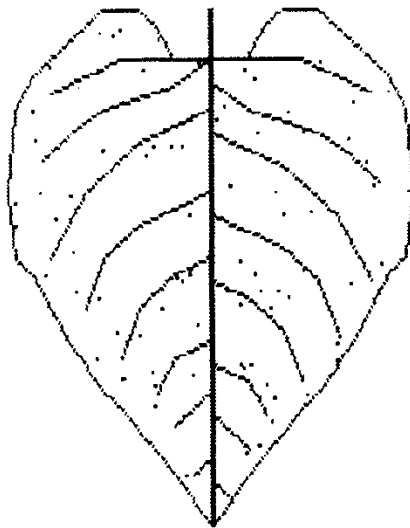




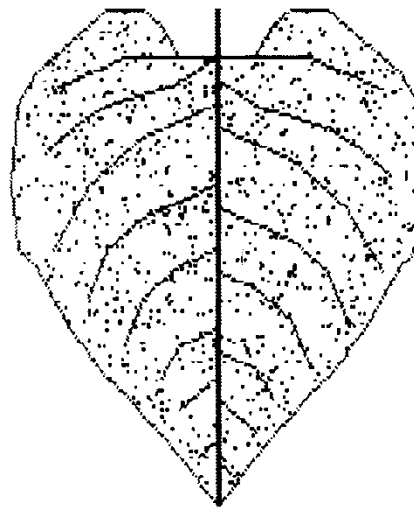
Instructions were examine upper 4 leaves on 5 consecutive plants and determine illustration that best fits average of all plants.



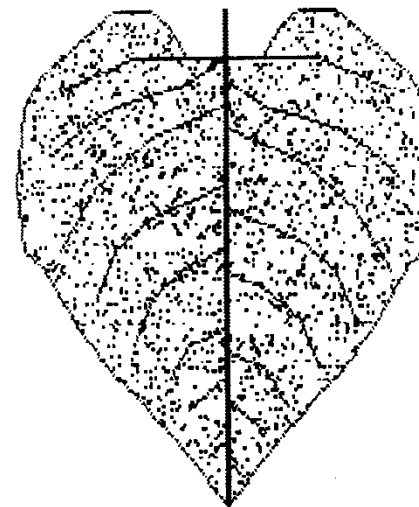
Leaf Area Affected .1%



Leaf Area Affected .5%

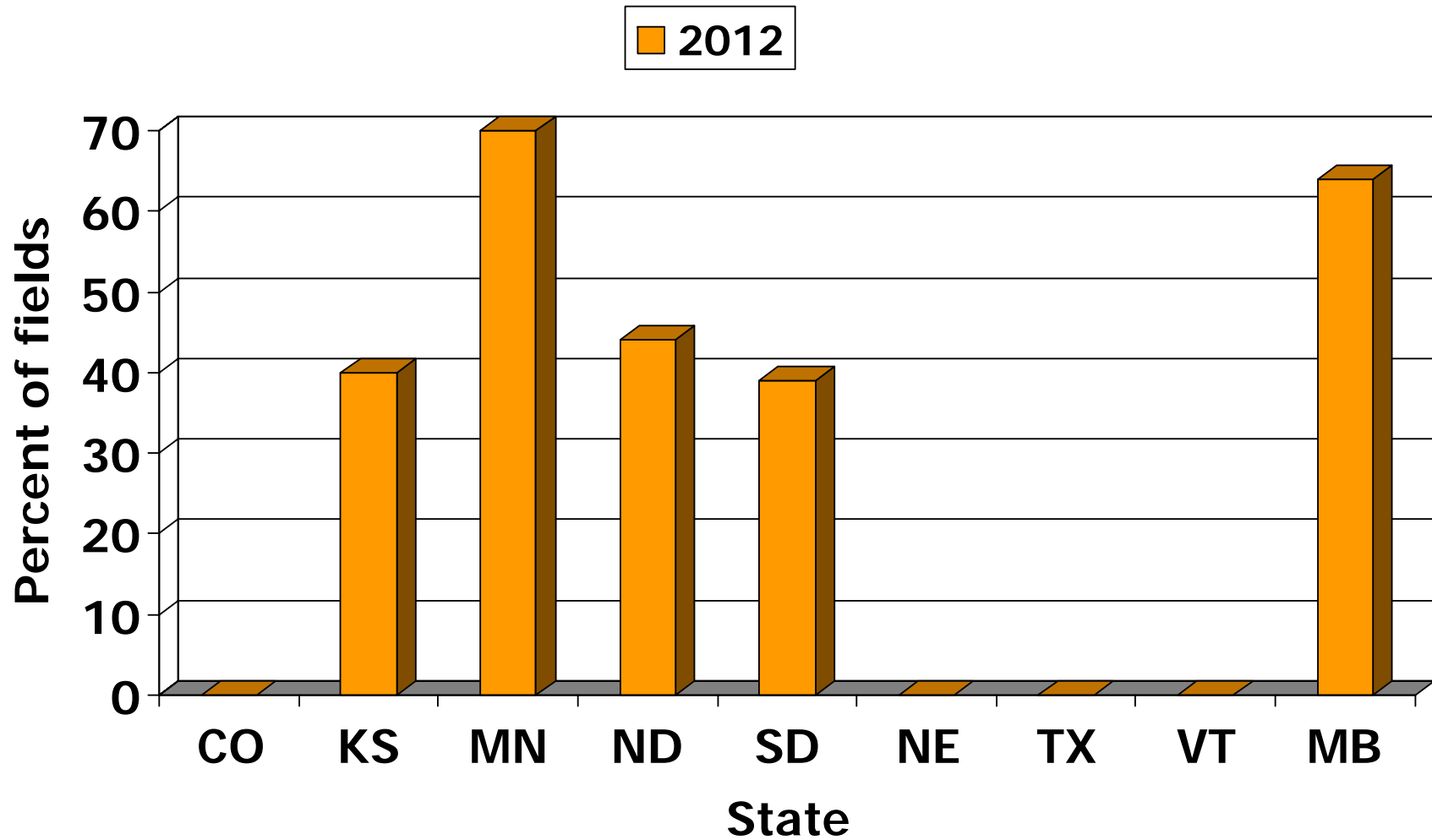


Leaf Area Affected 5%

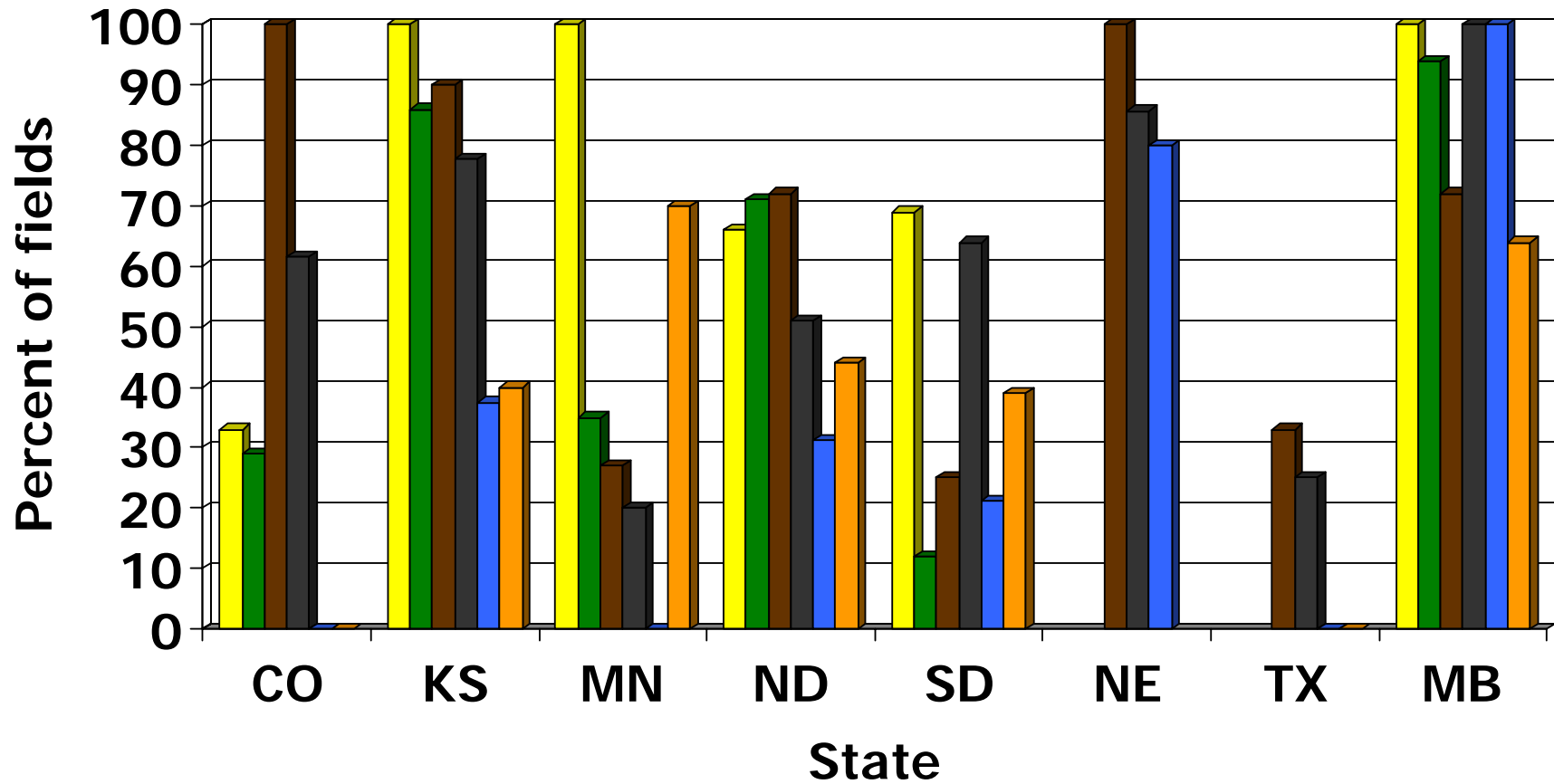


Leaf Area Affected 10%

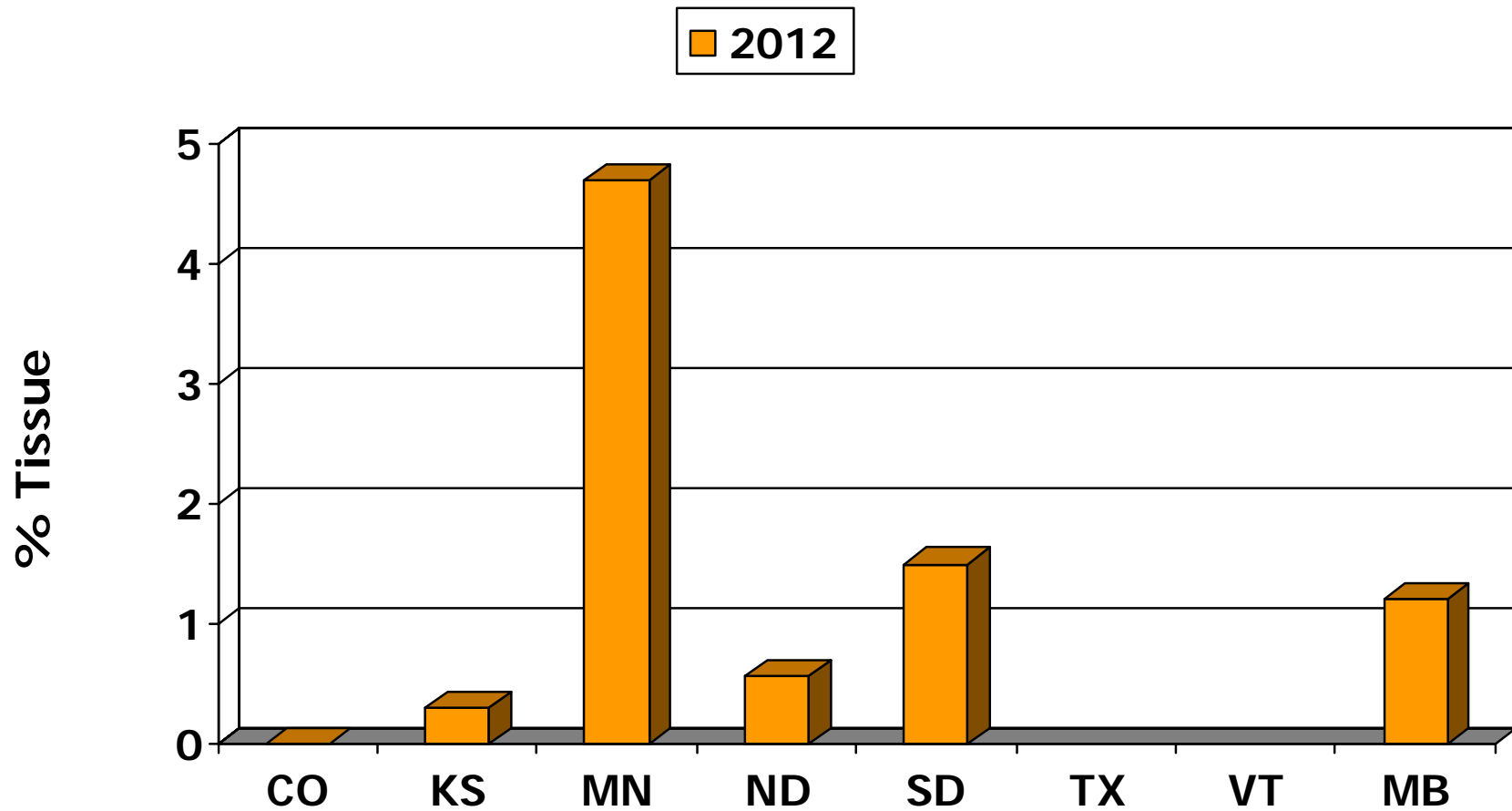
Red Rust Incidence in Sunflower



Red Rust Incidence in Sunflower

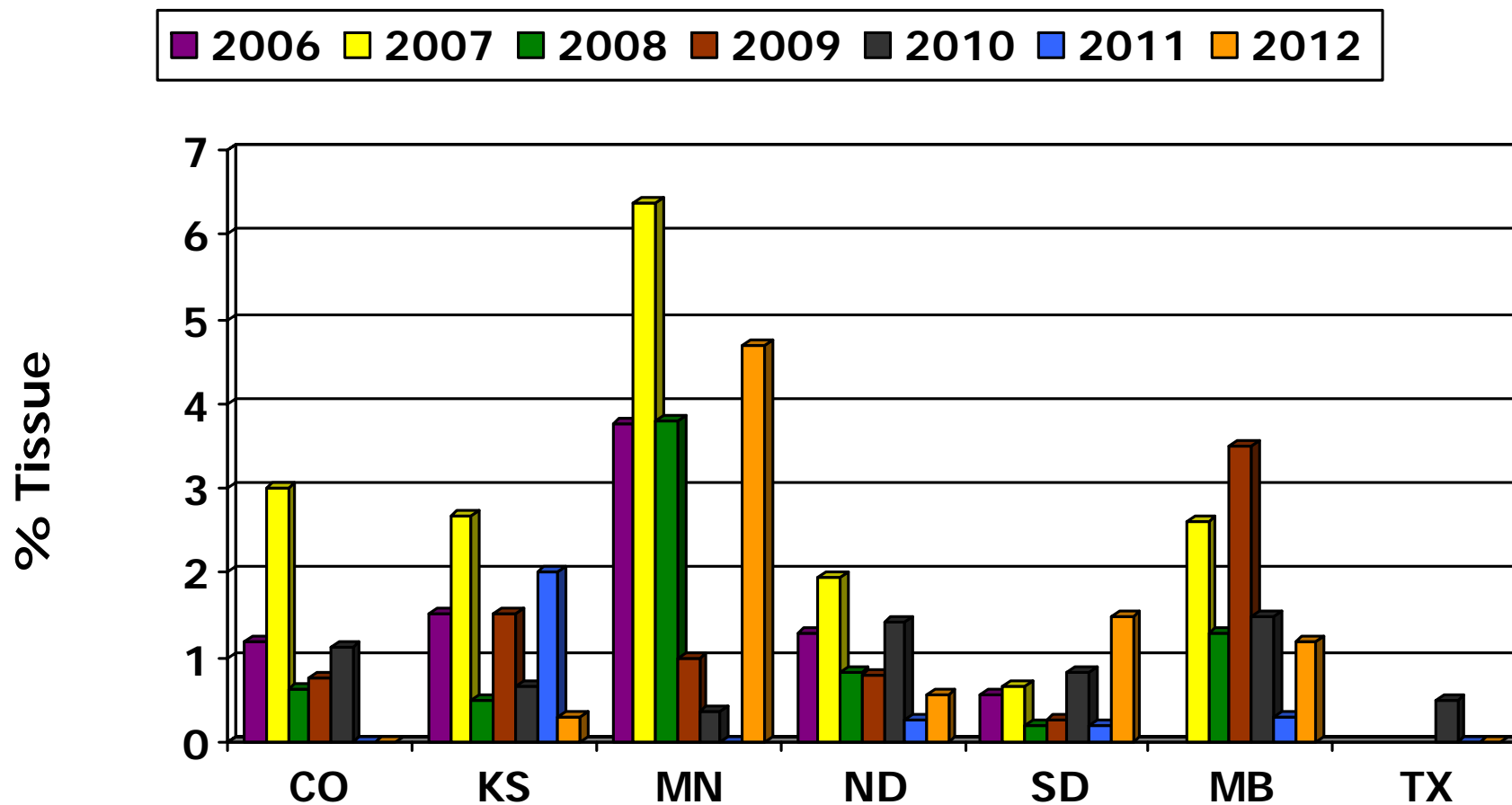


Red Rust Severity in Sunflower



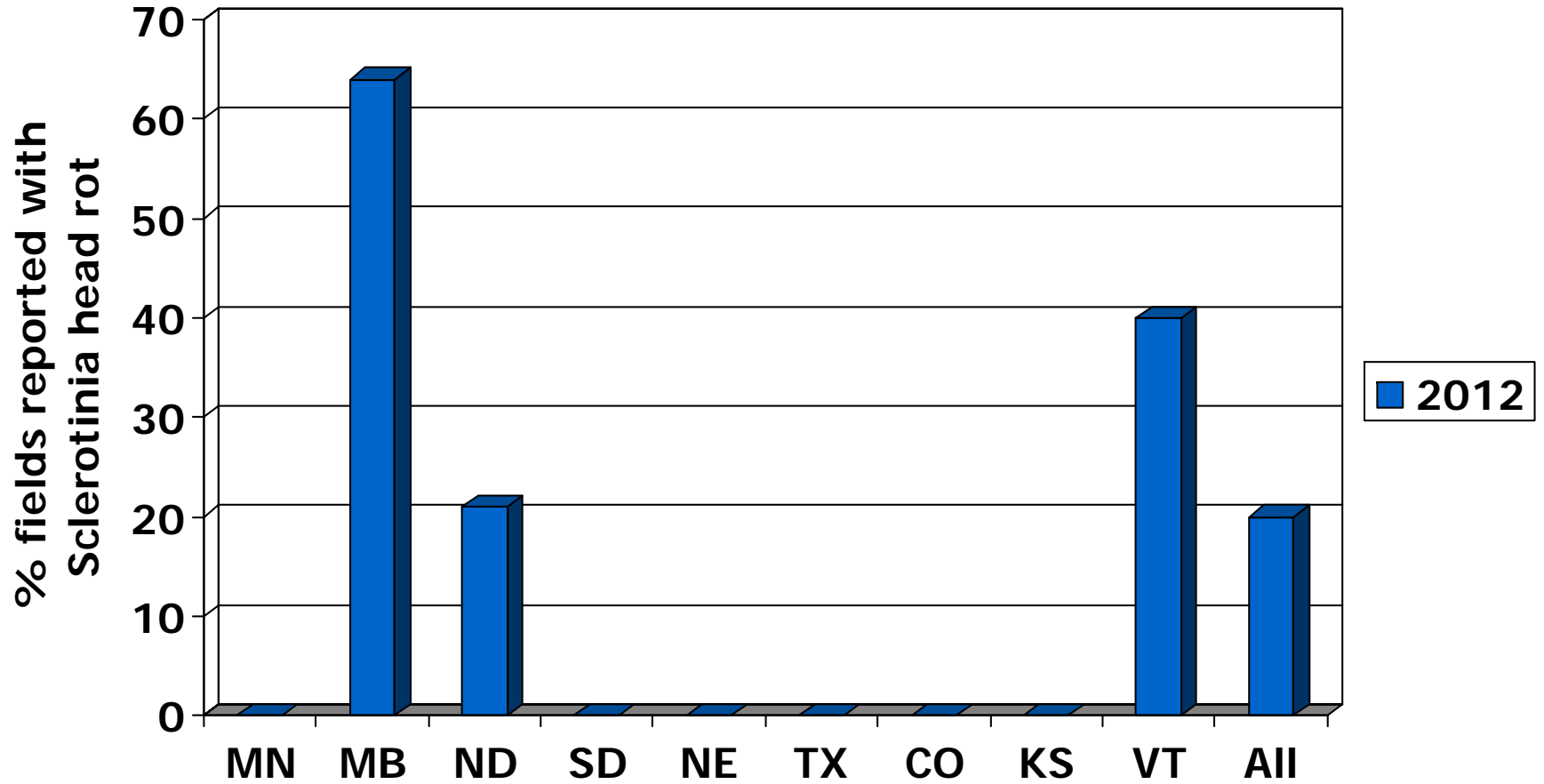
Rust Severity Estimated for Fields Where Incidence Reported

Red Rust Severity in Sunflower

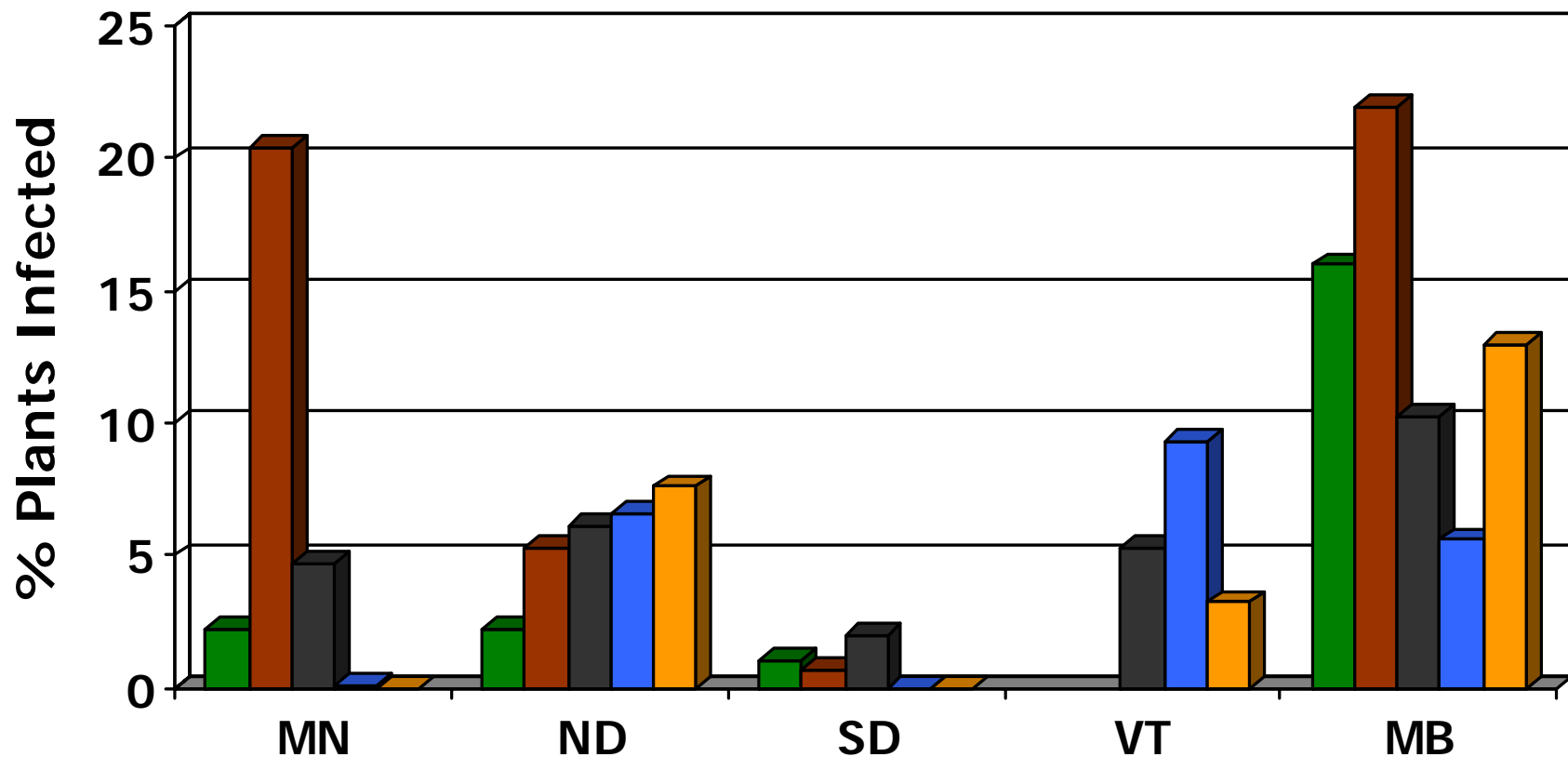
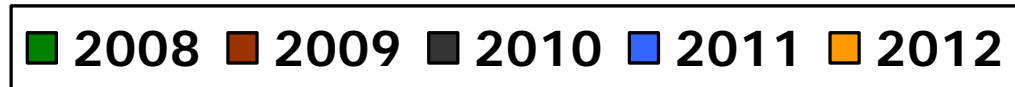


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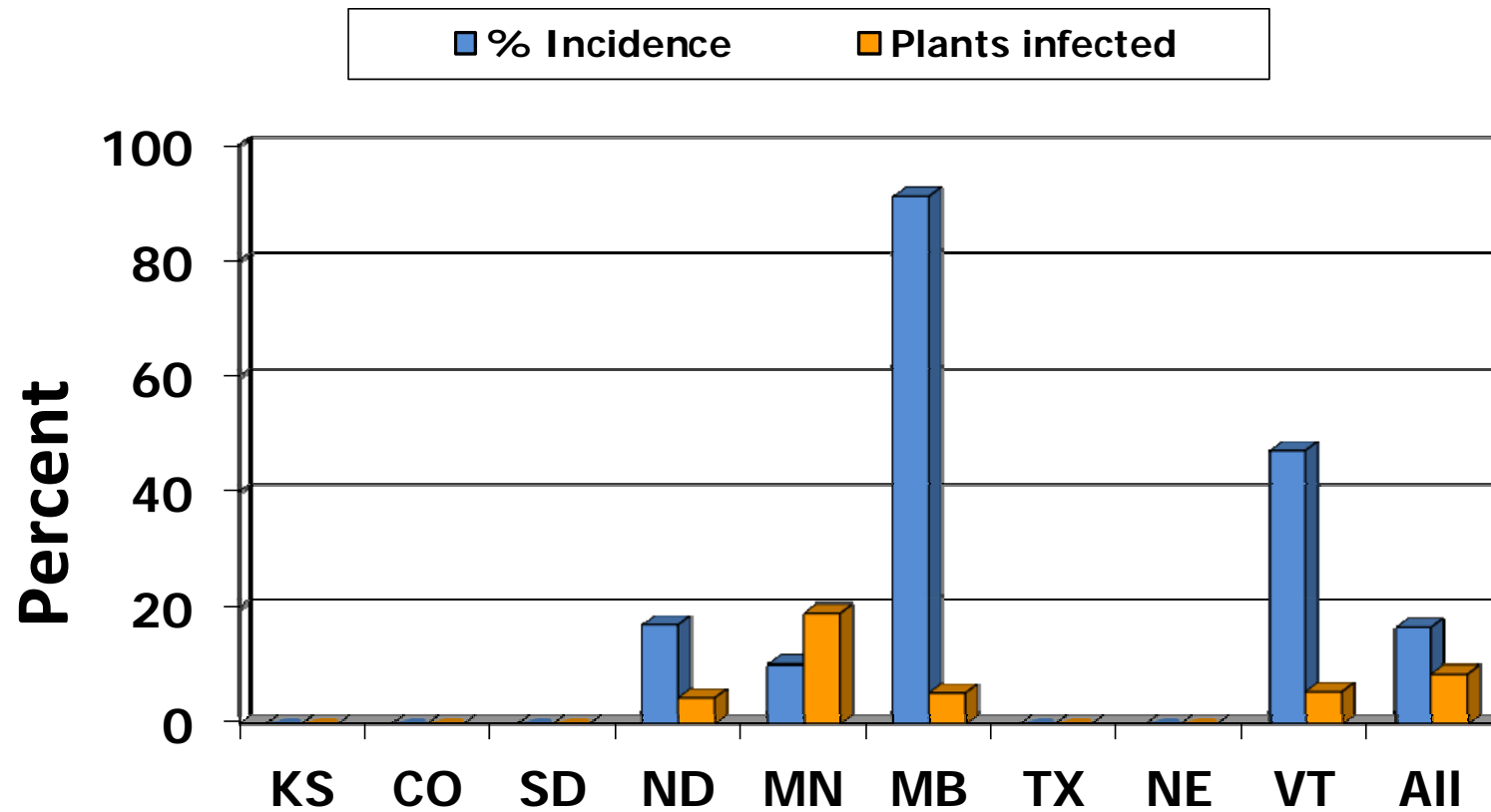
Sclerotinia Head Rot Incidence in Sunflower 2012



Sclerotinia Head Rot Severity in Sunflower 2008-2012



Sclerotinia Stalk Rot Incidence and Severity in Sunflower 2012



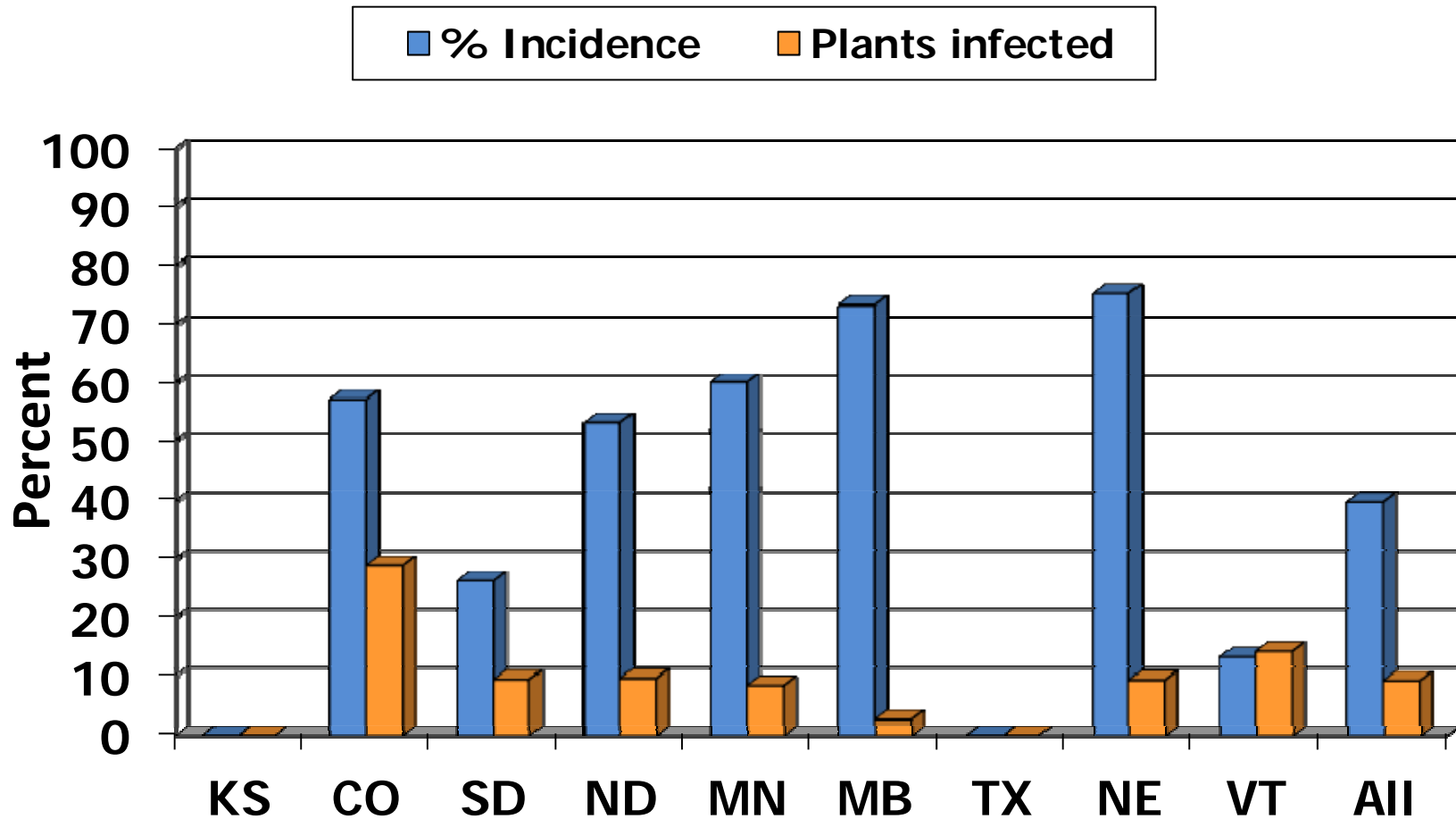
Phomopsis Stem Canker



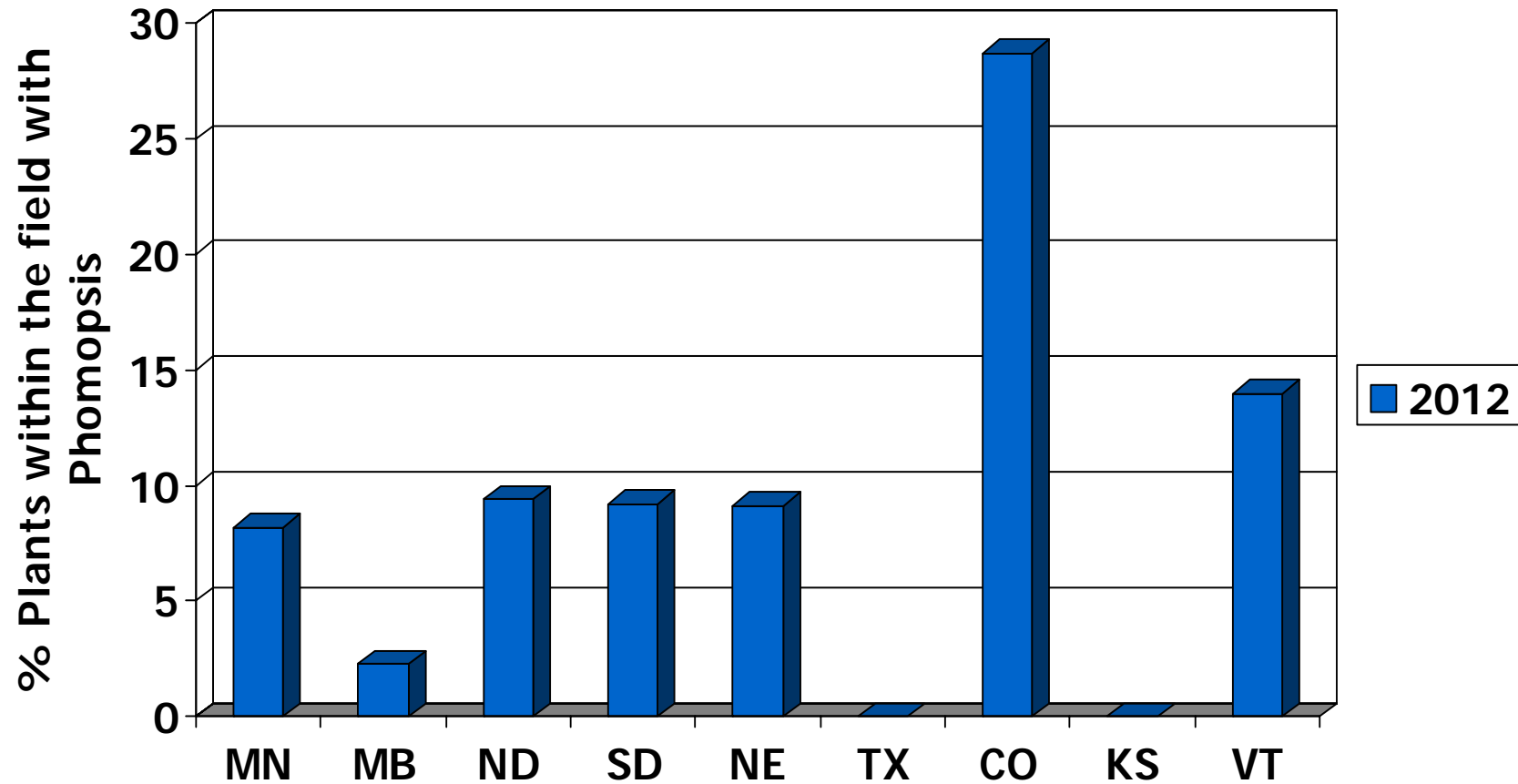
Phoma



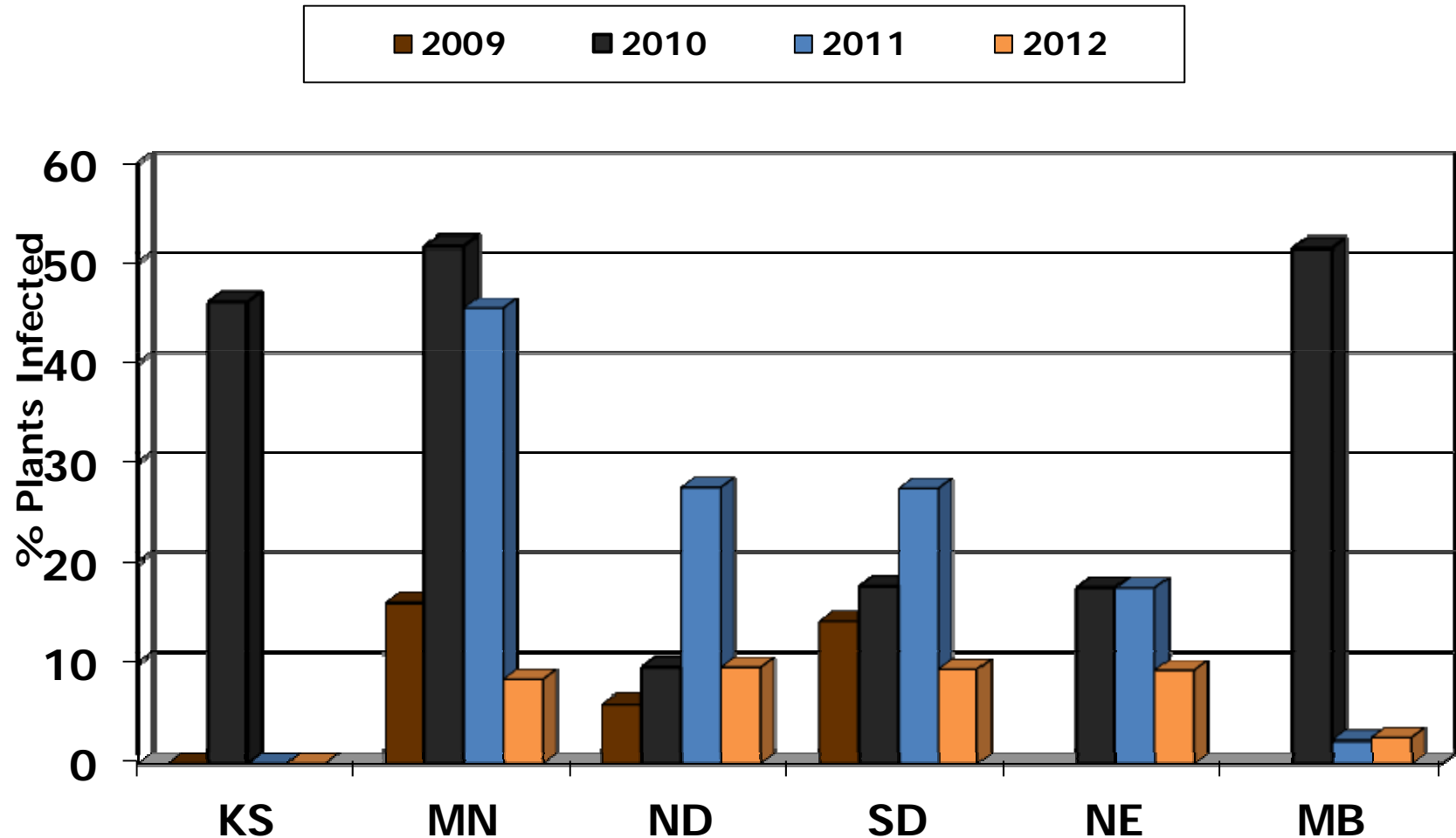
Phomopsis Incidence and Severity in Sunflower 2012



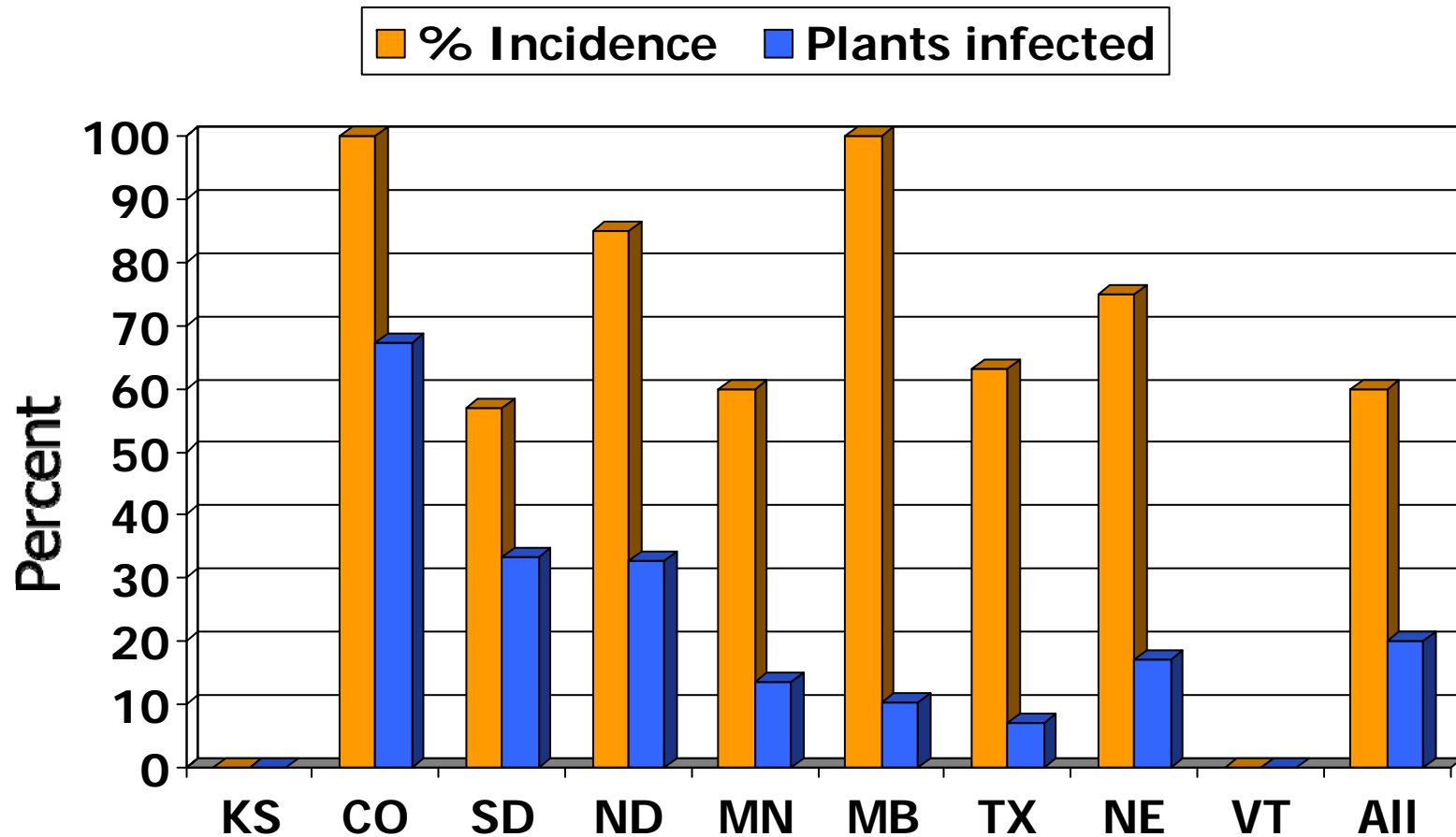
Phomopsis Severity in Sunflower 2012



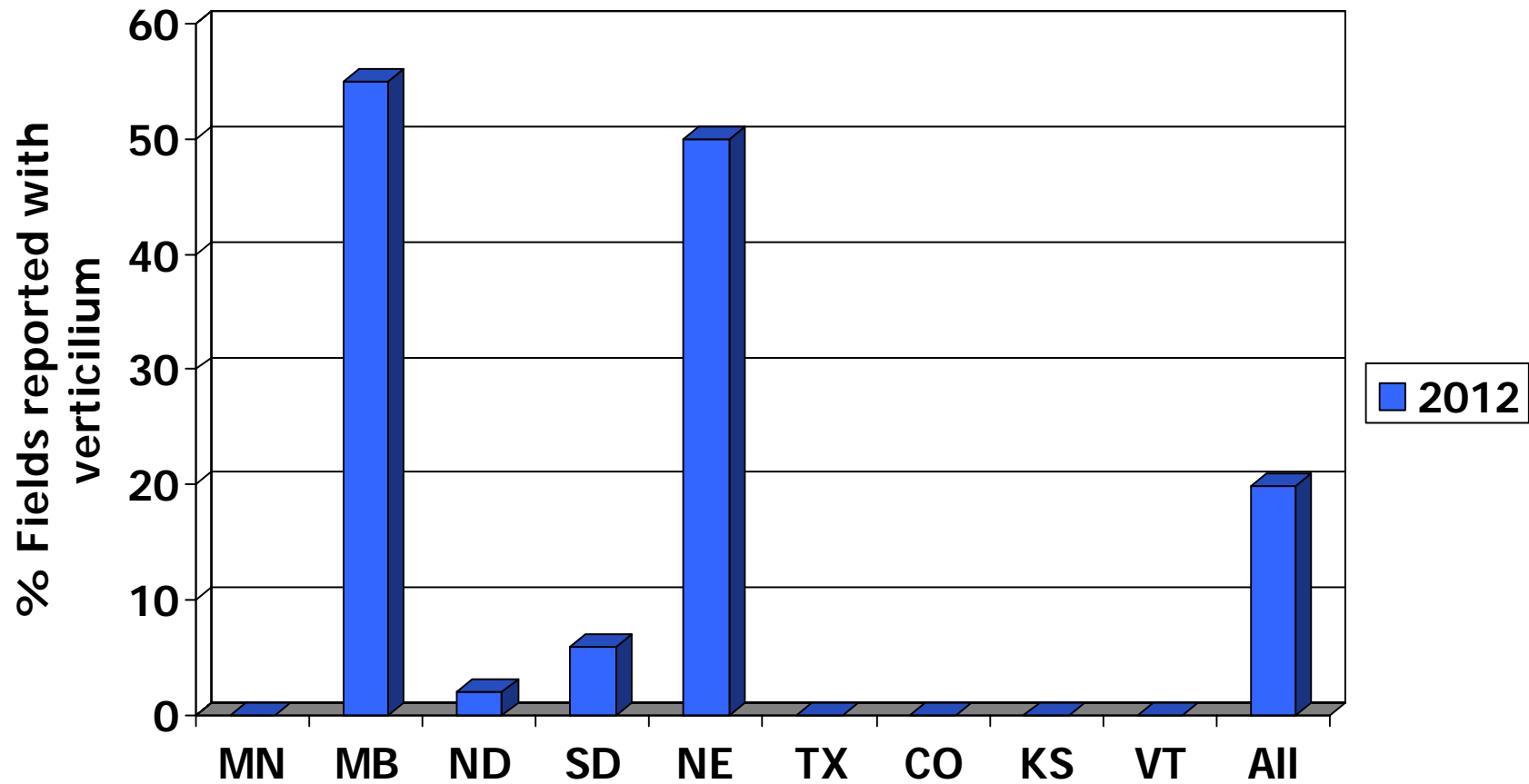
Phomopsis Severity in Sunflower 2009-2012



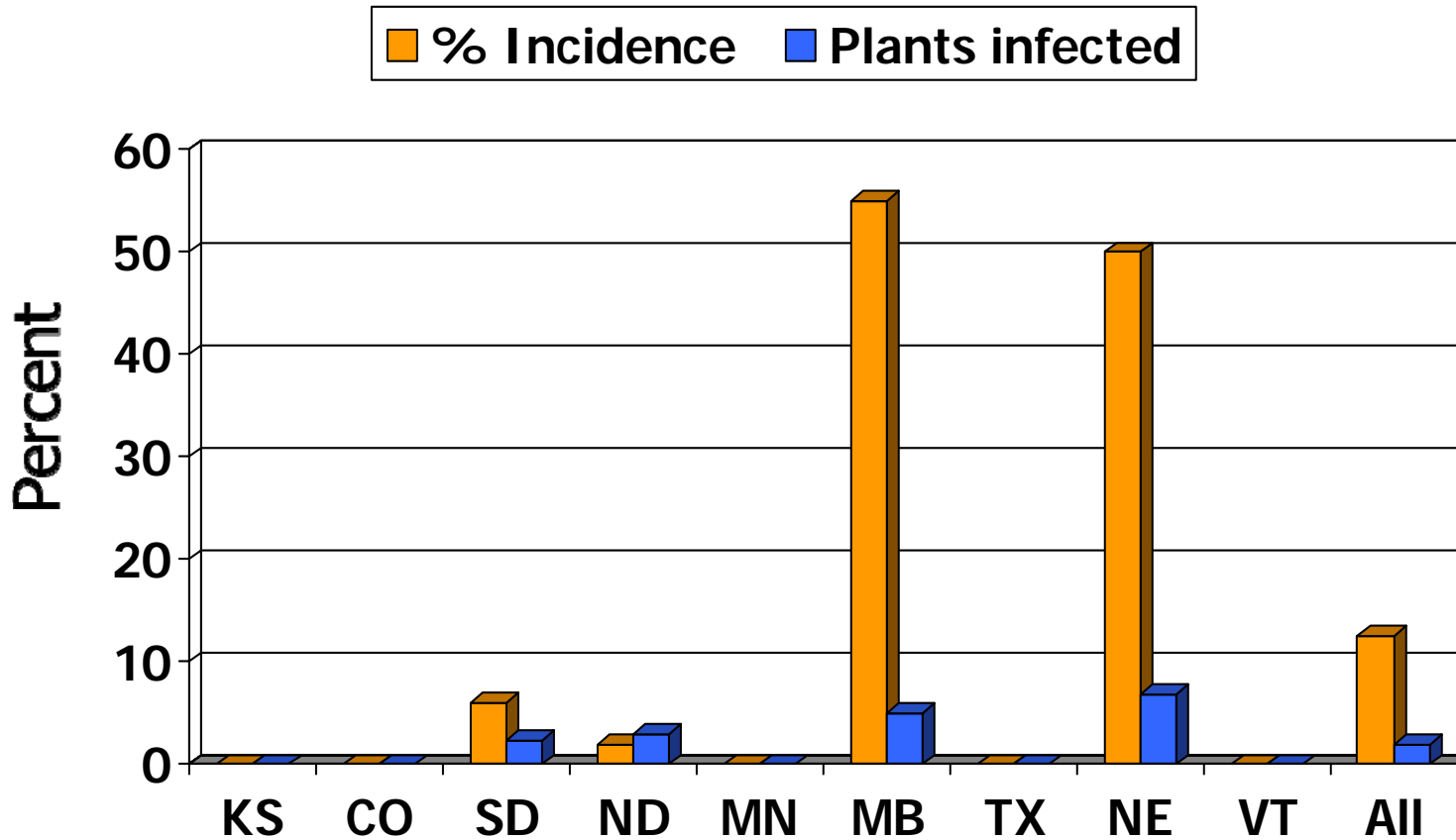
Phoma Incidence and Severity in Sunflower 2012



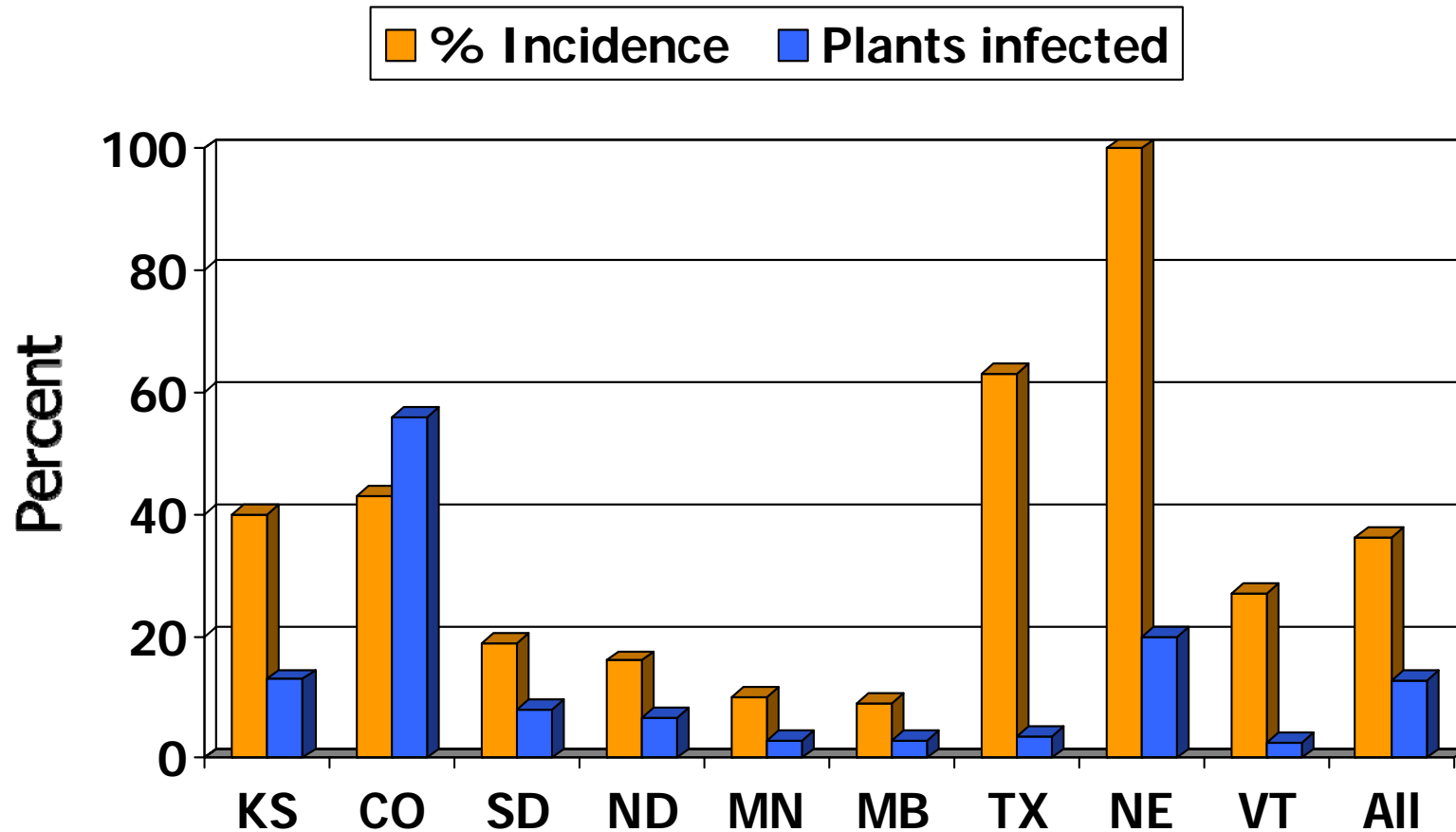
Verticillium Incidence in Sunflower 2012



Verticillium Incidence and Severity in Sunflower 2012

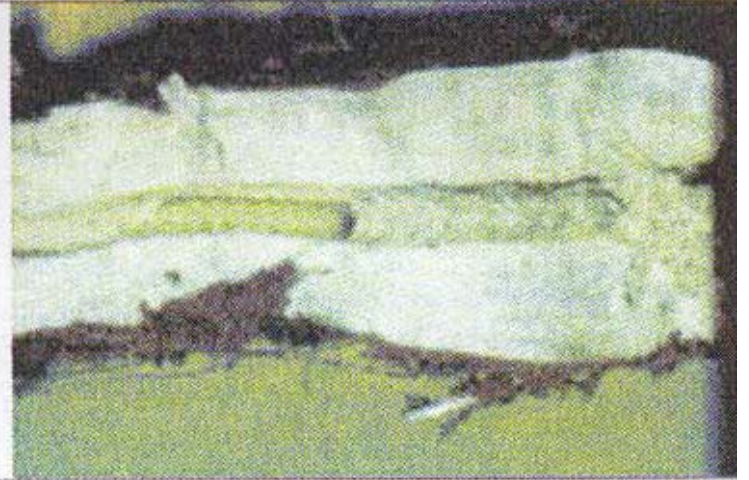
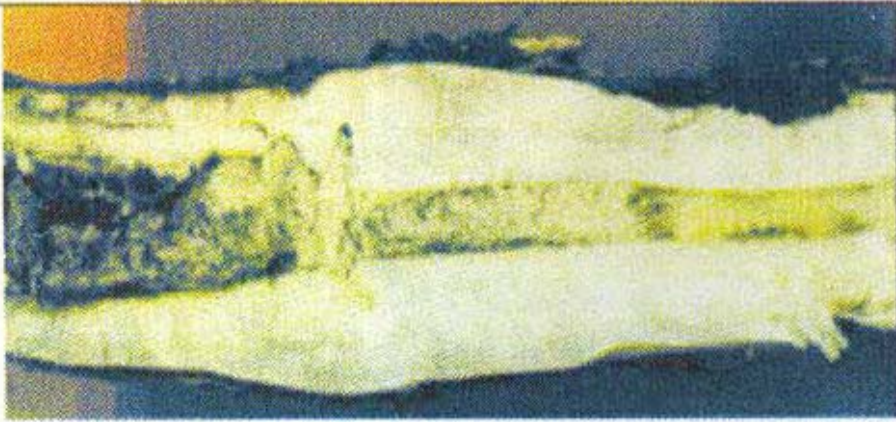


Rhizopus Incidence and Severity in Sunflower 2012

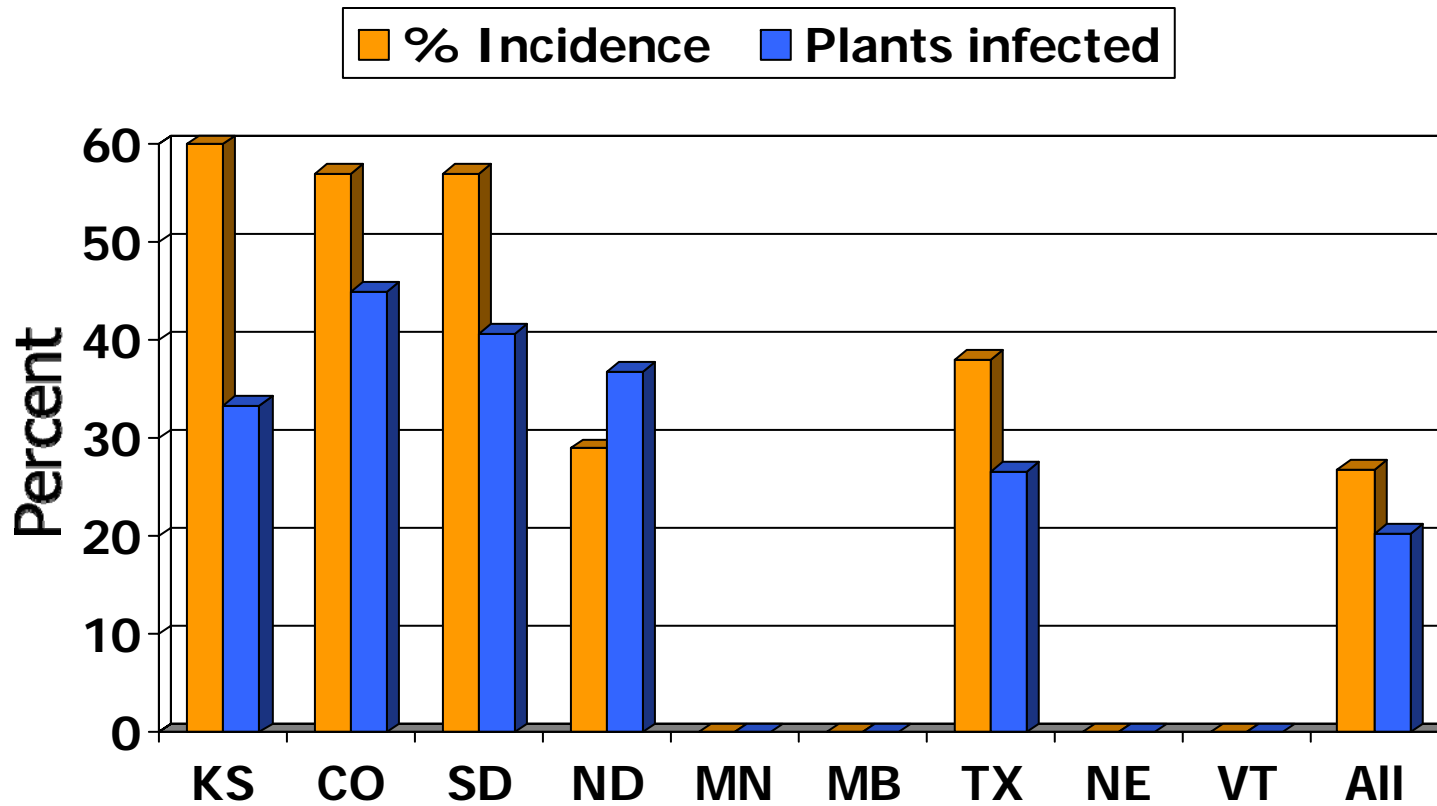


Dectes

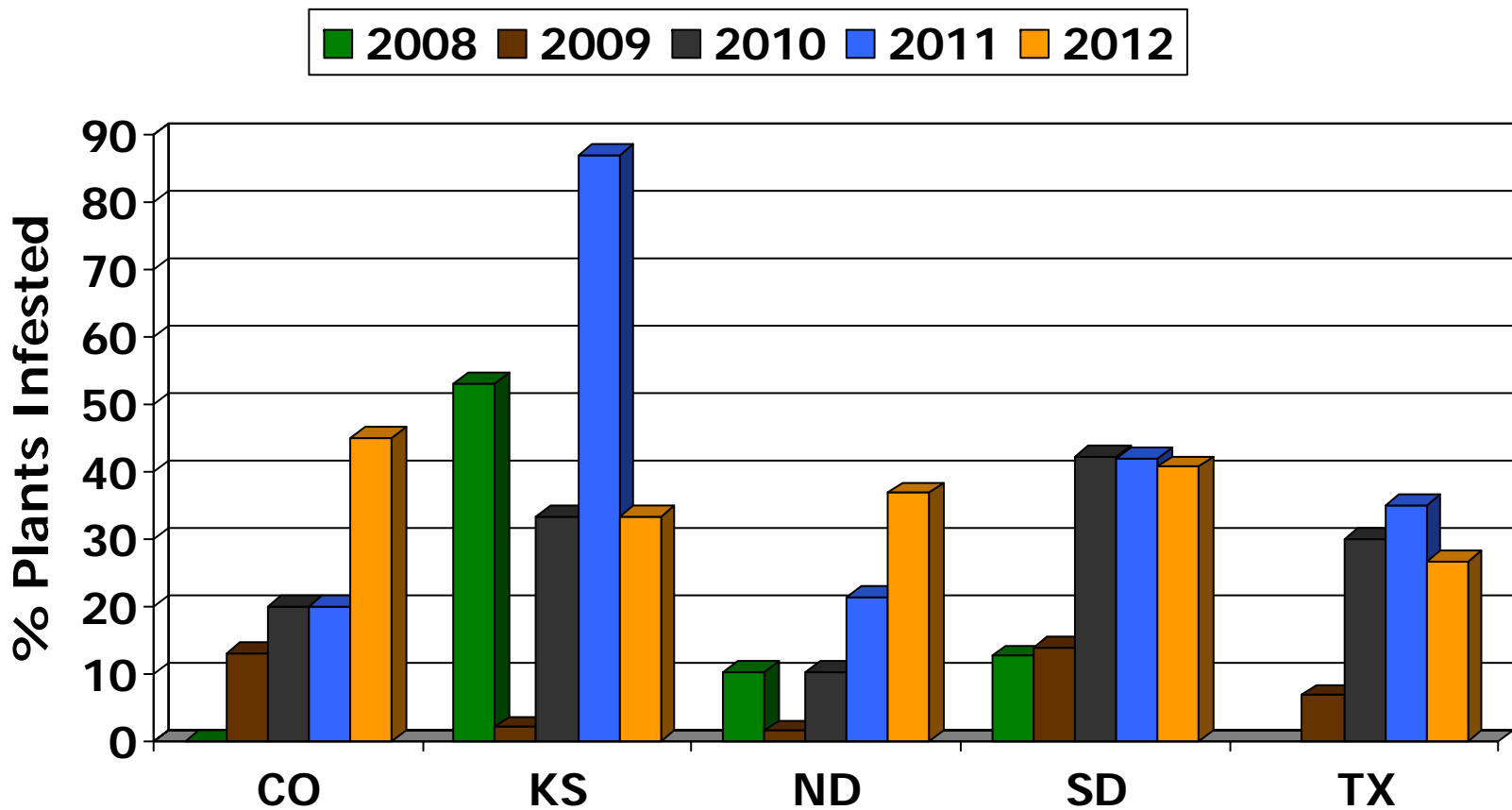
- Dectes (Long-horned Beetle)



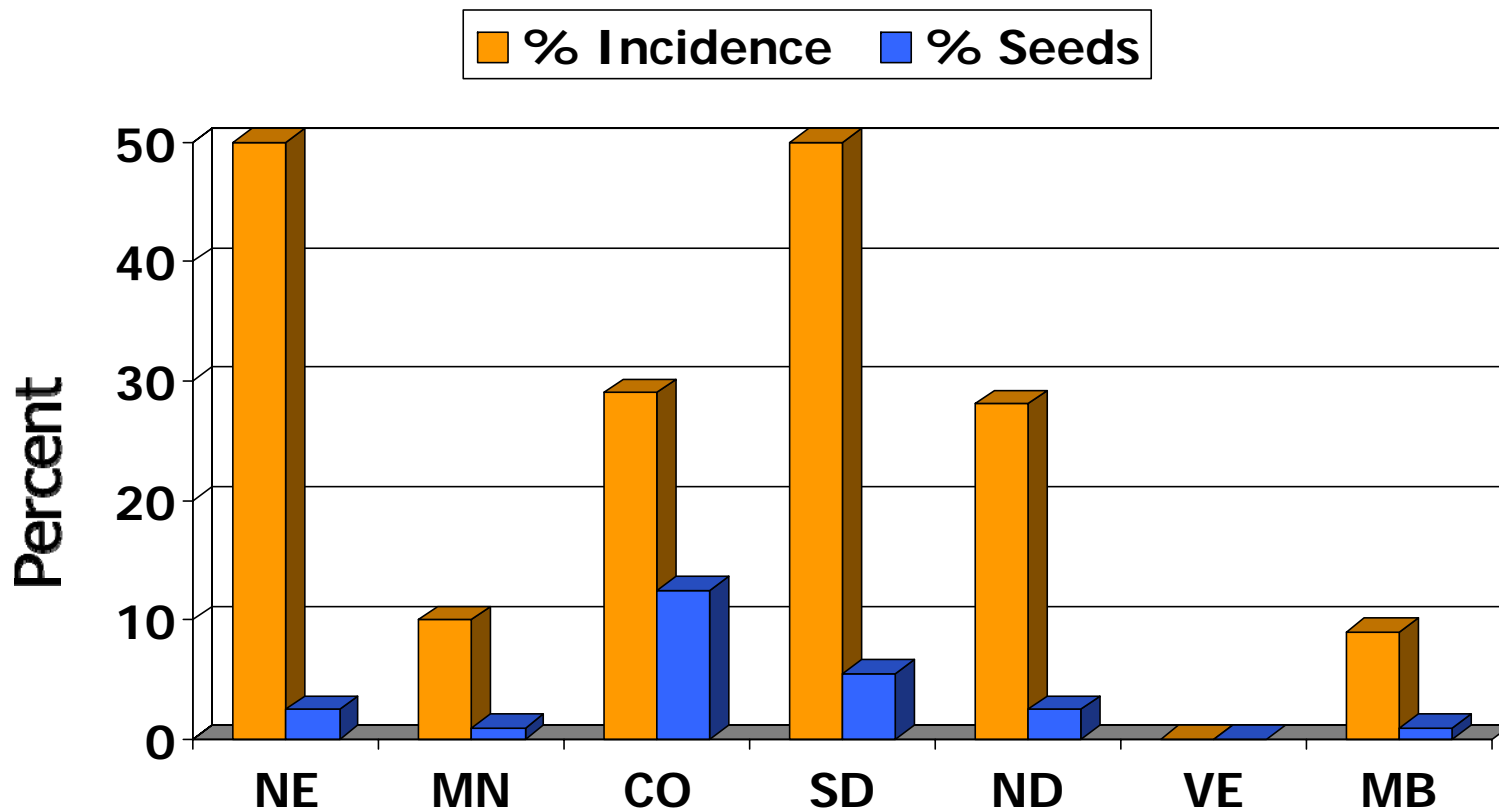
Long-horned Beetle Incidence and Severity in Sunflower 2012



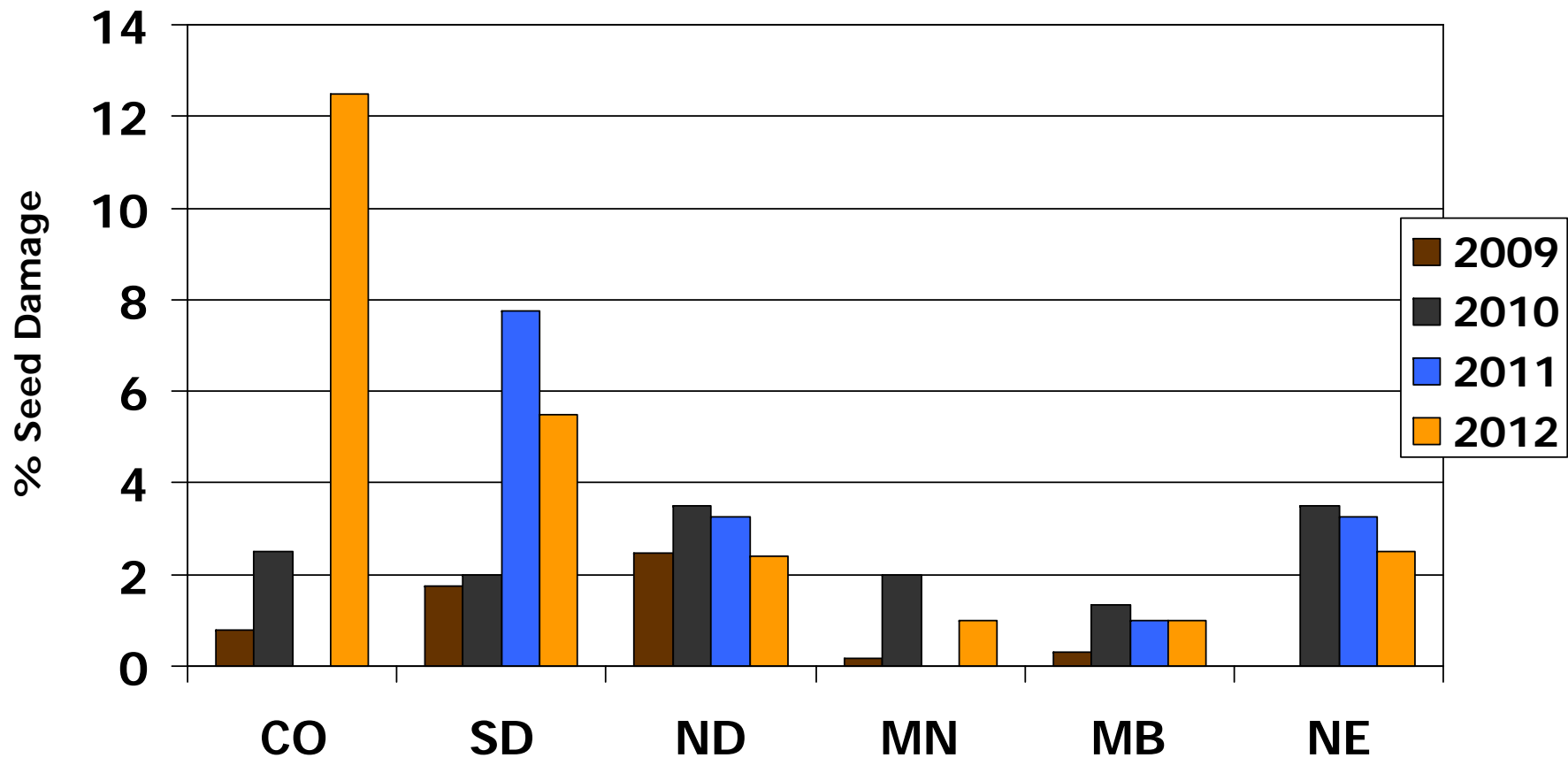
Long-horned Beetle Severity in Sunflower 2008-2012



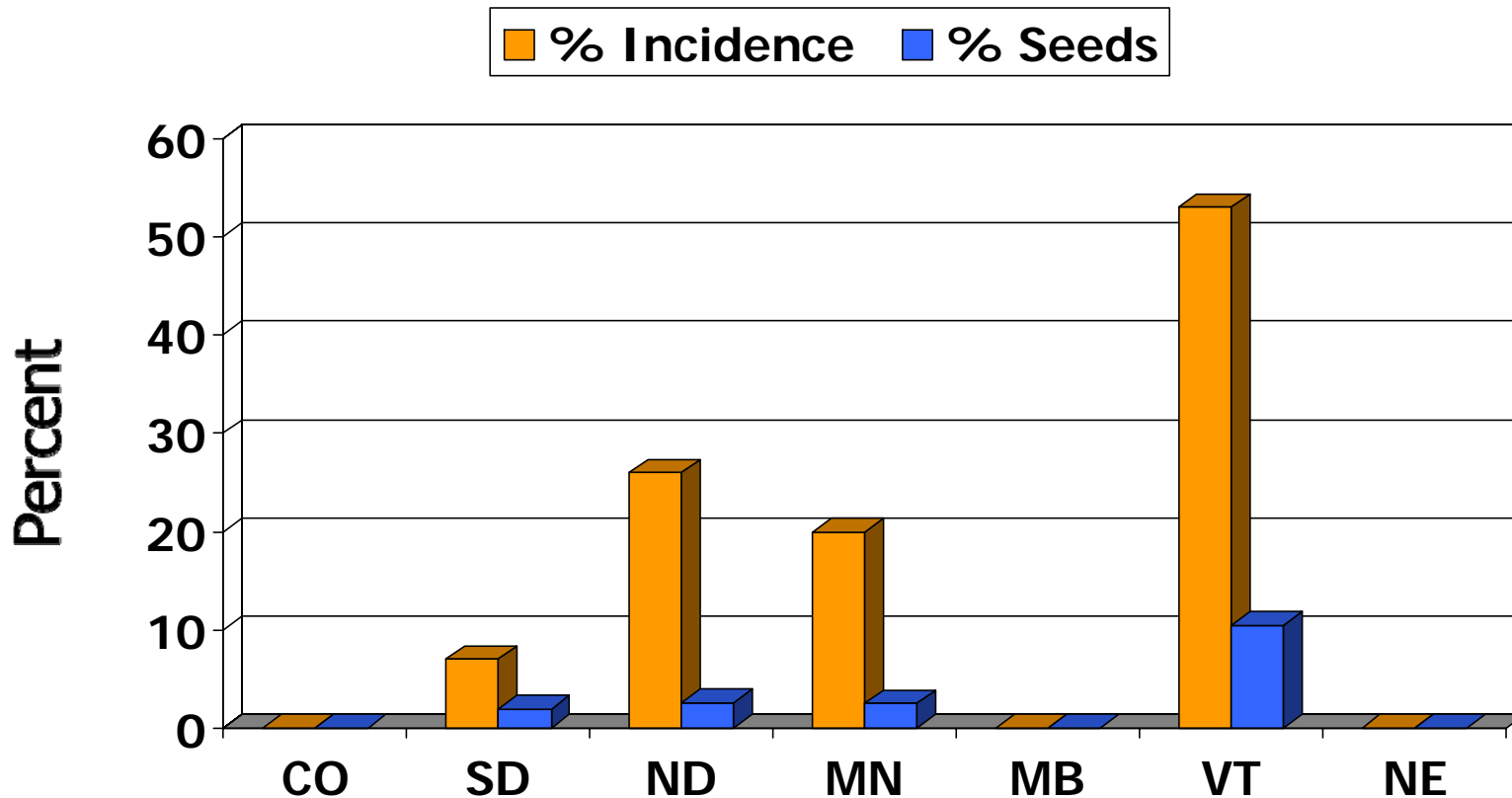
Seed Weevil Incidence and Severity in Sunflower 2012



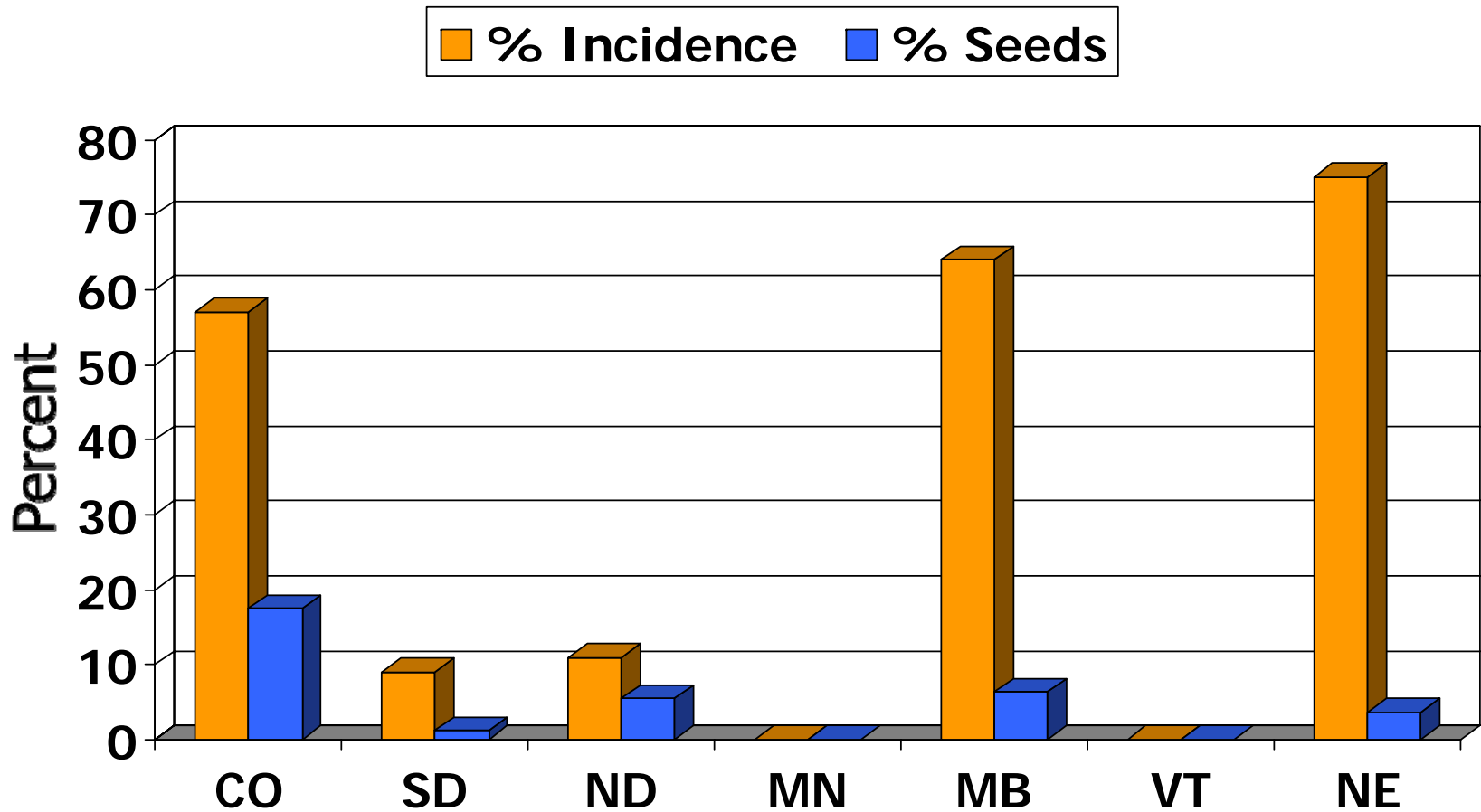
Seed Weevil Damage in Sunflower 2009-2012



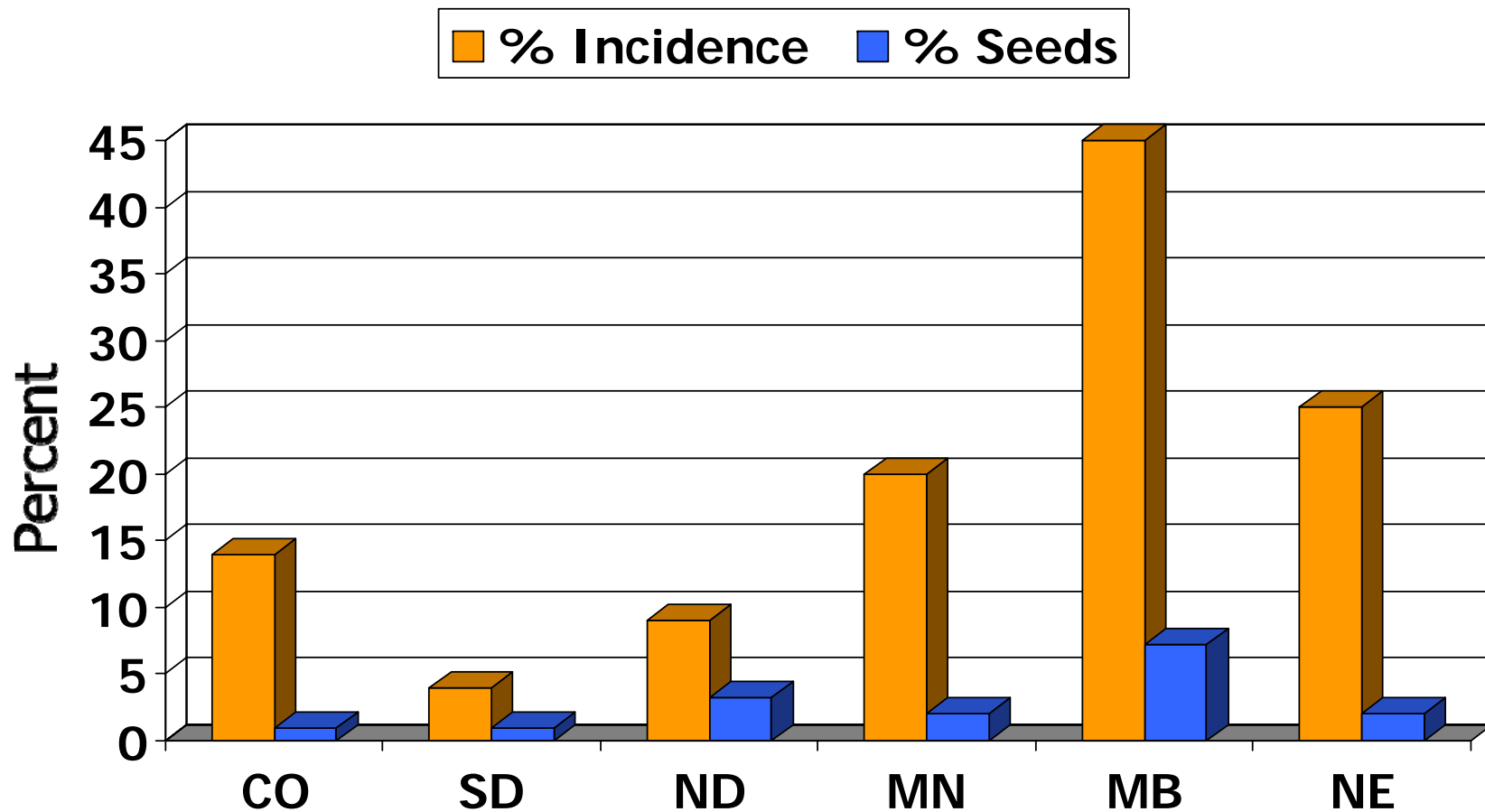
Banded Sunflower Moth Incidence and Severity in 2012



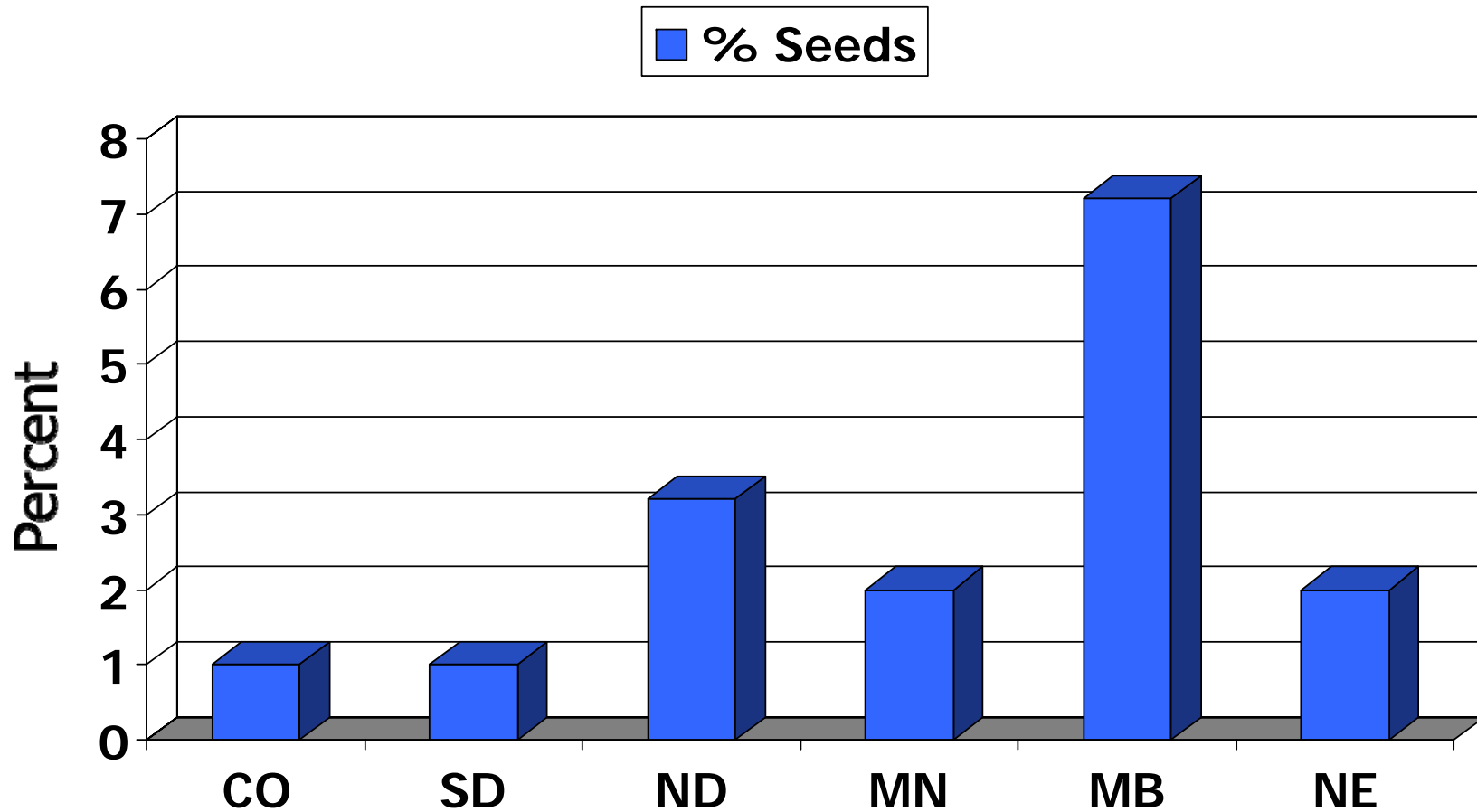
Sunflower Moth Incidence and Severity in Sunflower 2012



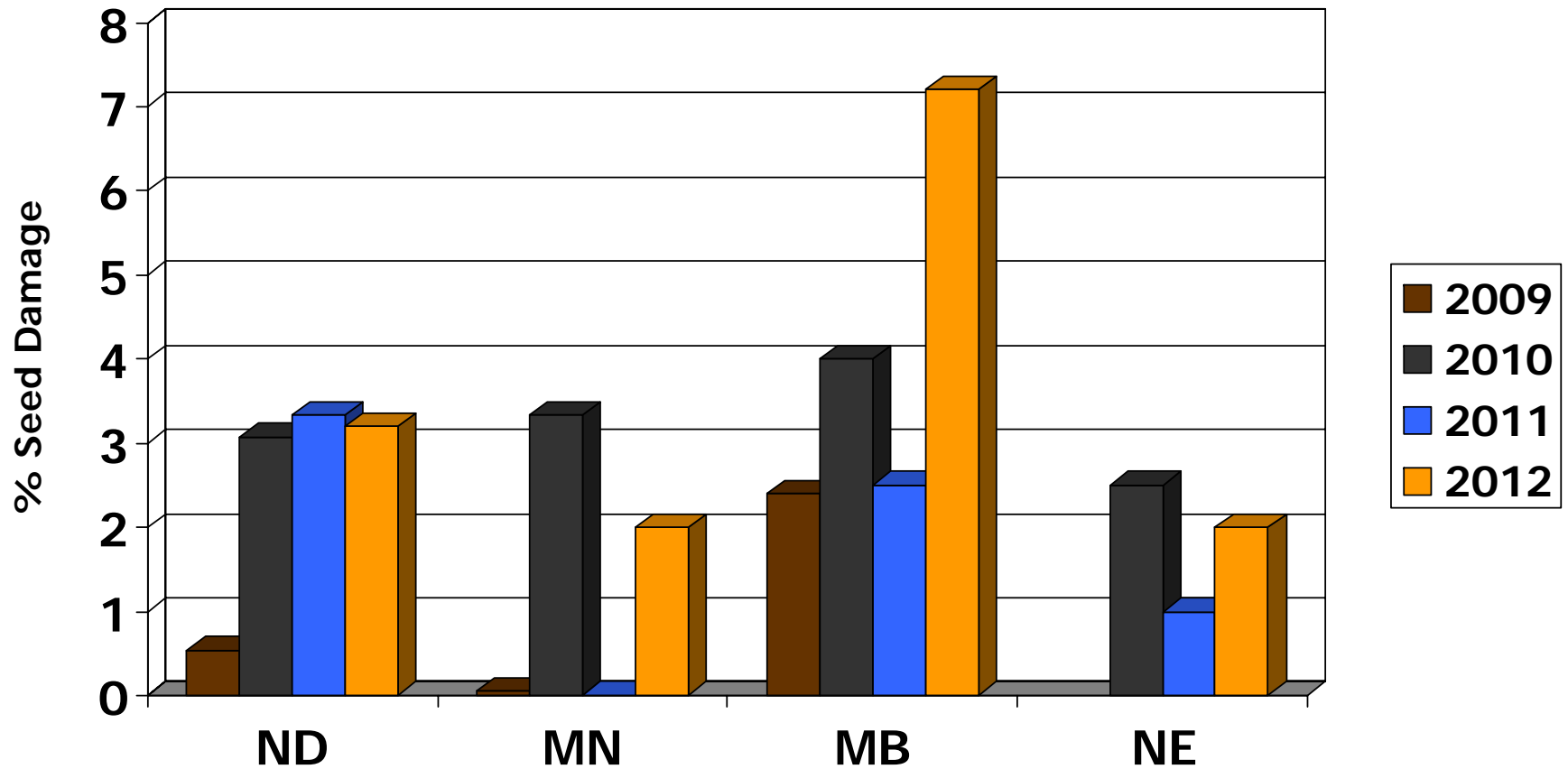
Brown Spot Incidence and Severity in 2012 (confectionary)



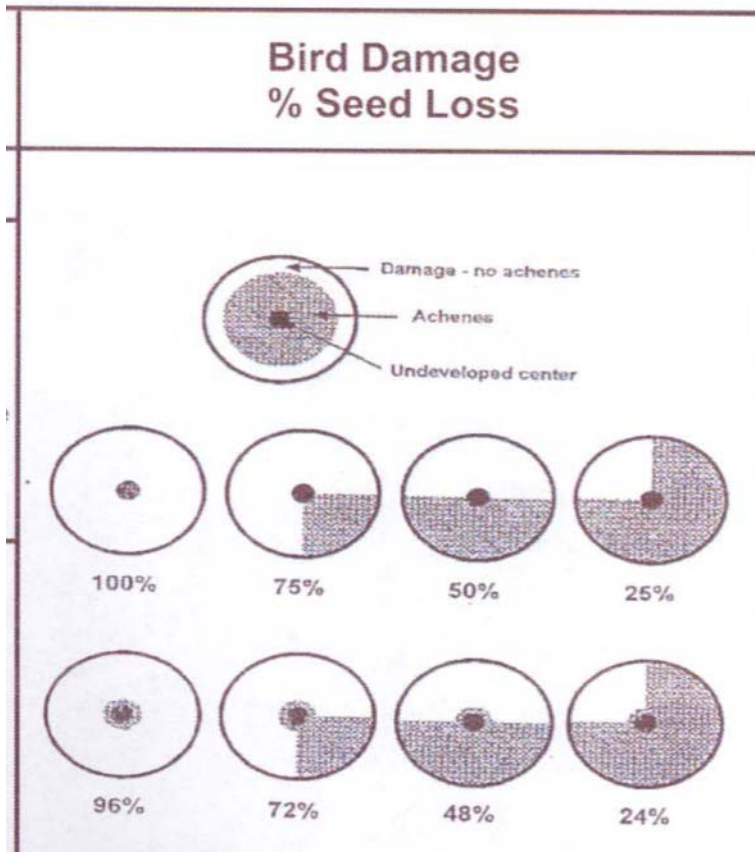
Brown Spot Incidence and Severity in 2012 (confectionary)



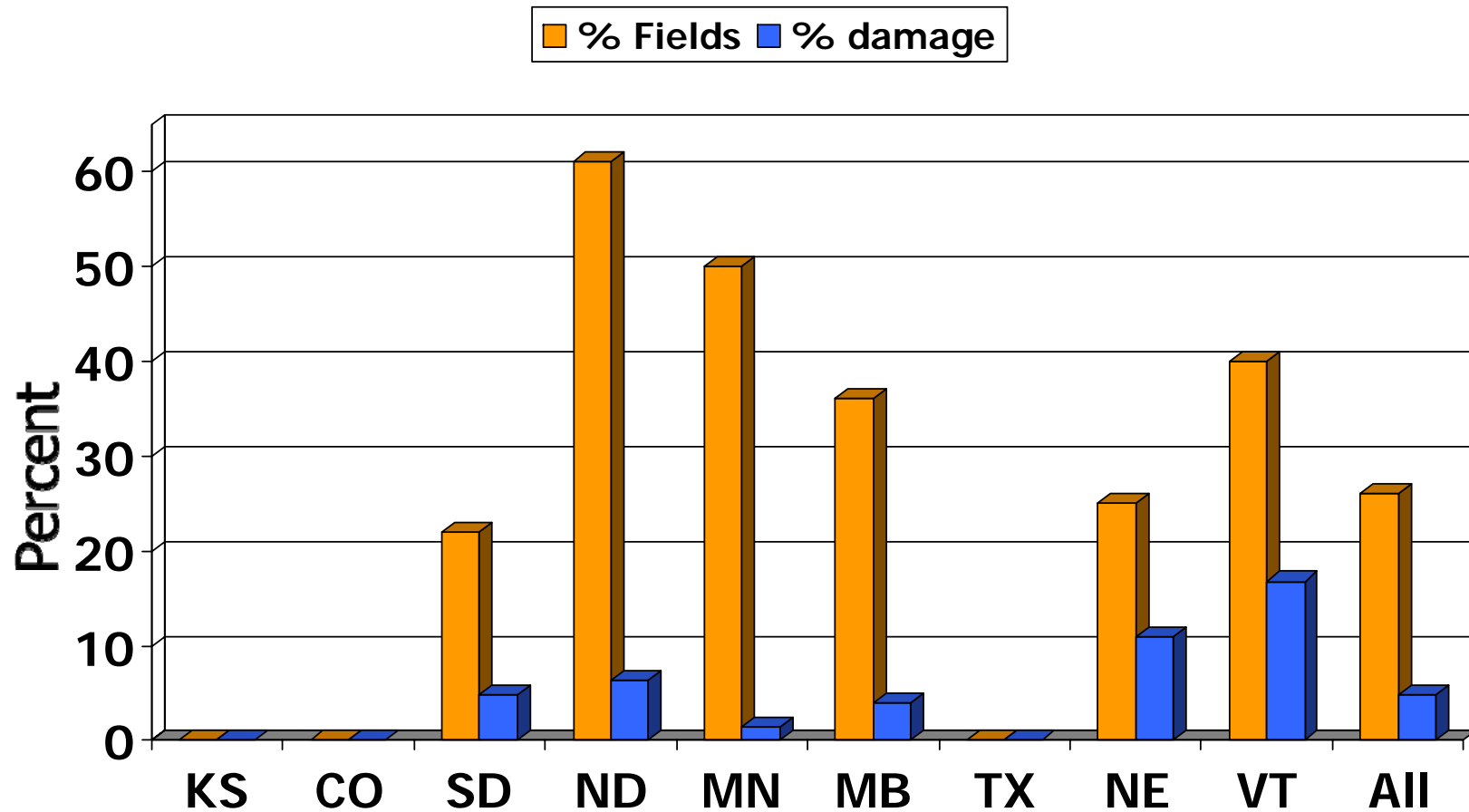
Brown Spot in Sunflower 2009-2012



Recording observations

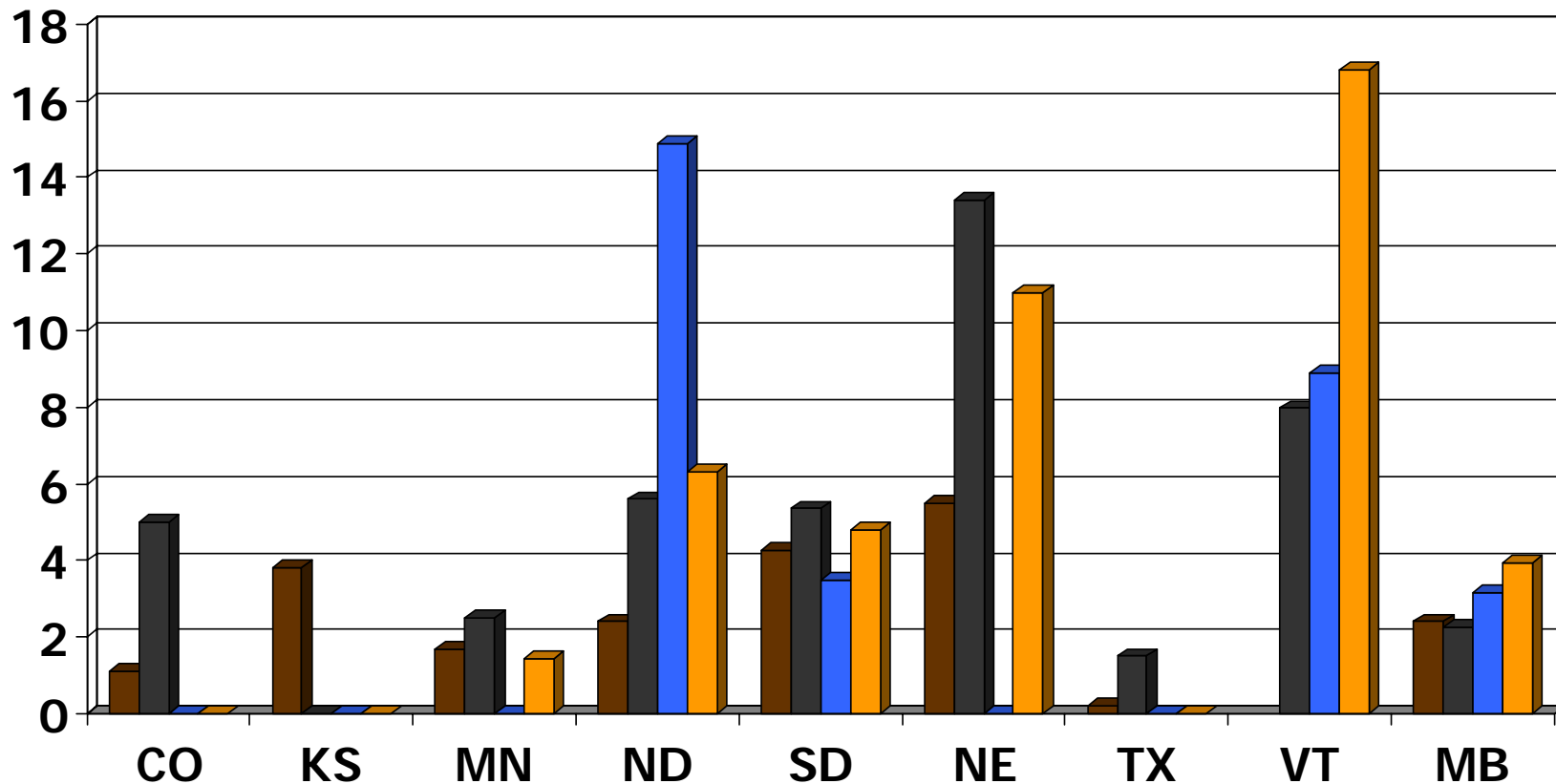


Bird Incidence and Severity in Sunflower 2012



% Bird Damage in Fields Sunflower 2006-2012

2009 2010 2011 2012



Top Weeds Observed: 2011

North Dakota

- Biennial Wormwood
- Canada Thistle
- Cockle Bur
- Lambsquarter
- Kochia
- Red root Pig Weed
- Wild buckwheat
- Wild mustard
- Foxtail

Minnesota

- Smart weed
- Wormwood
- Canada Thistle
- Lambsquarter
- Russian Thistle



Top Weeds Observed: 2012

North Dakota

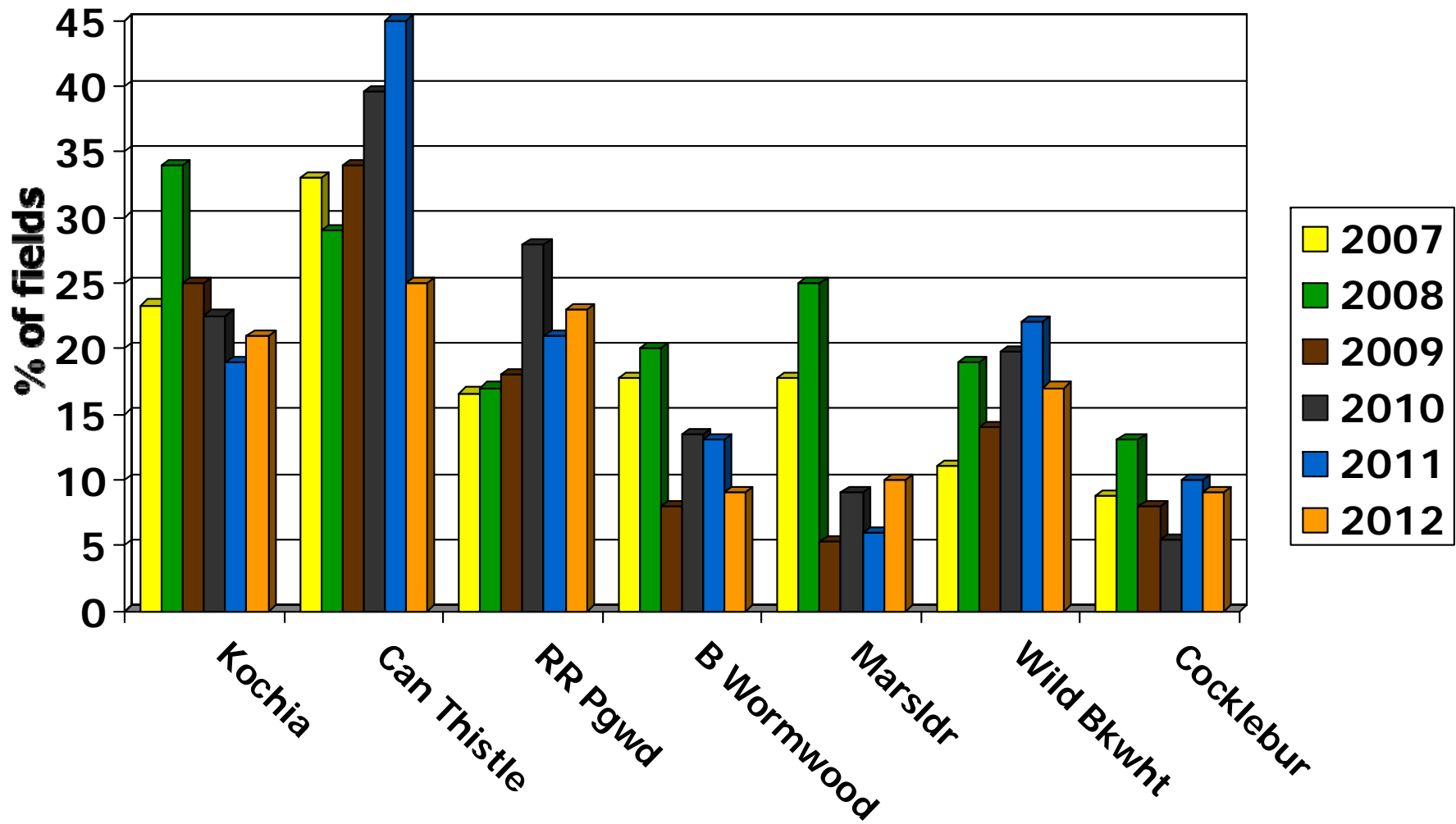
- Biennial wormwood
- Canada thistle
- Cockle Bur
- Lambsquarter
- Kochia
- Red root Pig Weed
- Russian thistle
- Rag weed-common
- Foxtail green & yellow

Minnesota

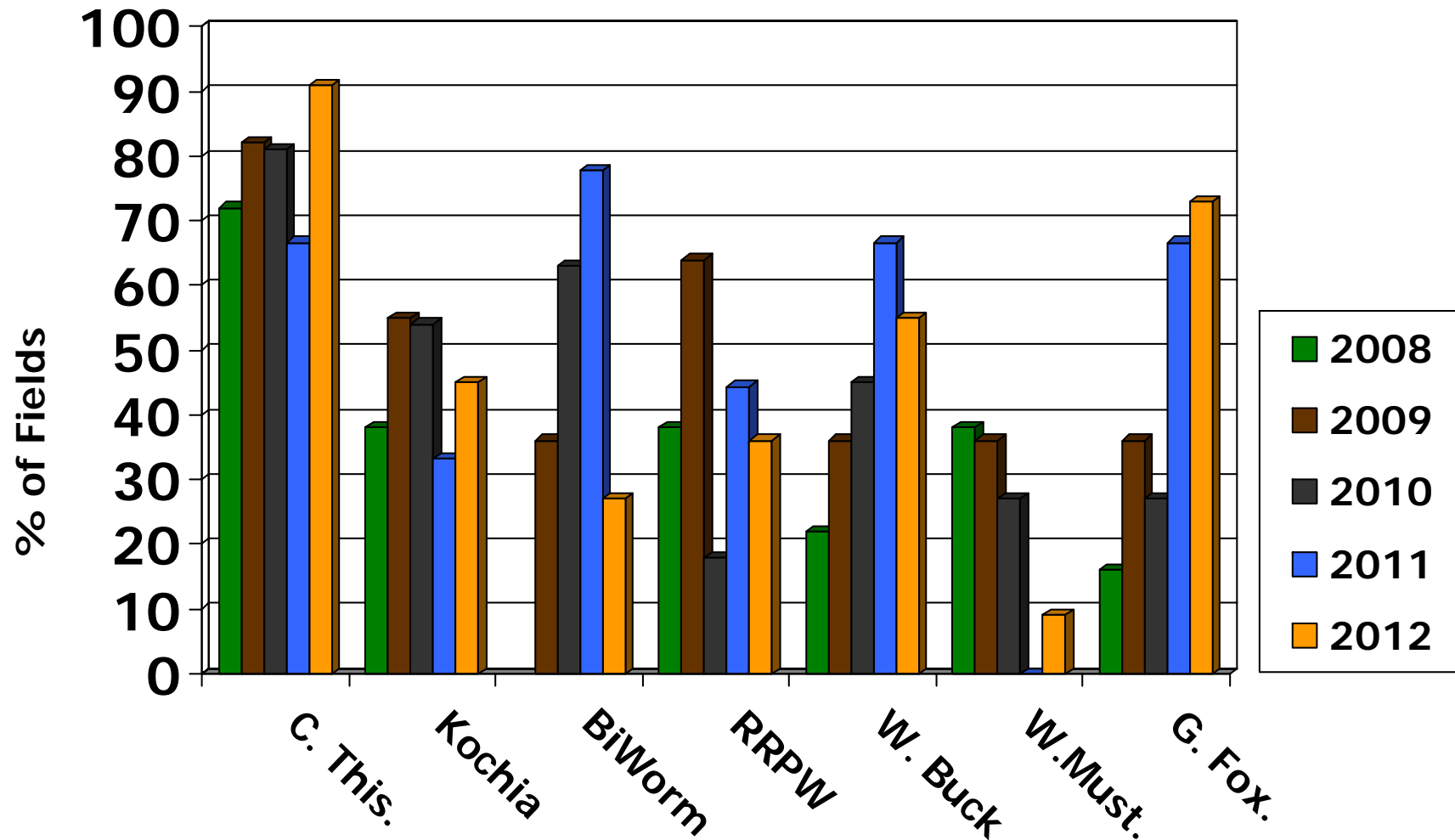
- Biennial wormwood
- Canada thistle
- Lambsquarter
- Marsh elder
- Rag weed-common
- Field sandbur
- Foxtail green



Incidence of Broadleaf Weeds ND/MN 2007-2012



Incidence of Weeds Observed in Manitoba 2008-2012



Top Five Weeds in South Dakota 2010-2012

2010

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

2011

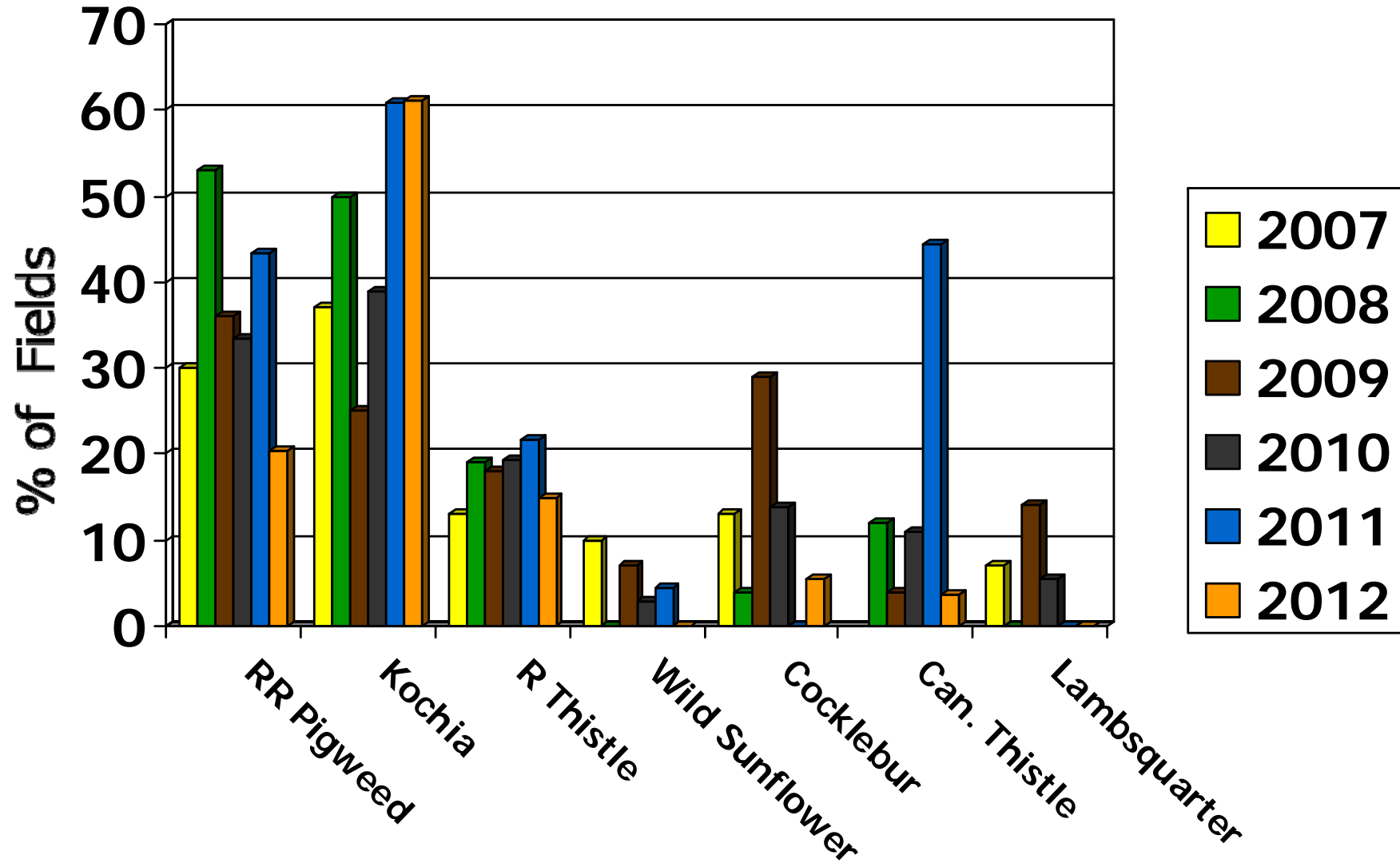
- Kochia
- Lanceleaf sage
- Redroot pigweed
- Russian thistle
- Green foxtail

2012

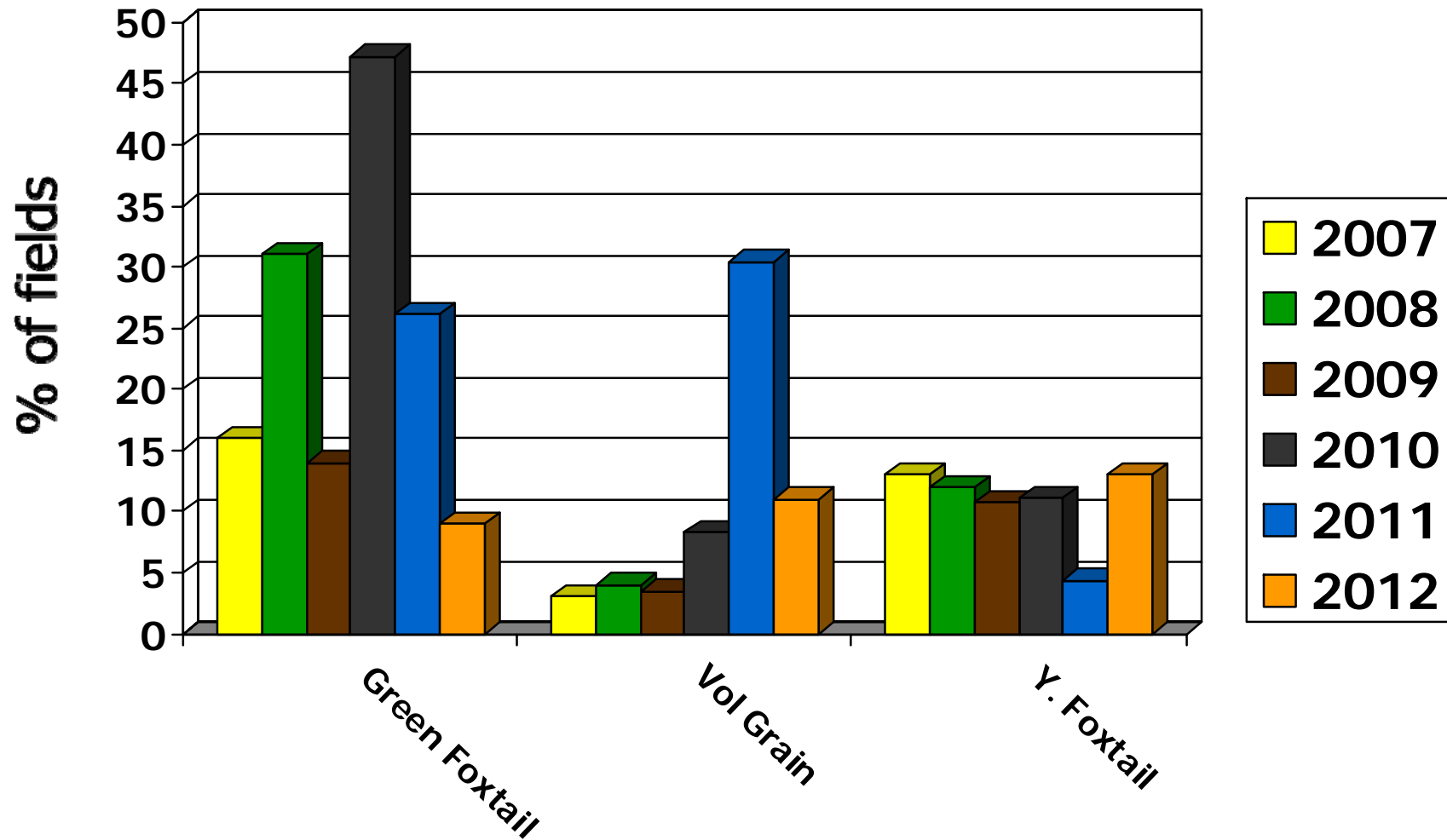
- Kochia
- Lanceleaf sage
- Redroot pigweed
- Russian thistle
- Green foxtail
- Yellow foxtail



Incidence of Broadleaf Weeds South Dakota 2007-2012



Incidence of Grassy Weeds South Dakota 2007 - 2012



Top Weeds Observed: 2012

Colorado

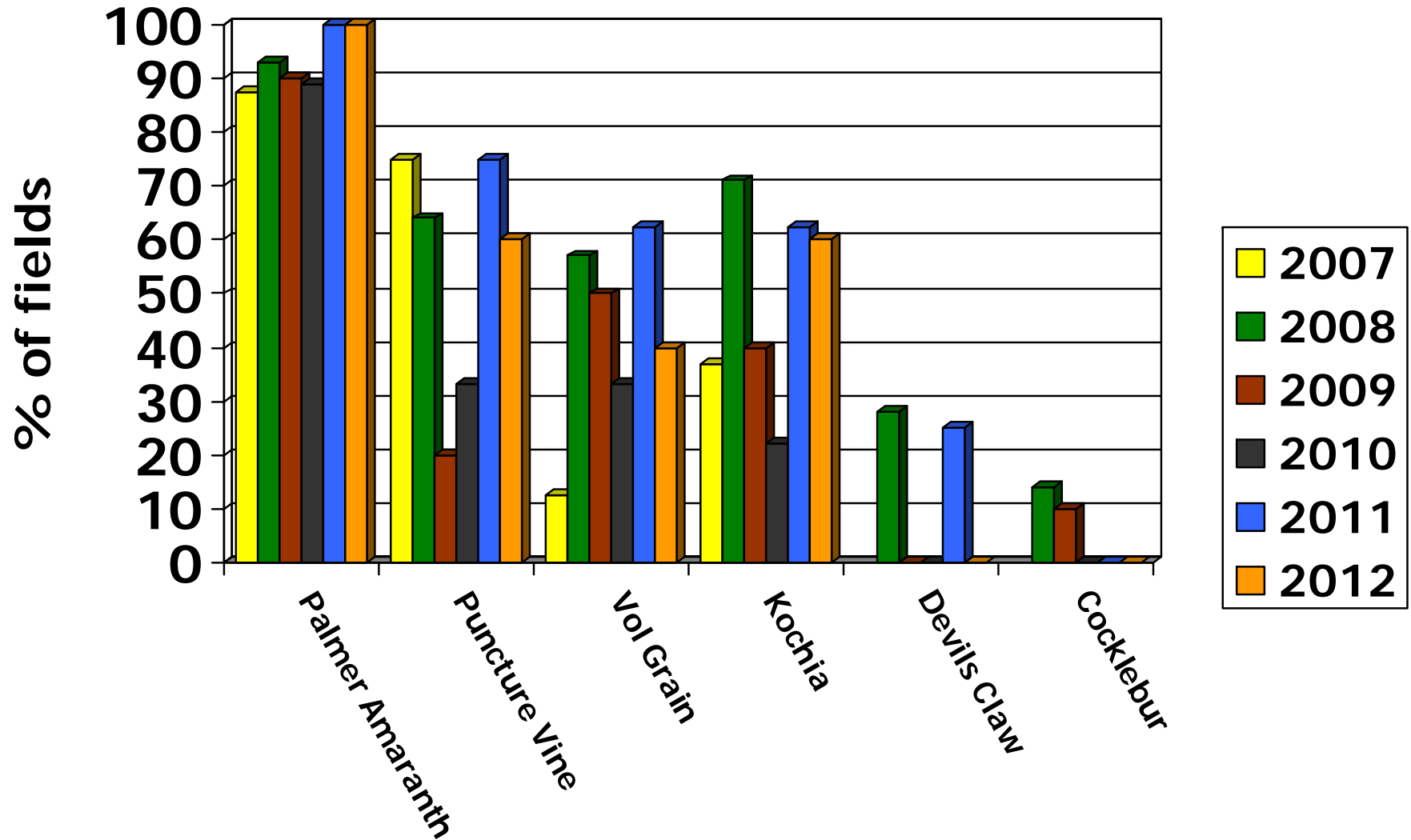
- Red root pig weed
- Kochia
- Puncture vine
- Russian thistle
- Nightshade
- Lanceleaf sage

Kansas

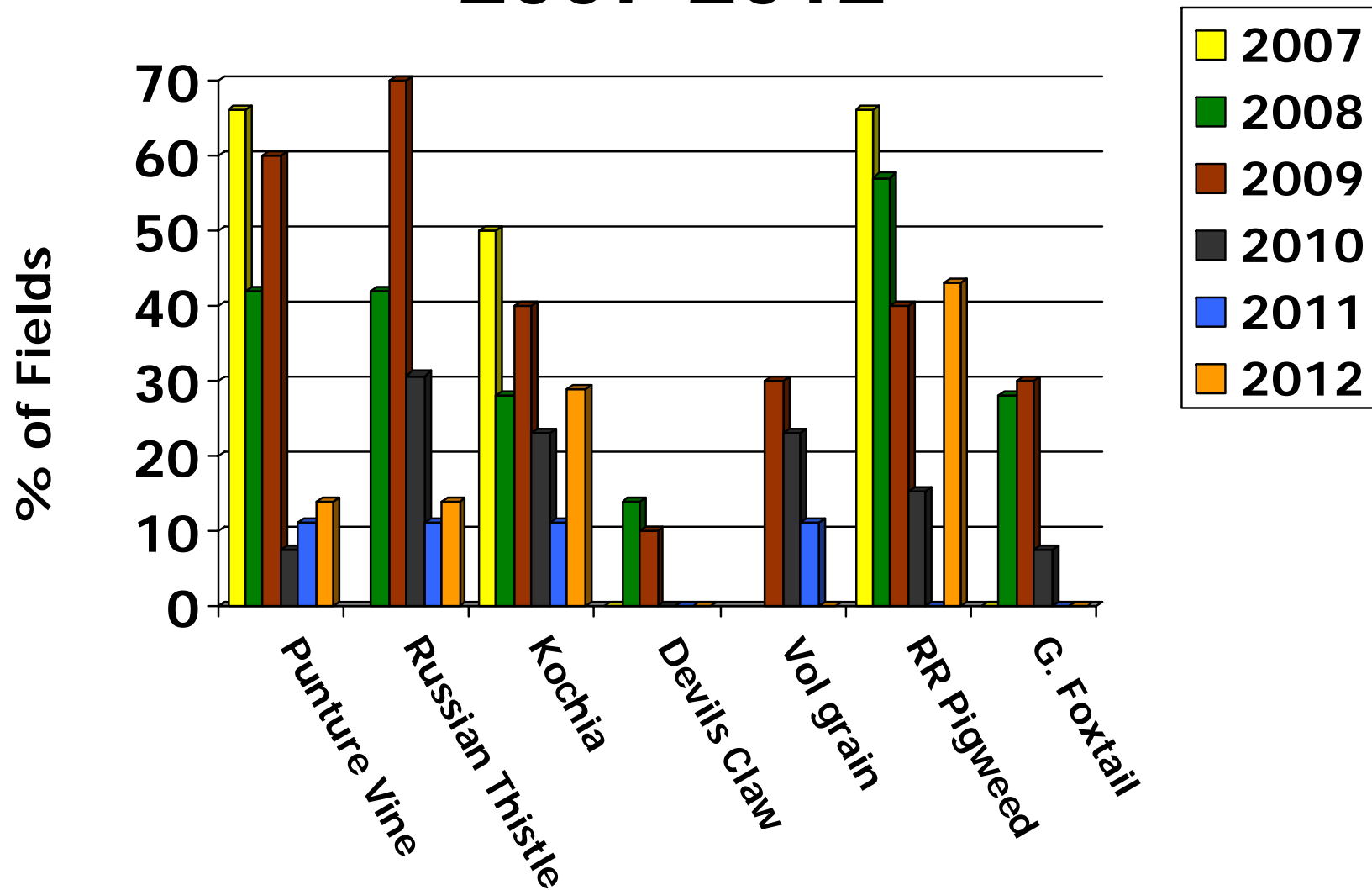
- Palmer amaranth
- Puncture vine
- Volunteer grain
- Kochia



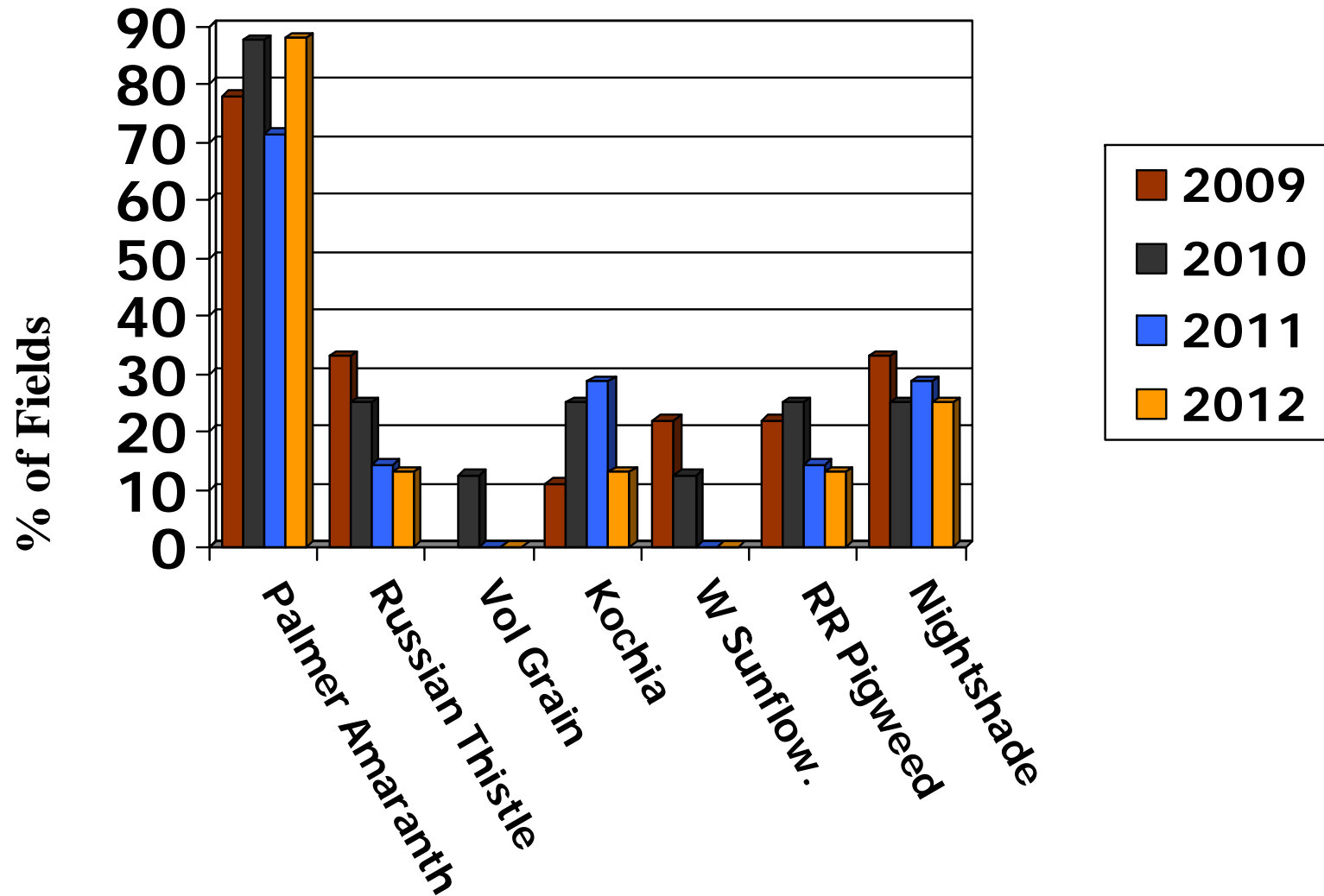
Incidence of Weeds in Kansas



Incidence of Weeds in Colorado 2007-2012



Incidence of Weeds in Texas



Conclusions and Summary of 2012 National Sunflower Survey

- Main yield limiting factors in ND were, drought, plant spacing (within the row), diseases, and birds.
- Main yields limiting factors in SD were plant spacing, disease and lodging.
- Main Yield limiting factors in Minnesota were plant spacing within the row and bird damage.



*2012 Sunflower Survey
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