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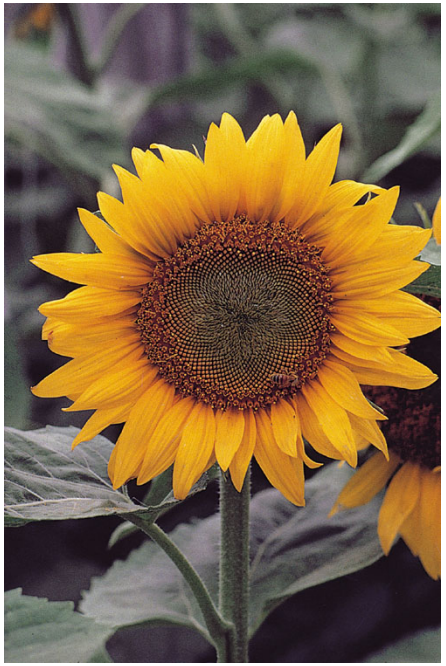
Texas A&M System

The Texas AgriLife Crop Testing Program for Hybrid Sunflower

Dennis Pietsch, Crop Testing director
Texas AgriLife Research, College Station
dpietsch@ag.tamu.edu, 979-845-8505

Calvin Trostle, Extension agronomist
Texas AgriLife Extension Service, Lubbock
ctrostle@ag.tamu.edu, 806-746-6101

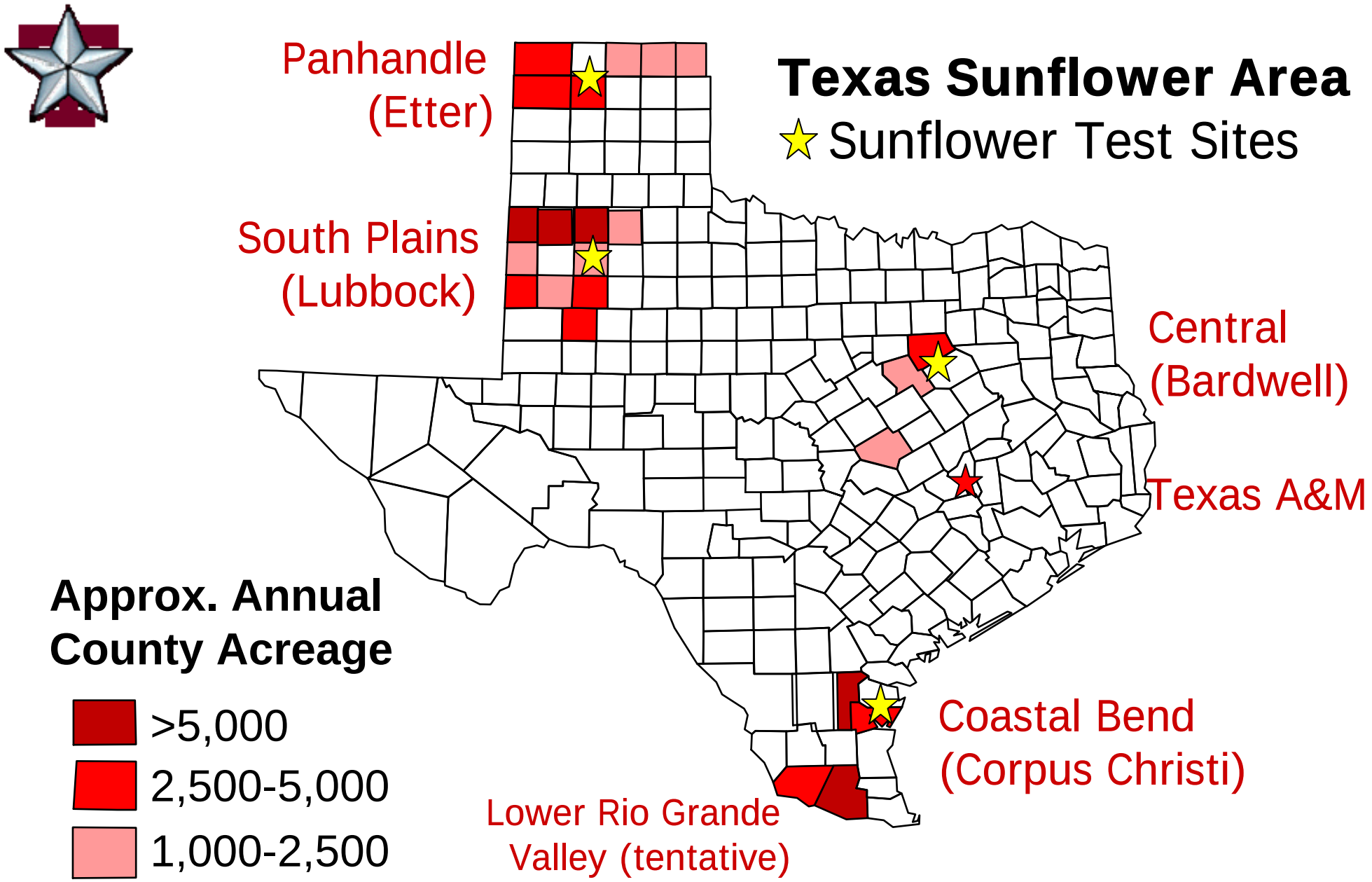


Texas Sunflower Program

- Initiated in 2007 with High Plains Testing
- Although sunflower acreage is less than 1% of Texas crop value, sunflower testing now represents ~13% of Crop Testing fees
- Increased interest in Texas production as well the opportunity to test in a more southerly environment with higher temperatures

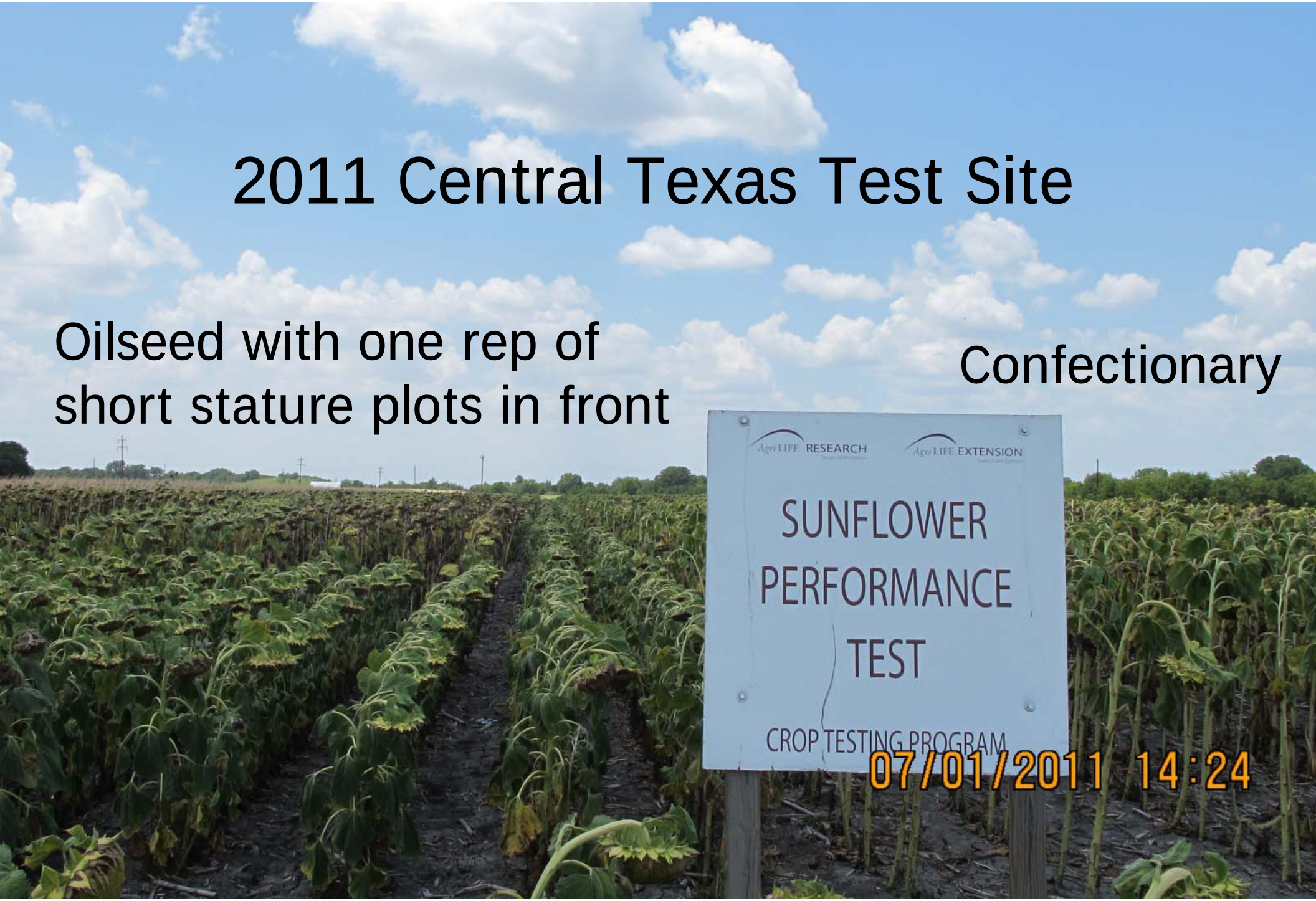
Texas Sunflower Program

- Provide regional crop and hybrid adaptation data for distinct regions of Texas, especially in areas where sunflower acreage has been minimal
- Data frequently provides a baseline for grower expectations


Texas Sunflower Area
Sunflower Test Sites
Panhandle (Etter)
South Plains (Lubbock)
Central (Bardwell)
Texas A&M
Coastal Bend (Corpus Christi)
Lower Rio Grande Valley (tentative)
Approx. Annual County Acreage
>5,000
2,500-5,000
1,000-2,500

Current Test Protocol

- Standard measures for lodging, half-bloom (R 5.1), height, yield, oil content or confection seed size, etc.
- 4-row plots with middle two rows harvested
- Blocking of short stature hybrids with extra SS borders within overall trial
- When needed, alleys within test to allow hi-boy sprayer for all-important sunflower head moth control
  - 2012: Will add physiological maturity (R-9) due to inconsistent days to maturity, esp. in Central & South TX


2011 Central Texas Test Site
Oilseed with one rep of short stature plots in front
Confectionary
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SUNFLOWER PERFORMANCE TEST
CROP TESTING PROGRAM
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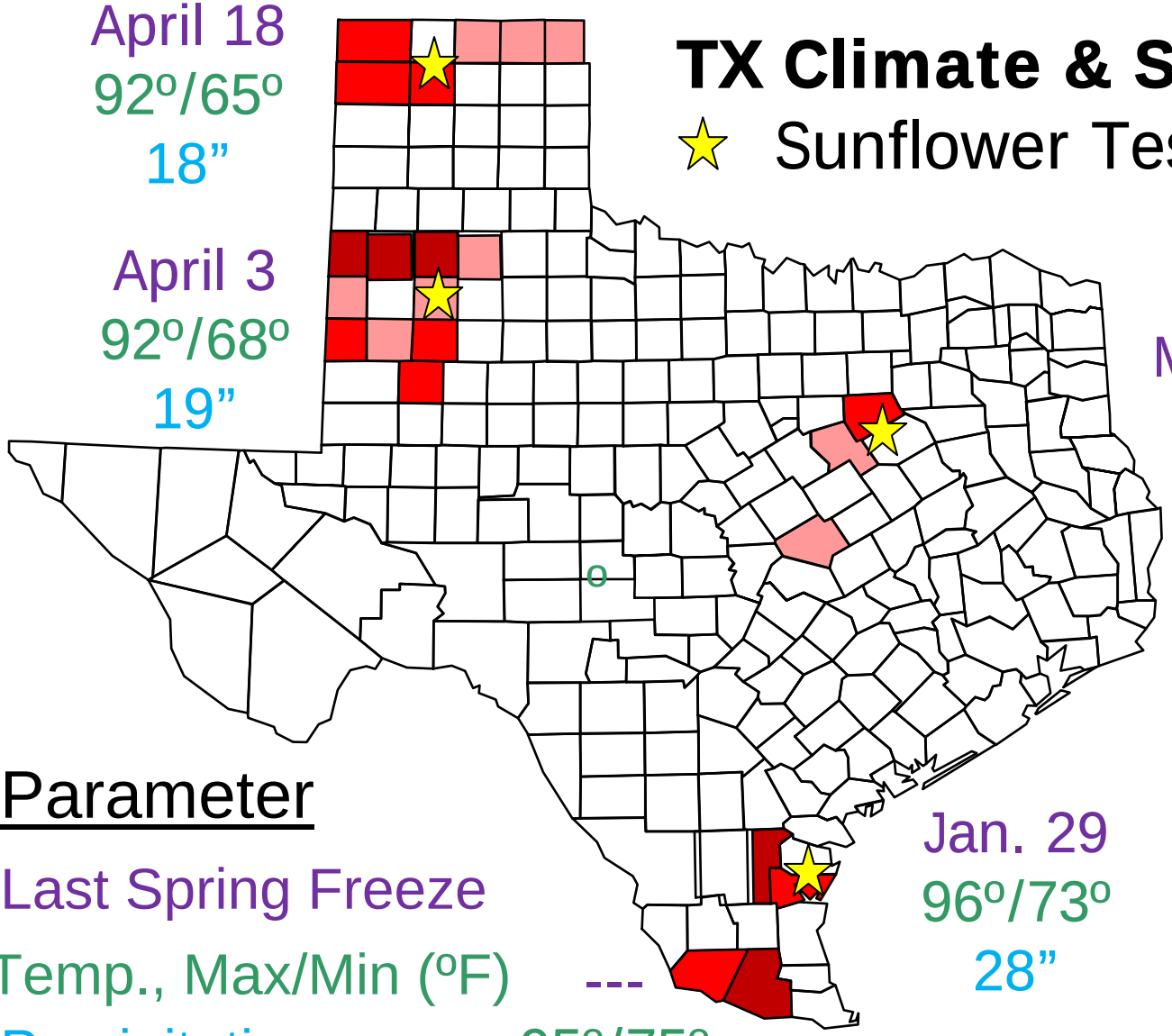
Test Conditions for Texas

- South Texas, also Central Texas
  - Extremely early planting near the coast
  - Preferred planting window only about 3-4 weeks
  - Seek to minimize tropical storms and/or high night time temperatures (>75^{o}F)
  - Rainfed
- High Plains
  - Wide range of planting dates (mid-April to early-July)
  - Productive sunflowers are irrigated

TX Climate & Sunflower

★ Sunflower Test Sites



April 18
92º/65º
18”

April 3
92º/68º
19”

March 14
96º/73º
39”

Jan. 29
96º/73º
28”

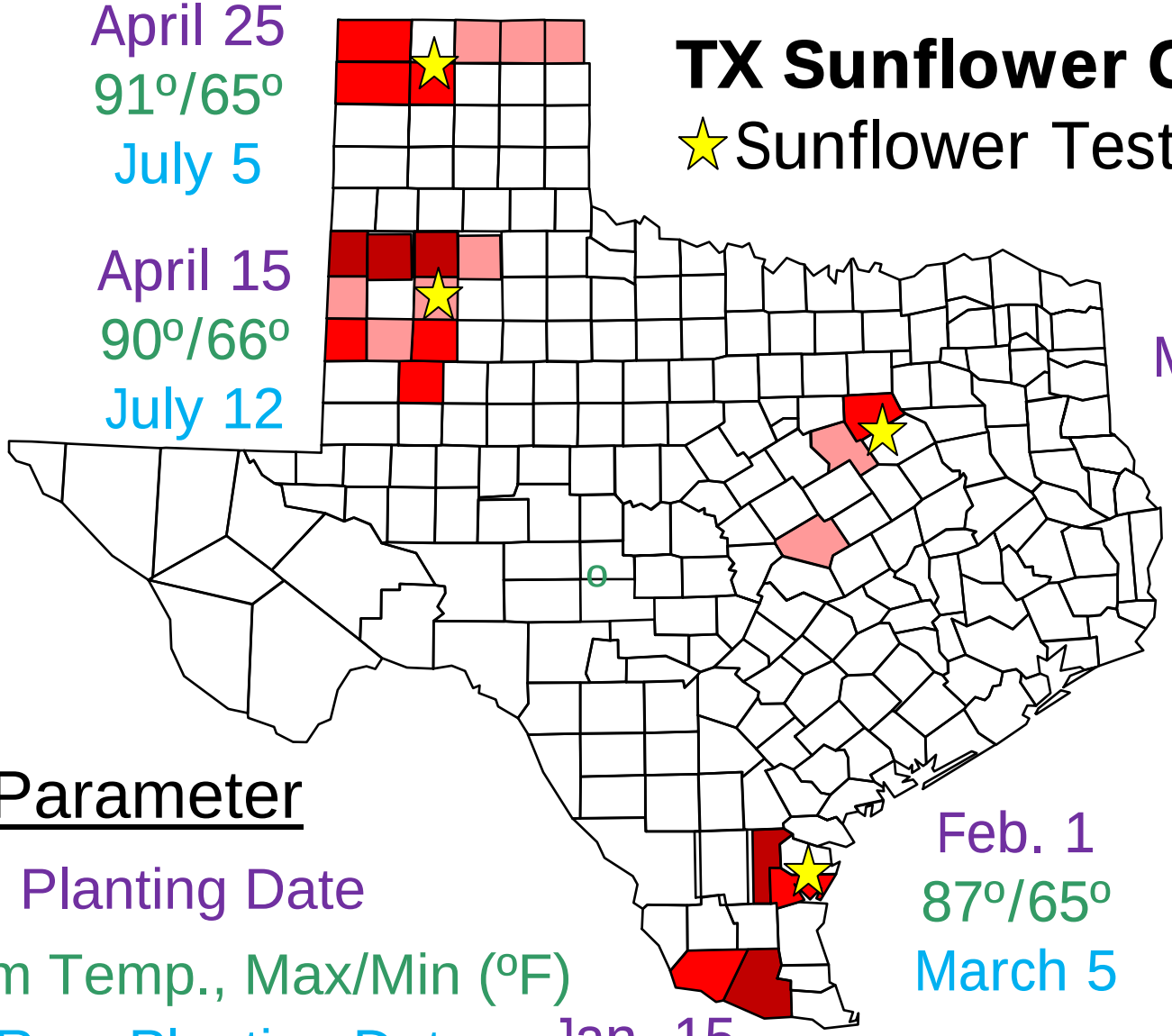
95º/75º
23”

Climate Parameter

- Avg. Last Spring Freeze
- July Temp., Max/Min (ºF)
- Avg. Precipitation

TX Sunflower Growth

★ Sunflower Test Sites



April 25
91º/65º
July 5

April 15
90º/66º
July 12

March 15
88º/67º
April 15

Feb. 1
87º/65º
March 5

Jan. 15
85º/64º
Feb. 20

Growth Parameter

- Initial Planting Date
- Bloom Temp., Max/Min (ºF)
- Last Rec. Planting Date

Features of TX Sunflower Reporting:

Crop Value

- Yield is not the only parameter
- Producers eye reports for yield, and %oil or confection seed size
- But what does it mean?
- Reporting crop value for both market types to reflect true differences

Confectionary Priced by Seed Size

Per 1,000 lbs./A clean yield

Pricing	% Seed >20/64"	Crop Value/$A
$34/22 cwt.	80.0%	$316 (+5.3%)
$34/22 cwt.	66.7%	$300
$34/22 cwt.	50.0%	$280 (-6.3%)
Flat rate, $30/cwt.	No seed check	$300

2010-2011: Three South Texas trials from TX AgriLife gave 48, 57, & 75% large seed.
TX High Plains research notes reduced seeding rates significantly increase large seed.

Assessing Yield vs. Crop Value

2010 Confectionary--Lubbock, TX

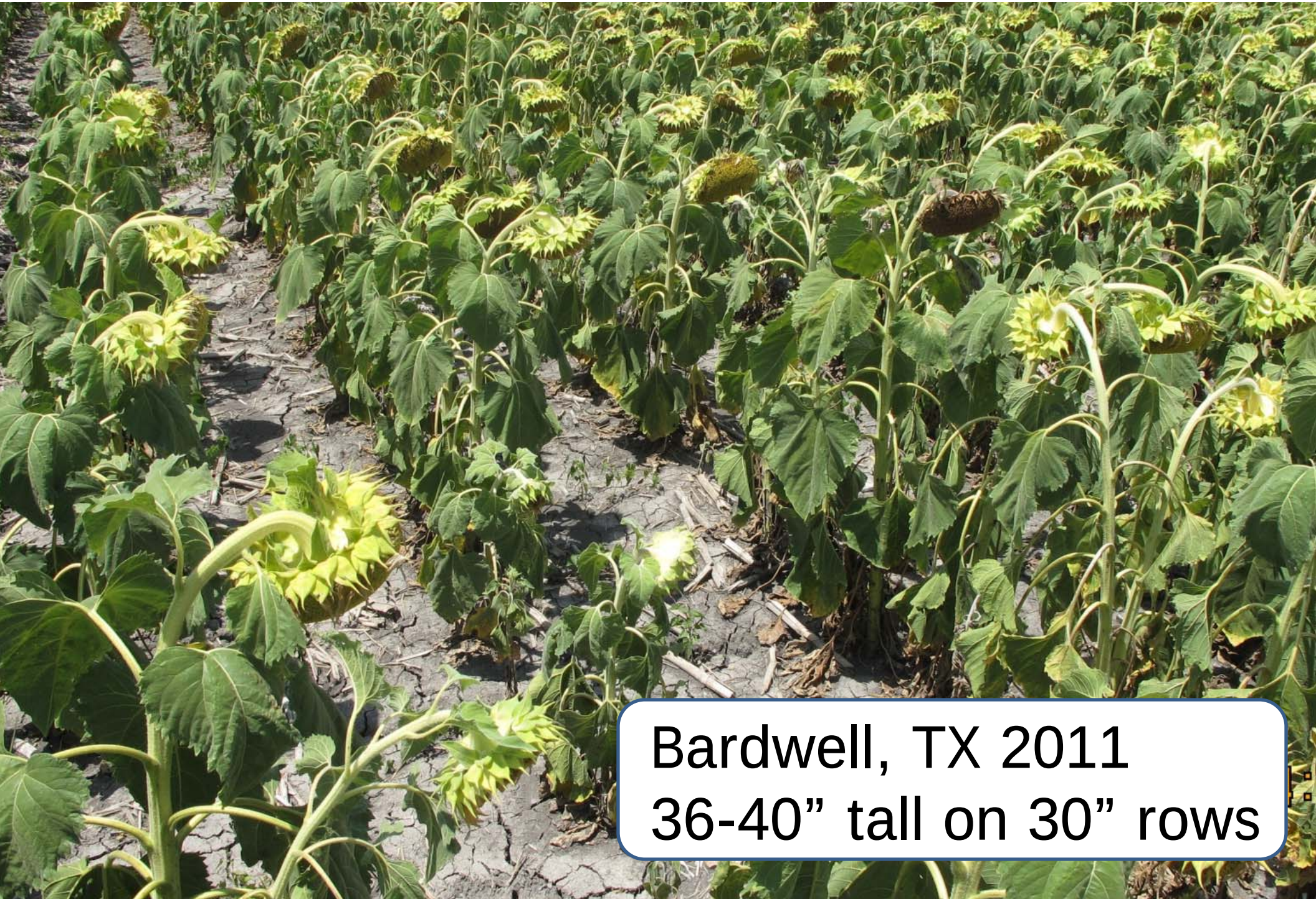
Yield (Lbs./A)	Rank Based on Yield	Crop Value ($/Acre)	Rank Based on Value	Value Rank vs Yield Rank
2,366	1	$533	1	0
2,169	2	$477	3	-1
2,111	3	$497	2	+1
2,056	4	$453	5	-1
1,981	5	$451	6	-1
1,933	6	$367	9	-3
1,865	7	$447	7	0
1,848	8	$459	4	+4
1,742	9	$369	8	+1
P = 0.0007		P = 0.0017		
PLSD = 230		PLSD = $67		

Features of TX Sunflower Reporting:
Market Type, Plant Type

- Comparative results, noted as trial averages for yield and crop value, between adjacent oilseed and confectionary trial
- Short stature vs. conventional height (oilseed for now):
  - Producers are strongly interested in the potential to manage sunflower head moth sprays with their own ground rig if they can get through the field
  - Some hybrids designated as “short-stature” aren’t that short (more recently a concern)
  - Do yields and crop value of short stature compete?

TX Crop Testing Comparison: Market Type Yield & Crop Value

Location	Sunfl Type	2010 Yield (Lbs./A)	2010 Crop Value	2011 Yield (Lbs./A)	2011 Crop Value
Corpus Christi	Conf.	1,460	$321	1,317	$421
	Oil	*1,539*	*$232*	*1,571*	*$486*
Central TX	Conf.	1,543	$343	1,703	$473
	Oil	*1,478*	*$262*	*1,725*	*$509*
Lubbock	Conf.	2,008	$450		
	Oil	*2,262*	*$354*		


Bardwell, TX 2011
36-40” tall on 30” rows

TX Crop Testing Comparison: Short-Stature Oilseed Height

Location	Year	Short Stature Oilseed	All Other Oilseed	Confec-tionary
Corpus Christi	2010	34-42”	45-56”	52-58”
	2011	*34-37”*	*44-53”*	*41-56”*
Central TX	2010	55-56”	67-79”	67-83”
	2011	*41-48”*	*57-69”*	*65-76”*
Lubbock	2010	54-57”	54-74”	56-75”
	2011	*34-41”*	*46-54”*	*47-58”*

Multi-Year Oilseed Comparison
TX High Plains, 2008-2010†

Oilseed Type	Average Yield (Lbs./Acre)	Average Oil Con-tent (%)	Average Crop Value ($/A)
NuSun	2,483	41.4%	$494
High Oleic	2,403	41.2%	$500
Short Stature‡	2,504	42.8%	$516

†Five irrigated tests sites at Lubbock, Halfway, or Etter, TX where oilseed price is usually slightly higher for HO.

‡Mostly NuSun but also some HO; all from Triumph Seed.

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2010 Confectionary Sunflower Hybrid Trial
Lubbock, Texas

AgriLIFE EXTENSION
Texas A&M System

Planted June 30, 2010; harvested October 8, 2010; June-September rainfall, 9.5"

Company or Brand	Hybrid	Hybrid Type†	Days to Half Bloom	Plant Height (inches)	Avg. Plants/ acre	Test Weight (lbs./bu)	%Seed Retained Over Screen >22/64"	%Seed Retained Over Screen >20/64"	Seed Yield @10% H2O (lbs./A)	Crop Value ($/Acre)‡
Red River	2215		52	68	18,800	23.0	28.5	58.2	2,169	$ 477
Red River	2215CL	CL	54	71	20,800	22.8	30.4	61.8	2,366	$ 533
Red River	2217		54	70	19,500	20.7	42.8	71.0	2,111	$ 497
Red River	8015		54	68	19,400	18.5	47.5	74.6	1,865	$ 447
Seeds 2000	Jaguar	CL	51	56	20,100	21.3	24.1	51.7	1,742	$ 369
Seeds 2000	Panther II		53	63	18,900	22.1	39.0	64.7	1,981	$ 451
Triumph	768C		55	74	19,300	22.1	30.4	58.5	2,056	$ 453
Triumph	770CL	CL	56	75	23,300	22.1	63.9	82.3	1,848	$ 459
Croplan	CG 179		52	63	20,500	21.9	11.6	33.2	1,933	$ 367
		Average	*53*	*67*	*20,100*	*21.6*	*35.3*	*61.8*	*2,008*	*$ 450*
		P-Value (Hybrid)	<0.0001	<0.0001	0.0919	<0.0001	<0.0001	<0.0001	0.0007	0.0017
		Fisher's Protected LSD (0.05)¶	1.5	4	NS§	0.9	11.2	10.9	230	$ 67
		Coefficient of Variation, CV (%)	3.1	9.7	9.8	6.2	42.3	22.9	11.3	14.5

†CL = Clearfield herbicide tolerant

§NS, not significant.

‡Average pricing for 2010 Texas High Plains at $27/cwt. large seed (>20/64"), $15/cwt. small seed.

¶Numbers in same column that vary by more than the least sig. difference (PLSD) are significantly different at a 95% confidence level.

Trial Notes: This trial was moved to a smaller test site after 2009 residual herbicide led to a poor stand in our mid-May planting (hence the two-row plots). About 6" of rainfall occurred on July 7-8 triggering excessive pigweed, which was hand weeded. Trial received four 4" furrow irrigations. Confectionary seed size was highly variable among hybrids, and the effect of higher pricing of large seed had more influence on crop value than yield per acre. Head moth pressure was moderate and sprays were effective.

An adjacent oilseed sunflower hybrid trial (22 hybrids) yielded 2,262 lbs./A (40.6% oil content) with an average crop value of $354/acre.

For further info. about this test and and for sunflower production resources for Texas contact Extension agronomist Dr. Calvin Trostle, Lubbock, (806) 746-6101, ctrostle@ag.tamu.edu, or visit http://lubbock.tamu.edu/sunflower.

For further info. about the Texas AgriLife Research Crop Testing Program, contact Mr. Dennis Pietsch, Crop Testing Director, Texas AgriLife Research, College Station, TX, (979) 845-8505, dpietsch@ag.tamu.edu

Please visit the Crop Testing webpage at http://varietytesting.tamu.edu

Hybrid value

Compare market type yield & value

Contact information & other crop resources!

Future Opportunity for Texas Sunflower Testing: **Supplemental** Tests for Companies

- Currently conducted for corn and grain sorghum
- Provides companies extra opportunity to evaluate their germplasm
  - Early look at numerous F(n) generations or advanced lines
  - Evaluate performance in different climatic and pest environments

Supplemental Tests: How this works…

- Tests range from :
  - Simple single-row unreplicated planting (~$10/entry, we collect no data, but company evaluates)—could do 100 lines or more (likely an observation only)
  - Test advanced lines handled like a regular hybrid trial with all data collected and provided to company (may not use publicly w/o permission), but usually fewer reps
- Depending on supplemental test chosen, most tests choose one field data criterion (e.g. ½ bloom) and harvest data (yield, test weight, moisture).

Supplemental Tests: Opportunity for Sunflower in Texas

- Companies can procure needed data on germplasm and advanced lines without having to establish an expensive nursery at a distant site in order to test in a different environment
- The type of tests can be determined based on the data you need
- We have the opportunity to conduct supplemental tests at any current site with an appropriate protocol
- Let's visit about your interests and needs!

Further Reasons for Sunflower in Texas Crop Testing

- Sunflower is becoming an important alternative to corn in rainfed production where aflatoxin is present, especially in droughty years.
- Central & South Texas producers are learning that "Early In, Early Out" cropping combats heat & drought.
- Split-pivot cropping to reduce irrigating all acres at once using wide range of planting dates.


July 1 harvest, Bardwell, TX