Considerations for Dryland Wide-Row Cotton Production

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This meeting will cover various important topics for growers interested in or considering dryland wide-row cotton production. Attendees are encouraged to direct questions to speakers during the meeting.

Speakers include:

- **Randy Boman - Cotton Agronomics Manager, Windstar, Inc. (Introduction, Overview, Discussion Moderator and Wrap-Up)**
- **Shawn Wade – Plains Cotton Growers (USDA-FSA and Crop Insurance Issues)**
- **Will Keeling – Texas A&M AgriLife Extension, Lubbock Center (Budget Considerations)**
- **Kris Verett and R.N. Hopper – South Plains growers with multi-year wide-row cotton experience**
- **Will conclude with a gratis lunch, which will be served at 12:00 pm.**

Meeting Objectives

- **We are not trying to change your mind about how you raise cotton**
- **Provide participating producers with relevant thought provoking information**
- **We are only providing some high quality and timely background information to those who have been considering change on their operations**
- **Introduce growers to potential resource contacts with subject matter expertise in critical areas**

Wide-Row Cotton

- **Can be defined as 60, 80, or perhaps 90-inch row cotton**
  - **e.g. 60-inch = plant 1 skip 1 in 30-inch rows,**
  - **Therefore 80-inch = plant 1 skip 1 in 40-inch rows**
- **As with any significant change in farming operation, one should seriously consider many factors**
- ***Wide-Row cotton is really a system***
- **This system consists of**
  - **Agronomic considerations (what happens to the yield and quality of the cotton harvested)**
  - **FSA / Crop Insurance considerations (substantial and can be difficult to comprehend)**
  - **Economics (can one reduce input costs, and if so, what can be the potential consequences? Can we "manage the skip" to omit certain crop inputs?)**
  - ***Experience is the best teacher***

Agronomics of Wide-Row Production is Poorly Understood in Our Region

- **We are unaware of any high-quality replicated scientifically valid data IN OUR REGION that compares yield and quality response to 60 or 80 inch rows vs. solid planted cotton**
  - **It is therefore scientifically poorly understood but anecdotal information is accumulating**
- **Some growers have been evaluating this system in our region, mostly based on Australian data and experiences (different situation)**
- **Decades ago, prior to the 1996 Freedom to Farm Act being passed, skip-row production was observed across a large number of dryland cotton acres**
- **The skip was considered “set aside acres” and was provided a payment by USDA-ASCS offices**
- **This was removed in the Freedom to Farm Act**

Agronomics of Wide-Row Production is Poorly Understood in Our Region

- **Another consideration compared to decades ago, is the cost of transgenic seed vs. conventional seed**
- **Seeding rates were typically extreme prior to the advent of expensive transgenic seed**
- **The objective for growers was to “get a stand” and inexpensive seed enabled that**
- **Transgenic seed costs are now among the most expensive inputs that growers have to face (other than harvesting/ginning).**
- **Wide-row or even skip-row planting patterns can reduce seed planted on a per-acre basis, and perhaps other inputs if the “skip is managed”**

Lamesa AG-CARES Dryland Seeding Rate x Planting Pattern Project 2003-2009

Everything Presented is on a Land-Acre Basis!

AgriLIFE EXTENSION

Texas A&M System

AGCARES 2003-2009 Dryland Seeding Rate x Planting Pattern

- 3 replicates
- Plot size 16 40-inch rows x ~250 ft
- John Deere MaxEmerge vacuum planter settings changed to plant 2, 4, 6 seed/row-ft
- 2x1 pattern established by plowing out rows as necessary shortly after emergence each year

AGCARES 2003-2009 Dryland Seeding Rate x Planting Pattern

- 3 seeding rates used
- 2, 4, 6 seed/row-ft
- Once skips established, had LAND-ACRE seeding rates of:
  - 2x1 skip: 17,424; 34,848; and 52,272
  - Solid: 26,136; 52,272; 78,408
- 2003-2005 – AFD 3511R
- 2006-2009 changed to FiberMax 9058F (lost 2006)

Uniform Management

- This project was fertilized and managed uniformly across both skip row and solid planting patterns.
- NO COVER
- No attempt was made to manage the blank or skip row in terms of potential reductions in inputs.
  - Fertilizer, insecticide, herbicide, harvest aid, etc.

Timely Project Management

- For the duration of the project, no substantial stand losses were encountered due to environmental or mechanical damage.
- Wind erosion control practices were timely, accurate, and effective.

AGCARES 2003-2009 Dryland Seeding Rate x Planting Pattern

- Stripper harvested center 8 rows of each plot
  - 2x1 – 6 planted, 2 skips (have to add in 1 more skip row for land acre conversion)
  - Solid – 8 planted
- Stripper dumped into Crust Buster weigh wagon
- Grab samples taken for each plot
- Ginned at Texas A&M AgriLife Research and Extension Center at Lubbock
- Lint samples submitted to Texas Tech University Fiber and Biopolymer Research Institute for HVI analysis

AGCARES 2003-2009 Dryland Seeding Rate x Planting Pattern

- Gross loan values across ALL YEARS were calculated by multiplying lint yields by the 2009 CCC loan chart for the HVI values obtained
- Seed value was set at $160/ton
- Ginning cost was set at $3/cwt of bur cotton
- All yield and value data converted to LAND-ACRE basis
- Net value per land acre was determined using combined lint and seed values, minus ginning costs and 2009 seed and technology fee costs (for FiberMax 9058F)

AGCARES 2003-2009 Dryland Seeding Rate x Planting Pattern

- Land-acre basis seed and technology fee costs based on **2009 pricing** for FiberMax 9058F were:

Bag Price would have been
$255/bag for 220K seed
Or
$288/bag for 250K seed

- S
  - 2
  - 4
  - 6
- 2

2 seed/row-ft	17,424	$20.12
4 seed/row-ft	34,848	$40.24
6 seed/row-ft	52,272	$60.35

AGCARES 2003-2009 Dryland Seeding Rate x Planting Pattern

- Land-acre basis seed and technology fee costs based on 2009 pricing for FiberMax 9058F were:

	Seed/land acre	$/acre
Solid planting pattern:		
2 seed/row-ft	26,136	$30.18
4 seed/row-ft	52,272	$60.35
6 seed/row-ft	78,408	$90.53
2x1 skip row pattern:		
2 seed/row-ft	17,424	$20.12
4 seed/row-ft	34,848	$40.24
6 seed/row-ft	52,272	$60.35

AGCARES 2003-2009 Dryland Seeding Rate x Planting Pattern

- 2003 fair moisture year
  - 353 lb/land acre average
- 2004 good moisture year
  - 451 lb/land acre average
- 2005 good moisture year, but yields lower than potential moisture
  - No N sidedressing, 312 lb/land acre average
- 2006 drought year; utility of trial compromised
- 2007 outstanding year
  - 719 lb/land acre average
- 2008 tough year, drought early, some rainfall late
  - 343 lb/land acre average
- 2009 good precipitation early, no rainfall in August, early September
  - 346 lb/land acre average

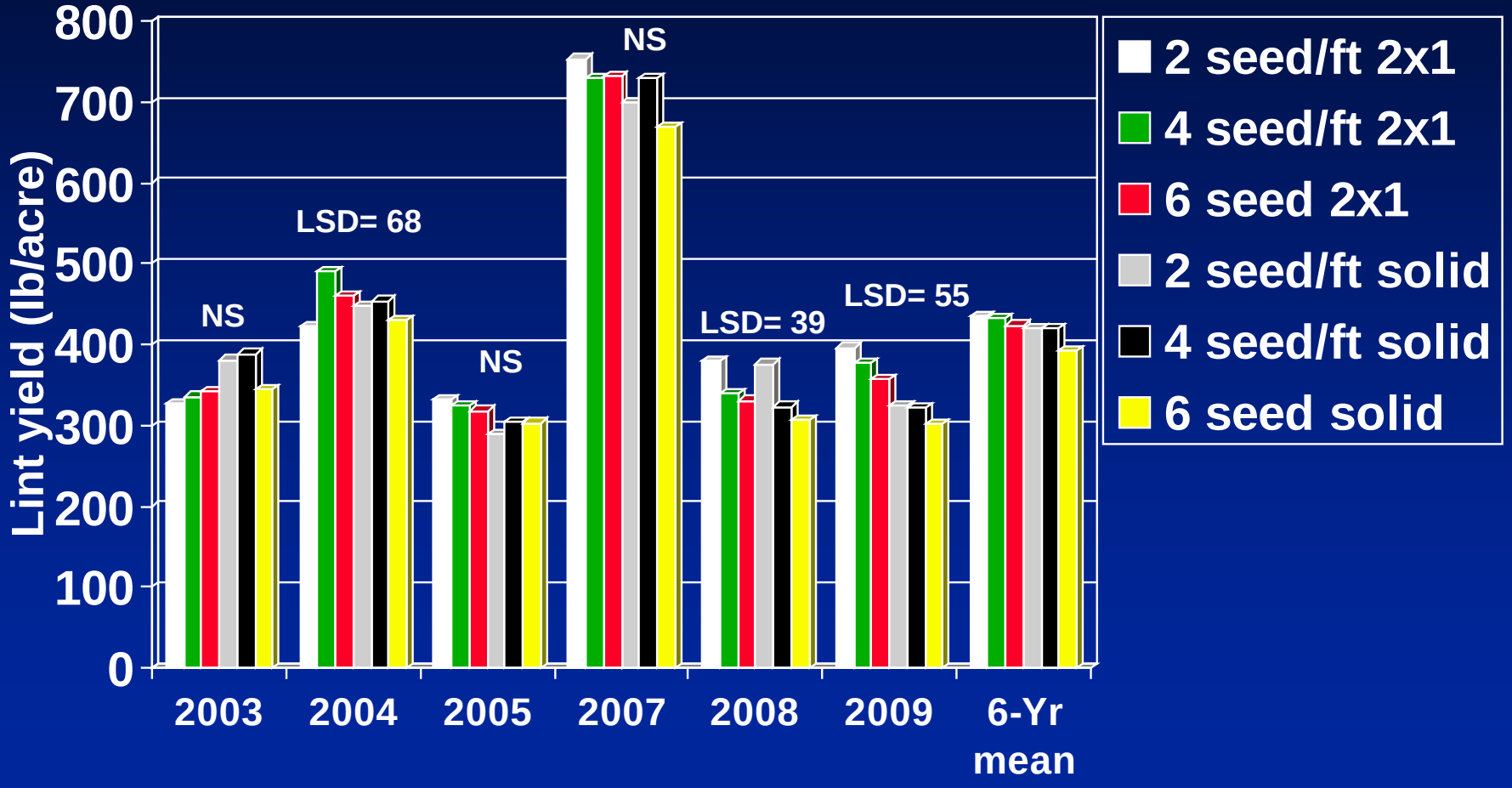
AGCARES 2003-2009 Dryland Seeding Rate x Planting Pattern

- Ben Mullinix, Experimental Statistician at Texas A&M AgriLife Research and Extension Center at Lubbock analyzed the dataset
- Data for 2003-2009 (excluding 2006) were combined using PROC MIXED in SAS 9.1 for Windows
- Cultivar, Year(Cultivar) and Replicate(Cultivar*Year) were considered random effects
- Least squares means are reported
- t-test used for mean separation

Table 1. Six-year least squares means of agronomic and economic results of the dryland seeding rate by planting pattern trials (lint yield and net value expressed on a land-acre basis), Lamesa – AG-CARES 2003-2009.

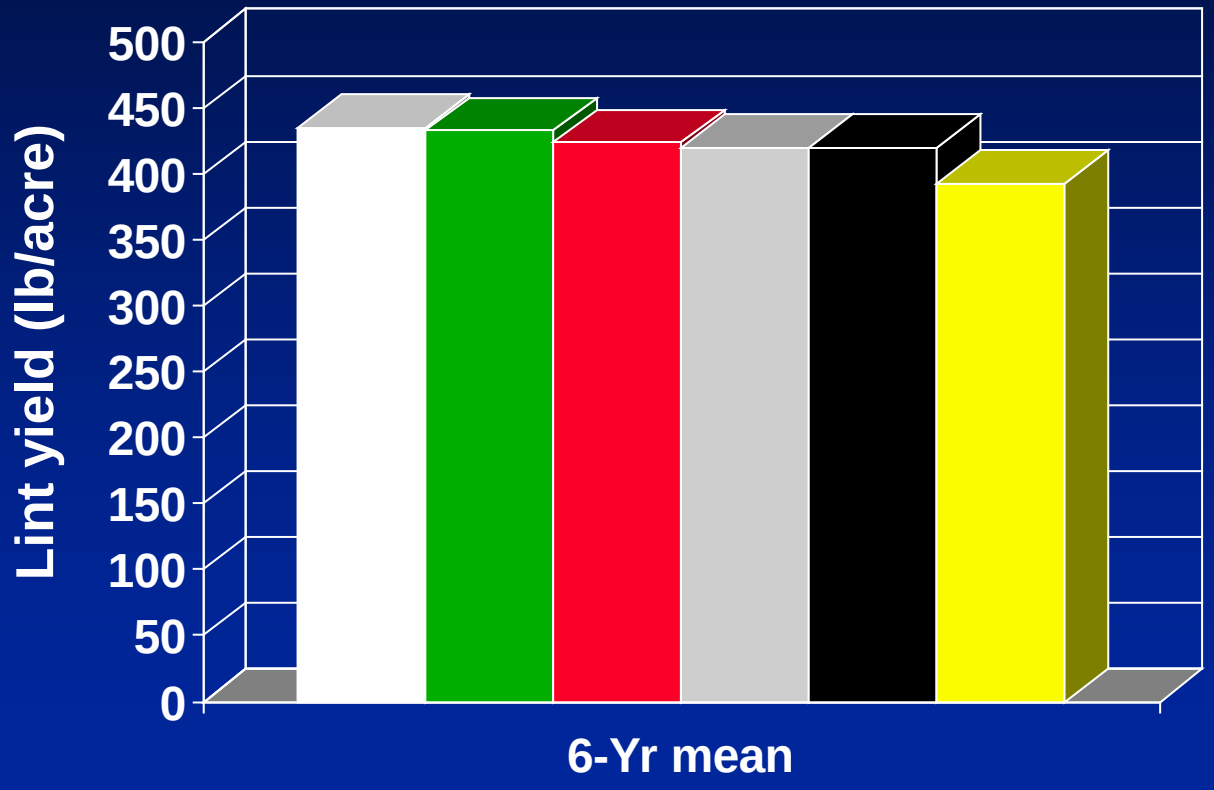
Treatment	Lint yield	Loan value	Net value††	Micronaire	Staple
	lb/acre	$/lb	$/acre	units	32nds inch
Solid planting pattern					
2 seed/ft (26,136/acre with $30.18/acre cost)	420	0.5336	207.94	4.1	34.9
4 seed/ft (52,272/acre with $60.35/acre cost)	420	0.5169	170.90	4.0	34.5
6 seed/ft (78,408/acre with $90.53/acre cost)	393	0.5201	127.59	4.0	34.2
2x1 skip row planting pattern					
2 seed/ft (17,424/acre with $20.12/acre cost)	435	0.5429	230.60	4.2	35.2
4 seed/ft (34,848/acre with $40.24/acre cost)	433	0.5332	205.39	4.1	35.2
6 seed/ft (52,272/acre with $60.35/acre cost	424	0.5267	176.65	4.1	34.9
Mean	421	0.5289	186.51	4.1	34.8
Differences of least-squares means	---------- Pr > |t| ----------				
2 seed/ft 2x1 skip (17,424) vs. 2 seed/ft solid (26,136)	NS	NS	*	NS	NS
2 seed/ft 2x1 skip (17,424) vs. 6 seed/ft solid (78,408)	*	*	*	†	*
2 seed/ft solid (26,136) vs. 4 seed/ft solid (52,272)	NS	*	*	NS	NS
2 seed/ft solid (26,136) vs. 6 seed/ft solid (78,408)	†	†	*	NS	*
4 seed/ft solid (52,273) vs. 6 seed/ft solid (78,408)	†	NS	*	NS	NS
2 seed/ft 2x1 skip (17,424) vs. 4 seed/ft 2x1 skip (34,848)	NS	NS	*	NS	NS
2 seed/ft 2x1 skip (17,424) vs. 6 seed/ft 2x1 skip (52,272)	NS	*	*	NS	NS
4 seed/ft 2x1 skip (34,848) vs. 6 seed/ft 2x1 skip (52,272)	NS	NS	*	NS	NS
4 seed/ft solid (52,272) vs. 6 seed/ft 2x1 skip (52,272)	NS	NS	NS	NS	NS

AGCARES 2003-2009 Dryland Seeding Rate x Planting Pattern Lint Yield / Land Acre



Note: 2006 lost due to drought; 2003-2005 AFD 3511R, 2007-2009 FM 9058F

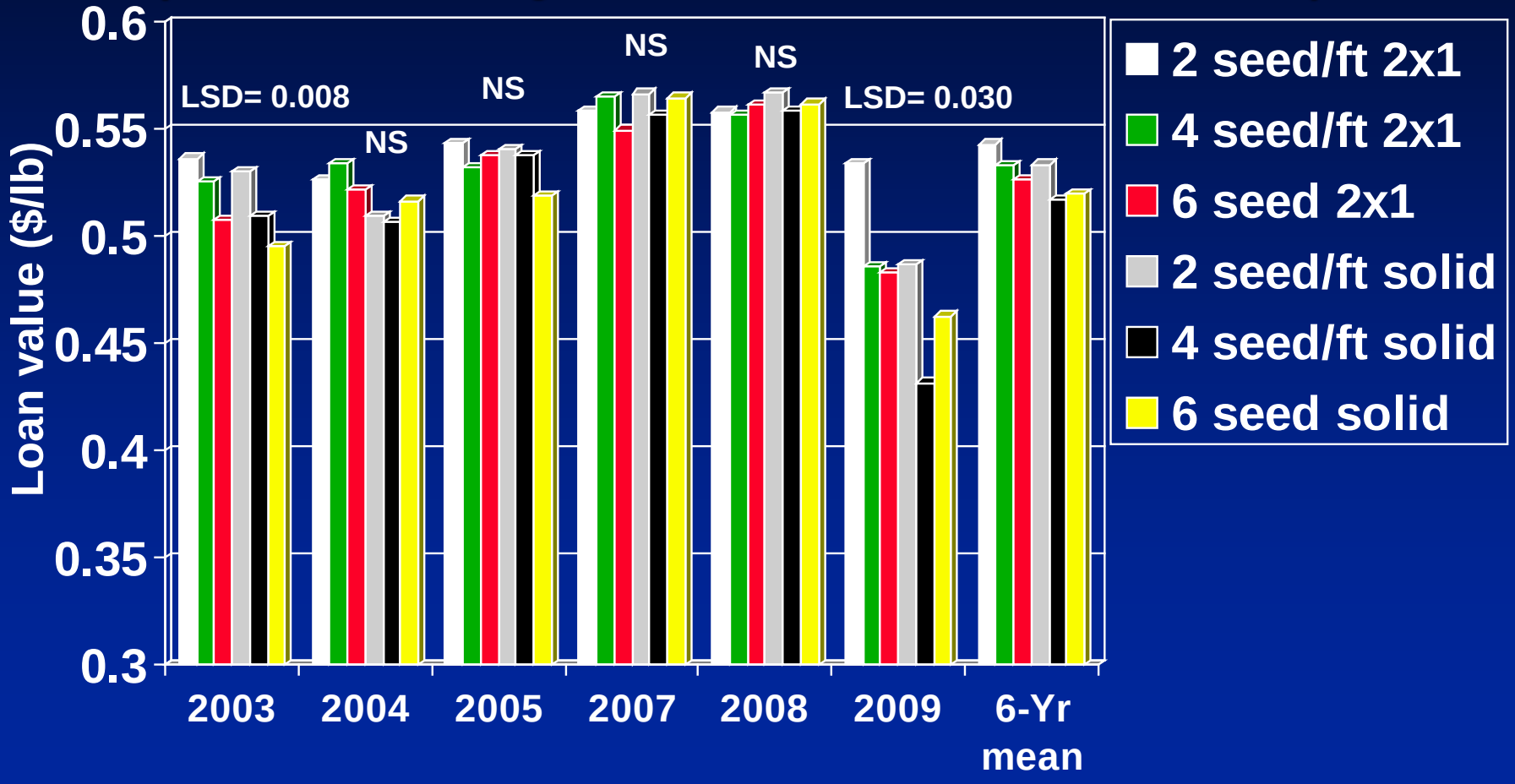
AGCARES 2003-2009 Dryland Seeding Rate x Planting Pattern 6-Year Mean Lint Yield / Land Acre



2 seed/ft solid vs. 4 seed/ft solid	NS
2 seed/ft solid vs. 6 seed/ft solid	†
4 seed/ft solid vs. 6 seed/ft solid	†
2 seed/ft 2x1 skip vs. 4 seed/ft 2x1 skip	NS
2 seed/ft 2x1 skip vs. 6 seed/ft 2x1 skip	NS
4 seed/ft 2x1 skip vs. 6 seed/ft 2x1 skip	NS
4 seed/ft solid vs. 6 seed/ft 2x1 skip	NS

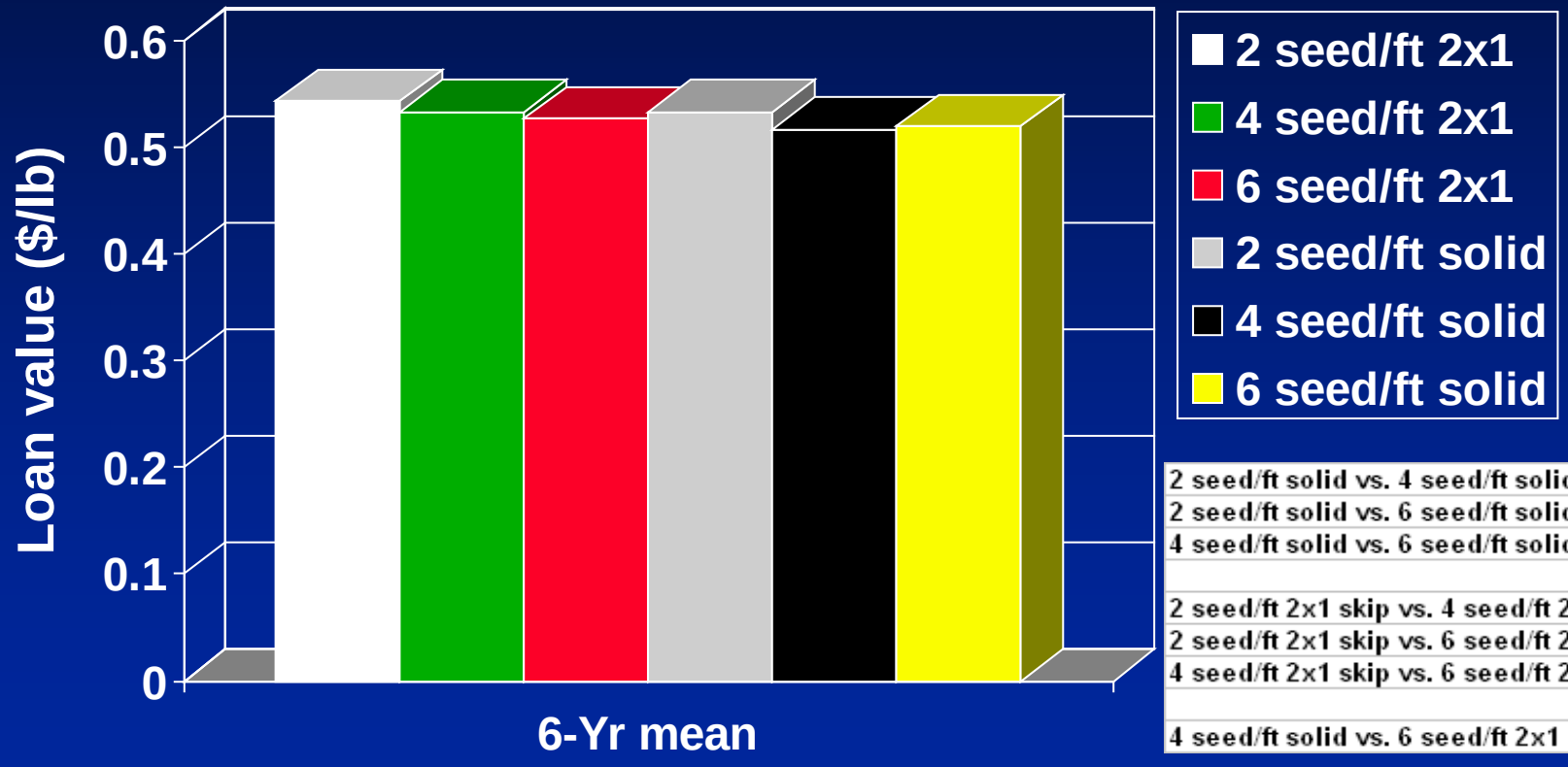
Note: 2006 lost due to drought; 2003-2005 AFD 3511R, 2007-2009 FM 9058F

AGCARES 2003-2009 Dryland Seeding Rate x Planting Pattern Loan Value (All Years Adjusted to 2009 Loan Chart)



Note: 2006 lost due to drought; 2003-2005 AFD 3511R, 2007-2009 FM 9058F

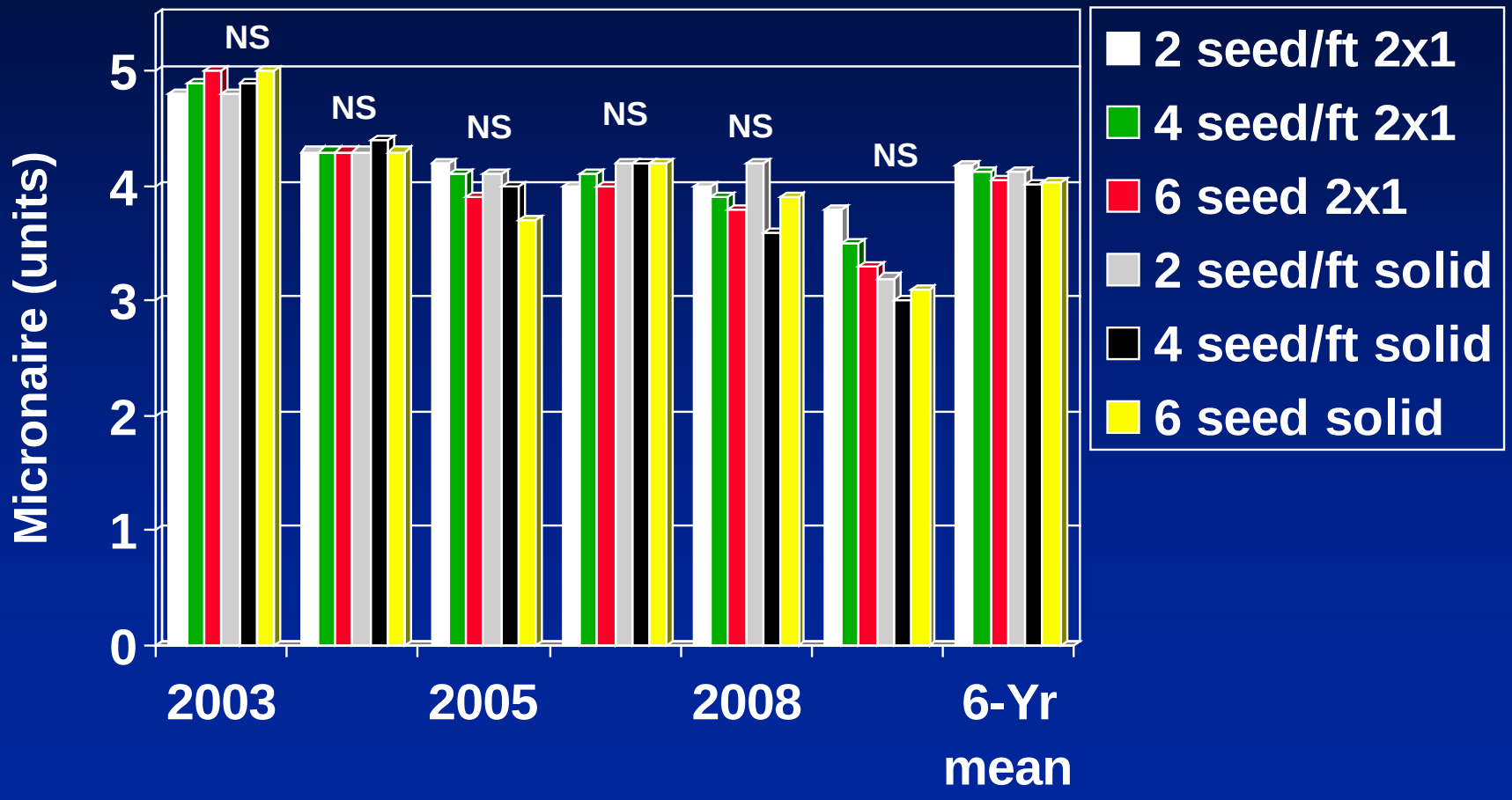
AGCARES 2003-2009 Dryland Seeding Rate x Planting Pattern 6-Year Mean Loan Value (All Years Adjusted to 2009 Loan Chart)



2 seed/ft solid vs. 4 seed/ft solid	*
2 seed/ft solid vs. 6 seed/ft solid	†
4 seed/ft solid vs. 6 seed/ft solid	NS
2 seed/ft 2x1 skip vs. 4 seed/ft 2x1 skip	NS
2 seed/ft 2x1 skip vs. 6 seed/ft 2x1 skip	*
4 seed/ft 2x1 skip vs. 6 seed/ft 2x1 skip	NS
4 seed/ft solid vs. 6 seed/ft 2x1 skip	NS

Note: 2006 lost due to drought; 2003-2005 AFD 3511R, 2007-2009 FM 9058F

AGCARES 2003-2009 Dryland Seeding Rate x Planting Pattern Micronaire



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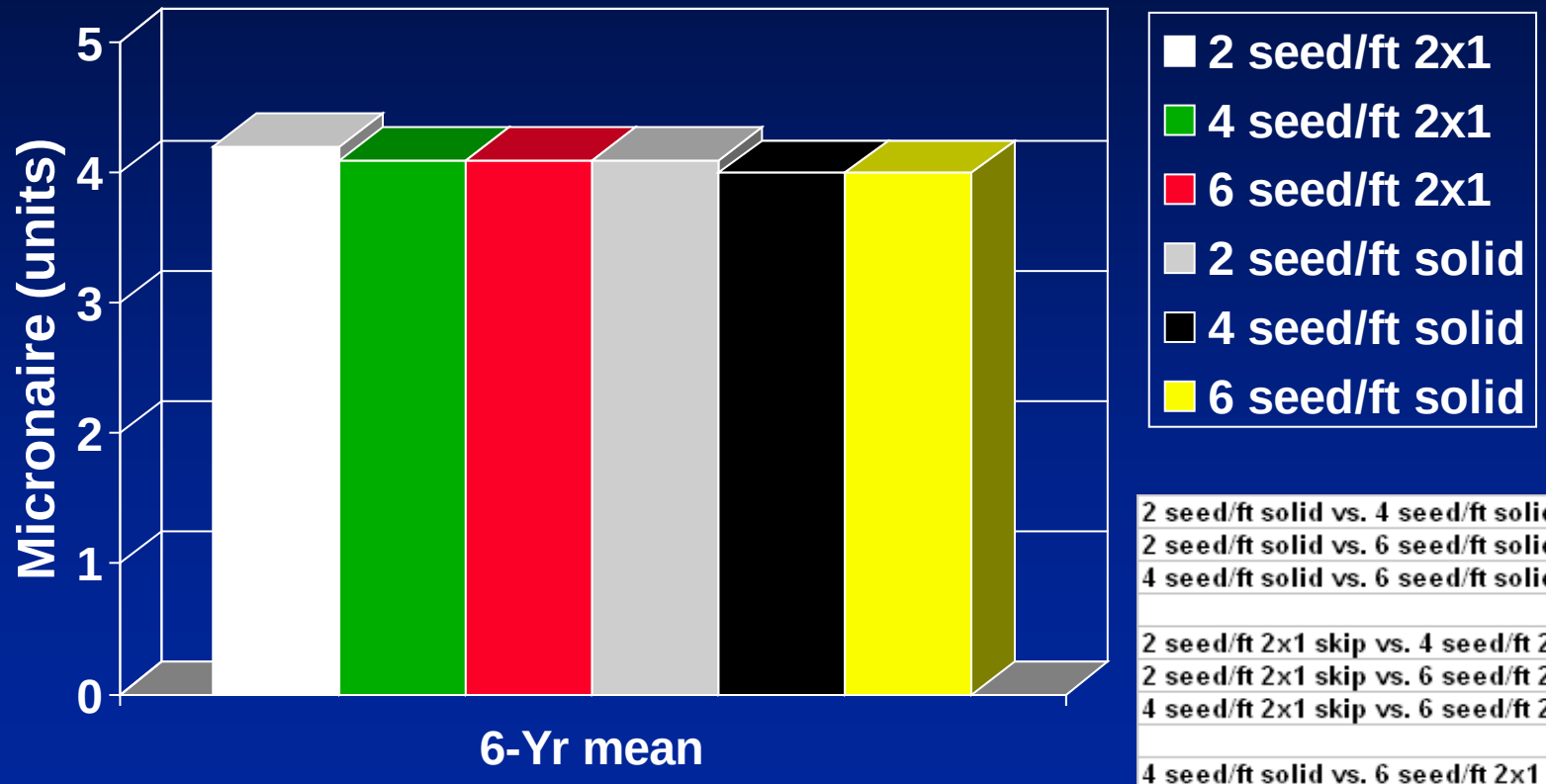
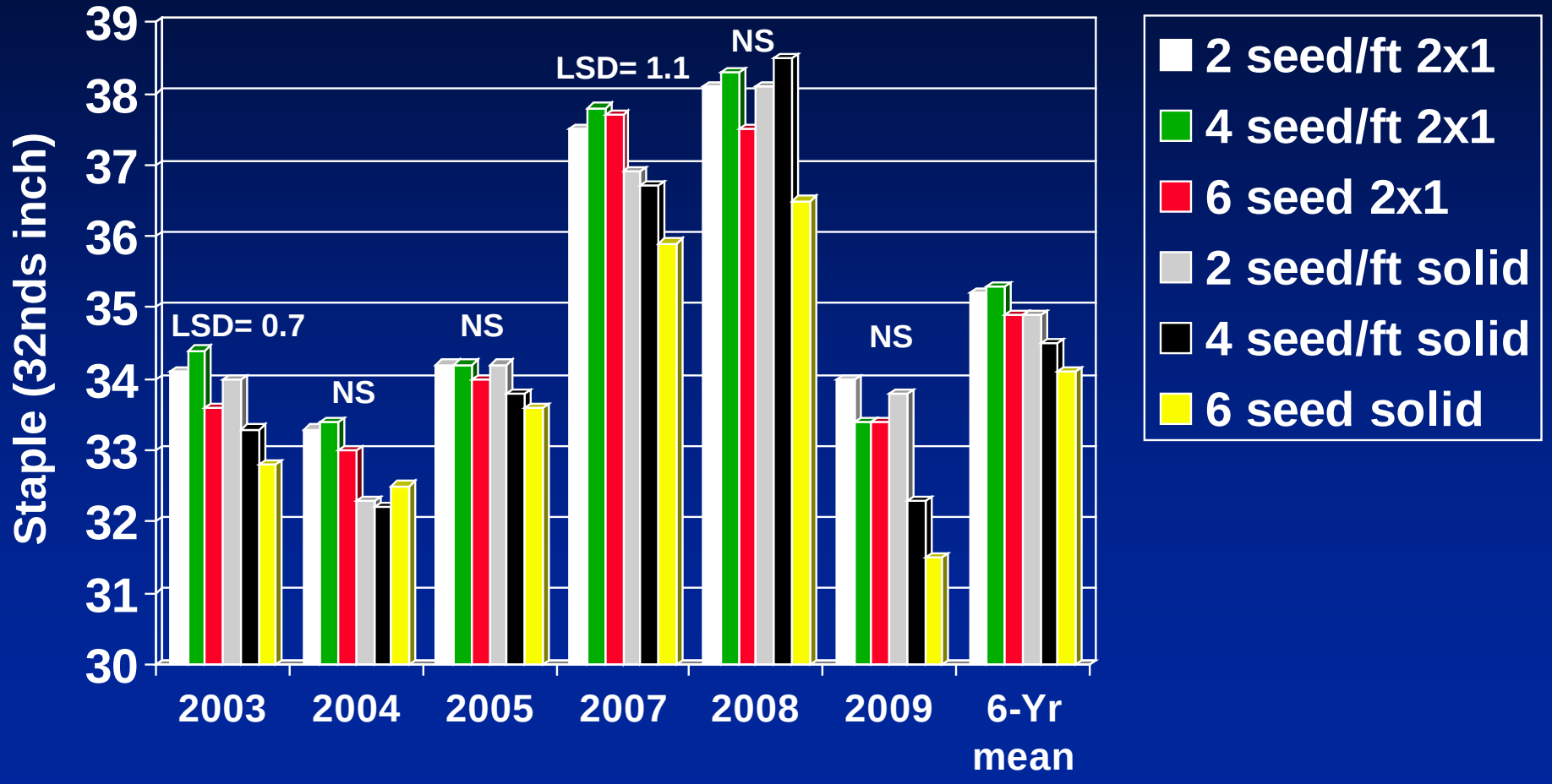
AGCARES 2003-2009 Dryland Seeding Rate x Planting Pattern 6-Year Mean Micronaire



2 seed/ft solid vs. 4 seed/ft solid	NS
2 seed/ft solid vs. 6 seed/ft solid	NS
4 seed/ft solid vs. 6 seed/ft solid	NS
2 seed/ft 2x1 skip vs. 4 seed/ft 2x1 skip	NS
2 seed/ft 2x1 skip vs. 6 seed/ft 2x1 skip	NS
4 seed/ft 2x1 skip vs. 6 seed/ft 2x1 skip	NS
4 seed/ft solid vs. 6 seed/ft 2x1 skip	NS

Note: 2006 lost due to drought; 2003-2005 AFD 3511R, 2007-2009 FM 9058F

AGCARES 2003-2009 Dryland Seeding Rate x Planting Pattern Staple



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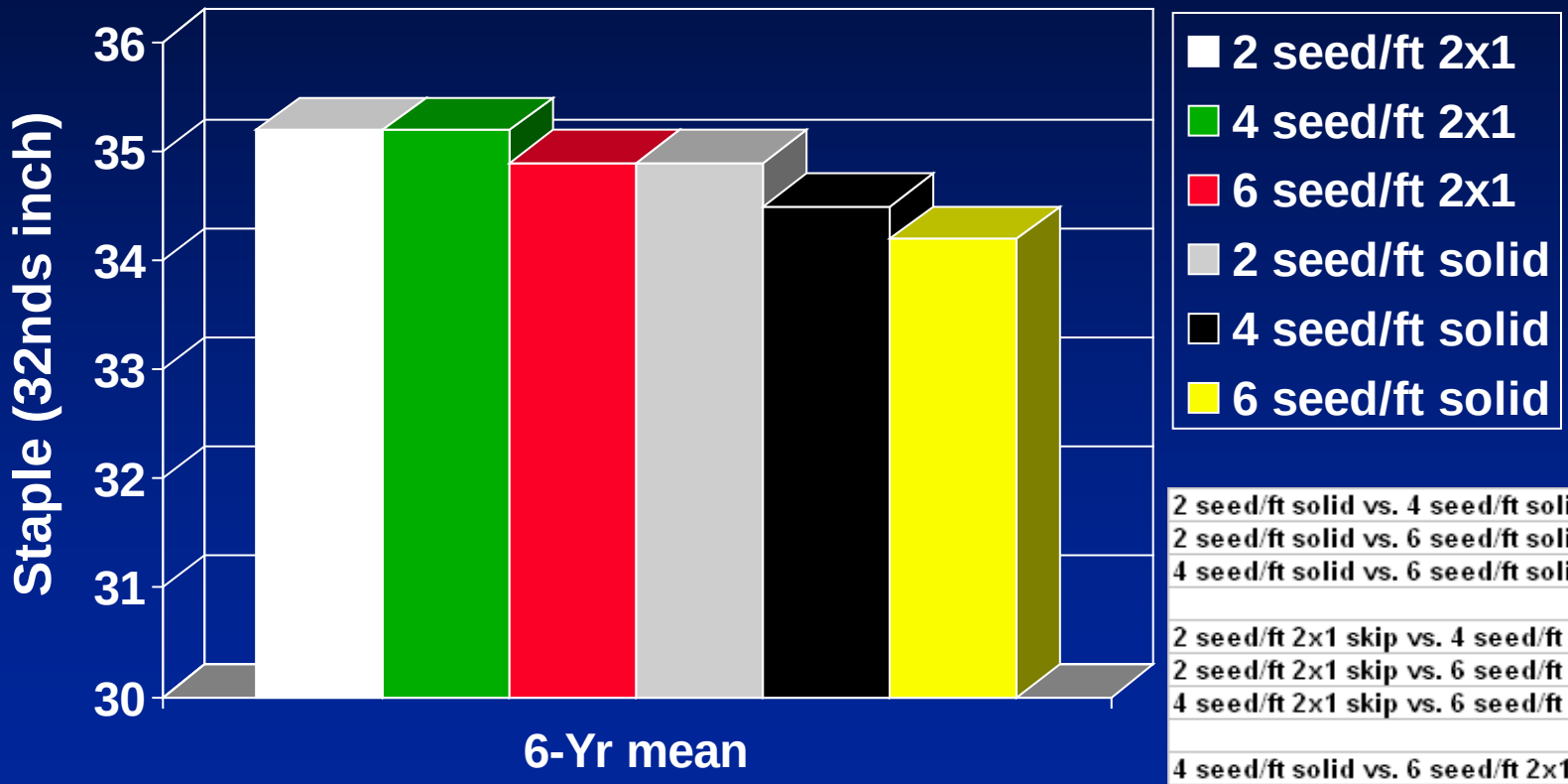
AGCARES 2003-2009 Dryland Seeding Rate x Planting Pattern 6-Year Mean Staple



2 seed/ft solid vs. 4 seed/ft solid	NS
2 seed/ft solid vs. 6 seed/ft solid	*
4 seed/ft solid vs. 6 seed/ft solid	NS
2 seed/ft 2x1 skip vs. 4 seed/ft 2x1 skip	NS
2 seed/ft 2x1 skip vs. 6 seed/ft 2x1 skip	NS
4 seed/ft 2x1 skip vs. 6 seed/ft 2x1 skip	NS
4 seed/ft solid vs. 6 seed/ft 2x1 skip	NS

Note: 2006 lost due to drought; 2003-2005 AFD 3511R, 2007-2009 FM 9058F

2 x 1 and Solid Planting Patterns
Seed Planted / Land Acre
vs. 6-Yr Mean Net Value After 2009 FM 9058F Seed and Tech Fees / Land Acre

Bag Price would have been
$255/bag for 220K seed
Or
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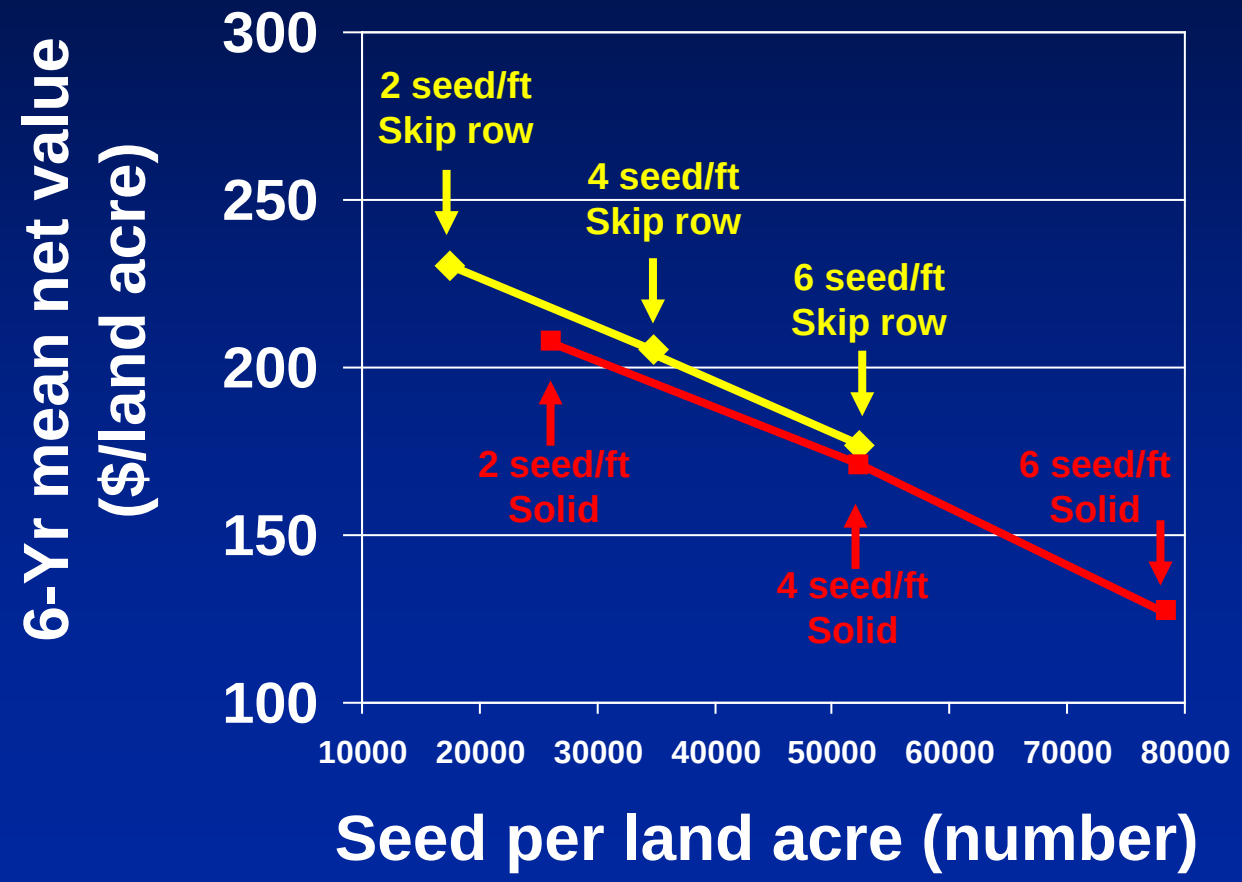
2 x 1 and Solid Planting Patterns Seed Planted / Land Acre vs. 6-Yr Mean Net Value After 2009 FM 9058F Seed and Tech Fees / Land Acre



	Seed/ land acre	Seed & tech fees ($/acre)
2 x 1 Skip Row		
2	17,424	20.12
4	34,848	40.24
6	52,272	60.35
Solid		
2	26,136	30.18
4	52,272	60.35
6	78,408	90.53

Conclusions

- When comparing the lowest seeding rate (2 seed/ft) to the highest seeding rate (6 seed/ft), the highest seeding rate had a greater negative effect on lint yield and net value for the solid planting pattern than for the 2x1 skip row pattern.
- In terms of net value/acre, seeding rate had the greatest effect regardless of planting pattern due to higher seed and technology fee costs.

Conclusions

- **This project was fertilized and managed uniformly across both skip row and solid planting patterns.**
  - **herbicides, insecticides, harvest-aid chemicals**
- **It did not include evaluation of potential reduced input costs by not fertilizing, spraying, etc. the skip row.**
- **If these potential input savings on the skip row could be realized, cost reductions favoring skip row production are possible.**

Conclusions

- We had been planting about 3.0-4.0 seed/ft in solid-planted 40-inch rows in AG-CARES dryland projects.
- Based on this work, it appears that somewhat fewer than that will not adversely affect potential profitability over the long term, assuming NO STAND LOSS due to weather, etc.
- ***Knowing seed quality and utilizing effective seed treatments are critical, and potential stand losses due to weather and sand fighting practices should be considered.***

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