



Does Size Really Matter?

Cotton Breeder Tour

July 22, 2019

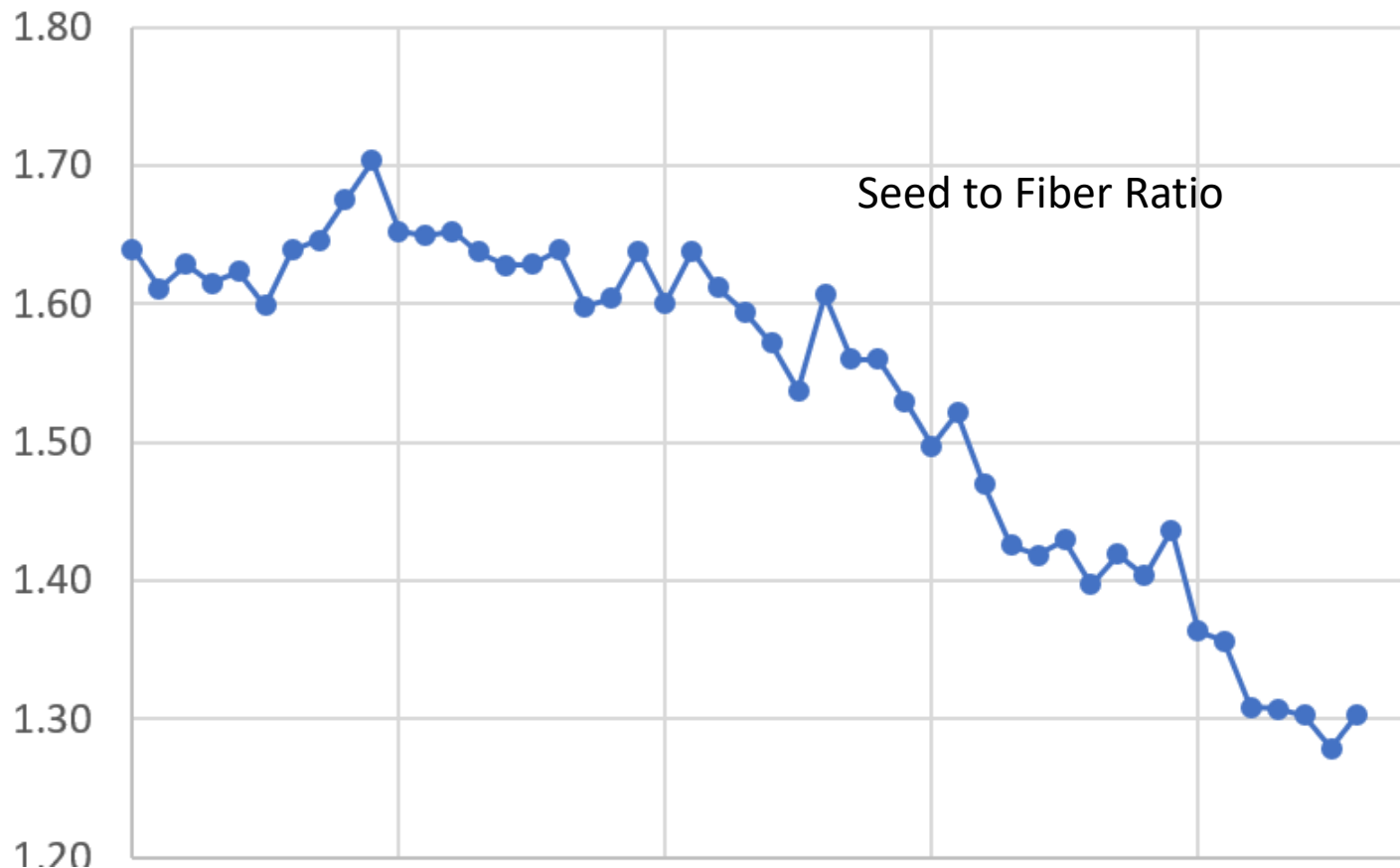
College Station, TX



Stakeholder Dialogue

- What this is not...
 - A scolding
 - A deep dive yield component analysis
 - An economics lecture
- What this is hoped to be...
 - An information exchange
 - A trend discussion
 - A value conversation





Seed size in cultivated cotton has dropped precipitously over the last thirty years

Farm (or seed production) level
germination, vigor, quality

Gin level
Equipment issues, rib
spacings, weak seed coat

Seed merchant/trader level
Rail freight logistics

Feeder and crusher level
change in oil and nutritive
content

4-Location Commercial Variety Performance Trial , 2018 (top 15*)

		% Turnout			Seed	Seed per
Designation	Yield	Lint	Seed	Lint %	Index	Boll
FiberMax FM 2498GLT	1192	27.9	36.2	37.9	10.4	36.6
Deltapine DP 1822 XF	1151	27.5	37.7	37.2	10.0	29.2
PhytoGen PHY 320 W3FE	1117	25.9	35.0	37.5	9.5	34.0
PhytoGen PHY 350 W3FE	1116	26.0	36.5	36.5	10.6	31.3
FiberMax FM 2574GLT	1109	28.8	33.0	41.1	8.9	34.0
FiberMax FM 1888GL	1090	28.0	37.4	37.1	11.0	35.4
PhytoGen PHY 250 W3FE	1087	27.4	36.2	36.9	10.3	31.7
Deltapine DP 1612 B2XF	1084	27.4	36.2	37.3	9.8	31.3
PhytoGen PHY 499 WRF	1065	26.8	35.9	37.5	9.7	32.2
PhytoGen PHY 430 W3FE	1063	27.6	33.7	39.1	9.3	32.2
FiberMax FM 1911GLT	1060	27.7	36.3	38.1	12.0	30.2
NexGen NG 4777 B2XF	1035	26.7	36.5	37.7	9.8	35.9
PhytoGen PHY 480 W3FE	1032	26.2	34.4	37.1	9.3	33.8
PhytoGen PHY 490 W3FE	1026	26.5	35.2	36.1	9.2	31.2
PhytoGen PX2A31W3FE	1023	27.9	36.5	38.2	9.9	30.4

Data from LBK furrow irrigated, LBK rainfed, Lamesa pivot base irrigated, Halfway pivot irrigated

*No significant difference in yield among the top 15 varieties

44 tested

What are
the gins and
other
downstream
processors
seeing?

Designation	Yield	% Turnout		Seed Index	Seed per Boll
		Lint	Seed	Lint %	
Deltapine DP 1646 B2XF (1)	949	28.0	33.3	40.0	8.4
Deltapine DP 1845 B3XF (20)	995	27.4	34.0	38.2	8.6
PhytoGen PHY 300 W3FE (14)	987	27.0	33.3	38.5	8.6
PhytoGen PHY 330 W3FE (8)	858	25.6	32.9	38.2	8.6
Deltapine DP 1820 B3XF	910	26.9	33.1	38.5	8.7
FiberMax FM 2574GLT	1109	28.8	33.0	41.1	8.9
FiberMax FM 1830GLT (11)	937	27.3	34.0	40.1	9.1
PhytoGen PHY 340 W3FE	971	27.8	35.0	37.1	9.1
PhytoGen PHY 490 W3FE (17)	1026	26.5	35.2	36.1	9.2
PhytoGen PHY 430 W3FE	1063	27.6	33.7	39.1	9.3
PhytoGen PHY 480 W3FE	1032	26.2	34.4	37.1	9.3
International Seed Technology BRS 416	935	26.3	35.9	36.6	9.3
NexGen NG 3780 B2XF	956	25.9	36.5	36.5	9.4
PhytoGen PHY 320 W3FE	1117	25.9	35.0	37.5	9.5
PhytoGen PHY 440 W3FE	968	26.5	35.6	37.8	9.6
Tamcot 73	980	26.2	38.7	34.0	9.6
International Seed Technology BRS 335	1005	26.0	36.8	35.2	9.6
PCG 713	984	25.8	37.8	34.3	9.6
PhytoGen PHY 499 WRF	1065	26.8	35.9	37.5	9.7
NexGen NG 3517 B2XF (19)	972	25.8	36.4	36.4	9.8
NexGen NG 4777 B2XF	1035	26.7	36.5	37.7	9.8
Deltapine DP 1612 B2XF(16)	1084	27.4	36.2	37.3	9.8
Mean	973	26.5	36.0	36.8	9.8
NexGen NG 4689 B2XF (2)	970	26.6	35.6	38.0	9.8
PhytoGen PX2A31W3FE	1023	27.9	36.5	38.2	9.9
International Seed Technology BRS 286	1018	25.1	37.3	35.5	10.0
Deltapine DP 1822 B3XF	1151	27.5	37.7	37.2	10.0
NexGen NG 4545 B2XF (3)	943	26.7	36.4	37.5	10.0
International Seed Technology BRS 372	858	26.2	36.1	35.3	10.1
Seed Source Genetics SSG UA 114X	839	25.3	37.9	34.2	10.2
International Seed Technology BRS 293	790	25.6	36.5	35.5	10.2
BS&D TonBuster Elite	765	23.9	37.2	35.7	10.2
PhytoGen PHY 250 W3FE	1087	27.4	36.2	36.9	10.3
PhytoGen PHY 764 WRF	802	23.8	34.5	35.8	10.3
FiberMax FM 2498GLT	1192	27.9	36.2	37.9	10.4
BS&D BSD 9X	942	26.0	37.5	36.1	10.4
Seed Source Genetics SSG UA 222X	1018	27.4	37.8	36.3	10.5
PhytoGen PHY 350 W3FE	1116	26.0	36.5	36.5	10.6
PCG 700	703	24.1	37.8	34.8	10.6
Seed Source Genetics SSG UA 107	853	26.8	37.9	36.1	10.8
Seed Source Genetics SSG UA 222	903	25.5	36.1	36.4	10.8
FiberMax FM 1888GL	1090	28.0	37.4	37.1	11.0
BS&D BSD 224	911	26.6	38.7	34.6	11.1
Tamcot G11	834	25.0	37.2	34.1	11.3
FiberMax FM 1911GLT	1060	27.7	36.3	38.1	12.0

Texas A&M
AgriLife

2018

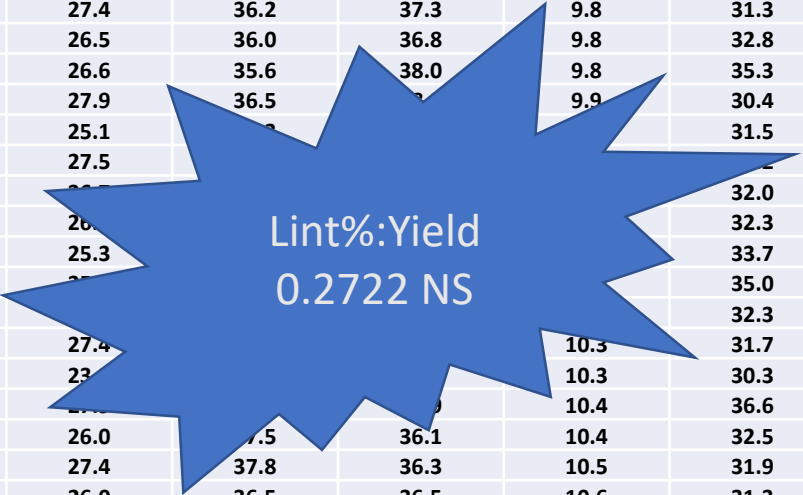
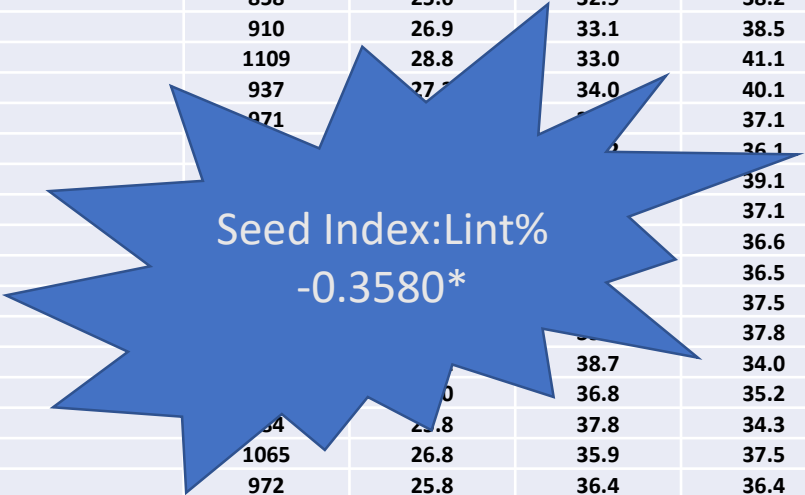
4-location
average

Sorted by seed
index (small to
large)

Red is top 20
market share

In this dataset, representing current varieties in major cotton production region of US, there is significant correlation between seed index and lint percent, but no correlation between lint percent and yield

Designation	Yield	% Turnout		Seed	Lint %	Seed Index	Seed per Boll
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Deltapine DP 1845 B3XF (20)	995	27.4		34.0	38.2	8.6	35.1
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Texas A&M
AgriLife

2018

4-location
average

Sorted by seed
index (small to
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Varieties Available for 2019 Sales*

Bayer CropScience/Deltapine

7 B3XF, 11 B2XF (2NR), 2 XF, 2 conventional

BASF/FiberMax

1 GLTP, 6 GLT, 1GLB2, 1B2RF, 3 GL, 1GT

BASF/Stoneville

1 GLTP, 3 GLT, 2 GLB2

Corteva Agrisciences/Phytogen

12 W3FE, 1 WRF

Americot/NexGen

6 B3XF, 11 B2XF, 3 XF, 1 conventional

Nutrien/Dynagro/All-Tex

8 B3XF, 14 B2XF, 2 B2RF, 2 XF, 2 RF, 4
conventional

Winfield® United/Croplan

3 B3XF, 5 B2XF, 1 GLT

BS&D (3 conventional)

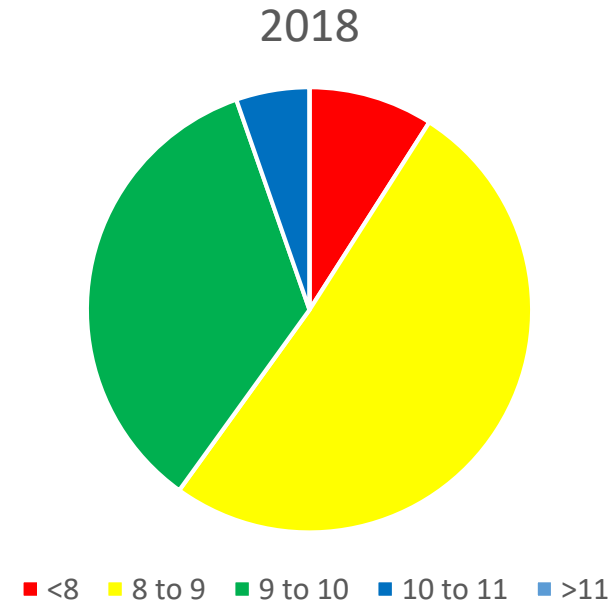
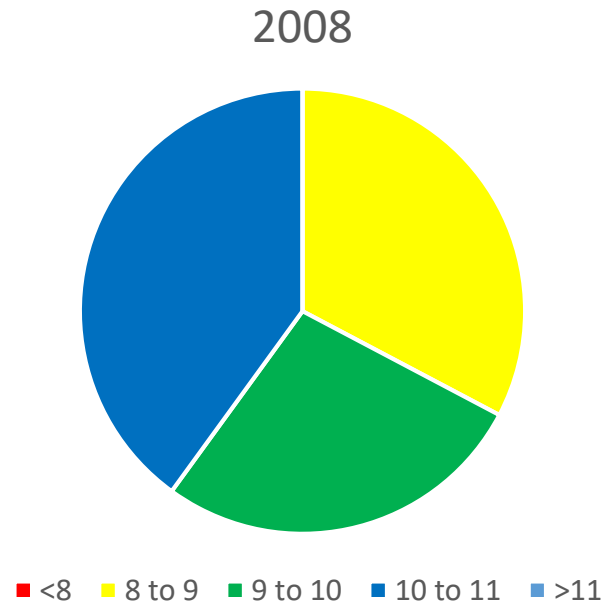
- 120 upland cotton varieties from 7 companies in 2019, 31 new (2018, 117; 2017, 113; 2016, 84)
- 11 conventional; 13 herbicide only; 3 single mode
- 58 2-gene Bt
- 38 3-gene Bt
- 12 technology options

*2019 Seed
Calculator



USA Variety Share by Seed Index*

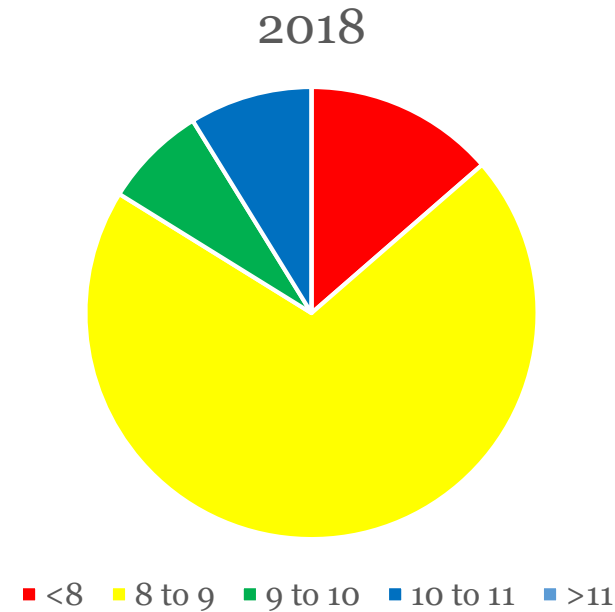
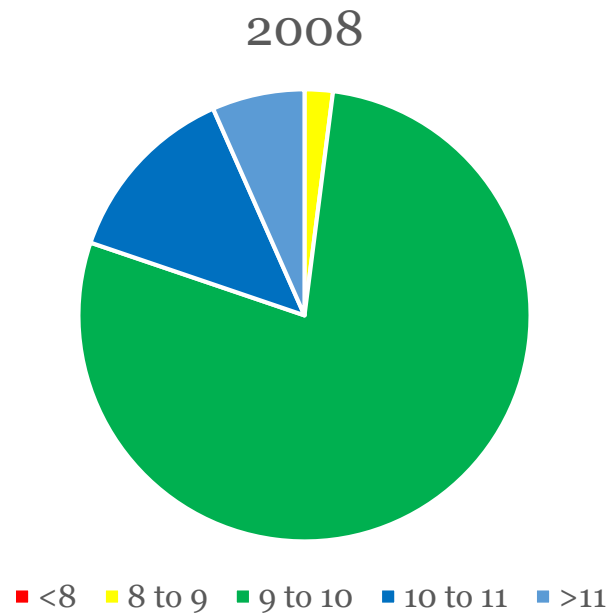
2008-2018



*Normalized by FM 958

USDA-AMS Top Cotton Varieties Planted & Corresponding Seed Index Category
Texas A&M AgriLife Cotton Performance Tests on the Texas High Plains (4 locations)

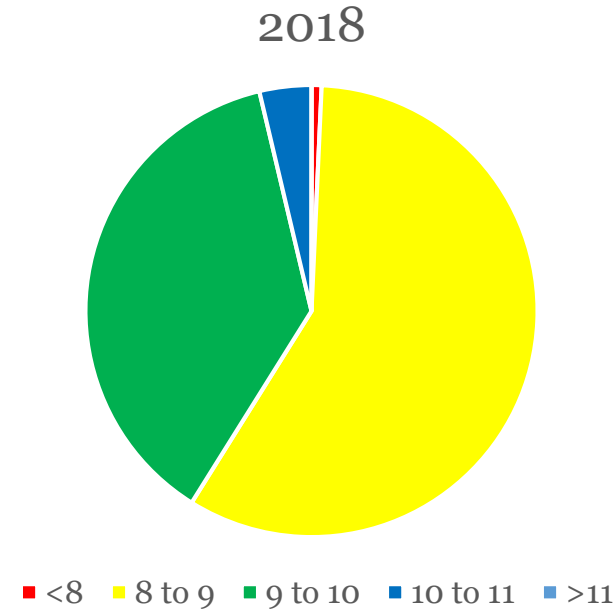
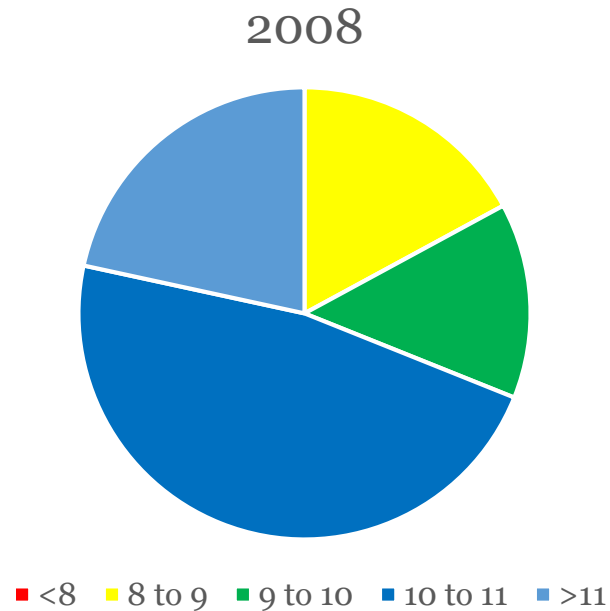
Southeast Variety Share by Seed Index* 2008-2018



*Normalized by FM 958

USDA-AMS Top Cotton Varieties Planted & Corresponding Seed Index Category
Texas A&M AgriLife Cotton Performance Tests on the Texas High Plains (4 locations)

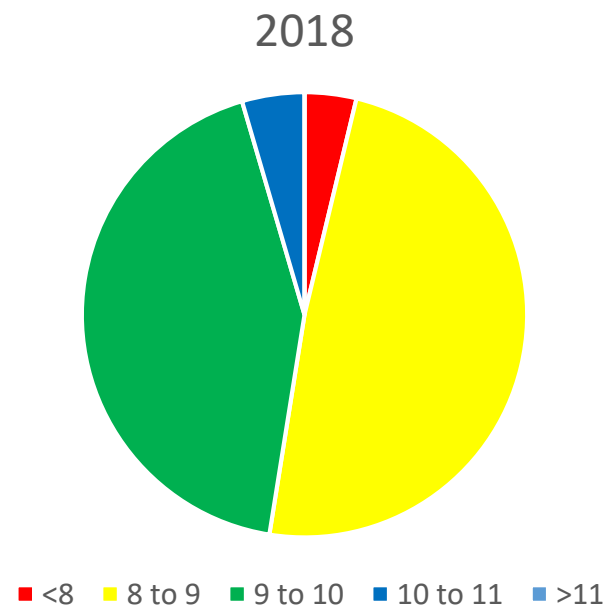
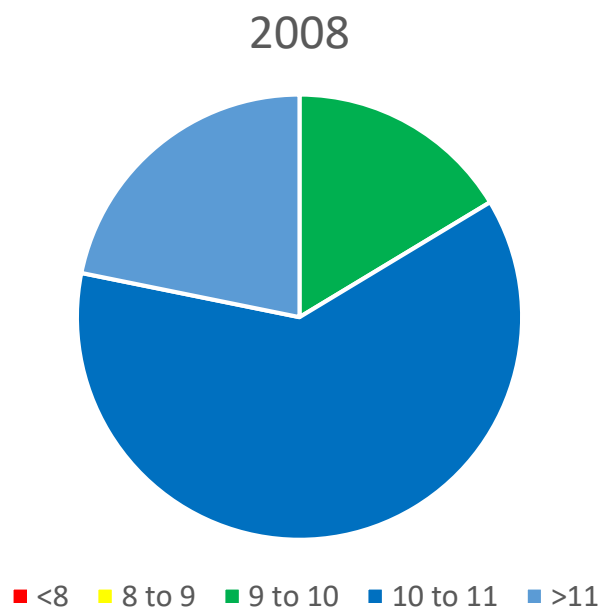
South Central Variety Share by Seed Index* 2008-2018



*Normalized by FM 958

USDA-AMS Top Cotton Varieties Planted & Corresponding Seed Index Category
Texas A&M AgriLife Cotton Performance Tests on the Texas High Plains (4 locations)

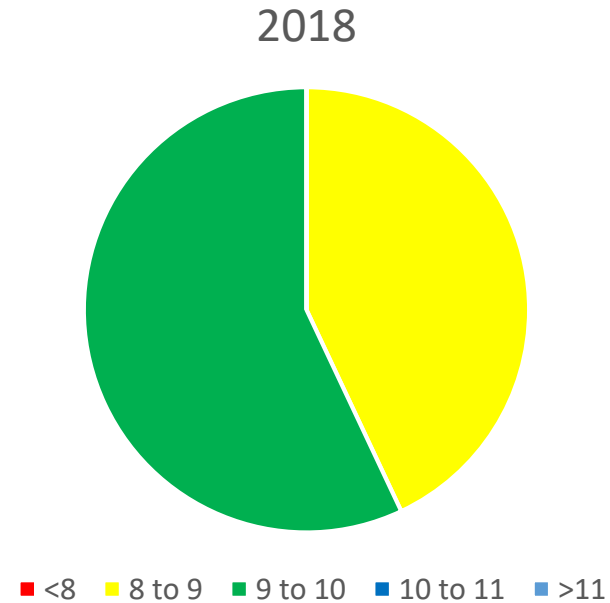
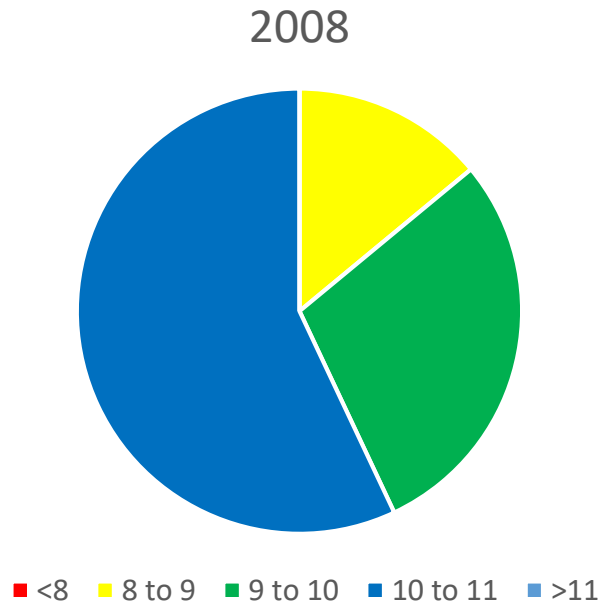
Southwest Variety Share by Seed Index* 2008-2018



*Normalized by FM 958

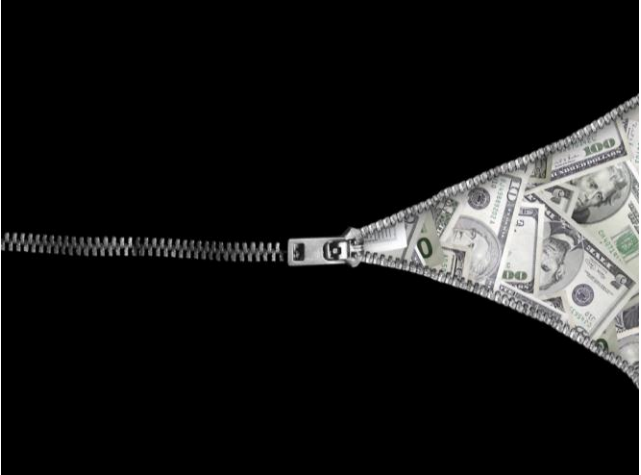
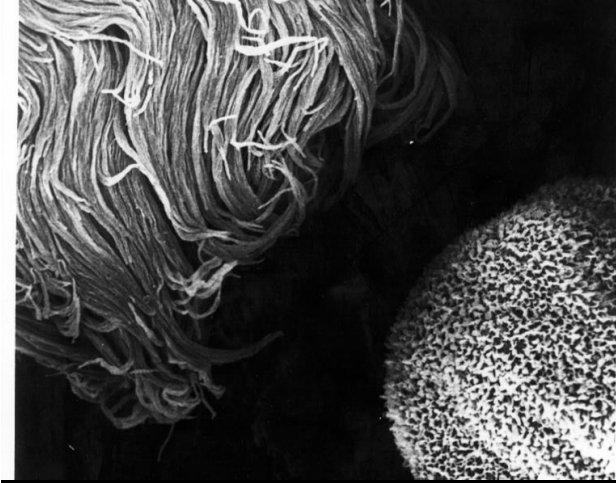
USDA-AMS Top Cotton Varieties Planted & Corresponding Seed Index Category
Texas A&M AgriLife Cotton Performance Tests on the Texas High Plains (4 locations)

Western Variety Share by Seed Index* 2008-2018



*Normalized by FM 958

USDA-AMS Top Cotton Varieties Planted (top 7) & Corresponding Seed Index Category
Texas A&M AgriLife Cotton Performance Tests on the Texas High Plains (4 locations)



Texas Cotton Crop Value

Fiber: ~\$2.4 billion

Seed: ~\$480 million

2018 – “seed cotton” is a covered commodity under Title 1 of 2014 Farm Bill and eligible for PLC coverage



Does size really matter?

- To ginners, crushers, traders, feeders, cooperatives
 - YES
- To farmer profitability in the long term
 - YES
- Can downstream processors “adjust?”
 - Only with size uniformity
- Would we already have size uniformity if small seed is critical?
 - YES

Tradeoffs?

Of course

Cotton breeders can raise fiber quality -- at a cost

| Sep 05, 2002

Those words of warning from Bill Meredith, a cotton breeder with the USDA Agricultural Research Service, seem to sum up the quandary facing the U.S. cotton industry these days.

Cotton breeders are able to breed improved fiber quality traits into new lines, but for the most part you trade yield for quality, says Meredith, who spoke at a meeting of the Stoneville-based Delta Council's Cotton Ginning and Quality Improvement Committee.

So why don't cotton breeders simply breed for improved fiber quality? In addition to its negative relationship with yield, current marketing systems are slow to encourage fiber quality, and there is no guarantee growers will be paid a premium for increased fiber quality.

Can better cotton varieties be developed? The short answer, Meredith says, is yes. To do it, though, will take a new breeding strategy that promotes fiber quality and reinforces the entire cotton industry. "If there is a dedicated effort to lower micronaire and hold yield levels it can be done, but it will take a concentrated effort," he says.

