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VERTICAL TILLAGE
VS.
CONVENTIONAL TILLAGE

UNLEASHES YIELD POTENTIAL!

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Conventional or "Horizontal" Tillage

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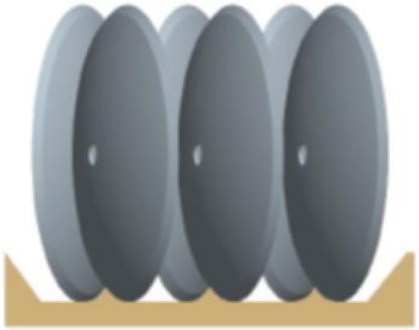
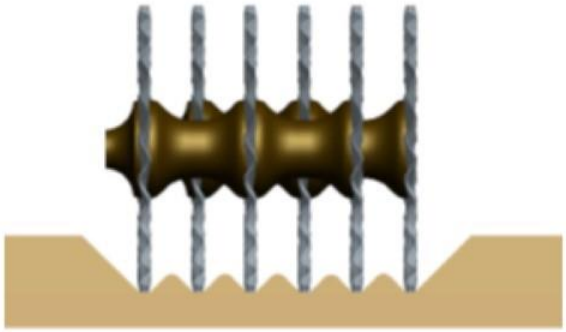
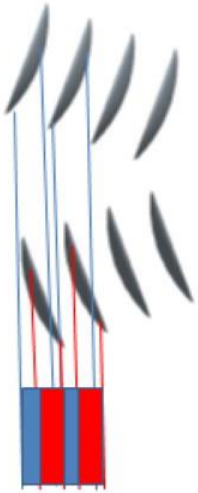
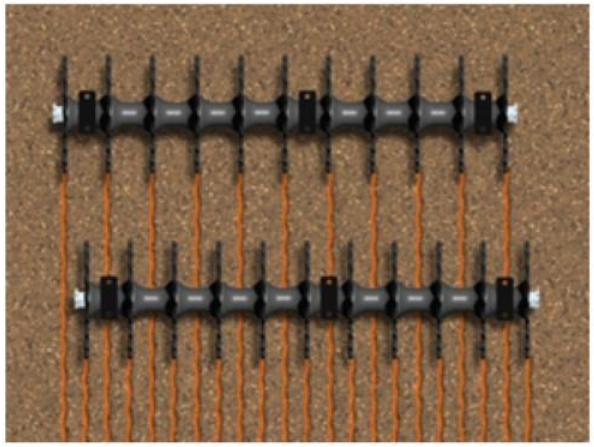


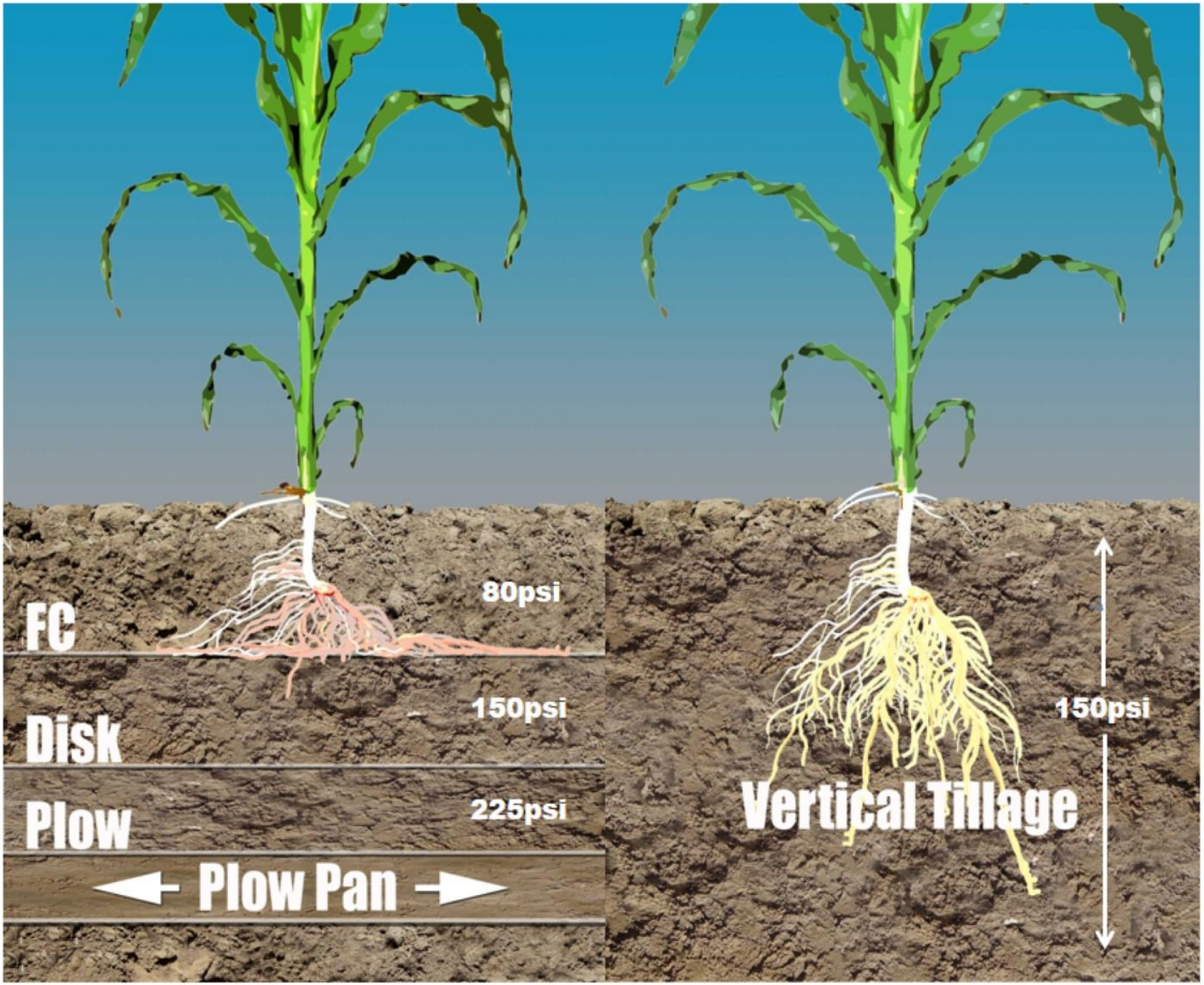
Horizontal
95+% shear



Vertical
0% shear






80psi
FC
150psi
Disk
225psi
Plow
Plow Pan
150psi
Vertical Tillage

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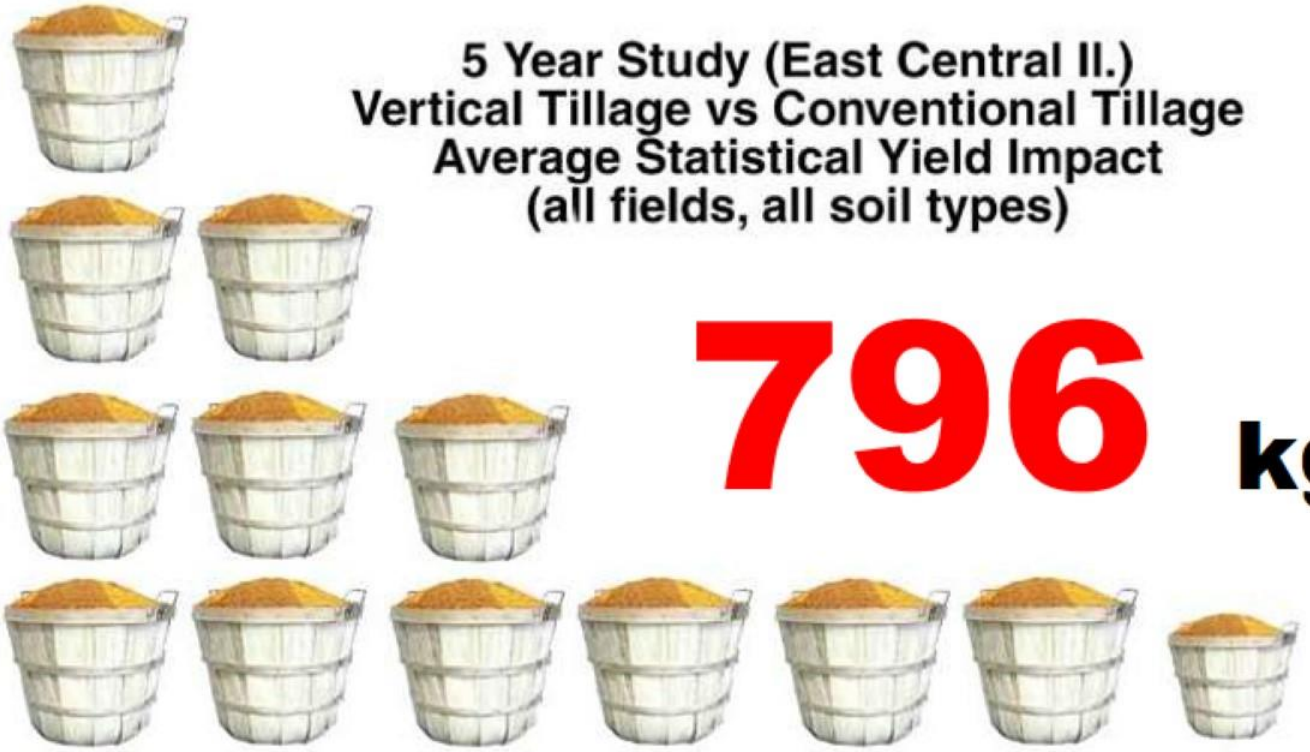
Which flower pot do you want to grow a corn crop in?

"The Root Of All Yields"

July/Aug. 2001 Farm Journal



5 Year Study (East Central Il.)
Vertical Tillage vs Conventional Tillage
Average Statistical Yield Impact
(all fields, all soil types)

796 kg/ha

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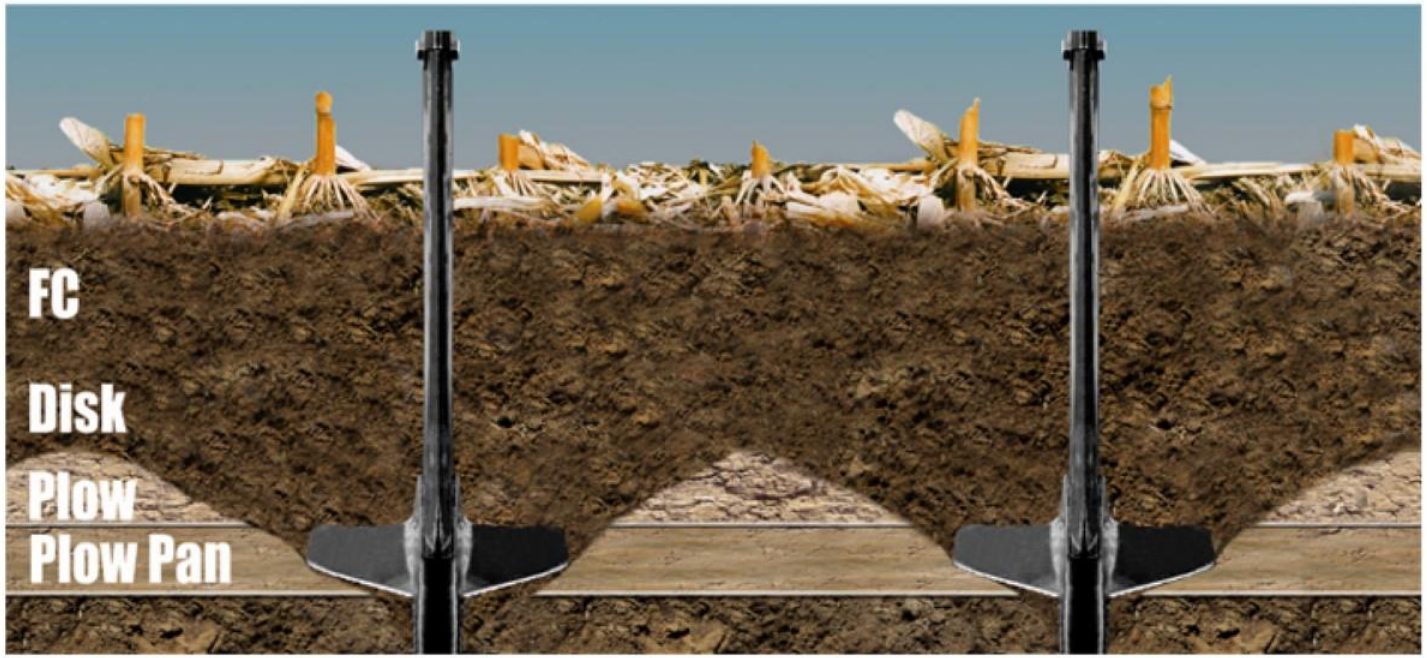
In-line Sub Soiler


FC
Disk
Plow
Plow Pan


FC
Disk
Plow
Plow Pan

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A "Hybrid" coulter-chisel for Today's Ag Producer

5000 Series Turbo-Chisel

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"Harvest Starts Here."

Turbo-Chisel

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VERTICAL FINISH

1- MAINTAIN UNIFORM DENSITY IN THE PROFILE

2- MANAGE RESIDUE

3-ESTABLISH AN IDEAL SEEDBED TO ALLOW PRECISION SEED PLACEMENT BY THE PLANTER

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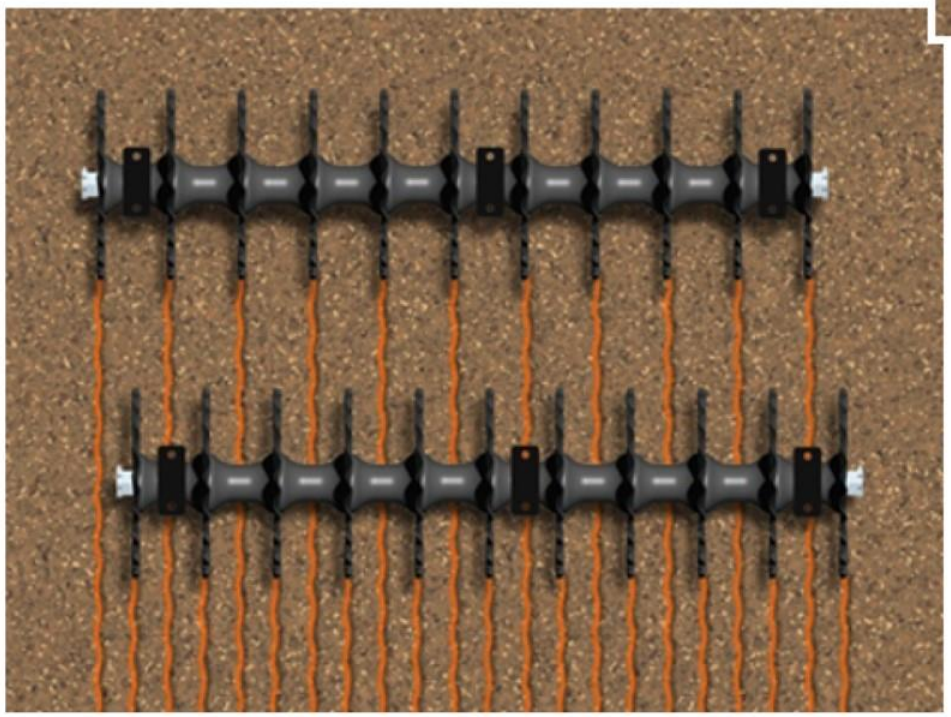
Turbo-Max 6 deg.

Turbo-Max 0 deg.



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Great Plains
"Harvest Starts Here."

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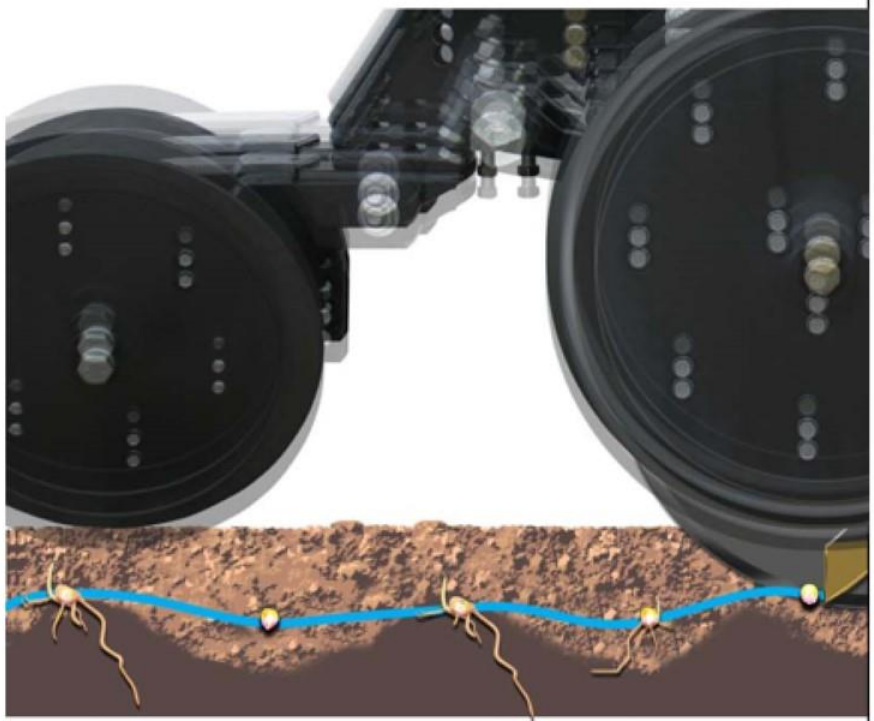


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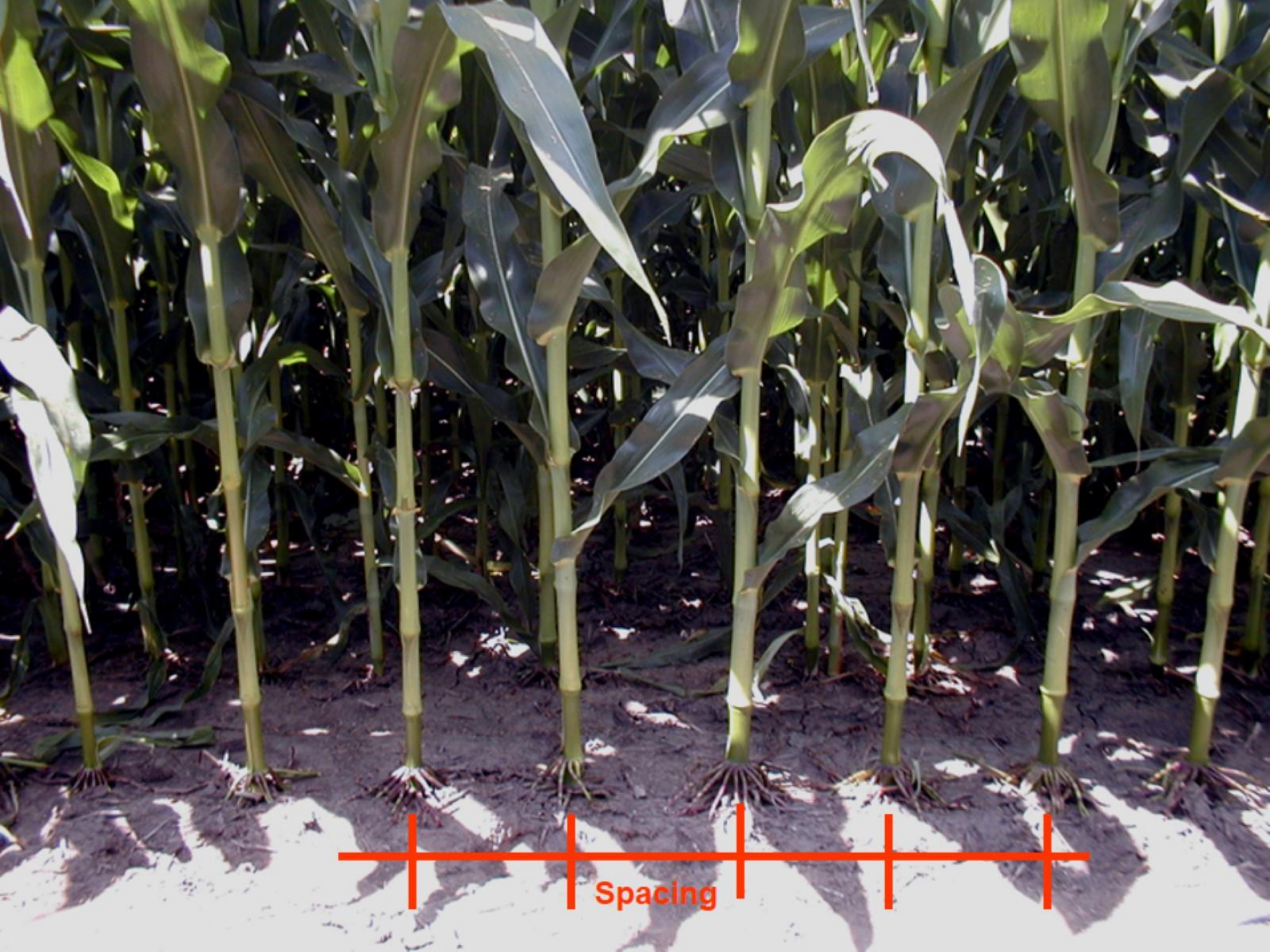
High yields start with
a perfect seedbed!

Formula for emergence

Spacing
+ Depth Control
+ Seed-To-Soil Contact

Even Emergence &
Maximum Ear Count


Spacing


Bad spacing


Result of bad spacing


4 leaf stage
2 leaf stage
Depth control or
seed-to soil contact???


Depth control


Air-pocket
= bad seed-to-soil
contact


07
6
Leaf
07
4
Leaf
07
6
Leaf

IT'S PLANTED RIGHT.....

NOW WHAT?


Take Yields to the next level with Twin-Row!

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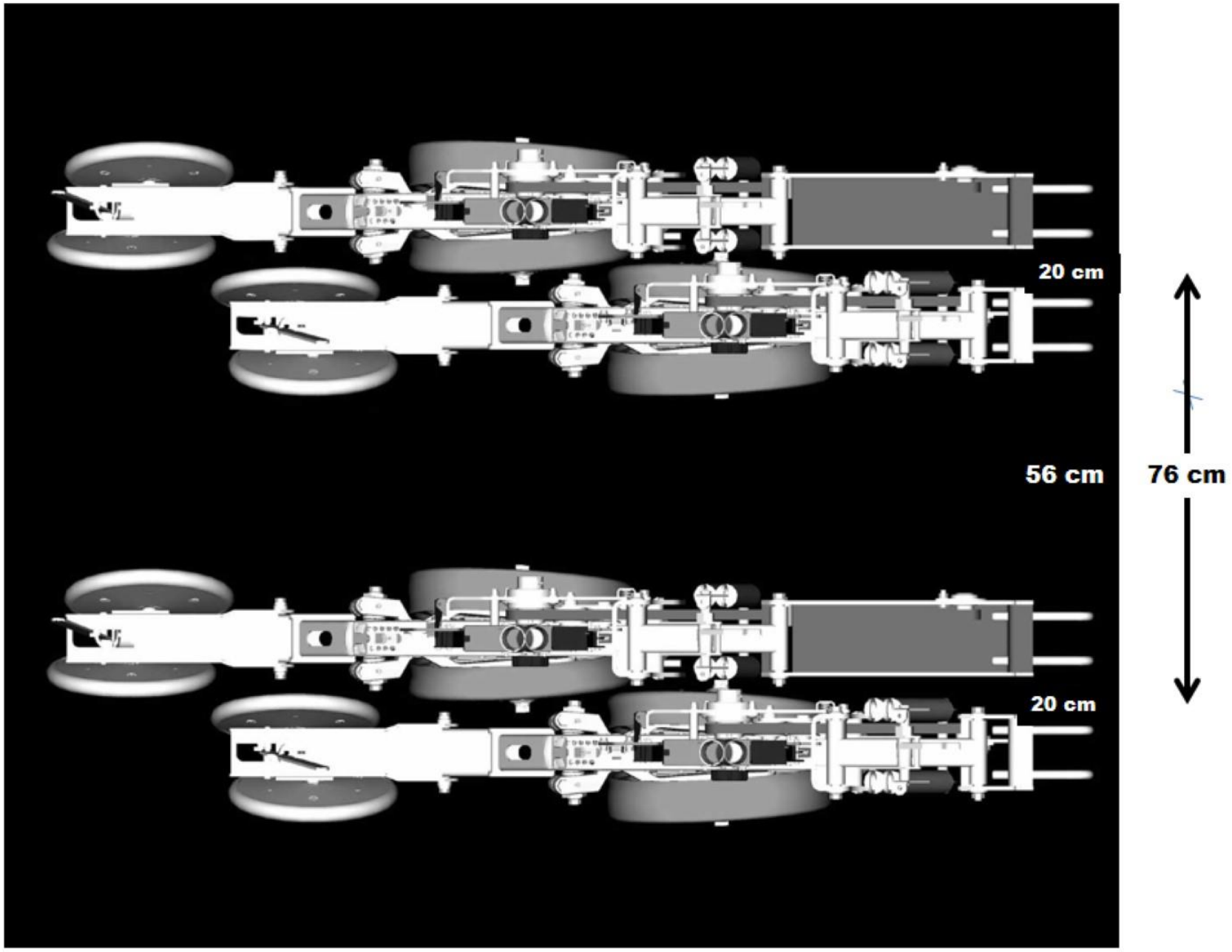
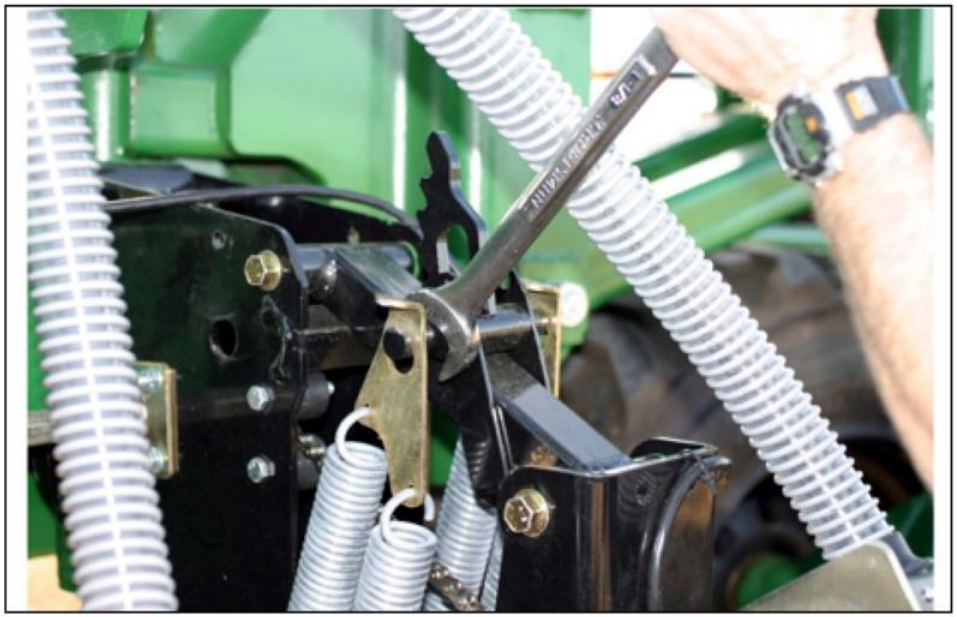
Twin-Row increases yield!

1. Utilize new genetics
2. Maximize the use of available light
3. Better shade to keep plant cooler during pollination
4. Increased canopy keeps ground cooler for better water utilization
5. More space per plant promotes bigger, better root system

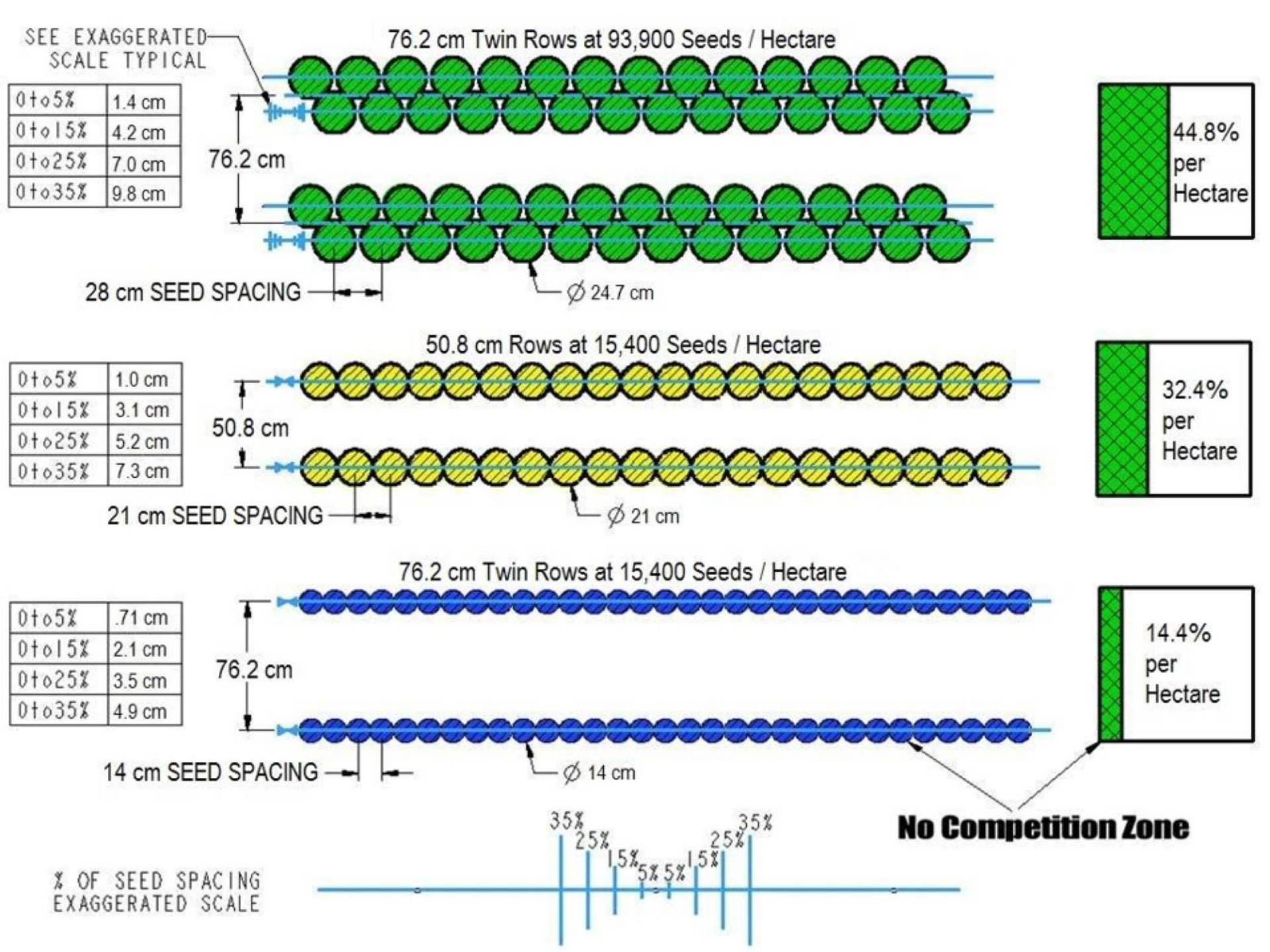

20 cm
56 cm
76 cm
20 cm

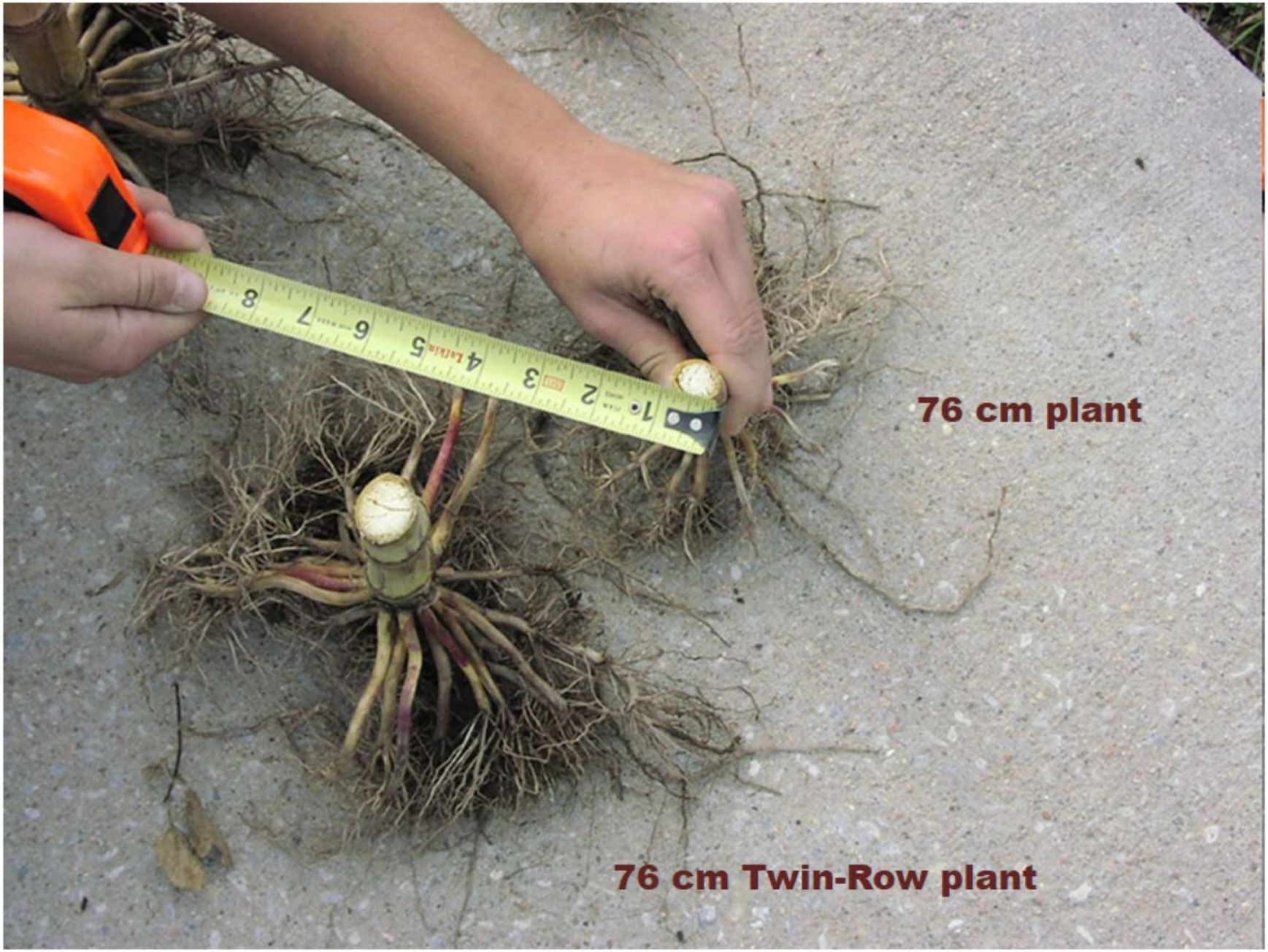
Opener Down-Pressure Adjustment



6 down-Pressure Settings		
Spring Setting	Kg	lbs
1	156.5	345
2	167.8	370
3	181.4	400
4	204.1	450
5	226.8	500
6	249.5	550

Maximum pressure setting depends on total weight of the unit


SEE EXAGGERATED SCALE TYPICAL
0 to 5% 1.4 cm
0 to 15% 4.2 cm
0 to 25% 7.0 cm
0 to 35% 9.8 cm
76.2 cm Twin Rows at 93,900 Seeds / Hectare
76.2 cm
28 cm SEED SPACING
Ø 24.7 cm
44.8% per Hectare
50.8 cm Rows at 15,400 Seeds / Hectare
0 to 5% 1.0 cm
0 to 15% 3.1 cm
0 to 25% 5.2 cm
0 to 35% 7.3 cm
50.8 cm
21 cm SEED SPACING
Ø 21 cm
32.4% per Hectare
76.2 cm Twin Rows at 15,400 Seeds / Hectare
0 to 5% .71 cm
0 to 15% 2.1 cm
0 to 25% 3.5 cm
0 to 35% 4.9 cm
76.2 cm
14 cm SEED SPACING
Ø 14 cm
14.4% per Hectare
No Competition Zone
% OF SEED SPACING EXAGGERATED SCALE
35%
25%
15%
5%
5%
15%
25%
35%


76 cm plant
76 cm Twin-Row plant

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Light Utilization @ V7

- 76cm Corn uses 30%
- 51cm Corn uses 68%
- 76cm Twin-Row uses 90%

TWINS

LIGHT
INTERCEPTION

76 cm ROWS

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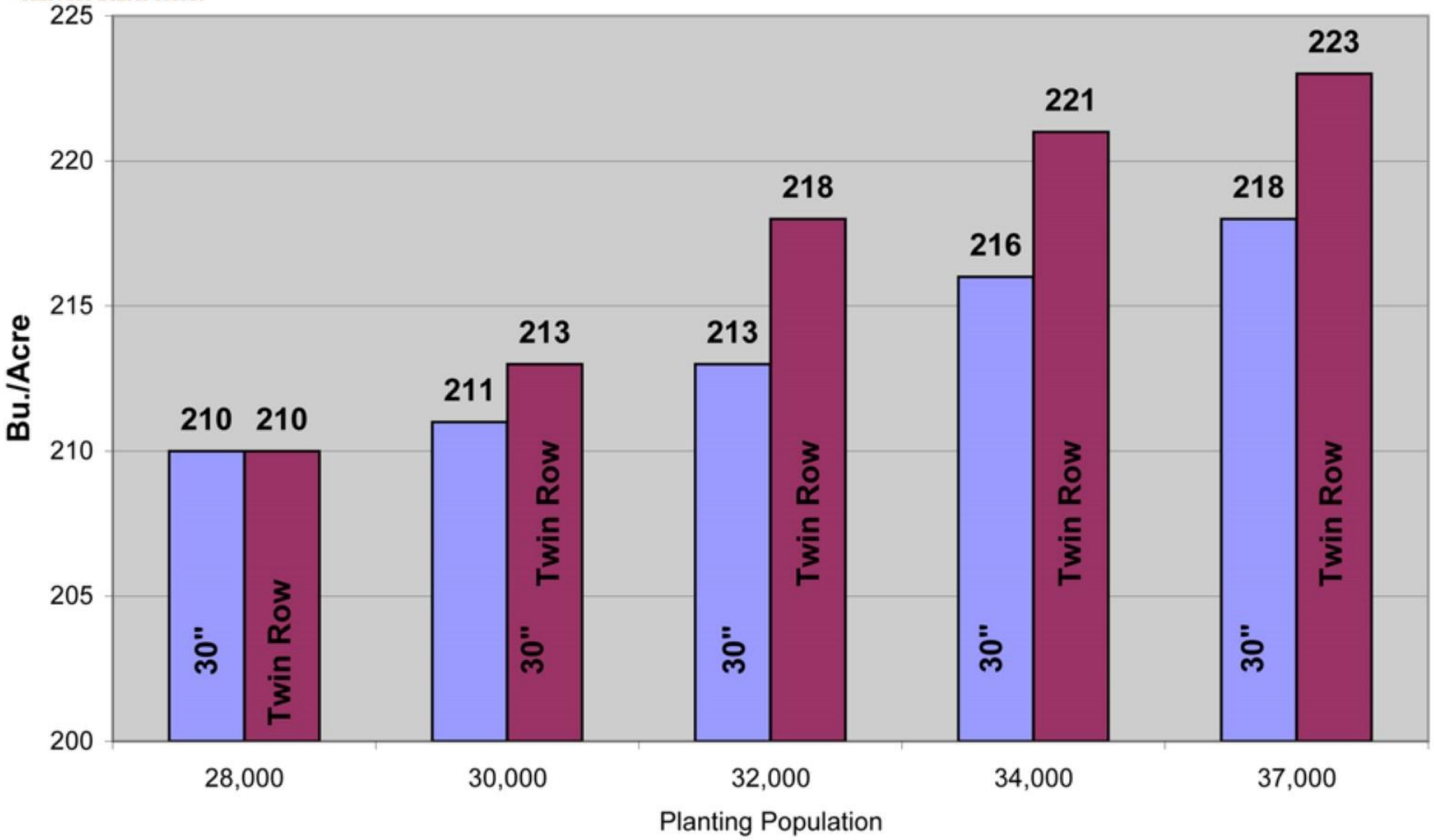
Twin Row Yield Comparisons (Farm Journal)



McLaughlin-Dooley Farms - 2005
Previous Crop - Soybeans
Agronomist -Crop Tech Consulting

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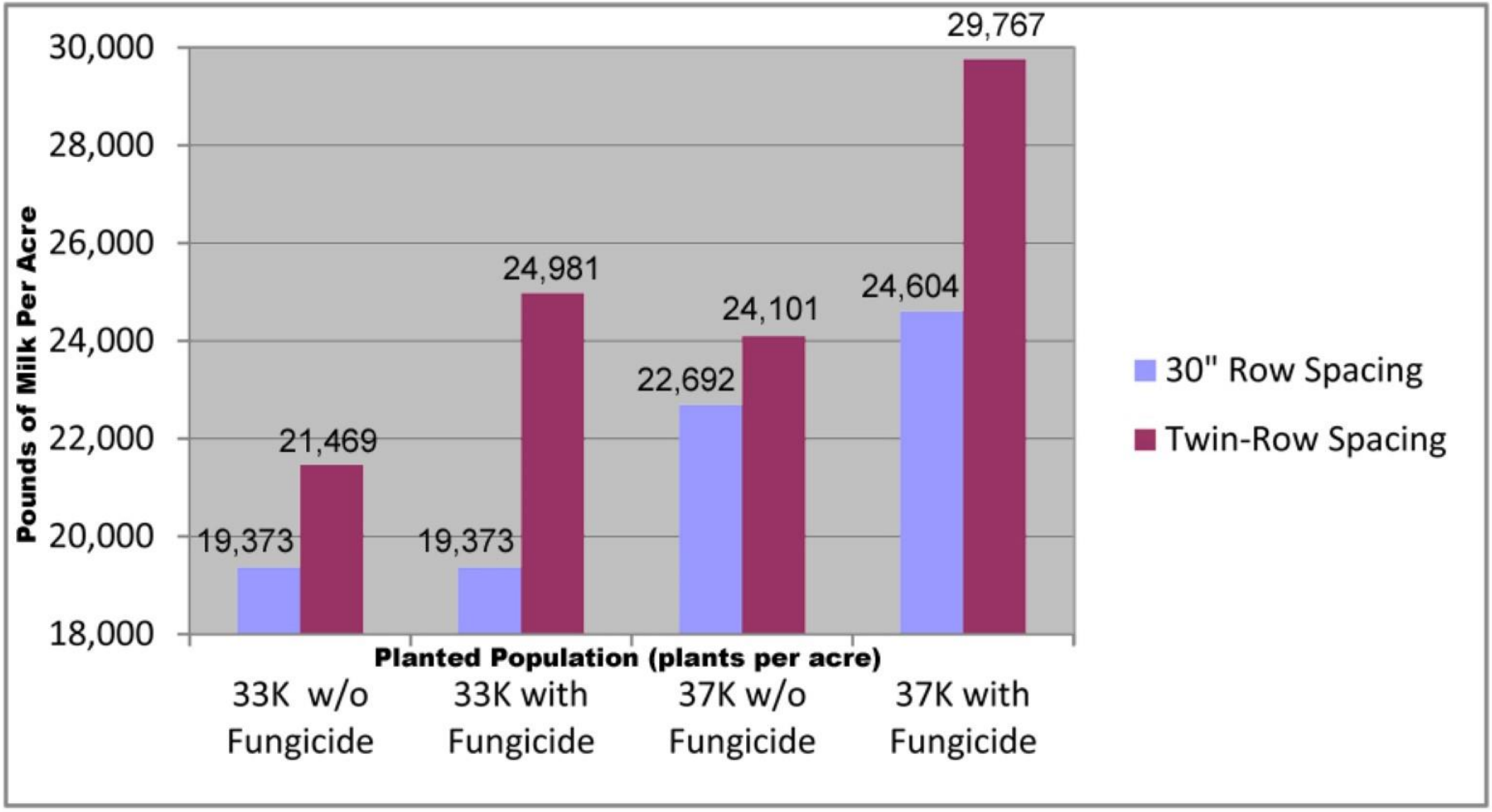
Pounds of Milk Per Acre Comparison

Farm Journal August 2009



Silage corn comparison of single row vs. Twin-Row

from previous page

Evaluation of Twin Rows in Corn

likely to show a more dramatic response to row spacing and populations (Figure 4C). For hybrids such as these, the goal is to redistribute the source of the competition to optimize yield potential. For example, putting the hybrid represented in Figure 4C in twin rows reduces interplant competition, which allows the hybrid to adequately handle the increased stress from higher plant populations. While higher populations generally result in slightly smaller ears, there are more ears per acre, resulting in more kernels per acre, and ultimately increased yield potential. Several of the hybrids currently available, such as the one represented in Figure 4B, show an intermediate response between the hybrids represented in Figures 4A and 4C. The interaction between hybrid and environment can be significant. It is important to consider how hybrids respond to stress in your area and take that into consideration when determining planting populations.

Case study at Farina, IL

Data from the trial established at Farina, IL were not used in the overall summary but have merit as a case study. A Kinze® planter with the row widths adjusted was used at Farina for twin rows. A 4 row John Deere® 7000 series planter was used for 30 inch row plots. Excessive rain two days after planting and challenging soil conditions resulted in poor stand establishment. Harvest populations deviated too much from the intended planting populations to be analyzed with the rest of the data. Due to circumstances such as location in the field, the stand establishment in the twin row plots was more negatively affected than in 30 inch row plots. However, despite more challenging soil conditions and lower plant populations, twin rows averaged 4 more bushels per acre than 30 inch rows (Figure 5). While this is only one location and one trial, the outcome is consistent with the experiences of the researcher who established the trial. Over multiple years, the agronomist has observed that more equidistant plant spacing, resulting in less interplant competition, allows the twin rows to produce higher yields, even under adverse conditions such as soil compaction early in the season or drought conditions at various parts of the growing season.

Limited Comparison of Twin Row, 30 inch and 20 inch Row Spacing Configurations

Trials were established at Monmouth and Rochelle, IL, to evaluate 20 inch rows, twin rows, and 30 inch rows. The strip trial at Rochelle evaluated the three row spacing configurations at 28,000, 33,000, 38,000, and 43,000 plants per acre. The replicated trial at Monmouth tested the three row spacing configurations at 33,000, 38,000, 43,000, and 48,000 plants per acre.

When averaged across trials, populations, and hybrids, twin rows had a 5 bushel advantage over 20 inch rows and a 9

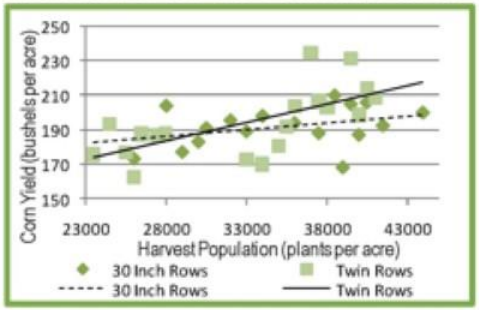


Figure 5. Corn yield response to different row spacing systems at various harvest populations. 2009774052 Farina, IL. 2009

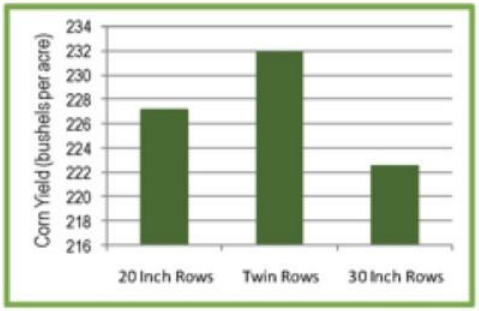


Figure 6. Corn yield response to different row spacing systems at Monmouth and Rochelle, IL. Monsanto data, 2009.

to pg. 4

Technology Development by MONSANTO.

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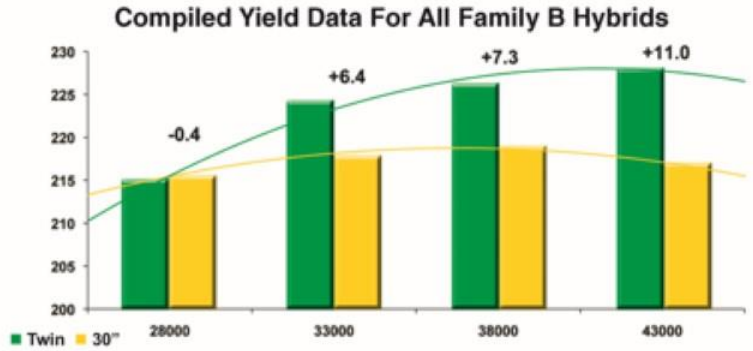
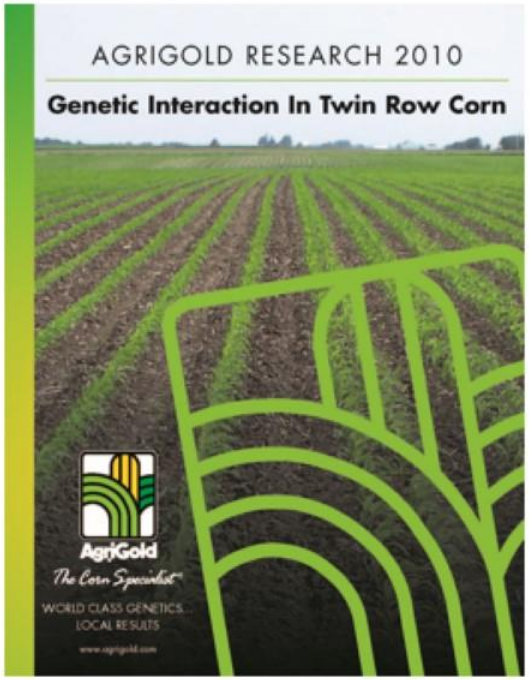
Response of Family B Genetics to Various Populations and Row Spacings



The response of Family B genetics under 30" row systems definitely showed a point of diminishing returns. AgriGold has recommended that flex eared hybrids such as Family B's do not need excessively high populations in 30" rows to maximize yield. The graph suggests yield potential plateaus and eventually decreases when populations increase above 34,000 plants per acre. The trend is common in field situations due to Family B's sensitivity to in row competition. As competition increases, kernel counts and kernel size typically are reduced. Research data collected in 2009 is further evidence that AgriGold's planting recommendations for Family B's in 30" row systems are accurate.

The response of Family B genetics under twin row systems demonstrated how providing more room for each plant reduces competition between plants of Family B hybrids. Less competition reduces stress, maximizes nutrient and water uptake and essentially allows the ear to flex and maximize yield. Additional room between plants in twin row systems allows Family B's to flex more at higher populations vs. 30" rows leading to greater yield potential.

The results suggest that yield increases as population increases up to 43,000 plants per acre in the twin row system, while the yield levels plateau at approximately 34,000 plants per acre in 30" rows. Twin row spacing compared to 30"row spacing resulted in an average of 6.1 bushel per acre increase for Family B's over all populations tested.



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Vertical Tillage

+ Twin-Row

Proven to Increased Yields