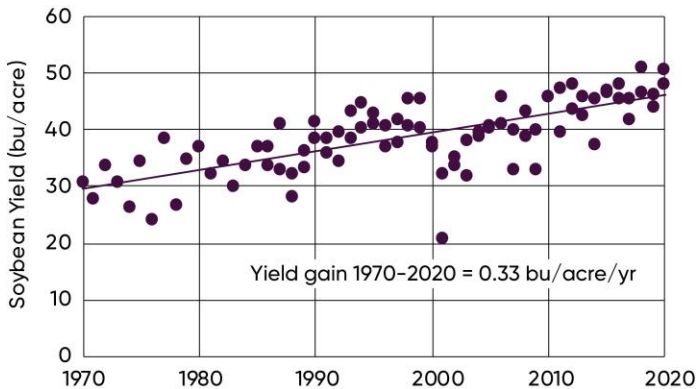


## High Yield Soybean Management in Eastern Canada

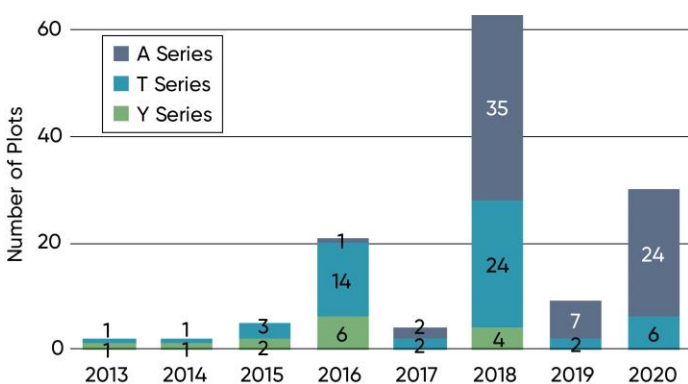
### Increasing Yields in Soybeans

- Improvements in genetics and management have driven substantial gains in soybean yields in Eastern Canada (Ontario and Quebec) over the past 50 years, at a rate of 0.33 bu/acre/year (Figure 1).
- Ontario's average soybean yields topped 50 bu/acre for the first time in 2018 and again in 2020. In 2020 Quebec's average soybean yields reach an all time high of 48.4 bu/acre.



**Figure 1.** Ontario and Quebec average soybean yields 1970-2020. (Statistics Canada, Table 32-10-0359-01 Estimated areas, yield, production, average farm price and total farm value of principal field crops, in metric and imperial units).

- 75 bu/acre has often served as a target yield level for farmers seeking high yields with optimized management and the newest genetics.
- Across all of the on-farm genetic and agronomic trials Pioneer conducts each year in Eastern Canada, it has not been unusual for a few entries each year to top 75 bu/acre.
- Beginning in 2018, the number of plots exceeding 75 bu/acre increased dramatically. This number declined in 2019 due to weather challenges but increased again in 2020 (Figure 2).



**Figure 2.** Series of Pioneer brand soybean varieties used in Eastern Canada Pioneer on-farm trial entries exceeding 75 bu/acre, 2013-2020.

### Pioneer On-Farm Trial Results

- A total of 67 on-farm soybean trials between 2018 and 2020 exceeded 75 bu/acre plot average, 66 of which contained A-Series soybean varieties (Figure 2).
- 75 bu/acre was achieved with 49 different Pioneer brand varieties from maturity group 0.3 to 3.1 across those plots from 2018 to 2020 (Table 1).

**Table 1.** Pioneer brand soybean varieties used from 2018 to 2020 in Eastern Canada Pioneer on-farm trials entries exceeding 75 bu/acre.

Variety/Brand <sup>1</sup>	Plots	Variety/Brand <sup>1</sup>	Plots
P03A26x (RR2X)	1	P18A98x (RR2X)	10
P04A60R (RR2X)	1	P19A14x (RR2X)	15
P05A35x (RR2X)	1	P19T39R2 (RR2Y)	5
P06A13R (R)	6	P20T95E (E3)	1
P06A51x (RR2X)	3	P21A20	1
P06T28R (R)	1	P21A28x (RR2X)	17
P07A18x (RR2X)	2	P23A15x (RR2X)	6
P08T96R (R)	10	P23A32x (RR2X)	9
P09A53x (RR2X)	19	P24A80x (RR2X)	12
P09A62x (RR2X)	16	P24T05R (R)	2
P09T74R2 (RR2Y)	6	P24T76E (E3)	2
P10T48R (R)	10	P25A54x (RR2X)	3
P11A10	2	P25A65R (R)	3
P11A44x (RR2X)	1	P26T57E (E3)	2
P11A67	1	P27A17x (RR2X)	11
P13T06L (LL)	1	P28A42x (RR2X)	8
P14A23L (LL)	1	P28A94x (RR2X)	7
P15A09x (RR2X)	4	P28T08R (R)	3
P15A63x (RR2X)	5	P28T14E (E3)	1
P15A88x (RR2X)	4	P28T62R (R)	2
P15T46R2 (RR2Y)	3	P29A25x (RR2X)	7
P15T83R (R)	1	93Y05 (R)	1
P16A13x (RR2X)	13	P31A22x (RR2X)	4
P16A84x (RR2X)	6	P31A95Bx (BOLT, RR2X)	2
P16T71E (E3)	2		

<sup>1</sup> All Pioneer products are varieties unless designated with LL, in which case some are brands.

## Agronomic Practices

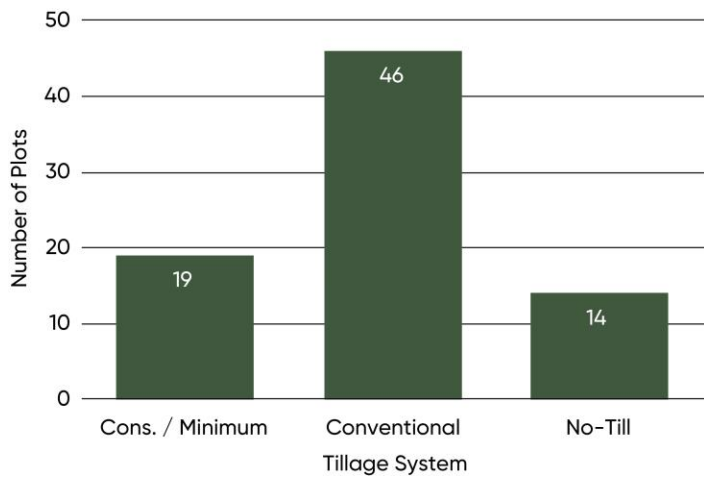
- 75+ bu/acre yields were achieved in a range of different environments and with a range of different agronomic practices.
- Analyses of management practices used in yield contest winners in other crops have produced similar findings (Jeschke, 2019), indicating that there is no single one-size-fits-all formula for achieving high yield potential.

### Previous Crop

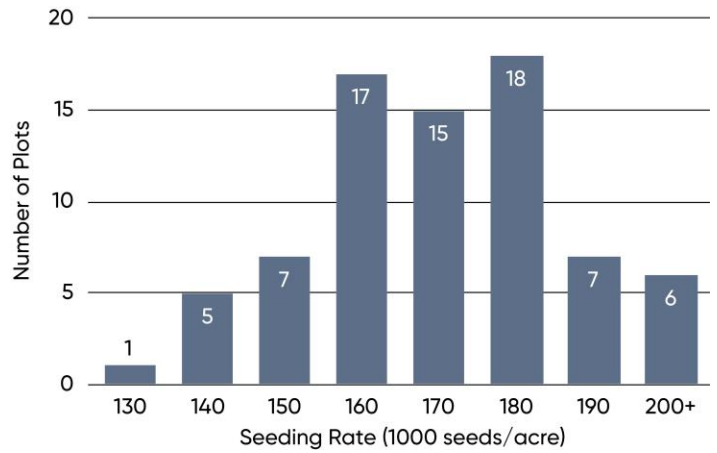
- The vast majority of 75+ bu/acre plots from 2013-2020 were planted to corn the prior season – 71 of 88 (80.7%) – while 8 (9.1%) were planted to soybeans, and 9 (10.2%) to another crop (data not shown).

### Tillage

- The most common tillage system used at locations with 75+ bu/acre plots was conventional tillage, followed by conservation/min-till, followed by no-till. (Figure 3).



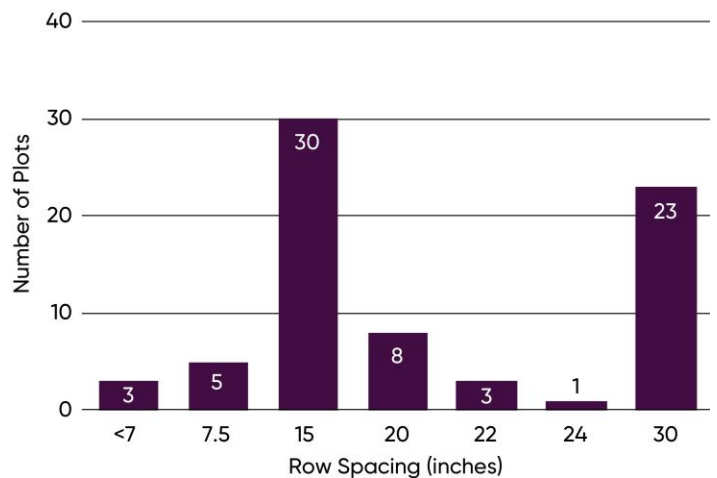
**Figure 3.** Tillage practices used in Eastern Canada Pioneer on-farm trials with entries exceeding 75 bu/acre, 2013-2020.



**Figure 4.** Seeding rate used in Eastern Canada Pioneer on-farm trials with entries exceeding 75 bu/acre, 2013-2020.

### Seeding Rate

- Seeding rates used in plots yielding above 75 bu/acre ranged from 130,000 seeds/acre to 225,000 seeds/acre, with an average of 173,000 seeds/acre (Figure 4).
- Average seeding rate was higher among no-till locations (180,000 seeds/acre) than conventional till locations (169,900 seeds/acre).
- Average seeding rates differed between Ontario and Quebec where all of the 75+ bu/acre plots were located:
  - The average seeding rate across Ontario locations was 174,000 seeds/acre.
  - The average seeding rate across Quebec locations was 161,600 seeds/acre.



**Figure 5.** Row spacing used in Eastern Canada Pioneer on-farm trials with entries exceeding 75 bu/acre, 2013-2020.

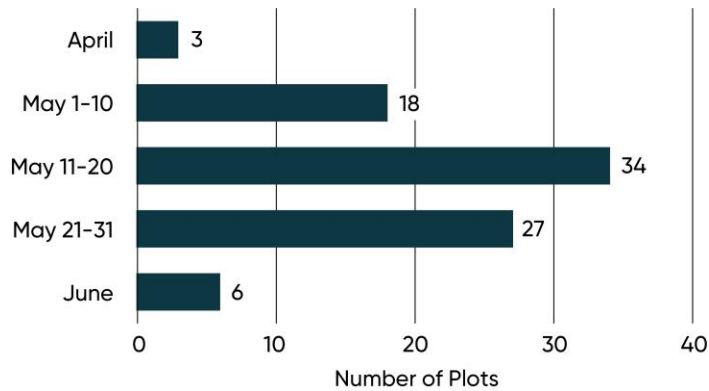
### Row Spacing

- Where row spacing was recorded there was an almost even split between locations with row spacing in 15-inch configurations or less, and 20-30-inch configurations (Figure 5).

- Geographic distribution of row spacing practices showed that all but one of Quebec's 75+ bu/acre locations was planted to a wide (20+ inch) row spacing with the majority of those rows being in a 30-inch configuration. Ontario locations showed a wider variety of row spacing configurations with 15-inch rows being the most common (data not shown).

## Planting Date

- Some recent research has shown the importance of early planting for maximizing soybean yields (Van Roekel, 2019). However most trial locations with 75 bu/acre plots in Eastern Canada were planted in the mid to latter half of May (Figure 6) highlighting the importance of soil fitness at planting.



**Figure 6.** Planting date of Eastern Canada Pioneer on-farm trials with entries exceeding 75 bu/acre, 2013-2020.

## Other Practices

- Other management practices employed at locations with 75+ bu/acre plots included foliar fungicides (especially those aimed at white mould control), and foliar insecticides.



## References

- Jeschke, M. 2019. Managing Corn for Greater Yield. Pioneer Crop Insights Vol. 29 No. 2.
- Van Roekel, R. 2019. The Importance of Early Planting for Soybeans in the Midwest. Pioneer Crop Focus Vol. 11 No. 1.

**Glyphosate**  
Tolerant

**ROUNDUP READY 2**  
**Xtend**  
SOYBEANS

**LIBERTY**  
**LINK**

**Enlist E3**  
SOYBEANS

**BOLT**

**Roundup Ready 2**  
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SOYBEANS

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