# Digging the channel: proprietary Purdue ag retail survey highlights challenges ahead

**Industry Overview** 



Equity | 12 April 2017

United States

Agricultural Chemicals

## The US ag economy remains under stress

We conducted a survey in collaboration with the Purdue University Center for Food and Agricultural Business. The survey, which included 144 ag retailers representing 3% of the US channel, highlights a tough end market with farmers expected to generate less income, shift down to lower priced products, and exercise more discretion on optional purchases. These effects are felt throughout the supply chain with retailers highlighting upstream chemical companies are reducing prices and increasing rebates. A challenged end market supports our mixed stance on ag-related chemical companies with four Underperforms (AGU, POT, MOS, FMC) compared to four Buys (CF, DOW, DD, PAH).

## Rapid Xtend launch positive for MON, negative for DOW

Responses show 27% penetration of Monsanto's Xtend soybeans among retailers, representing the potential for greater than 20mn acres vs. Monsanto's recently increased guidance of 18mn acres. Retailers in Illinois had a weighted average penetration of 47%, Indiana 34%, and Iowa 17%. Respondents noted the rapid adoption was driven by both the superior yielding genetics as well as a defensive maneuver to protect from potential spraying of dicamba by neighbors. Rapid adoption of Xtend, particularly in the high yielding Combelt, represents a launch challenge for Dow's Enlist soybeans that are still awaiting Chinese import approval. Retailers were mixed on Xtend's net effect on total industry herbicide sales with 25% expecting an increase and 21% expecting a decrease, and several were not expecting to spray any dicamba.

### Increased pressure on seed prices vs. chemicals

Among respondents, 50% expected lower priced seed in 2017 compared to 17% expecting increased prices. Several retailers commented they expect increased competition in seeds and we note that since the 2013 peak, seed prices have increased about 5% vs. around 20% decline in fertilizer prices and about 3% decline in chemical prices. Crop protection chemicals showed a more benign trend with 36% expecting lower price/mix vs. 25% expecting an increase. Inventories may be elevated with 23% indicating above normal levels of crop protection chemicals in inventory compared to 15% below normal.

## Bear case on fertilizer demand from variable rate unlikely

Variable rate application of phosphate and potash is estimated at 42%, consistent with other third-party survey work. Retailers noted applications on 91-100% of fields by 1% of respondents, on 76-90% by 10% of respondents, and on 51-75% by 28%. In contrast to one bear thesis on fertilizer demand, our survey shows no material change in fertilizer consumption from variable rate application with 38% of retailers indicating their application of P/K has not changed vs. 31% showing a decrease and 29% an increase.

### Lower farm income, but yield drivers remain in place

Ag retailers highlighted another challenging year ahead with 62% of respondents expecting farmer cash margins per acre to contract in 2017, 24% expecting no change, and only 12% expecting an increase. Those expecting lower cash margins estimated a 12% decline while those expecting an increase predicted a 6% gain. Variable rate application of seed at 20% penetration remains behind the adoption curve of fertilizer and represents an upside driver of yield moving forward. Genetics, precision ag, and gene editing (see 2017 agricultural economy primer) represent additional yield upside.

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Refer to important disclosures on page 15 to 16.

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**BofA Analytics** - DATA DRIVEN -

Steve Byrne, CFA Research Analyst +1 646 855 5746

steve.byrne@baml.com

lan Bennett, CFA Research Analyst +1 646 855 5738 ian.bennett@baml.com

Ben Gottesdiener Research Analyst ML PE&S +1 646 855 1966 benjamin.gottesdiener@baml.com

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## Map of survey participants

We conducted a survey in collaboration with the Purdue University Center for Food and Agricultural Business. We surveyed 144 Ag retailers in the US, representing 3% share of this channel, with a majority of the participants in the Cornbelt. All survey data was collected in April. See individual sections for executive summaries with full data and comments available in the appendix.

Exhibit 1: Ag retail respondents were primarily in the central Cornbelt

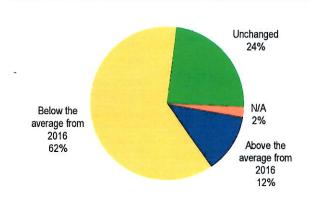


Source: BofA Merrill Lynch Global Research

## **Farm Economics**

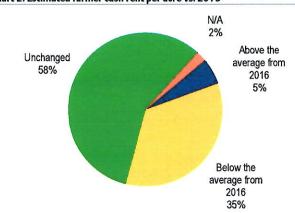
Ag retailers highlighted another challenging year ahead with 62% of respondents expecting farmer cash margins to contract in 2017, 24% expecting no change, and only 12% expecting an increase. Those expecting lower cash margins estimated a 12% decline while those expecting an increase predicted a 6% gain. Somewhat offsetting expectations for lower cash margins are expectations for farmers to pay lower cash rent. 35% of retailers expect farmers to pay lower cash rent in 2017 vs. 5% expecting an increase while 58% expect no change.

Chart 1: Estimated farmer cash margin per acre vs. 2016



Source: BofA Merrill Lynch Global Research

Chart 2: Estimated farmer cash rent per acre vs. 2016



Source: BofA Merrill Lynch Global Research

## **Fertilizer**

Variable rate application of phosphate (P) and potash (K) was applied on 91-100% of fields by 1% of respondents, on 76-90% by 10% of respondents, on 51-75% by 28%, on 26-50% by 35%, on 11-25% by 18%, and applied on 0-10% of fields by 6% of respondents. As a result of variable rate application, 38% of retailers indicated their

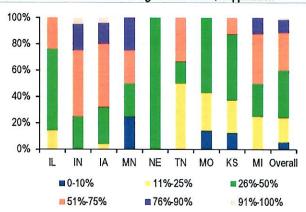
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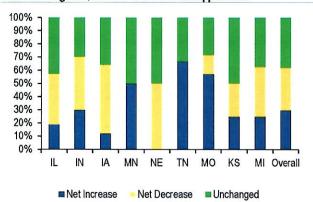
application of P/K has not changed while 31% showed a decrease and 29% showed an increase. If grower interest in variable rate fertilizer applications is not to reduce total fertilizer costs, then we believe the motivation is to prevent a potential yield drag from insufficient fertilizer availability in certain areas.

Chart 3: Fraction of fields receiving variable rate P/K application



Source: BofA Merrill Lynch Global Research

Chart 4: Change in P/K use from variable rate applications

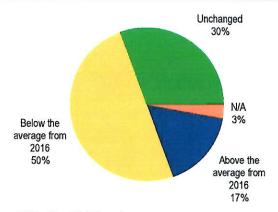


Source: BofA Merrill Lynch Global Research

## Seed

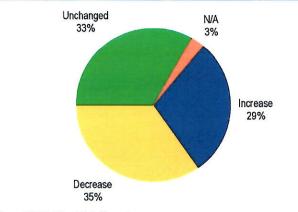
Retailers largely expect declining seed prices in 2017 with 50% of respondents forecasting below average prices vs. 2016, 30% expecting unchanged prices, and only 17% predicting prices to increase. Those expecting declines forecasted 8% lower prices while those expecting an increase predicted a 6% gain. Biotech traits per acre are likely to not materially change with 35% expecting a decrease, 33% forecasting unchanged, and 29% predicting an increase. DuPont (32%) and Monsanto (20%) were most mentioned when asked which brand has been most aggressive on price in 2017.

Chart 5: Expectation of seed prices in 2017 vs. 2016



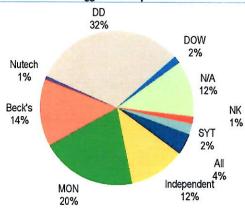
Source: BofA Merrill Lynch Global Research

Chart 6: Expectation of biotech traits per acre in 2017 vs. 2016



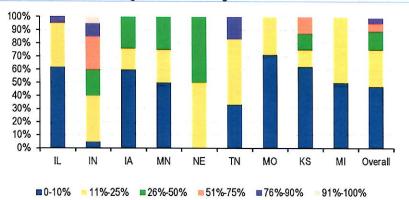
Source: BofA Merrill Lynch Global Research

Chart 7: Seed brands mentioned as most aggressive on price in 2017



Variable rate application of seed was applied on 91-100% of fields by 1% of respondents, on 76-90% by 4% of respondents, on 51-75% by 6%, on 26-50% by 14%, on 11-25% by 27%, and applied on 0-10% of fields by 45% of respondents. The "I" states of Illinois, Indiana, and Iowa tended to have higher fractions of variable rate seeding, which we believe could accelerate yield gains.

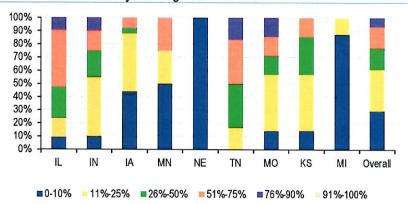
Chart 8: Fraction of fields receiving variable rate seeding



Source: BofA Merrill Lynch Global Research

Penetration of Monsanto's Xtend soybeans in the ag retailer's local area was estimated at 76-90% by 6% of respondents, at 51-75% by 15%, at 26-50% by 15%, at 11-25% by 30%, and at 0-10% by 28% of respondents. Illinois had a weighted average penetration of 47%, Indiana 34%, and Iowa 17%.

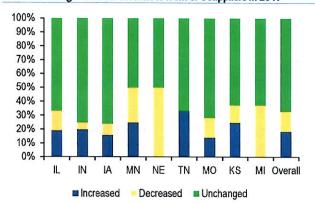
Chart 9: Penetration of Xtend soybeans in ag retailer's local area



## **Crop Protection Chemicals**

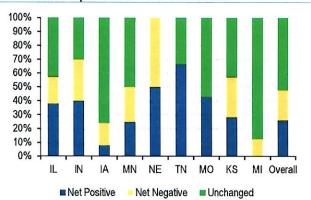
Retailers noted crop protection chemical (CPC) rebate incentives from chemical suppliers have likely overall slightly increased in 2017 with 65% indicating no change, 14% indicating a decrease, while 18% show an increase. Ag retailers were mixed in their views on Xtend's net expected effect on herbicide sales with 25% expecting increased sales, 21% expecting a decrease, and 50% predicting unchanged sales.

Chart 10: Change in rebate incentives from CPC suppliers in 2017



Source: BofA Merrill Lynch Global Research

Chart 11: Xtend expected net effect on herbicide sales



Source: BofA Merrill Lynch Global Research

More retailers expected a higher level of fungicide use in 2017 vs. 2016 with 33% expecting an increase, 21% expecting a decrease, and 43% predicting unchanged use. Expected use of insecticide showed no material change with 18% expecting an increase, 18% expecting a decrease, and 62% predicting unchanged use.

Chart 12: Expected use of fungicide in 2017 vs. 2016

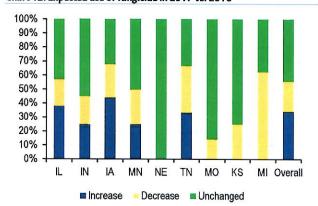
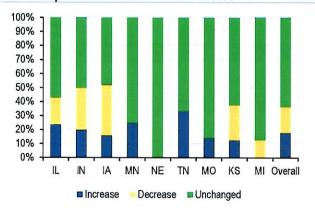


Chart 13: Expected use of insecticide in 2017 vs. 2016



Source: BofA Merrill Lynch Global Research

Source: BofA Merrill Lynch Global Research

A greater number of retailers noted above normal levels of CPC inventory with 23% indicating above normal levels, 15% below normal, and 62% unchanged. This may have helped contribute to price/mix expectations in 2017 vs. 2016 with 36% indicating lower price/mix, 25% indicating higher, and 39% showing unchanged.

Chart 14: Inventory of crop protection chemicals

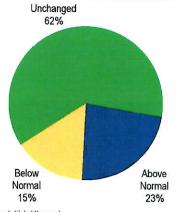
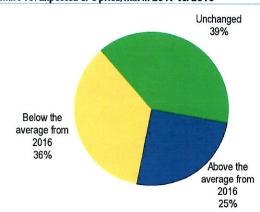


Chart 15: Expected CPC price/mix in 2017 vs. 2016



Source: BofA Merrill Lynch Global Research

Source: BofA Merrill Lynch Global Research

# Appendix: Full data set and commentary

### Table 1: General commentary

The consumer voice gets louder each day. Ag Retailers need to be aware that we must demonstrate responsibility (third party audits of stewardship programs) and be involved in process when legislation is drafted to keep the decision making based on science and not emotion.

Net farm income is still under pressure and resulting in lower margins and more generics. Income is totally dependent on yields. More focus on ROI of inputs, but at the same time a higher probability of a positive ROI is required.

Most of my customer base is still in with 50/50 leases or reasonable cash rest leases. Most the customers are fairly conservative. Chemical usage will increase a little do to using more products and higher rates on soybean acres fighting off weeds. There is a lot of dicamba beans being planted, but a very low percentage will be sprayed with dicamba the first year.

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Most products are slightly lower except for fuel which is 20% increase

A lot depends on weather and implications of commodity price/pressure.

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### Table 1: General commentary

2017 will be a pivotal year - increase yields and depressed commodity prices will speed up the weak ag economy. Major drought with 15% lower trend line yields will band aide the economy for a year or two.

Most of the Dicambia tolerant crops are being planted for a "rescue treatment" option or from a defensive strategy, against drift form neighbors.

Margins could be up a little this year on Soybean and Corn Acres because of the decrease in fertilizer prices.

Lots of variables going into this season, how many less corn acres etc.

Expect this year to be more competitive than last. The other competition is going in up front with low pricing looking to get more market share.

Our customers are cautiously optimistic. We are surviving on superior yields in 2016 being marketed in 2017 for cash flow. This will work for 2017, but if yields slip back to average, with the current market prices, we will have a financial meltdown.

ag economy is very very tough

chemical inventories and dollars are up due to increase soybean residual rates

Grower margins will continue to be pressured. More acres will be planted with the abundance of moisture in the west. Commodity prices are either stagnant, or slightly declining. It will be another tough year to keep growers successful.

I feel that we are getting ready to see a correction in prices on seed and chemicals. Not sure how all this will happen, but with fewer players in the market and consolidation, we may experience more chemical and Seed ties across our business.

Most of the responses provided will be highly dependent upon the weather and what happens in the coming weeks as we start planting in our area.

Not custom spraying any Dicamba this year on soybeans post emergent

Though sales are down on chemistry, any factor can change this during the growing season, threat of stripe rust in wheat, white mold in beans, weed resistance etc. or an insect out break like Aphids

Source: BofA Merrill Lynch Global Research

Table 2: How would you estimate farmer cash margins per acre in your area for this year vs 2016 levels (% change)?

						Above t	he avera 2016	ge from	Below t	he averag	ge from
State	Total	Above the average from 2016	Below the average from 2016	Unchanged	N/A	Average	Max	Min	Average	Max	Min
IL	21	2	16	3	0	2%	2%	2%	(11%)	(20%)	(3%)
IN	20	8	8	4	0	7%	15%	3%	(9%)	(15%)	(4%)
IA	25	2	19	4	0	4%	4%	4%	(14%)	(20%)	(10%)
MN	4	0	2	2	0	NM	NM	NM	NM	`NM	`NM
NE	2	0	1	1	0	NM	NM	NM	NM	NM	NM
TN	6	1	4	1	0	NM	NM	NM	(20%)	(20%)	(20%)
MO	7	0	5	2	0	NM	NM	NM	(15%)	(25%)	(5%)
KS	8	2	4	2	0	10%	10%	10%	(5%)	(5%)	(5%)
MI	8	0	5	3	0	NM	NM	NM	(10%)	(10%)	(10%)
Others	43	3	25	12	3				17		,,
Overall	144	18	89	34	3	6%	15%	2%	(12%)	(35%)	(2%)
Answer Mix	100%	13%	62%	24%	2%	605.6 TO			,	1-27-4	(= / • /

Source: BofA Merrill Lynch Global Research

Table 3: How would you estimate farmer cash rent per acre in your area for this year vs 2016 levels (% change)?

						Above the	average 1	from 2016	Below the	average i	from 2016
State	Total	Above the average from 2016	Below the average from 2016	Unchanged	N/A	Average	Max	Min	Average	Max	Min
IL	21	2	7	12	0	NM	NM	NM	-6.8%	-10.0%	-2.0%
IN	20	0	8	12	0	NM	NM	NM	-8.2%	-15.0%	-1.0%



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Table 3: How would you estimate farmer cash rent per acre in your area for this year vs 2016 levels (% change)?

144	8	50	83	3	8.0%	15.0%	1.0%	-7.8%	-20.0%	-1.0%
43	3	10	27	3						
8	0	3	5	0	NM	NM	NM	-10.0%	-10.0%	-10.0%
8	0	4	4	0	NM	NM	NM	-12.5%	-20.0%	-5.0%
7	1	3	3	0	15.0%	15.0%	15.0%	-5.0%	-5.0%	-5.0%
6	1	1	4	0	NM	NM	NM	NM	NM	NM
2	0	0	2	0	NM	NM	NM	NM	NM	NM
4	0	3	1	0	NM	NM	NM	-9.5%	-15.0%	-5.0%
25	1	11	13	0	NM	NM	NM	-6.5%	-10.0%	-3.8%
	25 4 2 6 7 8 8 43	25 1 4 0 2 0 6 1 7 1 8 0 8 0 43 3	25	25 1 11 13 4 0 3 1 2 0 0 0 2 6 1 1 1 4 7 1 3 3 3 8 0 4 4 4 8 0 3 5 43 3 10 27	25       1       11       13       0         4       0       3       1       0         2       0       0       2       0         6       1       1       4       0         7       1       3       3       0         8       0       4       4       0         8       0       3       5       0         43       3       10       27       3	4 0 3 1 0 NM 2 0 0 2 0 NM 6 1 1 1 4 0 NM 7 1 3 3 0 150% 8 0 4 4 0 NM	4 0 3 1 0 NM NM 2 0 0 2 0 NM NM 6 1 1 1 4 0 NM NM 7 1 3 3 0 15.0% 15.0% 8 0 4 4 0 NM NM	4     0     3     1     0     NM     NM     NM       2     0     0     2     0     NM     NM     NM       6     1     1     4     0     NM     NM     NM       7     1     3     3     0     150%     150%     150%       8     0     4     4     0     NM     NM     NM	4     0     3     1     0     NM     NM     NM     -9.5%       2     0     0     2     0     NM     NM     NM     NM       6     1     1     4     0     NM     NM     NM     NM       7     1     3     3     0     15.0%     15.0%     15.0%     -5.0%       8     0     4     4     0     NM     NM     NM     -12.5%	4     0     3     1     0     NM     NM     NM     -9.5%     -15.0%       2     0     0     2     0     NM     NM     NM     NM     NM       6     1     1     4     0     NM     NM     NM     NM     NM       7     1     3     3     0     15.0%     15.0%     -5.0%     -5.0%     -5.0%       8     0     4     4     0     NM     NM     NM     -12.5%     -20.0%

Table 4: In your area, what fraction of cultivated fields will receive variable rate applications of Phosphate and Potash for the 2017 crops?

State	Total	0-10%	11%-25%	26%-50%	51%-75%	76%-90%	91%-100%	N/A
IL	21	0	3	13	5	0	0	0
IN	20	0	0	5	10	4	1	0
IA	25	0	1	7	12	4	1	0
MN	4	1	0	1	1	1	0	0
NE	2	0	0	2	0	0	0	0
TN	6	0	3	1	2	0	0	0
MO	7	1	2	4	0	0	0	0
KS	8	1	2	4	1	0	0	0
MI	8	0	2	2	3	1	0	0
Others	43	5	13	12	6	4	0	3
Overall	144	8	26	51	40	14	2	3
Answer Mix	100.0%	5.6%	18.1%	35.4%	27.8%	9.7%	1.4%	2.1%

Source: BofA Merrill Lynch Global Research

Table 5: Has variable rate applications of Phosphate and Potash resulted in a net increase or decrease in total applications?

State	Total	Net Increase	<b>Net Decrease</b>	Unchanged	N/A
ĬL.	21	4	8	9	0
IN	20	6	8	6	0
IA	25	3	13	9	0
MN	4	2	0	2	0
NE	2	0	1	1	0
TN	6	4	0	2	0
MO	7	4	1	2	0
KS	8	2	2	4	0
MI	8	2	3	3	0
Others	43	15	9	16	3
Overall	144	42	45	54	3
Answer Mix	100.0%	29.2%	31.3%	37.5%	2.1%

Source: BofA Merrill Lynch Global Research

Table 6: Do you expect the average price of seed sold for 2017 season to be above or below the average from 2016, and by how much (percentage)?

						Above the	average 2016	e from	Below t	he avera 2016	ge from
State	Total	Above the average from 2016	Below the average from 2016	Unchanged	N/A	Average	Max	Min	Averag e	Max	Min
L	21	2	13	6	0	4.5%	5.0%	4.0%	-5.9%	-10.0%	-3.0%
IN	20	2	7	11	0	5.0%	5.0%	5.0%	-7.3%	-15.0%	-4.0%
IA	25	3	14	8	0	NM	NM	NM	-11.7%	-25.0%	-5.0%
MN	4	0	3	1	0	NM	NM	NM	-9.5%	-10.0%	-8.5%
NE	2	1	0	1	0	2.0%	2.0%	2.0%	NM	NM	NM

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Table 6: Do you expect the average price of seed sold for 2017 season to be above or below the average from 2016, and by how much (percentage)?

TN	6	2	2	4	0	7.5%	10.00	5.0%	N III 4	NINA	
MO	7	3	2	1	0		10.0%		NM	NM	NM
	,	Ü	3	4	0	NM	NM	NM	-5.0%	-5.0%	-5.0%
KS	8	4	1	3	0	5.2%	7.5%	3.0%	-10.0%	-10.0%	-10.0%
MI	8	0	8	0	0	NM	NM	NM	-8.3%	-10.0%	-3.0%
Others	43	9	21	9	4						
Overall	144	24	72	44	4	5.5%	20.0%	2.0%	-8.2%	-25.0%	-1.0%
Answer Mix	100.0%	16.7%	50.0%	30.6%	2 8%						

Table 7: Do you expect the average number of biotech traits per acre will increase or decrease vs 2016, and why?

State	Total	Increase	Decrease	Unchanged	N/A
IL	21	8	5	8	0
IN	20	4	12	4	0
IA	25	5	13	7	0
MN	4	0	2	2	0
NE	2	1	0	1	0
TN	6	4	1	1	0
MO	7	3	0	4	0
KS	8	3	2	3	0
MI	8	1	6	1	0
Others	43	13	9	17	4
Overall	144	42	50	48	4
Answer Mix	100.0%	29.2%	34.7%	33.3%	2.8%

Source: BofA Merrill Lynch Global Research

# Table 8: Do you expect the average number of biotech traits per acre will increase or decrease vs 2016, and why?

### Comments

### Increase

Added insurance for the big guys.

Addition of Dicamba to the lineup.

advancement in technology

Better products

diacamba traits

Dicamba Beans & more Liberty beans (40% Extend, 20% Liberty, 40% RR2)

dicamba tolerant soybeans

Dicamba trait has been added to the mix

Dicamba tolerant cotton and soybeans will drive more Boitech trait sales

farmers are looking at ways to increase profits

herbicide resistance

introduction of dicamba tolerant soybeans in ON.

Many acres will add Xtend to others. Should outweigh conversion to conventional

Need the Biotech traits in today's environment. Without has not worked, yields &It; 20% Last YR

New choices in herbicides

New technologies of Roundup Xtend and Enlist

New technology has come on the scene. (Dicamba & 2, 4-D technology)

Palmer amaranth control with new technologies.

Resistance

Results

Still where the yield is at

Weed resistance

Weeds

XTEND Yield

Increase on drought tolerance traits.

Duracade is coming, along with Enlist and Balance bean

### Decrease

cost cutting, low corn prices



# Table 8: Do you expect the average number of biotech traits per acre will increase or decrease vs 2016, and why?

#### Comments

Cost Savings-Take advantage of soil applied products

farmers are more willing to accept risk of pest pressure in lieu of planting biotech seeds

Farmers looking to decrease the purchase price per unit

Farms are cutting corn input cost as much as possible

Few guys buying cheaper seed with less traits

grain prices

I think cost will drive producers to average the same number of traits or plant a cheaper product with less traits

less corn acres, so less corn on corn and less of the rootworm traits are being ordered

Less traits lowers cost

Margins

more above ground only, less above and below

More demand for non-gmo

Non traited corn will increase 5% due to price.

Price

Producers do not see the value of purchasing EVERY trait in the bag. They would rather only purchase the specific traits

they feel the need.

Slightly down due to conventional and organic demand.

some will look at lowering seed cost per acre this year

Still shifting corn genetics from full traited to conventional because of costs

We have had an extreme interest in Non-GMO varieties for the dairies

Price

Price

Reduce seed costs

Similar yields can be attained without expensive traits.

Smartstax to DoublePro

The value to grower is lower in our geography with low-priced commodities

too pricey

Using insecticides

VT2's have been yielding well with plenty of rain the last couple of years, cost savings

based on price. Need to cut costs somehow

Be more deliberate where used.

Cheaper

Cost Cost

Cost savings that growers are looking for

farmers are more willing to accept risk of pest pressure in lieu of planting biotech seeds

Growers are looking for cheaper seed and often that offers fewer botech traits

Lower corn price

Lower cost on less traits and less corn on corn acres

More conventional and double stacked traits rather than triple or smart stacks

More conventional corn in area

Source: BofA Merrill Lynch Global Research

Table 9: In your area, what fraction of cultivated fields will receive variable rate seeding for 2017?

State	Total	0-10%	11%-25%	26%-50%	51%-75%	76%-90%	91%-100%	N/A
IL	21	13	7	0	0	1	0	0
IN	20	1	7	4	5	2	1	0
IA	25	15	4	6	0	0	0	0
MN	4	2	1	1	0	0	0	0
NE	2	0	1	1	0	0	0	0
TN	6	2	3	0	0	1	0	0
MO	7	5	2	0	0	0	0	0
KS	8	5	1	1	1	0	0	0
MI	8	4	4	0	0	0	0	0
Others	43	19	9	7	2	2	0	4
Overall	144	66	39	20	8	6	1	4
Answer Mix	100.0%	45.8%	27.1%	13.9%	5.6%	4.2%	0.7%	2.8%

Source: BofA Merrill Lynch Global Research

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Table 10: Penetration of Xtend soybeans in your area?

State	Total	0-10%	11%-25%	26%-50%	51%-75%	76%-90%	91%-100%	N/A
IL .	21	2	3	5	9	2	0	0
IN	20	2	9	4	3	2	0	0
IA	25	11	11	1	2	0	0	0
MN	4	2	1	0	1	0	0	0
NE	2	2	0	0	0	0	0	0
TN	6	0	1	2	2	1	0	0
MO	7	1	3	1	1	1	0	0
KS	8	1	3	2	1	0	0	1
MI	8	7	1	0	0	0	0	0
Others	43	12	11	7	3	3	0	7
Overall	144	40	43	22	22	9	0	8
Answer Mix	100.0%	27.8%	29.9%	15.3%	15.3%	6.3%	0.0%	5.6%

Table 11: Have rebate incentives from crop protection chemical suppliers for 2017 changed from 2016?

State	Total	Increased	Decreased	Unchanged	N/A
IL	21	4	3	14	0
IN	20	4	1	15	0
IA	25	4	2	19	0
MN	4	1	1	2	0
NE	2	0	1	1	0
TN	6	2	0	4	0
MO	7	1	1	5	0
KS	8	2	1	5	0
MI	8	0	3	5	0
Others	43	8	7	23	5
Overall	144	26	20	93	5
Answer Mix	100.0%	18.1%	13.9%	64.6%	3.5%

Source: BofA Merrill Lynch Global Research

Table 12: Will Xtend (dicamba tolerance) be a net positive or net negative for herbicide sales?

21 20 25	8 8 2	4 6	9 6	0
	8 2	6	6	0
25	2			- 0
4		4	19	0
4	1	1	2	0
2	1	1	0	0
6	4	0	2	0
7	3	0	4	0
8	2	2	3	1
8	0	1	7	0
43	7	11	20	5
44	36	30	72	6
0.0%	25.0%	20.8%	50.0%	4.2%
	44	44 36	44 36 30	44 36 30 72

Table 13: In your areas, do you expect Fungicide use to increase or decrease from 2016 levels, and why?

State	Total	Increase	Decrease	Unchanged	N/A
IL	21	8	4	9	0
IN	20	5	4	11	0



Table 13: In your areas, do you expect Fungicide use to increase or decrease from 2016 levels, and why?

Overall Answer Mix	<b>144</b> 100.0%	<b>48</b> 33.3%	<b>30</b> 20.8%	<b>62</b> 43.1%	<b>4</b> 2.8%
Overell	4.44	40	00	20	
Others	43	21	5	13	4
MI	8	0	5	3	0
KS	8	0	2	6	0
MO	7	0	1	6	0
TN	6	2	2	2	0
NE	2	0	0	2	0
MN	4	1	1	2	0
IA	25	11	6	8	0

## Table 14: In your areas, do you expect Fungicide use to increase or decrease from 2016 levels, and why?

### Comments

### <u>Increase</u>

0% finance offers to attract early orders have us thinking today use will be up. That remains to be seen.

2016 results were good

Benefits have been demonstrated in a very wet year (2015) and a dry year (2016).

#### **Increase**

Due to warm winter, disease pressure will be up

great results from 2016

growing uptake on soybeans

Heavy yield loss due to Rust last year will increase farmer use of fungicide this year

Higher rainfall and inoculum from 2016

Higher than normal moisture

If we have potential of a good crop they will apply due to the results of applying or not applying fungicides last year

Its effectiveness in preventing losses last year was dramatic

Lots of moisture / disease pressure

More disease issues popped up last year where they didn't use it

more on soybeans, less on corn

NA

No Winter

Positive ROI from 2016.

RO

running local program to incentivize these applications

some nice payoffs most years but more when conditions are right.

the results are positive in most cases

we continue to see consistent value in both corn and soybeans

we will have an increase in peanut acres - thus resulting in higher usage.

Weather conditions

Wet 16

wet cool spring

wet warm spring

### <u>Decrease</u>

S

cutting overall dollars spent on the farm

Depends on the weather

due to cost / pricing / ROI lower potential

Due to crop prices on Corn & Soybeans. Up on Sugar Beets and Fruit Crops.

Farmers will prioritize \$ for weed control

grain prices

Keeping cost down, less corn acres

Less producers will invest in preventative products, and instead take a chance on fungicide being needed or not.

Lower moisture so far on wheat acres and less margin to spend for it.

margins

More selective use and cost cutting.

Primarily used on Wheat and we have 20-25% less wheat, additionally not sure how much investment in wheat will be made

Source: BofA Merrill Lynch Global Research

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Table 15: In your area, do you expect Insecticide use to increase or decrease from 2016 levels, and why?

State	Total	Increase	Decrease	Unchanged	N/A
IL	21	5	4	12	0
IN	20	4	6	10	0
IA	25	4	9	12	0
MN	4	1	0	3	0
NE	2	0	0	2	0
TN	6	2	0	4	0
MO	7	1	0	6	0
KS	8	1	2	5	0
MI	8	0	1	7	0
Others	43	7	4	28	4
Overall	144	25	26	89	4
Answer Mix	100.0%	17.4%	18.1%	61.8%	2.8%

# Table 16: In your area, do you expect Insecticide use to increase or decrease from 2016 levels, and why?

### Comments

#### **Increase**

Also because of warm winter, insect pressure will be up

Increase in non-gmo = need for insecticide

Increased for foliar application in soybeans. Decrease in soil applied for corn.

Mild winter expect more bugs

More cotton acres will result in more total insecticides. But other crops will more selective

No cold winter weather

no hard freeze

Smaller guys have the time to do it, and will save money.

There will be more insect pressure this year

we will have an increase in peanut acres - thus resulting in higher usage.

Weed pressure

with a mild winter I expect to see a lot of bugs

### Decrease

\$

cost too much/acre

Going back on crop rotations, to a 60/40 c/sb vs 90/10

growers are more willing to accept the risk of rootworm feeding on traited-seeds

Insecticides not approved as tank mix partner with new dicambas

Less Milo planted so we wont spray as much for Sugar Caine Aphids, We also had a large run on soybeans last year I would not count on again

margins

reduction in corn on corn acres

Sacrificial lamb

So much depends on the season and on the pressure, with costs in mind I think producers would say decrease now but pressure will drive the ultimate net change

Source: BofA Merrill Lynch Global Research

Table 17: Is your inventory of crop protection chemicals above or below normal and by how much (percentage)?

						Above Normal		Below Norma		ıal
State	Total	Above Normal	Below Normal	Unchanged	N/A	Average	Max Min	Average	Max	Min
IL	21	7	0	14	0	9%	15% 5%	NM	NM	NM
IN	20	3	4	12	1	9%	10% 8%	-15%	-20%	-10%
IA	25	7	3	15	0	10%	15% 5%	-5%	-5%	-5%
MN	4	1	1	2	0	10%	10% 10%	-10%	-10%	-10%
NE	2	0	1	1	0	NM	NM NM	-20%	-20%	-20%
TN	6	4	1	1	0	11%	20% 5%	NM	NM	NM
MO	7	0	2	5	0	NM	NM NM	-15%	-20%	-10%
KS	8	2	1	5	0	15%	15% 15%	-5%	-5%	-5%
MI	8	1	3	4	0	10%	10% 10%	-15%	-25%	-10%



Agricultural Chemicals | 12 April 2017

## Table 17: Is your inventory of crop protection chemicals above or below normal and by how much (percentage)?

Others	43	7	5	27	4				
Overall	144	32	21	86	5	12%	30% 5%	-13%	-25% -5%
Answer Mix	100.0%	22.2%	14.6%	59.7%	3.5%				

Source: BofA Merrill Lynch Global Research

Table 18: How do you expect average price mix of crop protection chemicals to change in 2017 vs 2016 (percent change)?

						Above th	e averag	ge from	Below ti	he avera 2016	ige from
State	Total	Above the average from 2016	Below the average from 2016	Unchanged	N/A	Average	Max	Min	Average	Max	Min
IL	21	9	4	8	0	9%	15%	5%	NM	NM	NM
IN	20	6	5	8	1	9%	10%	8%	-15%	-20%	-10%
IA	25	6	9	9	1	10%	15%	5%	-5%	-5%	-5%
MN	4	1	1	2	0	10%	10%	10%	-10%	-10%	-10%
NE	2	0	1	1	0	NM	NM	NM	-20%	-20%	-20%
TN	6	2	2	2	0	11%	20%	5%	NM	NM	NM
MO	7	3	4	0	0	NM	NM	NM	-15%	-20%	-10%
KS	8	3	1	4	0	15%	15%	15%	-5%	-5%	-5%
MI	8	1	6	1	0	10%	10%	10%	-15%	-25%	-10%
Others	43	4	16	19	4						
Overall	144	35	49	54	6	12%	30%	5%	-13%	-25%	-5%
Answer Mix	100.0%	24.3%	34.0%	37.5%	4 2%	170.01		- ,-			

Source: BofA Merrill Lynch Global Research

### Companies mentioned

Ticker	Rating	Price in US\$ (Apr 11, 2017)
agu	C-3-8	93.81
pot	C-3-8	16.85
mos	C-3-8	28.69
fmc	B-3-7	75.38
cf	C-1-8	29.65
dow	C-1-7	62.49
dd	B-1-7	79.14
pah	C-1-9	13.27
	agu pot mos fmc cf dow dd	agu C-3-8 pot C-3-8 mos C-3-8 fmc B-3-7 cf C-1-8 dow C-1-7 dd B-1-7

Source: BofA Merrill Lynch Global Research

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Agricultural Chemicals | 12 April 2017

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