



# Non-GMO Food-grade Soybeans Quantification Study

## Presentation

September 2023



## Background

### Purpose

Provide USSEC with updated information about the state of non-GMO soybean production and especially food-grade-soybean production.

### Information collected from 3 different groups

- **100 Growers** who produce non-GMO food-grade or feed-grade soybeans (phone and online)
- **15 Companies** that purchase export non-GMO/food-grade or feed-grade soybeans (online)
- **3 QSSB's** (Qualified States' Soybean Boards) and industry experts (phone).

Information collected from each group achieves a different objective and is complementary to the purpose of achieving the overall goal of this research.

Secondary data sources were compiled from the USDA and its various agencies.

# Information Objectives for Key Groups

## Growers

Quantify non-GMO soybean acres

Identify changes in the non-GMO production and reasons for changes.

Assess premiums and yield for non-GMO soybeans.

Future non-GMO planting intentions.

## Purchasers

Portion non-GMO food-grade soybeans exported and the receiving countries.

Portion of contracted non-GMO soybean acres.

End-use for food-grade soybeans.

Outlook for non-GMO soybeans and market signals that influence their outlook.

## QSSBs/ Industry Experts

Verify state soybean production.

Identify other issues that may impact non-GMO and non-GMO food-grade soybean production.

# Executive Highlights

## Incentives and Challenges to Non-GMO Production Continued

**Contamination** is the third most mentioned risk associated with non-GMO production (*see page 30*). Growers mitigate the risk of contamination by using careful management practices, including scouting and cleaning equipment thoroughly, as one grower explains, *“[We use] careful management, clean equipment, check seed purity before planting, scout regularly.”*

**Competing technologies**, such as Plenish soybeans, also represent a challenge for growers. Plenish soybeans are mentioned by a few growers as well as purchasers as negatively impacting non-GMO soybean production. According to Farm Progress magazine, *“processors and participating elevators make delivery of Plenish soybeans as similar as possible to commodity soybeans.”* Plenish is a high-oleic GM IP soybean that has been approved for use in international markets, despite GM labeling. One grower explains, *“Plenish soybeans (RR) are similar management with slightly easier weed control and genetics have equal or better premium.”* One purchaser notes, *“We keep having the same target volume regardless of other factors. However, CBOT and Plenish GMO bean program affects negatively our Non-GMO program.”*

For purchasers, the challenge is the **uncertainty of both the supply and demand** (*see page 62*), as one purchaser explains the risk, *“Contracting with both growers and buyers well in advance of knowing quantity and quality.”* Another purchaser concurs, *“Locking in the purchase price, and then having customer back out on demand side.”* To mitigate these risks, purchasers seek to hedge costs (i.e., same-day buy and sell, early shipments, forward contracting). Purchasers report they contract for most of the IP non-GMO soybeans they acquire (86%).

**Limited local delivery options** disconnect growers from upstream buyers and impact growers’ premium considerations. While purchasers report they can meet about 85% of demand, growers are looking for local delivery options to signal an increase in demand, as one grower explains, *“Proximity to end-user is challenging. If closer so that I could direct haul on contracts that are not based on commodity soybean price I would be more open to growing acres.”* Another grower states, *“We have fewer opportunities to grow NGMO beans because two local delivery points no longer take them.”* Another grower explains how this impacts premium considerations, *“If the market for hauling beans pays for what we have to haul them to the nearest elevator that wants that specialty crop, we will haul as far as we have to. But once we start losing money, be it for whatever reason we will switch some, or all acres back to GMO.”*

# Executive Highlights

## Future Non-GMO Food-grade Soybean Production

All indications from this study are that non-GMO food-grade soybean production will increase gradually over the next couple of years, especially if premiums continue to rise and commodity prices continue to fall. Optimism about the future of non-GMO food-grade soybean production is expressed by purchasers, who report they can meet more demand in 2023 than in 2022; growers, who express more willingness to increase non-GMO food-grade production; and industry experts, who reason that there is more competition versus CBOT prices and no yield drag in Non-GMO varieties. QSSBs in IL and ND also agree about the potential growth of the non-GMO soybean market. A net of about 19% of growers report they will increase non-GMO food-grade soybean production over the next couple of years and nearly all growers report higher premiums will incentivize them to produce more food-grade soybeans (90%). Furthermore, from purchasers' perspective, demand has not shown any sign of easing, as one purchaser explains, *"Our customer volumes are still at a high/ consistent level."*

While future production for non-GMO food-grade soybeans looks promising, some historical hurdles still exist in fully meeting non-GMO food-grade soybean demand. The *perceived* yield gap between GMO and non-GMO soybeans, weed control, insect control, contamination, and local delivery options are contrary to growers' decision to plant or increase their non-GMO food-grade soybean acreage. While growers take various steps to mitigate these risks, they also look to buyers, and seed and chemical companies to share in this burden with higher premiums commensurate with increases in commodity soybean prices, more local delivery options, more or better non-GMO soybean varieties, more chemical options, and agronomy advice.

For purchasers, it is the uncertainty about the final order on both delivery (from growers) and acceptance (from upstream buyers) that hinders their willingness to engage more in the market. Industry experts explain that contracting for non-GMO acres is especially difficult given the risks associated with growing the crop. Not only must they contract enough to meet expected purchases, but they must add acres to account for weather-related reductions in the yields (excessive rain, drought, hail, etc.). Geographic dispersion is also necessary to avoid weather and disease-related danger to the crops. Growers are contracting soybeans now for food-grade in September of next year. This is riskier – buying seed and offering premiums. When contracting for soybeans, purchasers want to contract with buyers as well.

In 2023, non-GMO food-grade soybean production increased as a portion of all non-GMO soybean production with some help from the commodities market prices. The challenge is keeping non-GMO food-grade soybean production stable when commodity prices are more attractive, and premiums are not high enough to offset growers' perceptions.

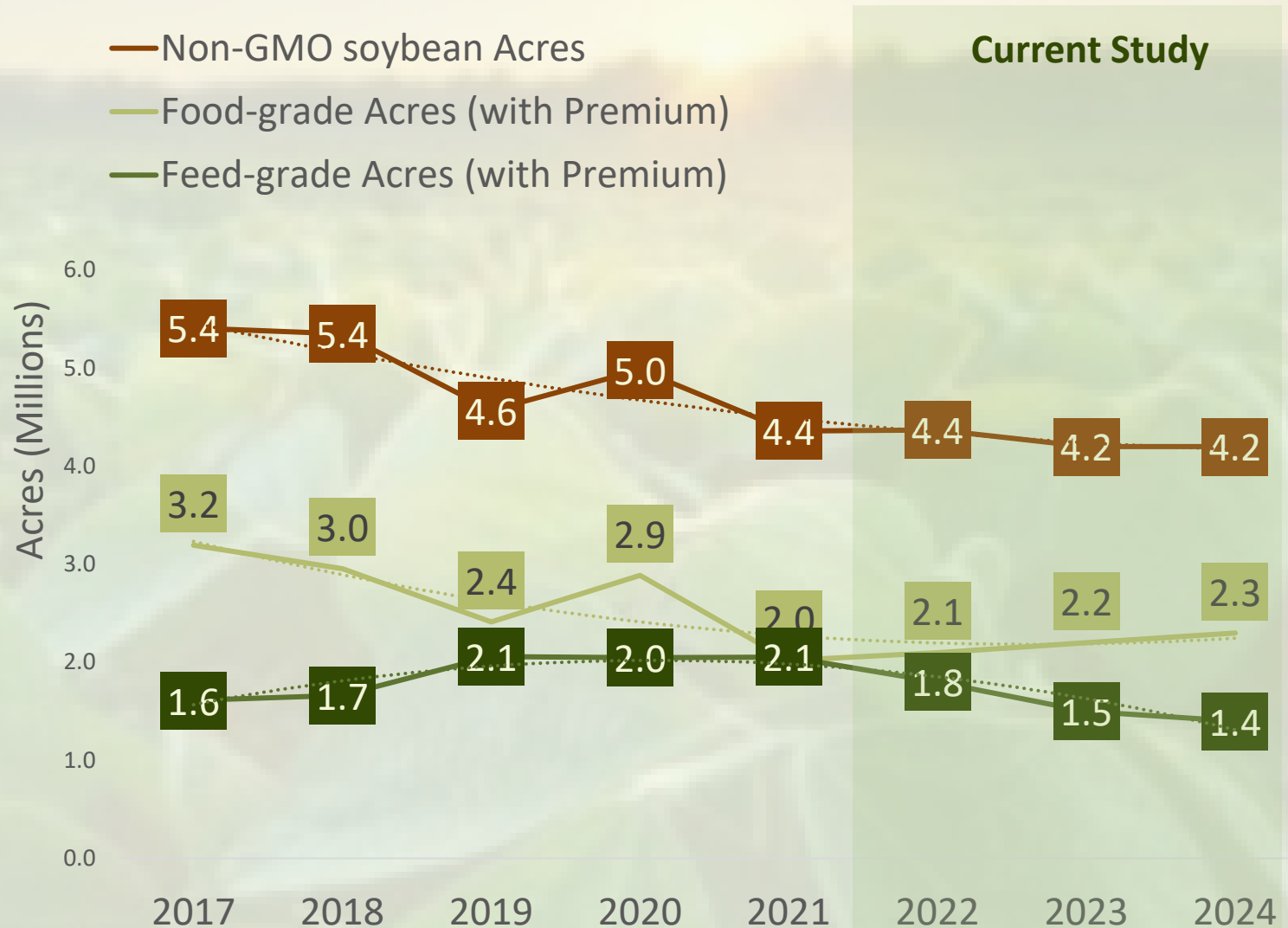
## Secondary Data

	2022	2023
Total U.S. Soybean acres planted (millions) <sup>1</sup>	87.5	83.6
Total U.S. Soybean Bushels (millions)	4,276	4,146
U.S. Non-GM Soybean acres (millions) <sup>1</sup>	4.37	4.18
% of U.S. Non-GM Soybeans marketed without premium <sup>3</sup>	11.7%	12.5%
U.S. Non-GM Soybeans marketed without premium	512,441	522,492
U.S. Non-GM Soybeans marketed for premium (millions)	3.86	3.66
Average GM soybean yield (bushels/acre) <sup>1</sup>	49.5	50.1
Estimated metric tons of U.S. soybeans exported (millions) <sup>2</sup>	54.2	48.72
Estimated bushels of U.S. soybeans exported (millions) <sup>2</sup>	1,990	1,790

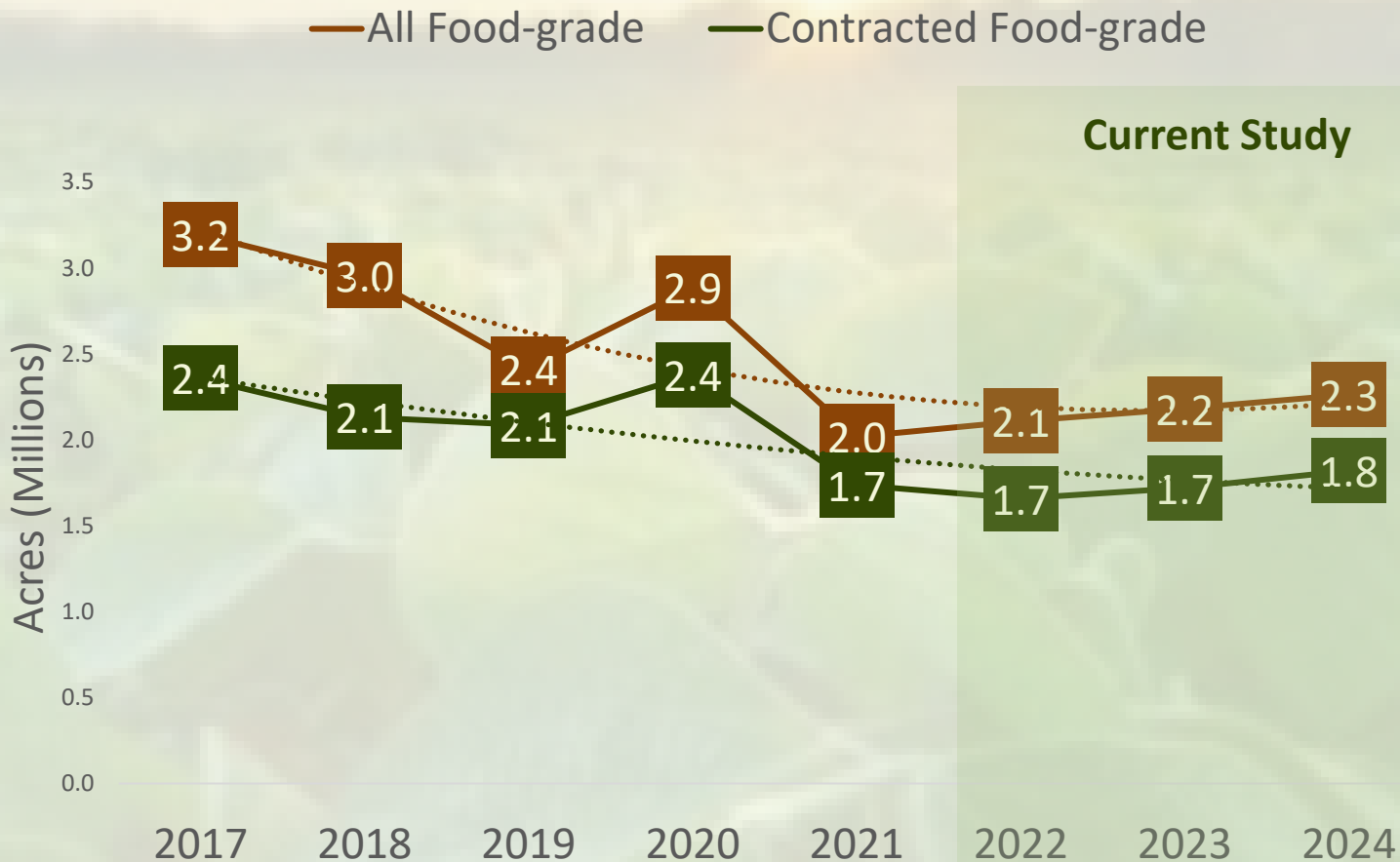
<sup>1</sup>Source: USDA/NASS, September 2023.

<sup>2</sup> USDA/World Agricultural Supply and Demand Estimates (WASDE) September 2023.

# Estimate of Non-GMO Soybean Acres in the U.S.



# Estimate of Contracted Non-GMO Food-grade Soybean Acres in the U.S.





## Analytical Notes & Cautions

- ⚠ Secondary estimates.
- ⚠ The margin of error for small sample sizes. 100 = +/- 9.8% at 95% confidence level and 8.3% at 90% confidence level.
- ⚠ Representation by purchasers.
- ⚠ QSSBs and industry expert interviews provide qualitative insights into how these groups view the non-GMO market. Their opinions may or may not reflect actual market trends.



# Results From Non-GMO Growers

**Non-GMO Food-grade Soybeans Quantification Study  
September 2023**



## Non-GMO Growers Sampled by State

Growers required to meet the following criteria:

Decision maker about soybeans planted on their farm

Plant more than 100 soybean acres in 2023

Plant IP non-GMO food-grade/feed-grade soybeans in 2023

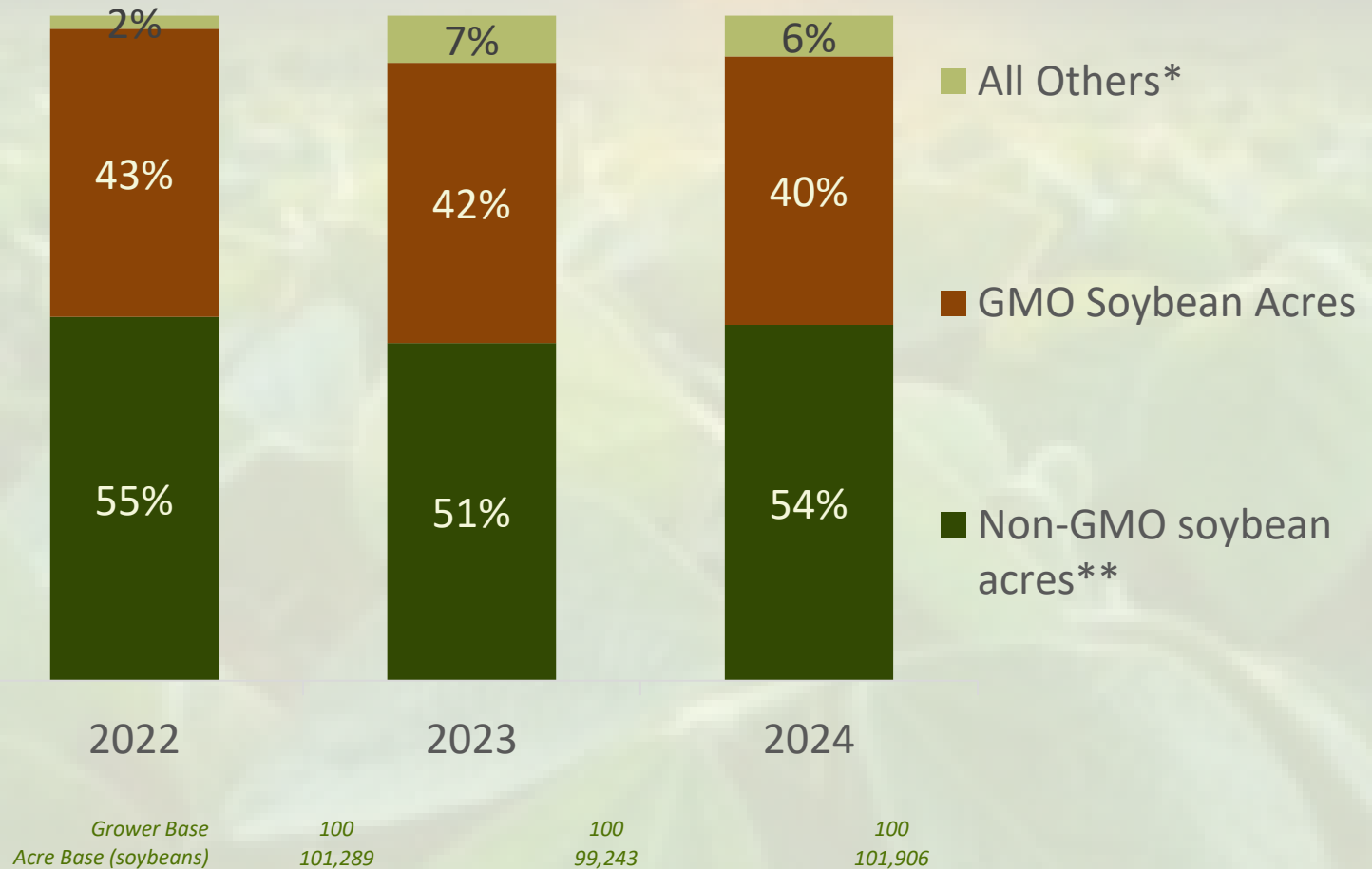
	Non-GMO Growers		Food-grade Growers		Feed-grade Growers	
	Count	Percent	Count	Percent	Count	Percent
Illinois	28	28%	17	26%	13	28%
Iowa	18	18%	11	17%	8	17%
Indiana	17	17%	7	11%	11	23%
Ohio	9	9%	7	11%	3	6%
Michigan	4	4%	3	5%	1	2%
Minnesota	4	4%	4	6%	0	0%
S. Dakota	4	4%	3	5%	2	4%
Other	16	16%	14	21%	9	19%
Total	100	100%	66	100%	47	100%

## Types of Soybeans Planted by Non-GMO Growers

% of Growers	2022	2023	2024
GMO soybeans	60%	61%	59%
Non-GMO sold as commodity	20%	18%	15%
Non-GMO food-grade soybeans	57%	66%	63%
Non-GMO feed-grade soybeans	44%	47%	36%
Both, non-GMO food-grade and non-GMO feed-grade soybeans	10%	13%	11%
Organic soybeans	10%	11%	8%
Commercial soybeans (for seed)	7%	7%	7%
<i>Base growers:</i>	<i>100</i>	<i>100</i>	<i>100</i>

Source (2023 study): Please distribute your soybean acres planted this year in 2023 into the following categories: Non-GMO sold as commodity beans (include non-GMO food-grade or non-GMO feed-grade soybeans for which you did/will not receive a premium), Non-GMO IP Food-grade sold for a premium that is not organic, Non-GMO IP Feed-grade sold for a premium that is not organic, Organic, Commercial for seed, Other types of soybeans.

## Distribution of Non-GMO Growers' Soybean Acres



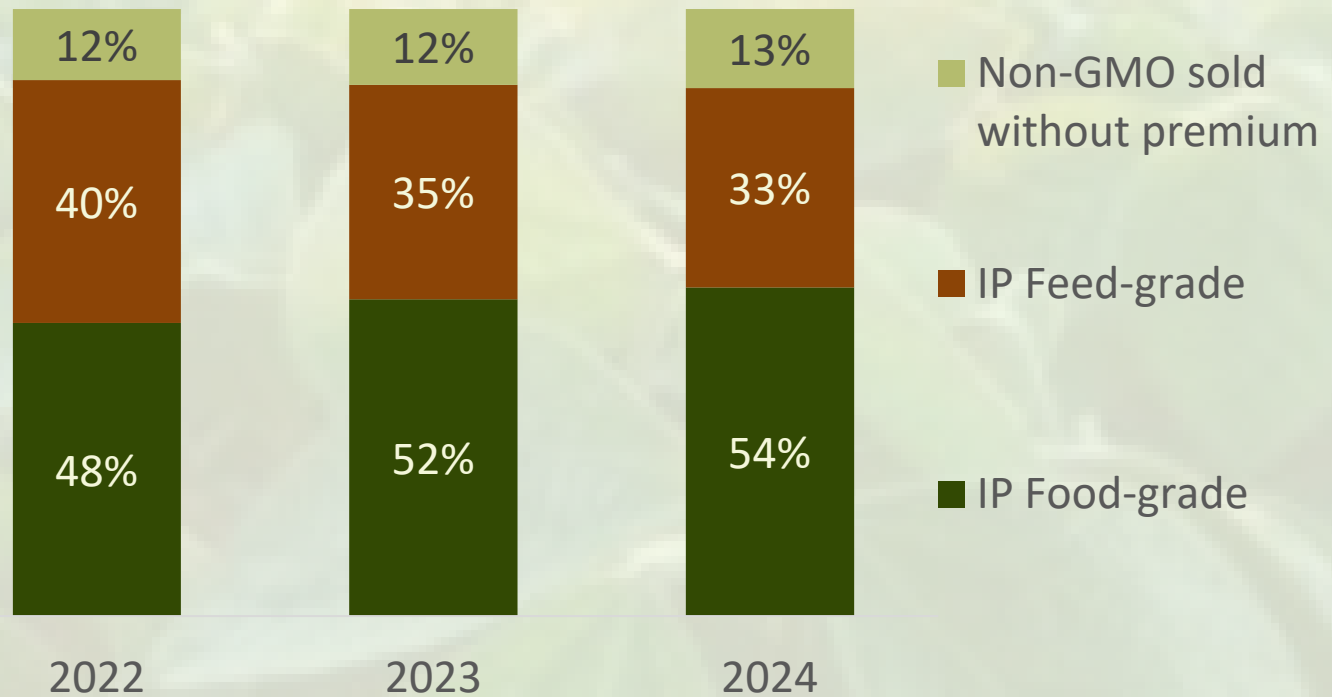
Source (2023 study): Please distribute your soybean acres planted this year in 2023 into the following categories: Non-GMO sold as commodity beans (include non-GMO food-grade or non-GMO feed-grade soybeans for which you did/will not receive a premium), Non-GMO IP Food-grade sold for a premium that is not organic, Non-GMO IP Feed-grade sold for a premium that is not organic, Organic, Commercial for seed, Other types of soybeans.

\*All other soybeans include commercial soybeans for seed, organic, etc.

\*\*Includes any food-grade, feed-grade and all other non-GMO acres, excluding organic.

# % of Non-GMO Soybean Acres That Are Indicated Types

- Food-grade soybeans increasing as a portion of growers' non-GMO soybean acres.
- Feed-grade soybean acres decreasing as a portion of growers' non-GMO soybean acres.



<i>Grower Base</i>	100	100	100
<i>Acre Base (soybeans)</i>	54,293.5	51,456.8	54,580

Source (2023 study): Please distribute all of your soybean acres according to the following: GMO (do not include high oleic and other specialty soybeans), Non-GMO sold as commodity beans, Non-GMO IP Food-grade, Non-GMO IP Feed-grade, Organic, Specialty (high oleic, etc.), Commercial for seed, Other types of soybeans

# Purpose of Selling Non-GMO Soybeans without a Premium

20% of non-GMO growers sold 12% of non-GMO soybeans without a premium in 2023.

Purpose	%	Count
<b>Reasons other than premium</b>	<b>45%</b>	<b>10</b>
Reduce seed cost	59%	13
Rotation	41%	9
Reduce inputs	27%	6
Minimize herbicide resistance	27%	6
<b>Unable to market</b>	<b>32%</b>	<b>7</b>
Produced over contracted amount	27%	6
No available markets, couldn't sell them	18%	4
Did not meet IP standards	9%	2
<b>Reasons other than premium and unable to market</b>	<b>23%</b>	<b>5</b>

Base=22.

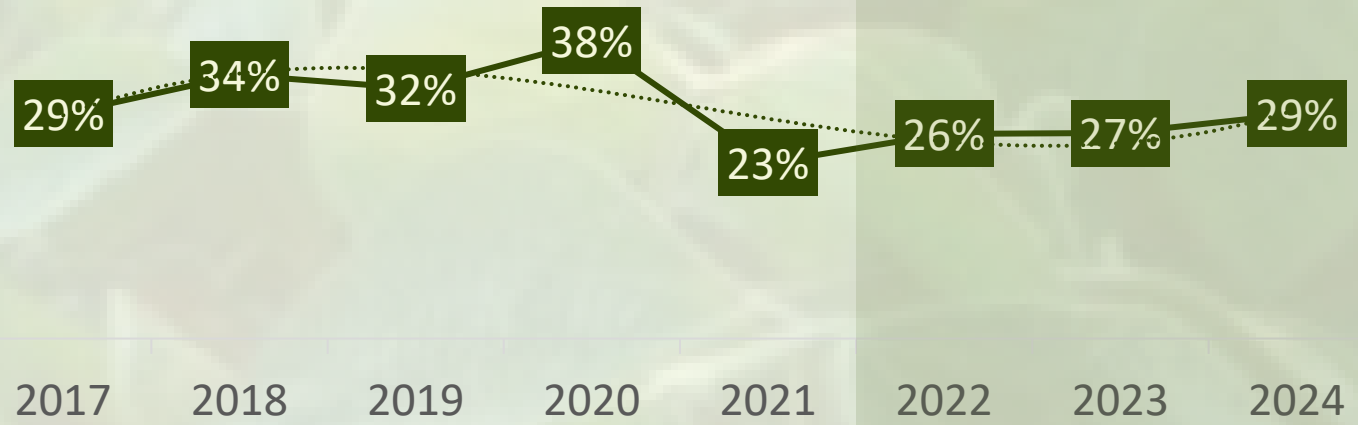
Source (2023 study): Please distribute all of your soybean acres according to the following.

[Non-GMO sold as commodity beans]

What purpose do the non-GMO soybeans that are sold as commodity beans serve?

# % of Soybean Acres that are IP Non-GMO Food-grade

% of Acres  
Among Non-GMO Growers Only

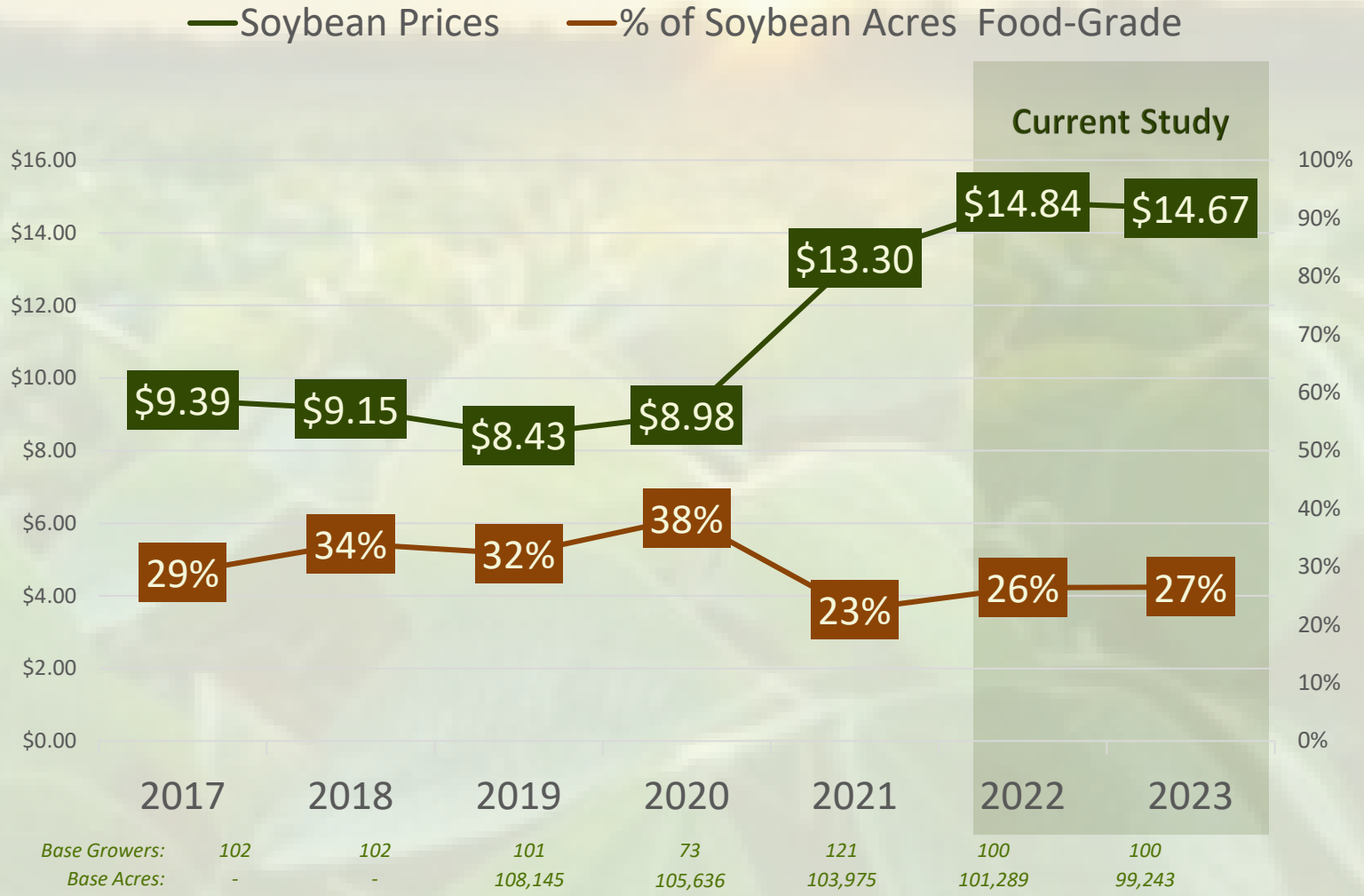


Base Growers:	102	102	101	73	121	100	100	100
Base Acres:	-	-	108,145	105,636	103,975	101,289	99,243	101,906

Source (2023 study): Please distribute your soybean acres planted this year in 2023 into the following categories: Non-GMO sold as commodity beans (include non-GMO food-grade or non-GMO feed-grade soybeans for which you did/will not receive a premium), Non-GMO IP Food-grade sold for a premium that is not organic, Non-GMO IP Feed-grade sold for a premium that is not organic, Organic, Commercial for seed, Other types of soybeans.



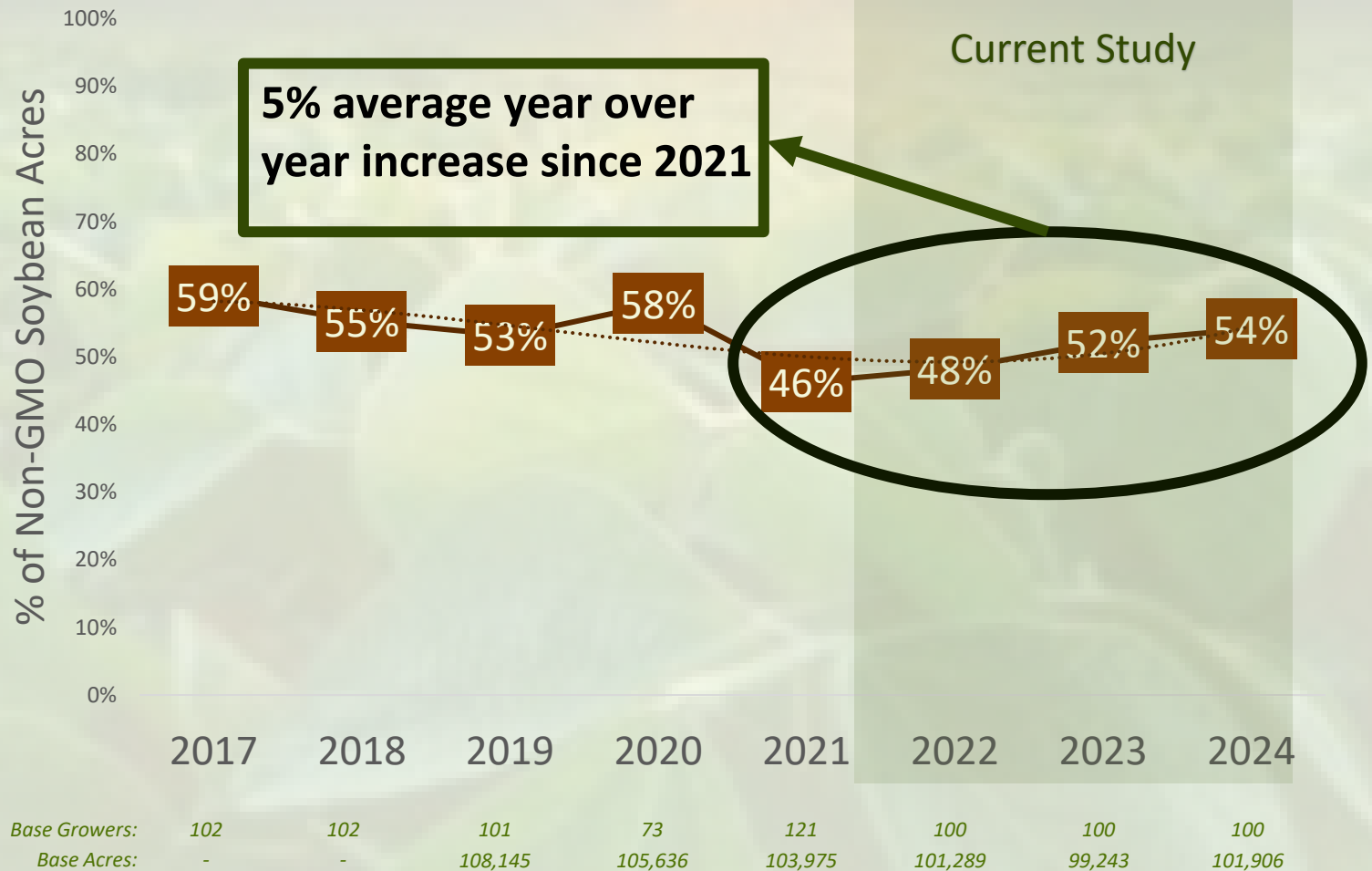
# % of Soybean Acres that are IP Non-GMO Food-grade and CBOT Soybean Prices



Source Acres (2023 study): Please distribute your soybean acres planted this year in 2023 into the following categories: Non-GMO sold as commodity beans (include non-GMO food-grade or non-GMO feed-grade soybeans for which you did/will not receive a premium), Non-GMO IP Food-grade sold for a premium that is not organic, Non-GMO IP Feed-grade sold for a premium that is not organic, Organic, Commercial for seed, Other types of soybeans.

Source Prices: USDA NASS, July 28, 2023.

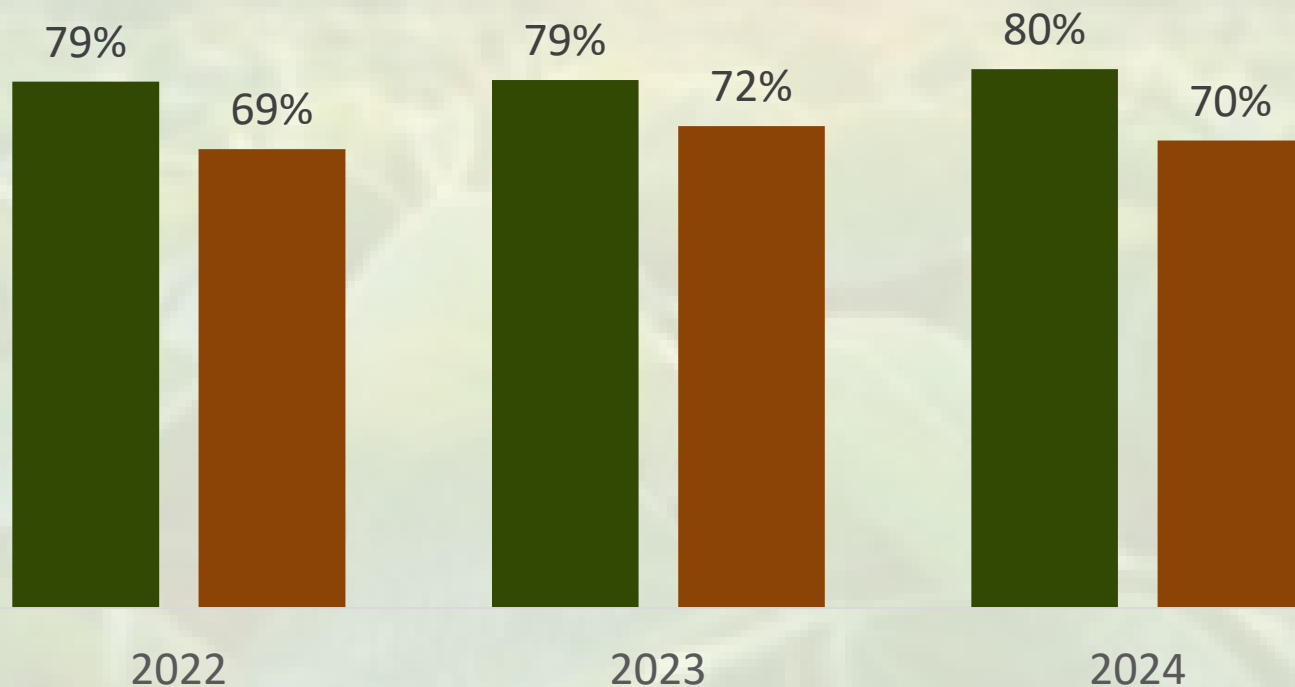
# % of Non-GMO Soybean Acres Accounted for by IP Food-grade Soybeans



Source Acres (2023 study): Please distribute your soybean acres planted this year in 2023 into the following categories: Non-GMO sold as commodity beans (include non-GMO food-grade or non-GMO feed-grade soybeans for which you did/will not receive a premium), Non-GMO IP Food-grade sold for a premium that is not organic, Non-GMO IP Feed-grade sold for a premium that is not organic, Organic, Commercial for seed, Other types of soybeans.

# % of Non-GMO Soybean Acres Produced Under Contract

■ IP Non-GMO Food-grade Acres ■ IP Non-GMO Feed-grade Acres



Grower Base 57 44 66 46 63 36

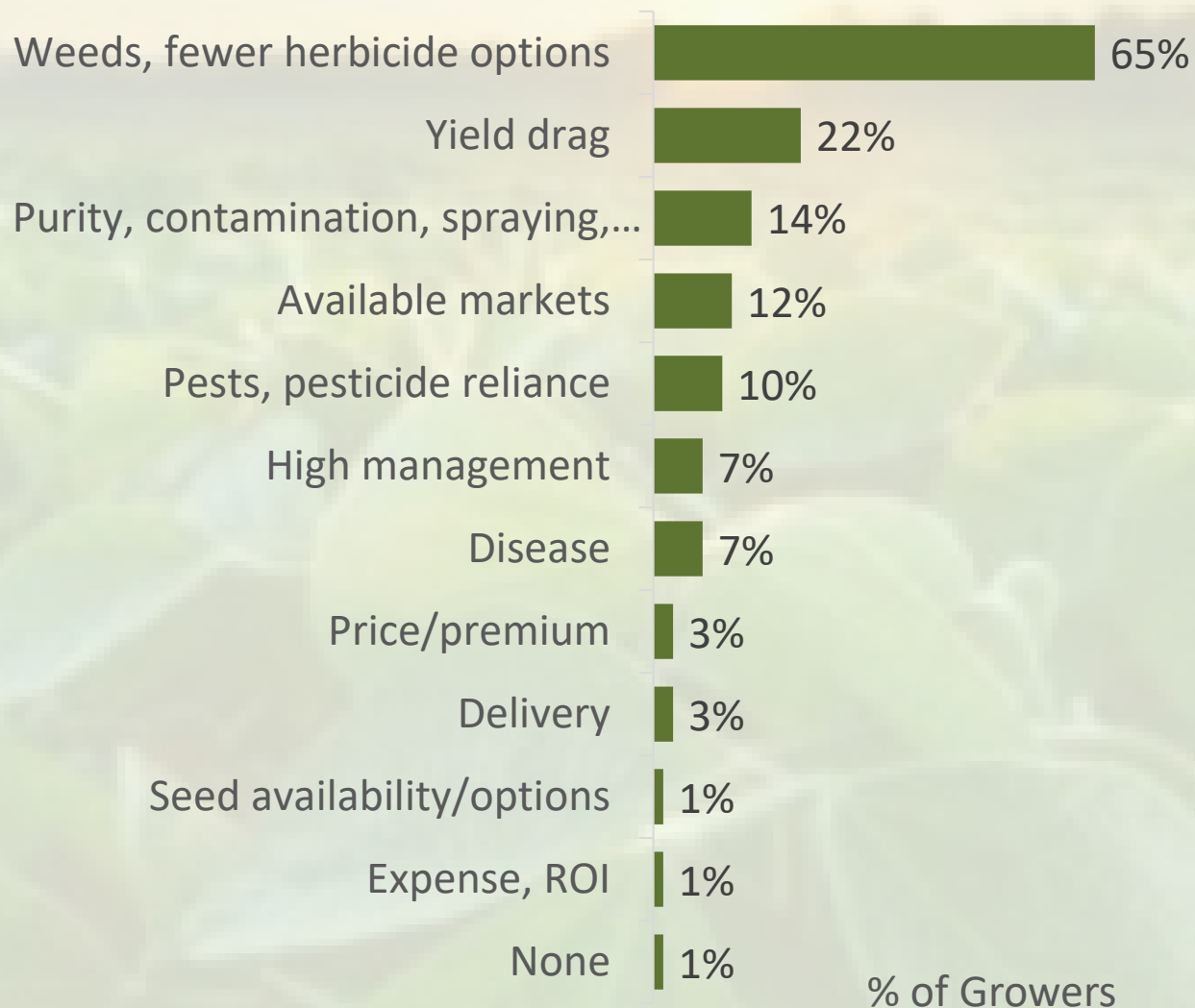
Source (2023 study): Of your total [feed-grade / food-grade] non-GMO soybeans, what percent (%) applies to each of the following categories? % Produced under contract



# **Growers' Risks and Rewards of Non-GMO Soybean Production**

**Non-GMO Food-grade Soybeans Quantification Study  
September 2023**

# Risks Growers Associate with IP Non-GMO Food-grade Production



Base growers=67.

Source (2023 study): What risks, if any, do you associate with planting IP non-GMO food-grade soybeans vs. planting GMO soybeans. Please list all risks you associate with non-GMO production.

# How Growers Mitigate Risks Associated with IP Non-GMO Food-grade Production

Management Practices	39%
Careful management, best practices	15%
Scouting	12%
Clean equipment thoroughly	10%
Crop consultants	4%
Warn neighbors, list on Field Watch	3%
Remove weeds by hand	1%

Chemical Applications	36%
Special herbicide program	15%
Timing of spray	6%
Extra spray passes	4%
Weed control	4%
Higher herbicide rates	3%
Use a fungicide	1%
Use pre-emergent	1%
Fall herbicide program	1%

Planting Practices	34%
Seed selection	12%
Keep them together, segregated	6%
Plant non-GMO earlier	4%
Field selection, placement	4%
Tillage practices	3%
Create borders, segregate field	3%
Use cover crops	1%
Plant all IP beans	1%

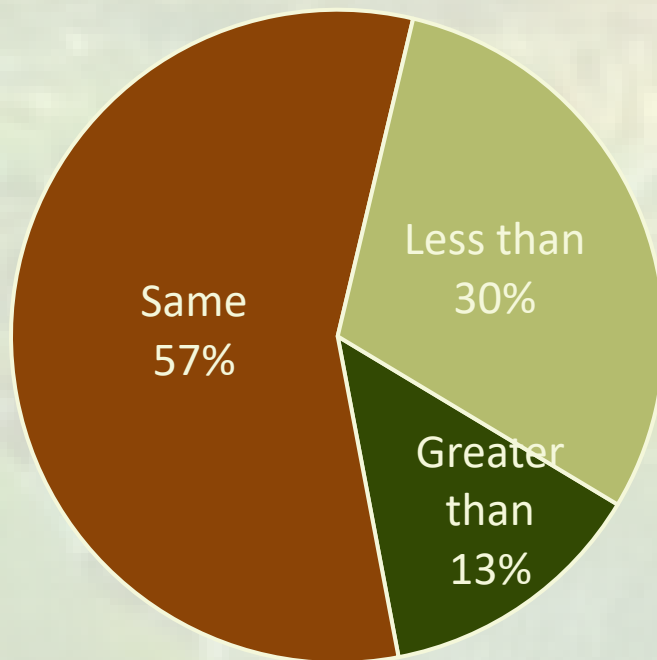
Marketing Practices	4%
Multiple buyers, market early	4%
Premium/Contracts	4%
Crop insurance	1%

Base growers=67.

Source: What steps do you take to mitigate the risks associated with IP non-GMO food-grade soybean production for your operation?

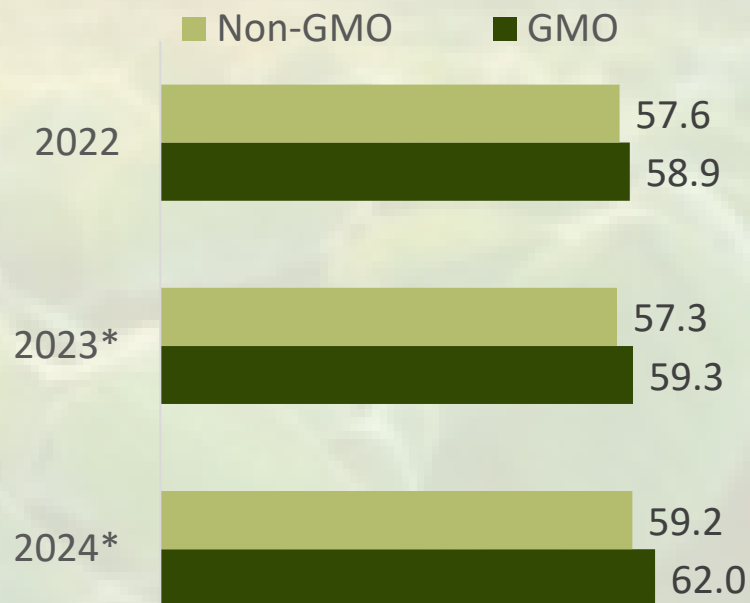
# Non-GMO Yields Compared to GMO Yields

% of Growers



Grower base=97.

Average Yield (Bu/Acre)\*\*



Minimum grower base=65.

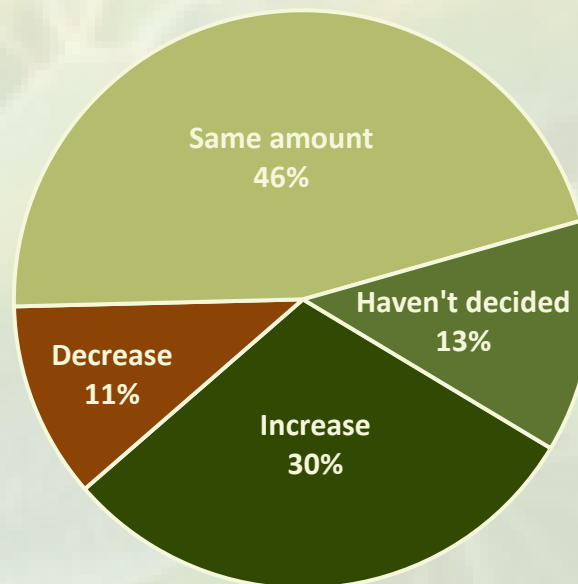
\*Expected yields.

\*\* 0's excluded

Source (2023 study): How would you best describe your yields from your non-GMO soybeans? What were your yields (bushels per acre) for the following types of soybeans? For 2023 and 2024, please give your expected yields.

A net of 19% of growers express they will increase their IP non-GMO food-grade soybean acres over the next couple of years. Overall, only 11% of growers contend they will decrease food-grade soybean production, compared to 46% who will maintain current production and 30% who intend to increase production.

## Change in Growers' Non-GMO Food-grade Soybean Production Over the Next Couple of Years (% of Growers)

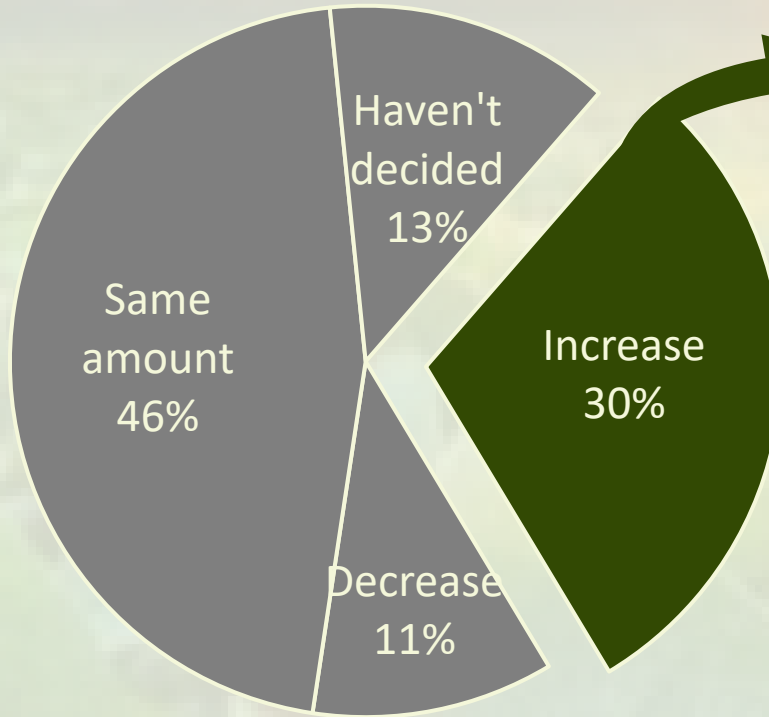


*Grower base=100.*

*Source: Are you likely to increase, decrease or plant the same amount of IP non-GMO food-grade soybean acres in the next couple of years?*  
*Source: Are you likely to increase, decrease or plant the same amount of IP non-GMO food-grade soybean acres in the next couple of years?*



# Reasons for Increasing Non-GMO Food-grade Soybean Production



**Net of 19% of growers  
Increasing production**

Top Reasons for Increase	% of Growers
Premium	66%
Market demand	17%
Reduce cost	10%

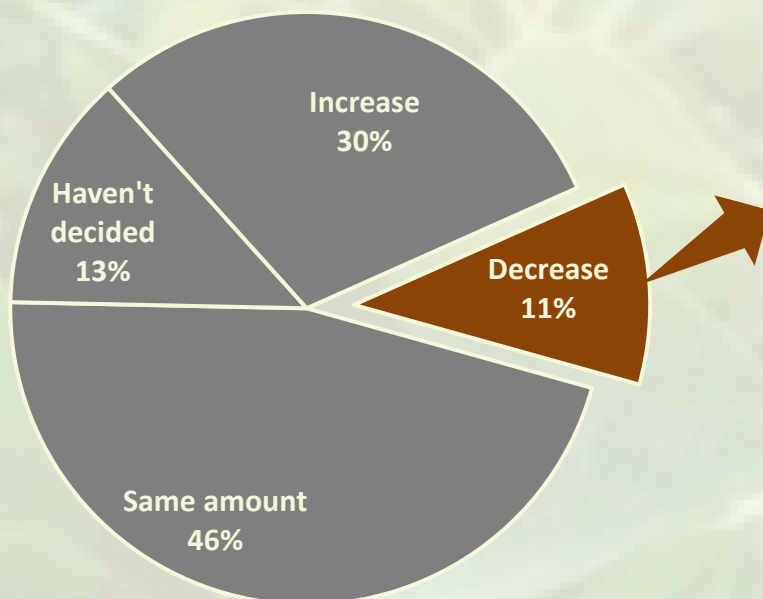
Premium received in 2023  
**\$2.45**  
*Base growers=63*

Premium needed to increase acres  
**\$2.58**  
*Base growers=93*

• Source *What are the primary reasons why you will increase IP food-grade soybean production?*

Few growers mention the premium as a disincentive to produce more non-GMO food-grade soybeans, but nearly all mention weed control as a disincentive, as one grower notes, *“Too hard to control weeds.”*

## Reasons for Decreasing Non-GMO Food-grade Soybean Production



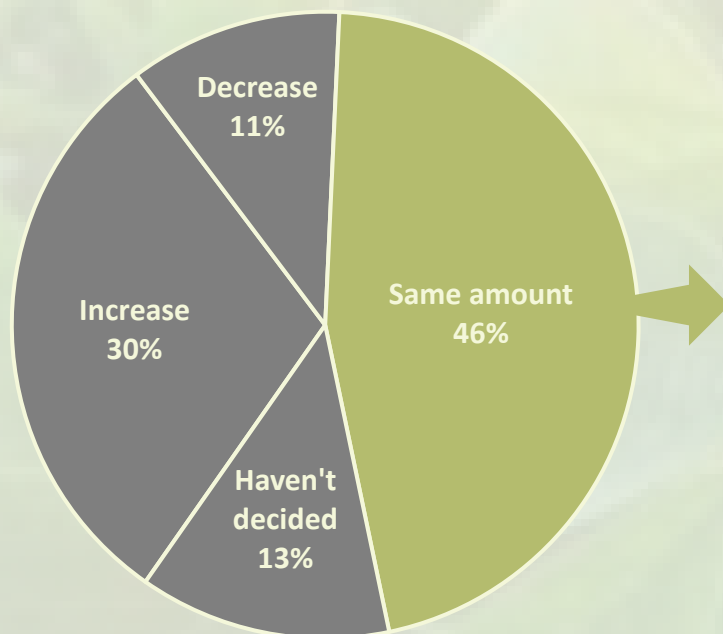
Top Reasons for Decrease	% of Growers
Weed control	73%
Premium, revenue, ROI	27%
Yield	18%

Base growers=11

Source What are the primary reasons why you will decrease IP food-grade soybean production?

Some growers are at maximum capacity for planting non-GMO soybeans, as one grower explains, *“If I increase the acres I farm I’ll increase. But currently, I expect to stay at about the same acres. I’m growing 100% non-GMO currently.”* Others mention rotation as the reason for keeping their acreage the same. One grower states, *“All of our acres are committed to our rotation, and an increase tends to mess up our other acres.”* The premium is mentioned more as an incentive not to decrease acres rather than an incentive to increase acres, as one grower contends, *“Good income enhancement if weeds can be controlled.”*

## Reasons for Maintaining Non-GMO Food-grade Soybean Production



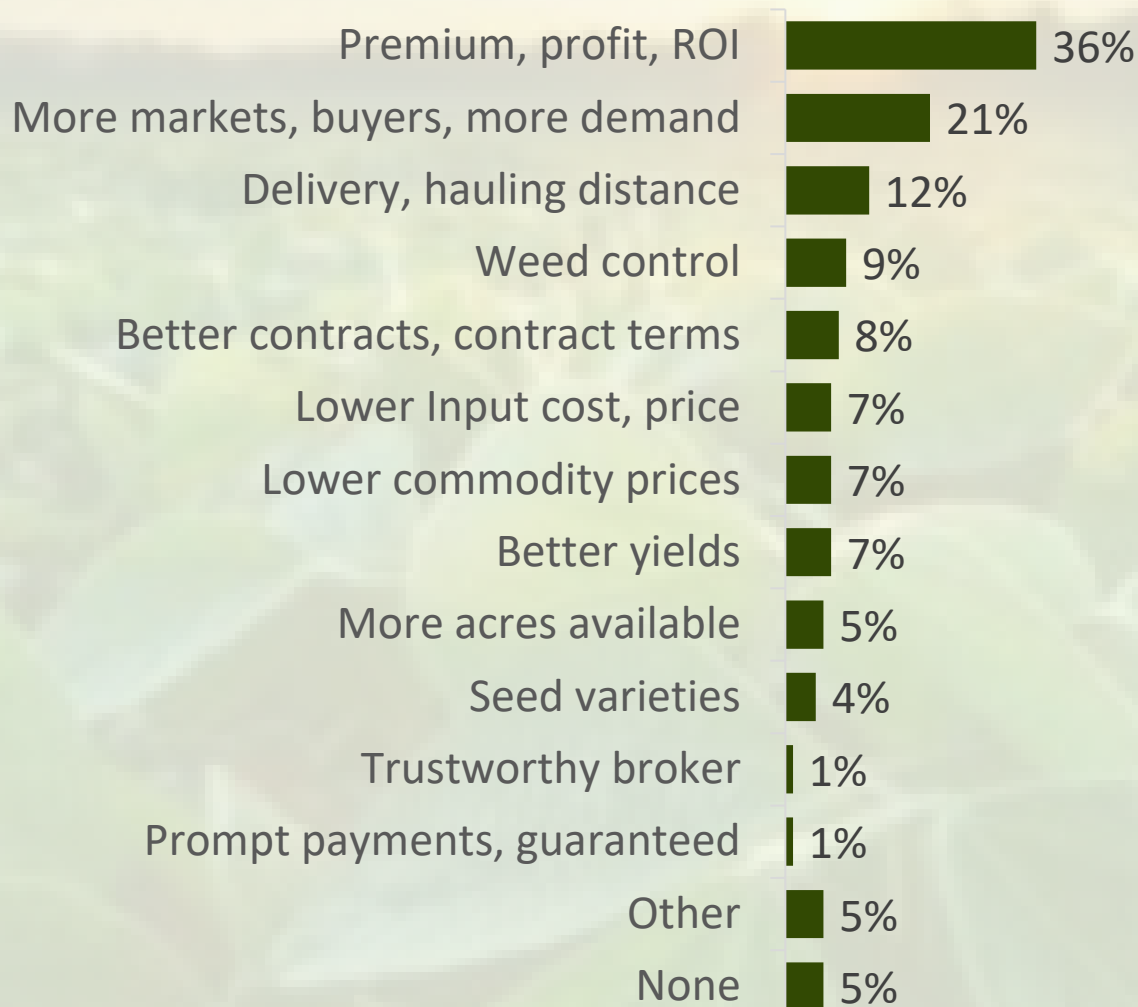
Top Reasons for Same	% of Growers
No more acreage	22%
Rotation	20%
Premium, revenue, ROI	17%
Storage capacity	15%
Weed control	13%
Fits program, suitable	11%

Base growers=46

Source What are the primary reasons why you will keep IP food-grade soybean production about the same?

# Market Signals to Increase Non-GMO Food-grade Soybean Production

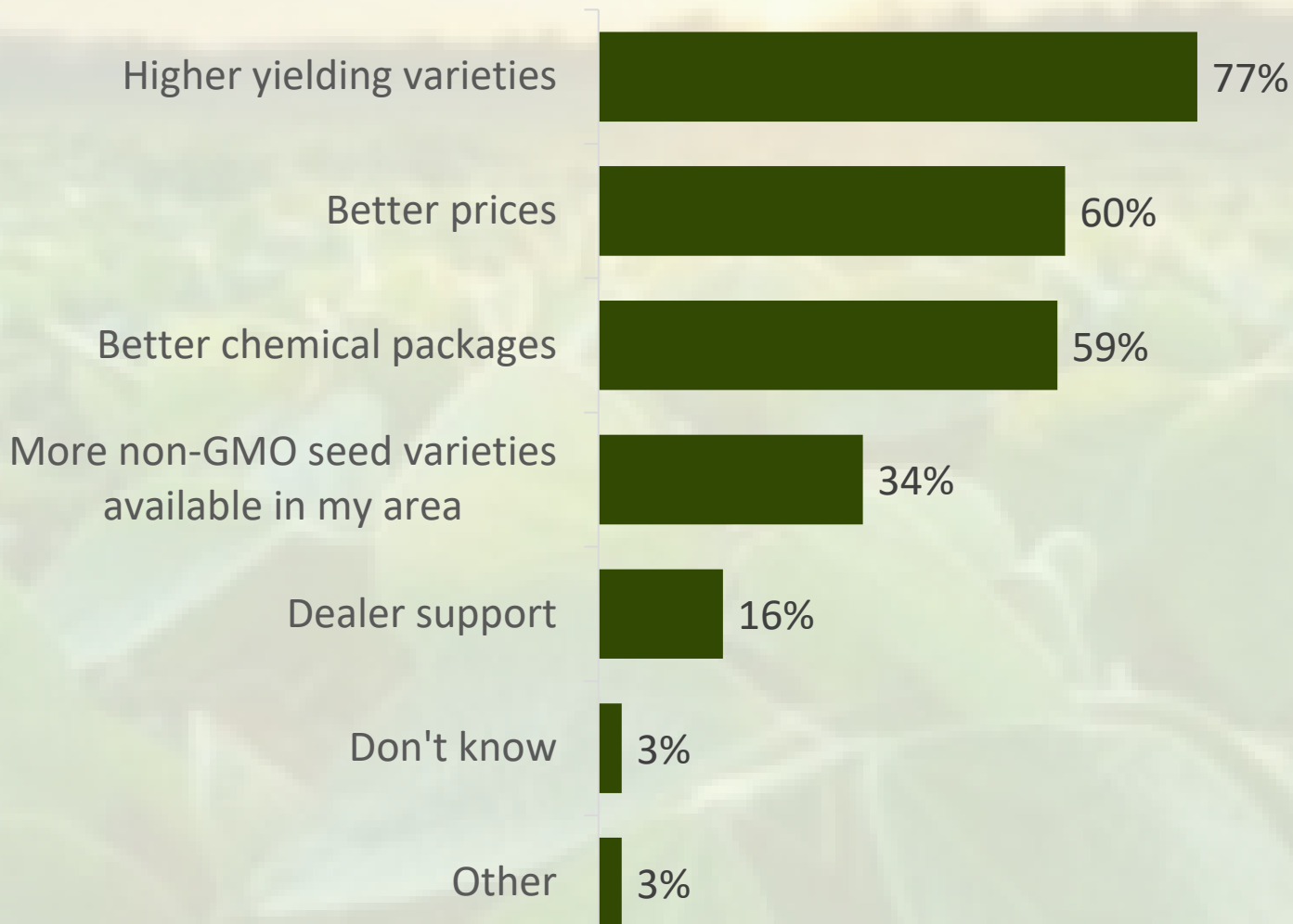
(% of Growers)



Grower base=92.

# What Seed Companies Can Do To Encourage Non-GMO Food-Grade Production

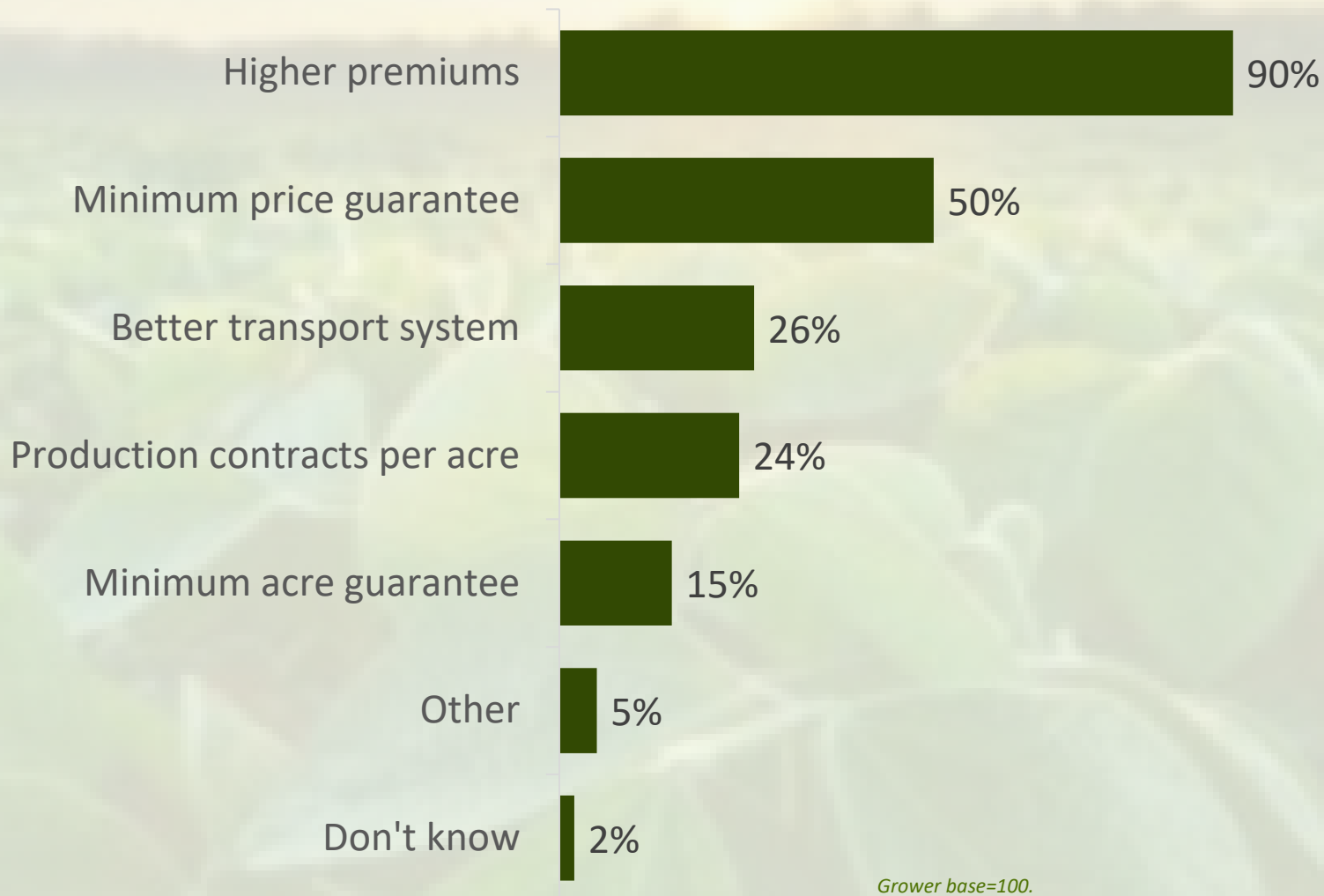
(% of Growers)



*Grower base=100.*

# What Buyers Can Do To Encourage Non-GMO Food-Grade Production

(% of Growers)



• Source *What would you need from purchasers for you to consider increasing your non-GMO soybean production?*

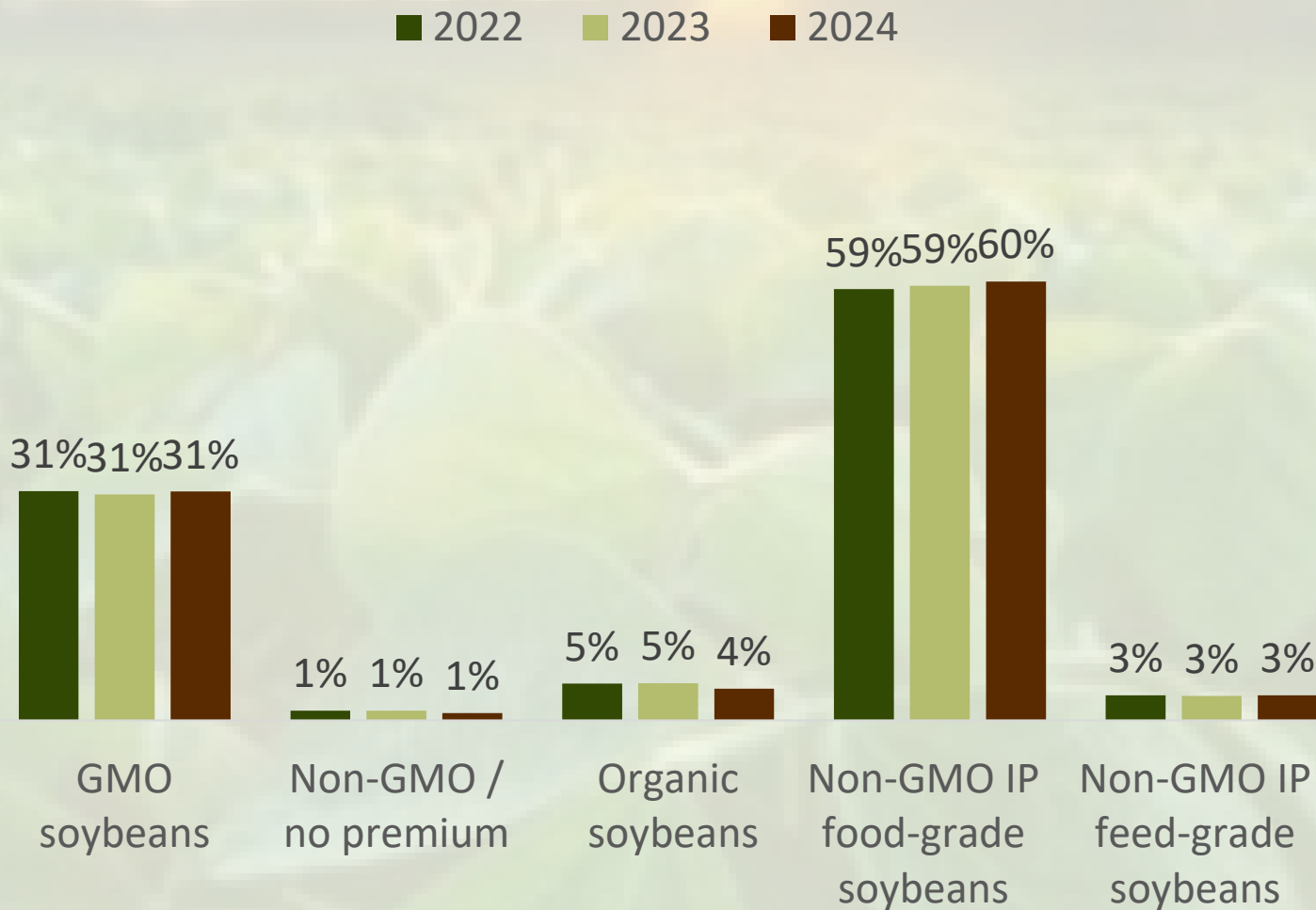


# Results from Non-GMO Purchasers

Non-GMO Food-grade Soybeans Quantification Study  
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# % of Purchased Soybeans That Are Indicated Types



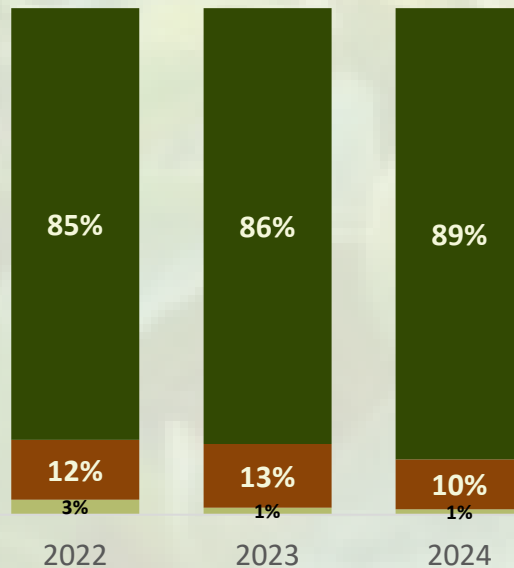
Source: Of the total soybeans purchased by your company, what percent (%) are of the following types? Base=15.



Nearly all non-GMO soybeans are acquired via contract, including non-GMO food-grade soybeans (82% in 2023). Purchasers expect to increase non-GMO contracted acres over the next year and decrease spot-purchased sourcing.

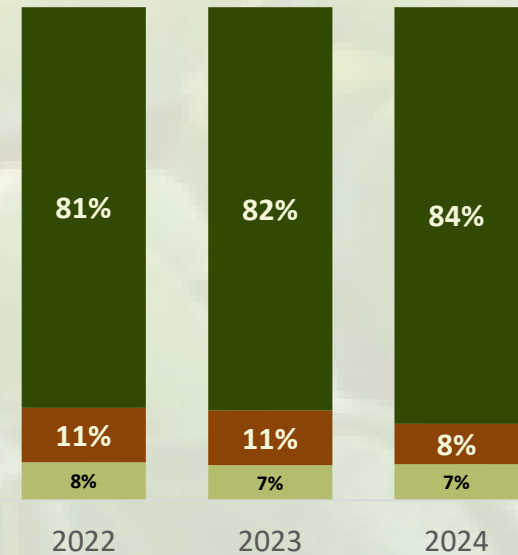
## How Non-GMO Soybeans are Acquired

All Non-GMO Soybeans



Food-grade Non-GMO Soybeans

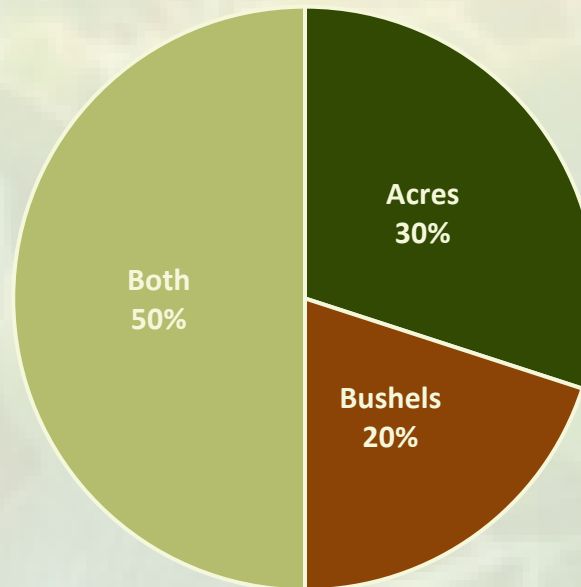
■ Contracted  
■ Spot-purchased  
■ Sourced from 3rd party



Source (bar chart): Of all the NON-GMO soybeans acquired by your company, what percent (%) will be/were acquired using the following methods? Source (pie chart): How does your company source non-GMO soybeans? When you use contracts to acquire non-GMO soybeans, are you contracting for a dedicated number of soybean acres or a specified number of bushels of soybeans? Base=15.

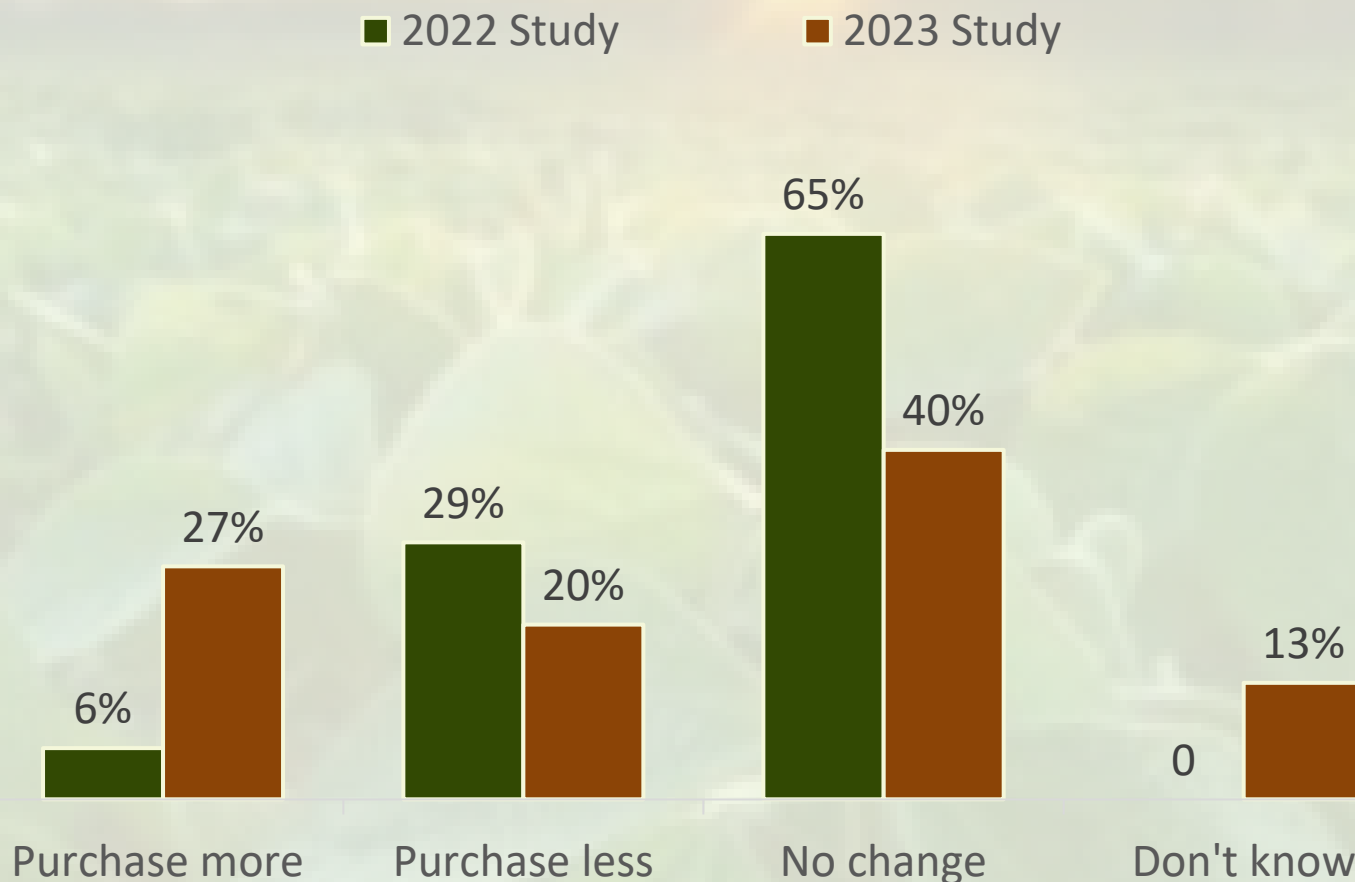
**Purchasers are just as likely to contract for acres as they are to contract for bushels.**

## Contracting Terms in Bushels or Acres



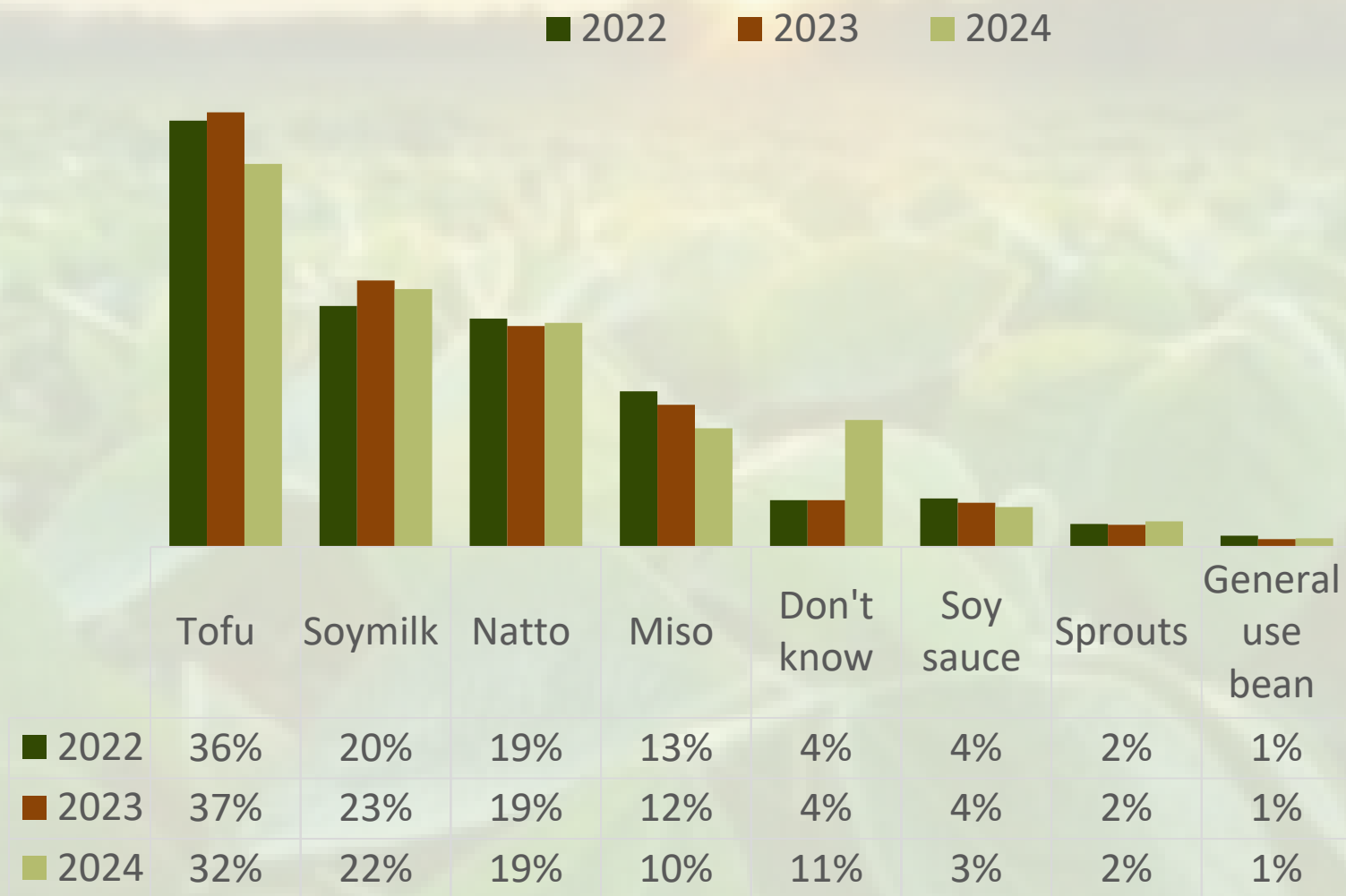
*Source* When you use contracts to acquire non-GMO soybeans, are you contracting for a dedicated number of soybean acres or a specified number of bushels of soybeans? Base=15.

# Impact of Recent Soybean Futures Prices On Decision to Purchase Non-GMO Soybeans



Source (2023 study): What impact did recent soybean futures prices have on your decision to purchase NON-GMO soybeans this year, in 2023? Base=15.

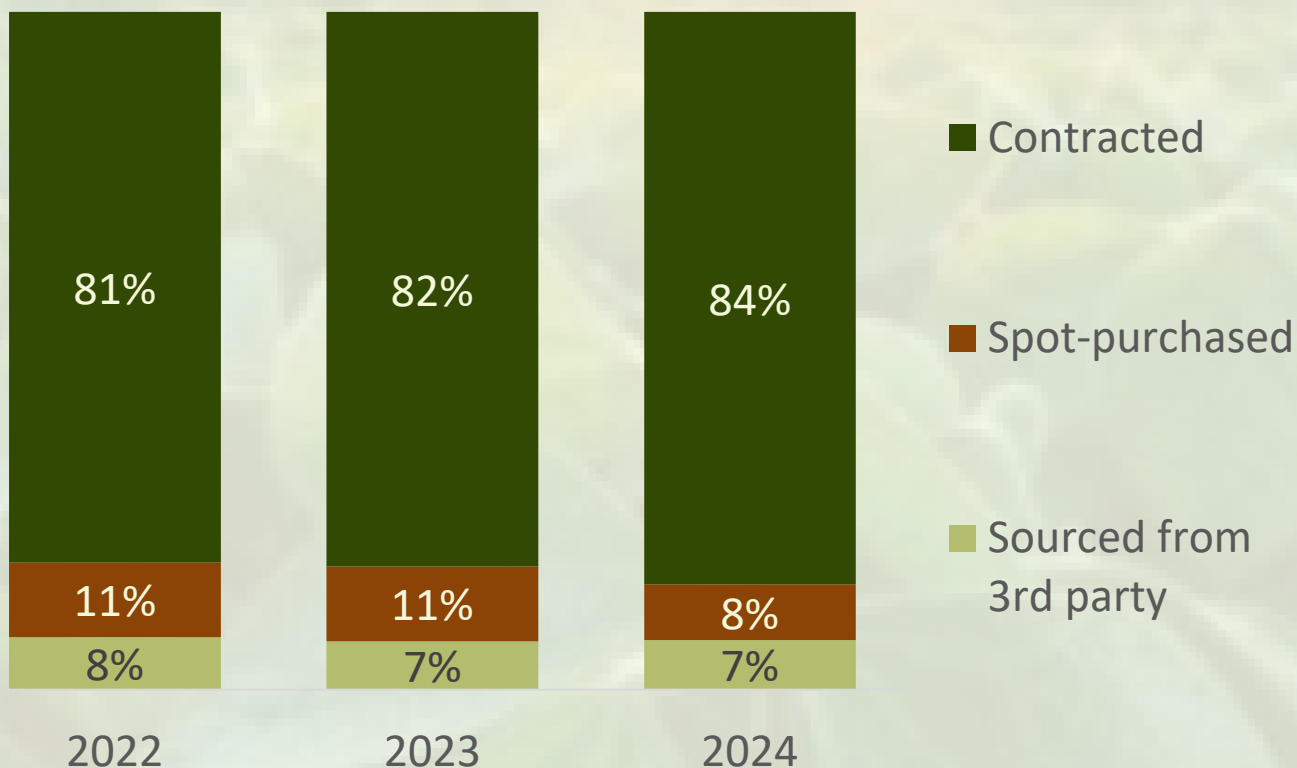
# Percent of Non-GMO Food-grade Soybeans Purchased for Indicated End-Purpose



Source: What percent (%) of the FOOD-GRADE IP NON-GMO soybeans purchased by your company are used for the following end-purposes?

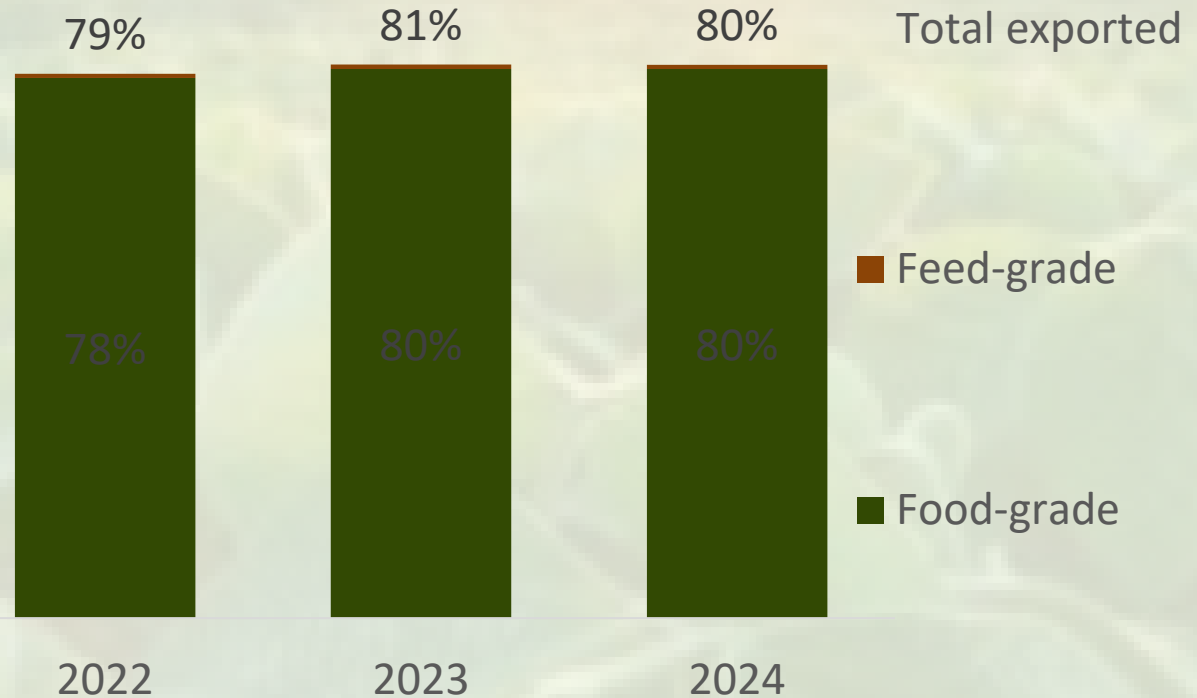
# How Food-grade Non-GMO Soybeans are Acquired

% of Food-grade Soybeans



Source (bar chart): Of all the NON-GMO soybeans acquired by your company, what percent (%) will be/were acquired using the following methods? Source (pie chart): How does your company source non-GMO soybeans? When you use contracts to acquire non-GMO soybeans, are you contracting for a dedicated number of soybean acres or a specified number of bushels of soybeans? Base=15.

# Food-grade Soybeans Exported to Countries Outside of the U.S.



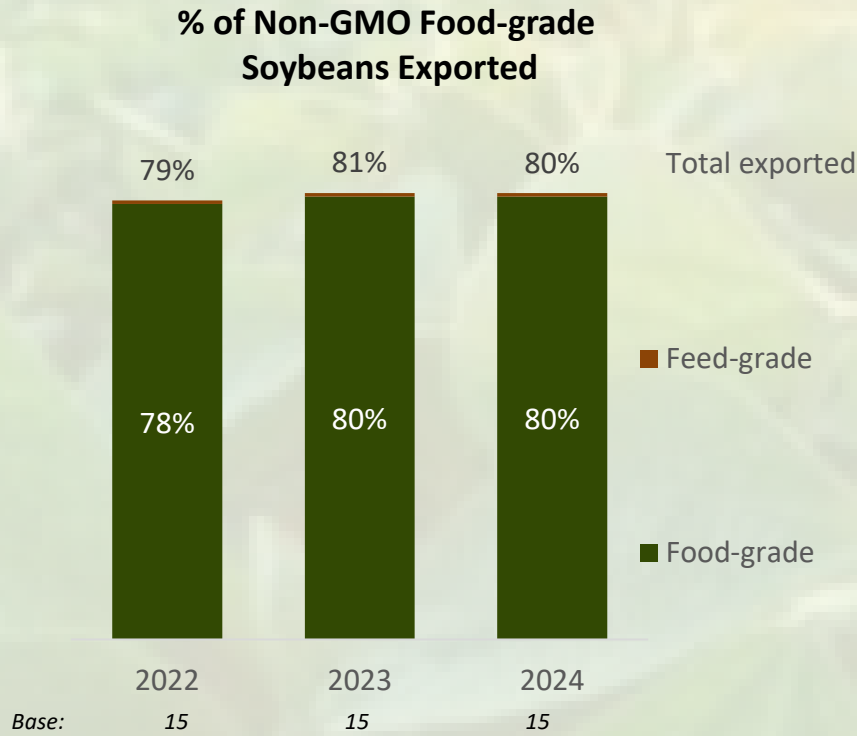
Base: 15 15 15

Source (bar chart): What percent (%) of the IP NON-GMO FOOD-GRADE soybeans purchased in the U.S. by your company will be used domestically and what percent (%) will be sold for export to countries outside of the U.S.? Of the IP NON-GMO FOOD-GRADE soybeans that will be exported, what percent (%) will be the following [food-grade, feed-grade]? Source (domestic use table) Of the IP NON-GMO FOOD-GRADE soybeans purchased for domestic use, what percent (%) will be sold to the following?

Most all non-GMO food-grade soybeans produced in the U.S. are exported internationally, most of which are exported as food-grade soybeans (99% of exported food-grade soybeans).

The bulk of the 19% of soybeans that will be used domestically will be sold to food companies (79% in 2023).

## Food-grade Soybeans Exported to Countries Outside of the U.S. and Used Domestically



### Where Domestic Use Soybeans are Sold

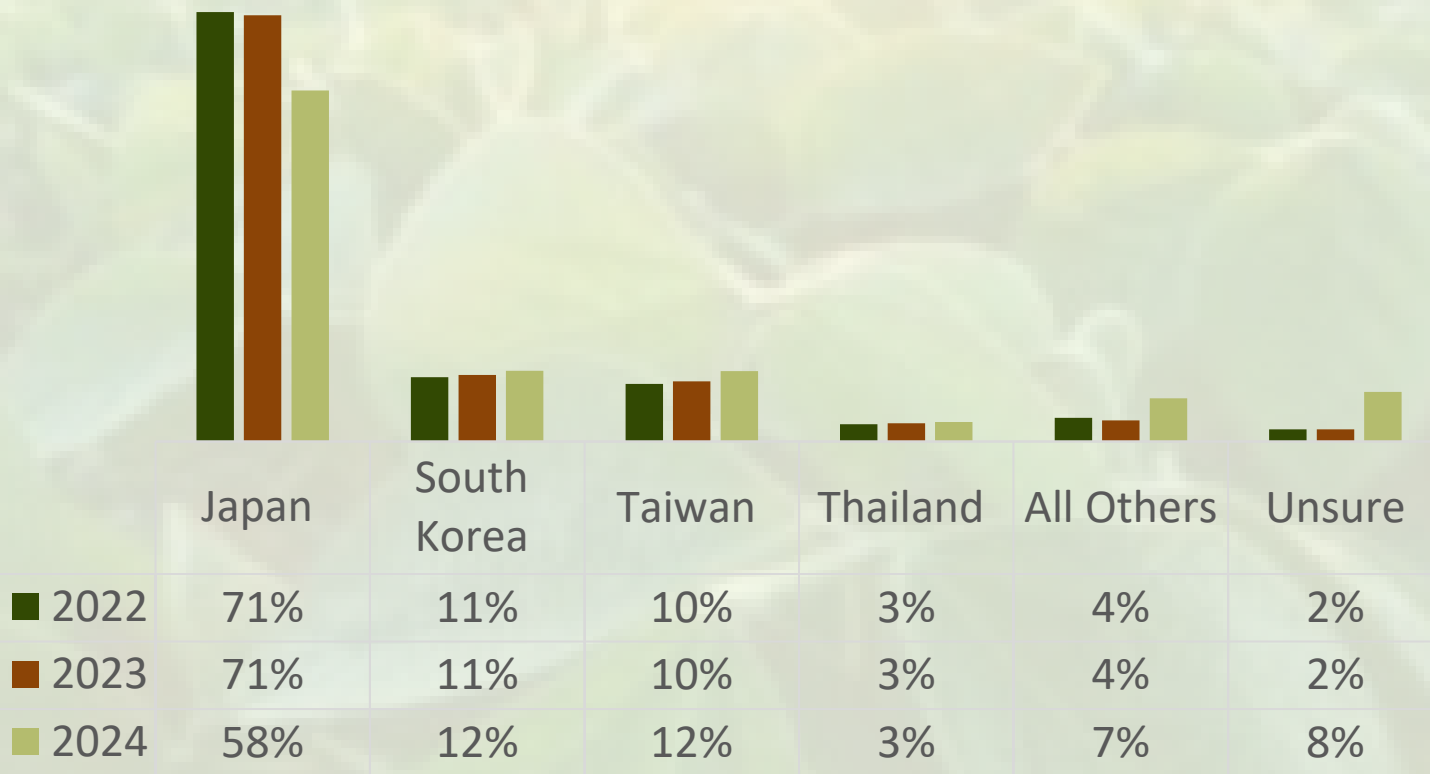
Domestic Use	2022	2023	2024
<b>% Used Domestically</b>	<b>21%</b>	<b>19%</b>	<b>20%</b>
Soybean Processors	12%	11%	11%
Food companies	75%	79%	76%
Commodity Traders	4%	1%	4%
Other	10%	10%	10%

Base: 13    13    13

Source (bar chart): What percent (%) of the IP NON-GMO FOOD-GRADE soybeans purchased in the U.S. by your company will be used domestically and what percent (%) will be sold for export to countries outside of the U.S.? Of the IP NON-GMO FOOD-GRADE soybeans that will be exported, what percent (%) will be the following [food-grade, feed-grade]? Source (domestic use table) Of the IP NON-GMO FOOD-GRADE soybeans purchased for domestic use, what percent (%) will be sold to the following?

# Percent of Exported Non-GMO Food-grade Soybeans That Will Go To Indicated Countries

■ 2022 ■ 2023 ■ 2024



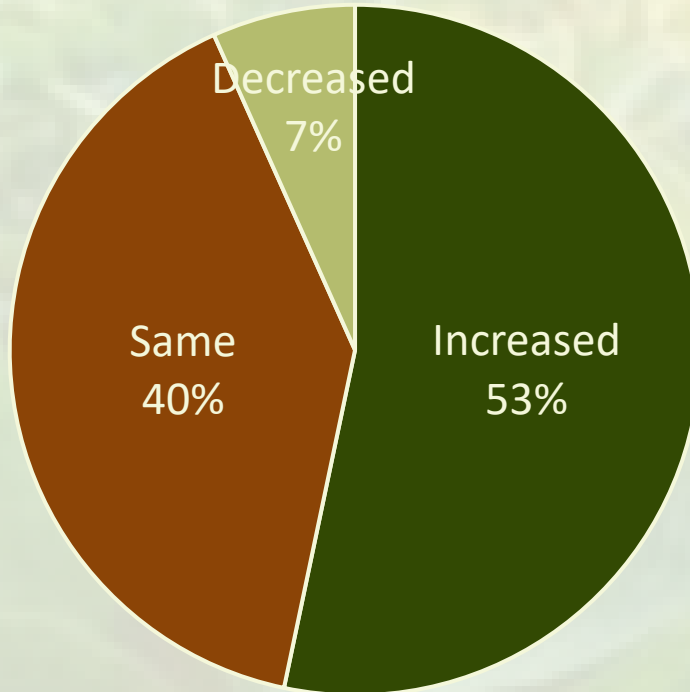
Source And to which countries will the exported IP NON-GMO FOOD-GRADE soybeans go. Please enter the portion that will go to each country. Base=14.



# Changes in Demand for Non-GMO Food-grade Soybeans and Purchasers' Ability to Meet Demand

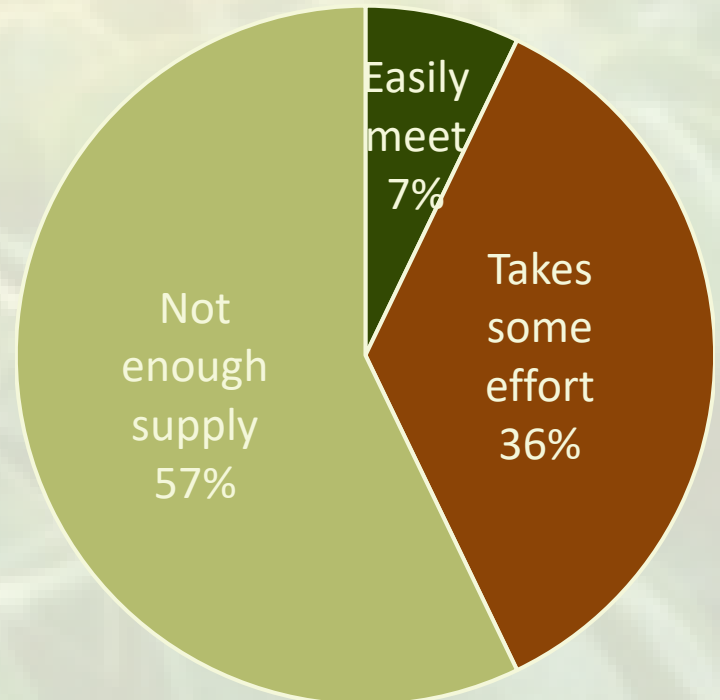
**87%** of IP Non-GMO Food-grade Soybean Demand Met

Change in Upstream Demand



Base=15.

Ability to Meet 2023 Demand



Base=14.

Source So we may better understand trends in the food-grade soybean market, how would you describe upstream demand for IP NON-GMO FOOD-GRADE soybeans in the past few years? How would you describe the supply of IP NON-GMO FOOD-GRADE soybeans from growers in the U.S.? What percent of the demand for IP non-GMO food-grade soybeans in the following years were you able to meet?

Both growers and purchasers make non-GMO decisions between October and January for the upcoming season.

## When Purchasers and Growers Make Decisions About Non-GMO Soybeans

	Prior Season		Same Season	
<b>January</b>	<b>0%</b>	<b>33%</b>	<b>33%</b>	<b>22%</b>
<b>February</b>	<b>0%</b>	<b>10%</b>	<b>33%</b>	<b>11%</b>
<b>March</b>	<b>0%</b>	<b>5%</b>	<b>13%</b>	<b>6%</b>
<b>April</b>	<b>0%</b>	<b>5%</b>	<b>0%</b>	<b>7%</b>
<b>May</b>	<b>0%</b>	<b>2%</b>	<b>0%</b>	<b>5%</b>
<b>June</b>	<b>0%</b>	<b>1%</b>	<b>0%</b>	<b>4%</b>
<b>July</b>	<b>7%</b>	<b>4%</b>	<b>0%</b>	<b>1%</b>
<b>August</b>	<b>27%</b>	<b>5%</b>	<b>0%</b>	<b>3%</b>
<b>September</b>	<b>47%</b>	<b>11%</b>	<b>7%</b>	<b>3%</b>
<b>October</b>	<b>60%</b>	<b>17%</b>	<b>13%</b>	<b>4%</b>
<b>November</b>	<b>60%</b>	<b>23%</b>	<b>7%</b>	<b>3%</b>
<b>December</b>	<b>53%</b>	<b>28%</b>	<b>0%</b>	<b>5%</b>

When purchasers' decisions are made

When growers' decisions are made

Source: When do you typically make decisions about the quantity of NON-GMO IP FOOD-GRADE soybeans your company will contract?



# U.S. Non-GMO Soybean Production Estimates

Non-GMO Food-grade Soybeans Quantification Study  
September 2023



# Summary of Findings

## Production Summary

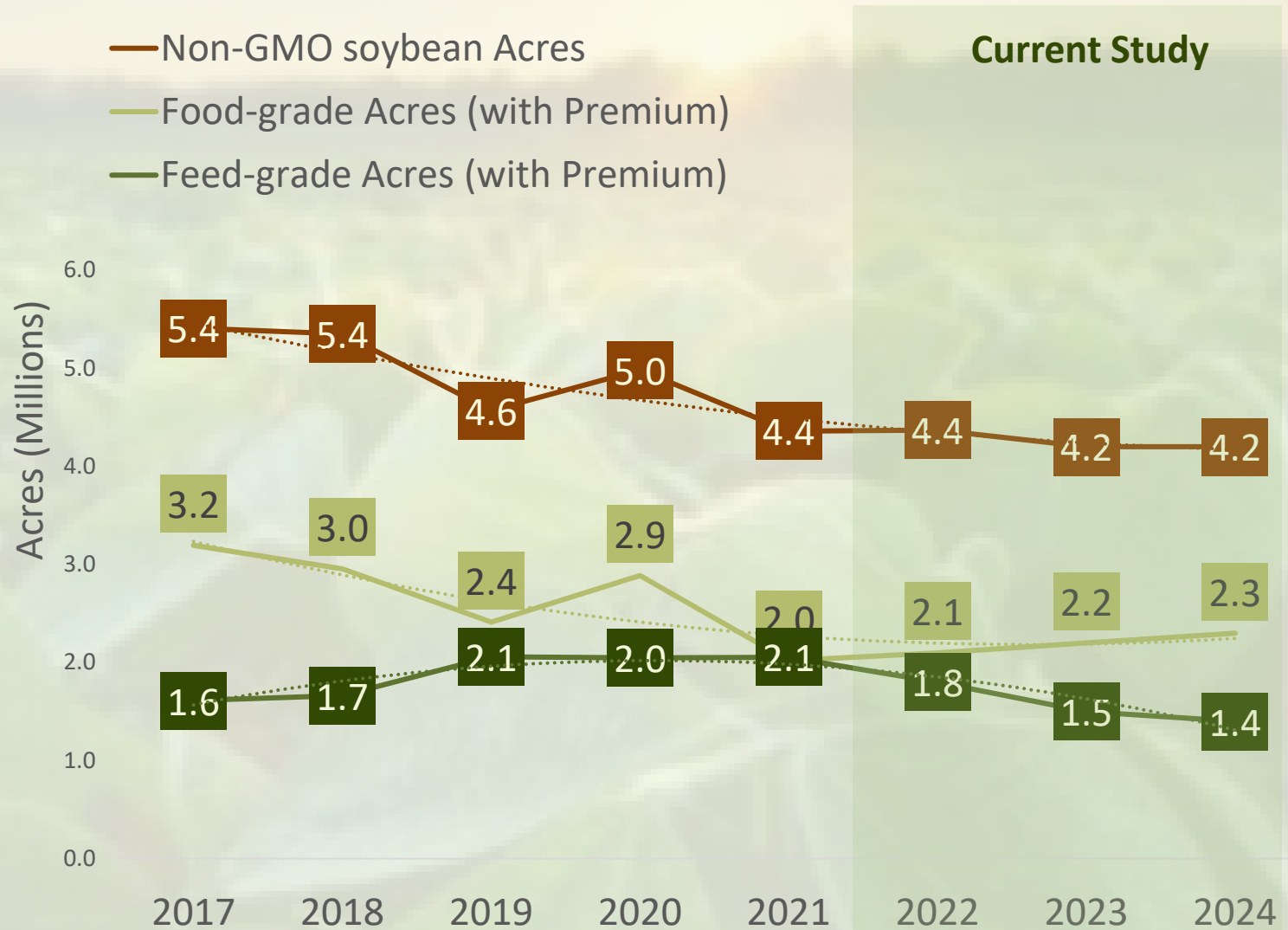
As overall soybean acres are down from the previous year (87.5 million), so are non-GMO acres.

- **83.6 million soybean acres**
- **4.2 million acres** non-GMO soybeans
- **3.7 million acres** non-GMO soybeans for a premium (88%)
- **2.2 million food-grade acres** for a premium
  - up from 2.1 in 2022 (5% increase)
  - 1.7 million contracted
- **1.5 million feed-grade acres** for a premium
  - down from 1.8 million in 2022 (14%)

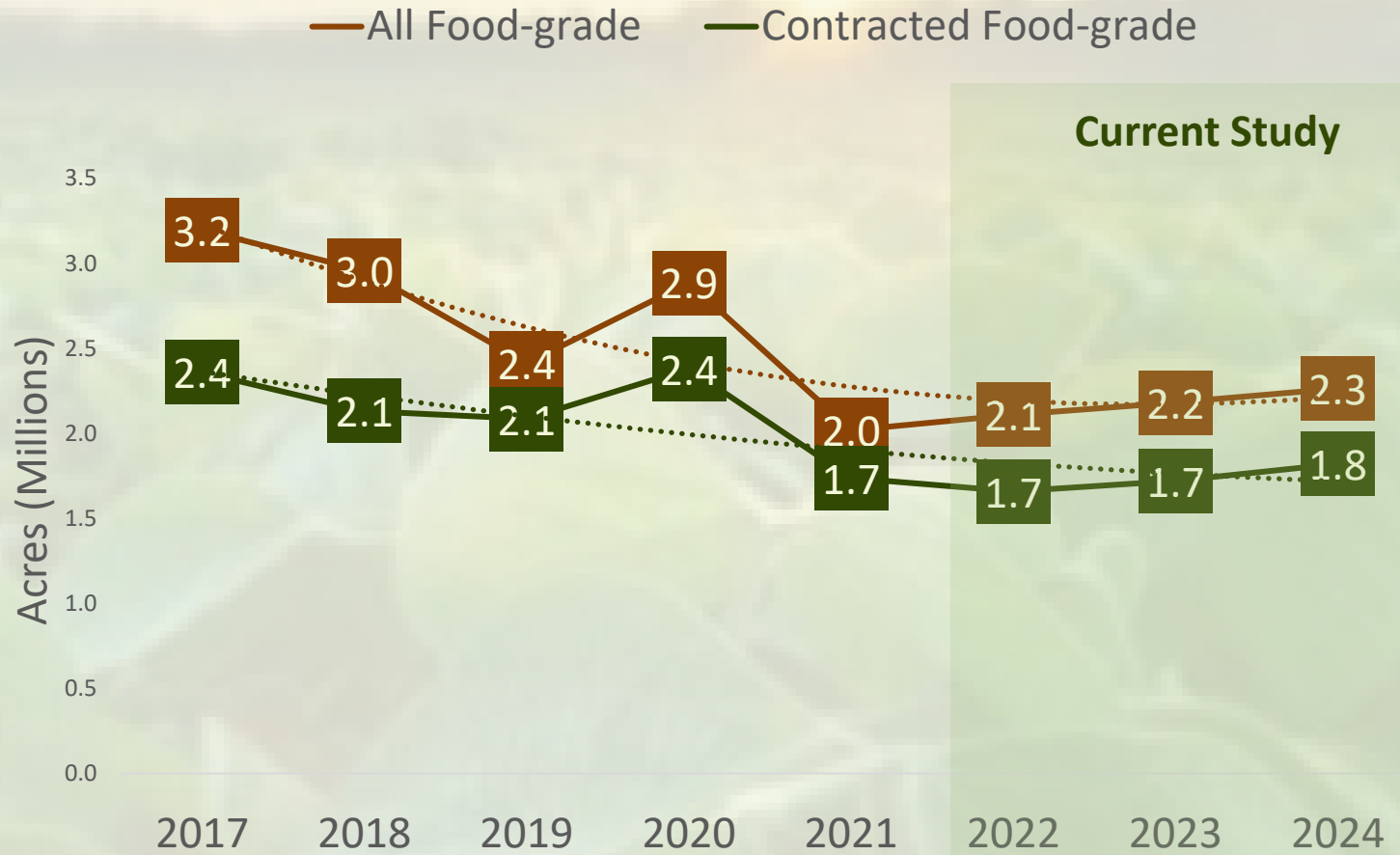
## Summary of Top Non-GMO Production States

- Indiana decreased non-GMO acres by 19%
- Illinois decreased non-GMO acres by 4%
- Iowa decreased non-GMO acres by 1%

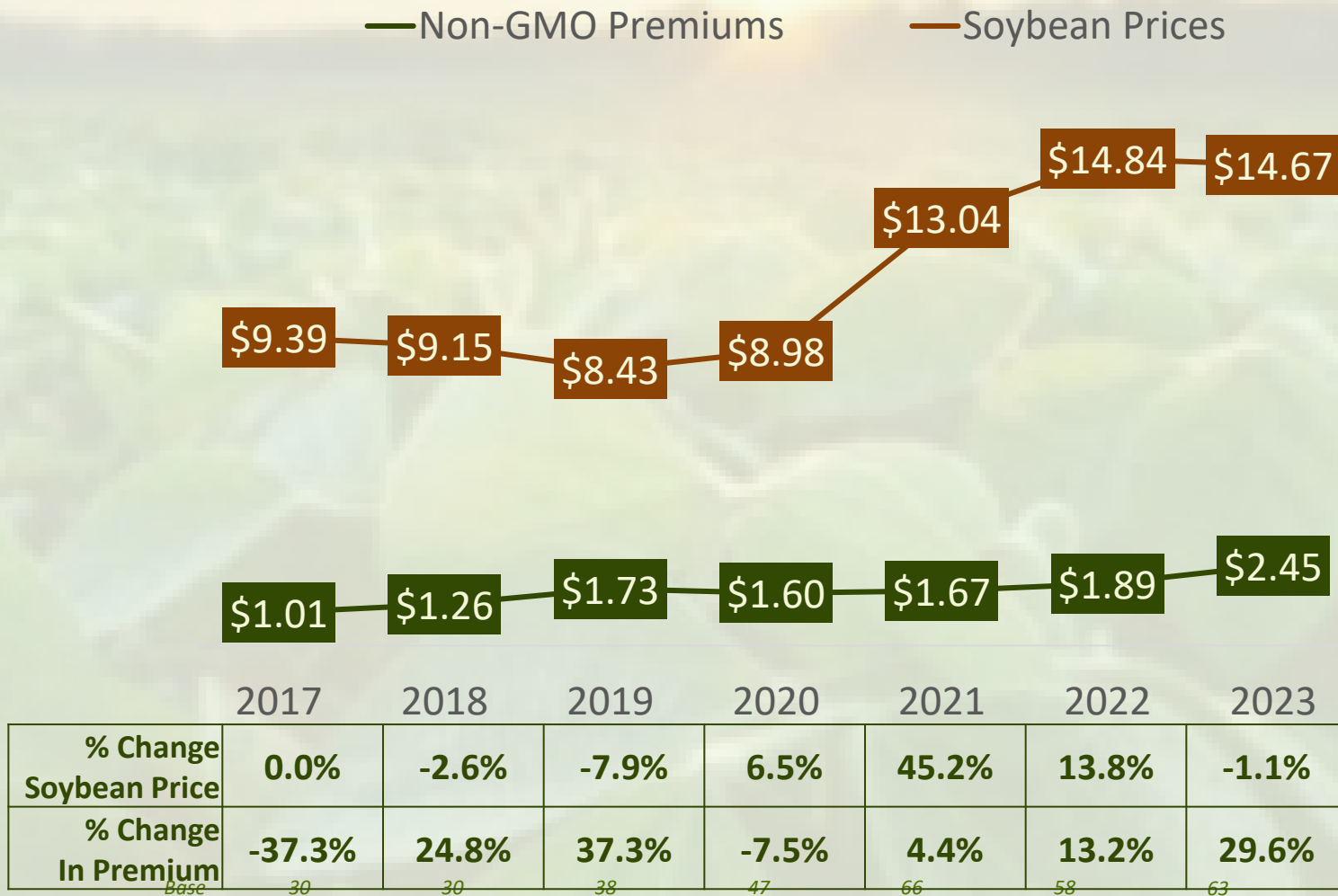
# Estimate of Non-GMO Soybean Acres in the U.S.



# Estimate of Contracted Non-GMO Food-grade Soybean Acres in the U.S.



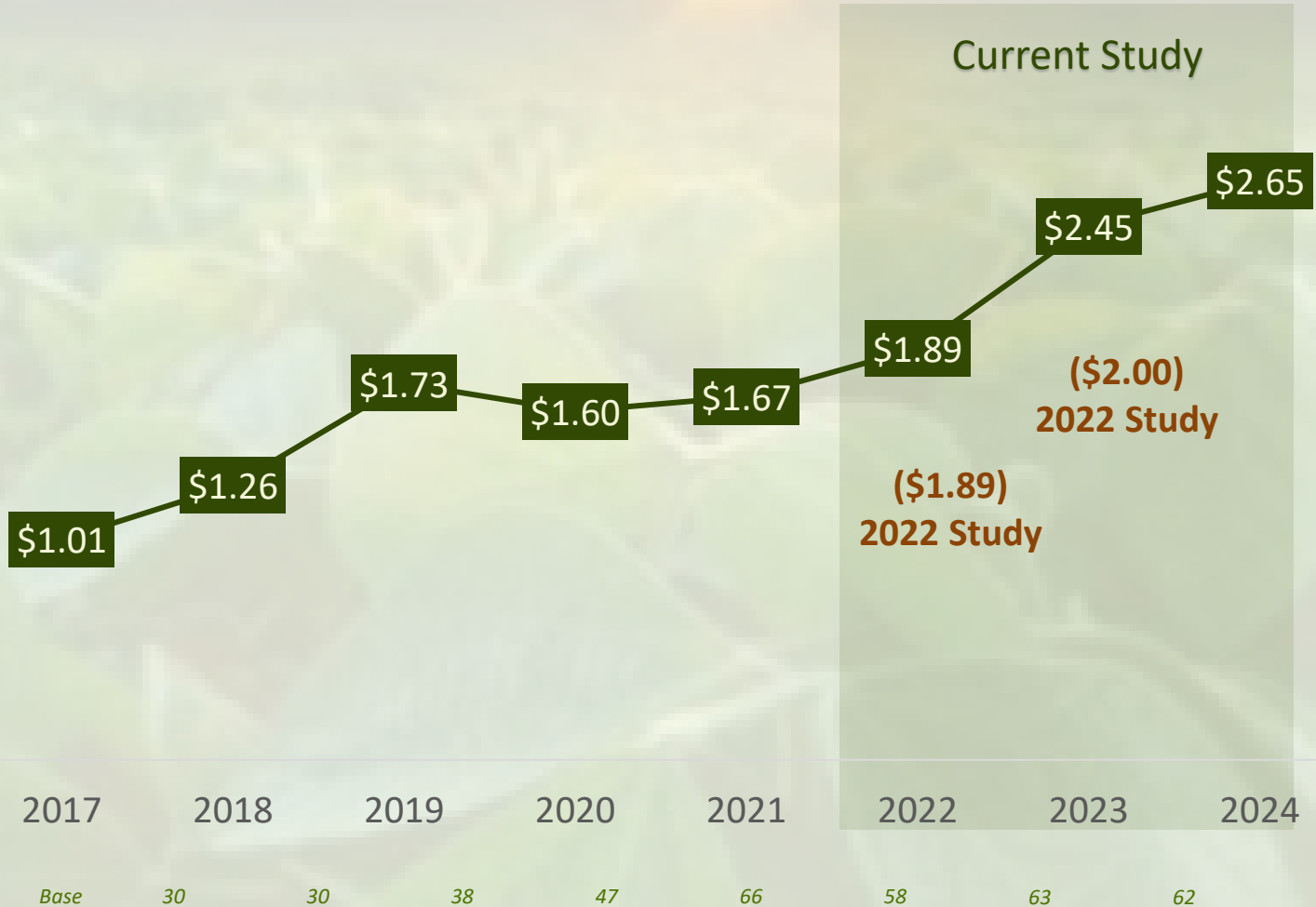
# Average Premium for IP Food-grade Non-GMO Soybeans



Source (2023 study): What premium (\$) did you or do you expect to receive for the following types of identity-preserved (IP) non-GMO soybeans in the following years? Premium refers to the amount above what you receive for your GMO soybeans. For 2024, please give your expected premium. Excludes "0's".

Source commodity prices: USDA, NASS, July 28, 2023, Prices Received: Soybean Prices Received by Month, US.

# Average Premium for IP Food-grade Non-GMO Soybeans



Source (2023 study): What premium (\$) did you or do you expect to receive for the following types of identity preserved (IP) non-GMO soybeans in the following years? Premium refers to the amount above what you receive for your GMO soybeans. For 2024, please give your expected premium. Excludes "0's".





# Conclusions & Implications

**Non-GMO Food-grade Soybeans Quantification Study  
September 2022**



# Summary of Findings

## End-Uses

- **Similar to those reported in 2022.**
  - tofu market (37%).
  - soymilk (23%)
  - Natto (19%)
  - miso (12%)

## Export Summary

- **49 million metric tons (MMT) of soybeans**
  - down from **54 MMT** of soybeans exported in 2022.
- **0.79 MMT Non-GMO food-grade soybeans** or 1.6% of exported
  - down from 0.80 MMT in 2022.
  - Most exports destined for Japan  
(between **500 and 600 thousand MT** )

## Premiums made non-GMO food-grade production better option

- Food-grade soybean **premiums** increased in from \$1.89 in 2022 to **\$2.45 in 2023**
- Commodity soybean prices fell from \$14.84 to \$14.57

## Conclusions

### Non-GMO food-grade supply-side deficits are beginning to ease.

- Higher premium & lower commodity prices
- Stable demand

### Optimism about the future of non-GMO food-grade soybean production

- Growers increasing production
- Purchasers report consistent demand

### Historical hurdles still exist in meeting non-GMO food-grade soybean demand on the supply side.

- Perceived yield gap
- Weed control,
- Insect control,
- Contamination, and
- Local delivery options
- For purchasers uncertainty about the final order on both delivery (from growers) and acceptance (from upstream buyers)