

 USSEC Global Trade Program

INTERNATIONAL MARKETING DIALOGUE

Non-GMO Food-grade Soybean Quantification Study

Completed by SMR&P in September 2020





Background & Methodology

Non-GMO Food-grade Soybeans Quantification Study September 2020

Study Purpose

The purpose of this study is to update USSEC about the number of non-GMO food-grade-soybean acres currently produced in the U.S., their end-use and destination. To gain a complete picture of the non-GMO market, and specifically trends that impact IP non-GMO food-grade soybean production, this study also provides information on trends in other non-GMO planting, including non-GMO feed-grade soybeans and organic soybeans.

Information Sources

Information for this study was collected between August 2020 and September 2020 from the following sources:

- **101 non-GMO soybean producers** (via phone interviews and online surveys)
- **22 companies that purchase or export non-GMO food-grade soybeans** (via online surveys)
- **3 state soybean associations** (via phone interviews). First year surveying this group.
- **Secondary sources** including the United States Department of Agriculture (USDA) and its various agencies.

In aggregate, information collected from different participants is meant to be complimentary and provide USSEC with a complete description of IP non-GMO food-grade soybean production in the U.S as well an assessment of production trends that may impact non-GMO food-grade soybean production.

Secondary Data

Secondary data sources compiled from the *USDA National Agricultural Statistics Service (USDA NASS)* reports, including the most recent *Crop Production Reports*, *Economic Research Services (ERS)* data and *Foreign Trade Statistics*. The following secondary information is assumed to be accurate and is used in this study as known quantities.

	2019	2020	2021
Total U.S. Soybean acres (millions) ¹	76.1	83.8	86.7
U.S. Non-GM Soybean acres (millions) ¹	4.6	5.0	5.2
Biotech/specialty soybeans acres (millions) ¹	71.5	78.8	81.5
Average GM soybean yield (bushels/acre) ¹	47.4	51.9	52.6*
Estimated metric tons of U.S. soybeans exported (millions) ²	45.7	57.8	57.9**
Estimated bushels of U.S. soybeans exported (millions) ²	1,680.0	2,125.0	2,126.2

*Projection based on grower data in current study.
 **Outlook for U.S. Agricultural Trade, AES-113, August 26, 2020, USDA, Economic Research Service and Foreign Agricultural Service

¹Source: *USDA/NASS*, 6/30/2020

² *USDA/World Agricultural Supply and Demand Estimates (WASDE)* September 2020, ISSN: 1554-9089



Non-GMO Growers

Objectives - Growers



101 Non-GMO Growers

- Quantify the total number of non-GMO IP food-grade soybean acres in the U.S. in the years from 2019 to 2021.
- Determine portion of non-GMO soybean acres that are food-grade versus feed-grade and changes in non-GMO food-grade soybean production.
- Compare GMO and non-GMO yields
- Assess premiums for IP food-grade soybeans, IP feed grade soybeans, organic soybeans and non-GMO soybeans that are not IP.
- Determine to whom growers market non-GMO food-grade soybeans.
- Future planting intentions.

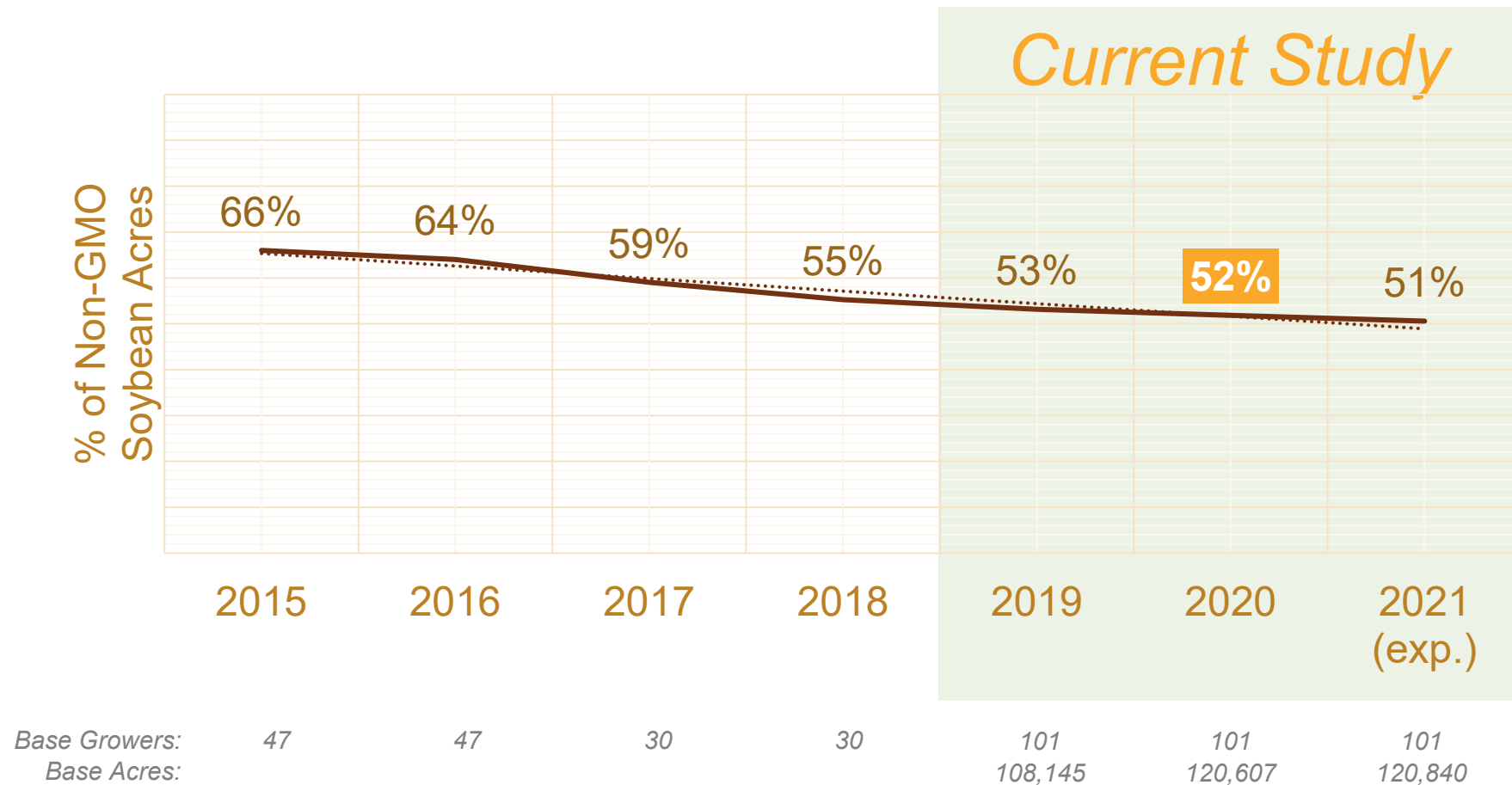


Non-GMO Growers Food-grade & Feed-grade Acres

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% Of Non-GMO Soybeans That Are Food-grade Soybeans

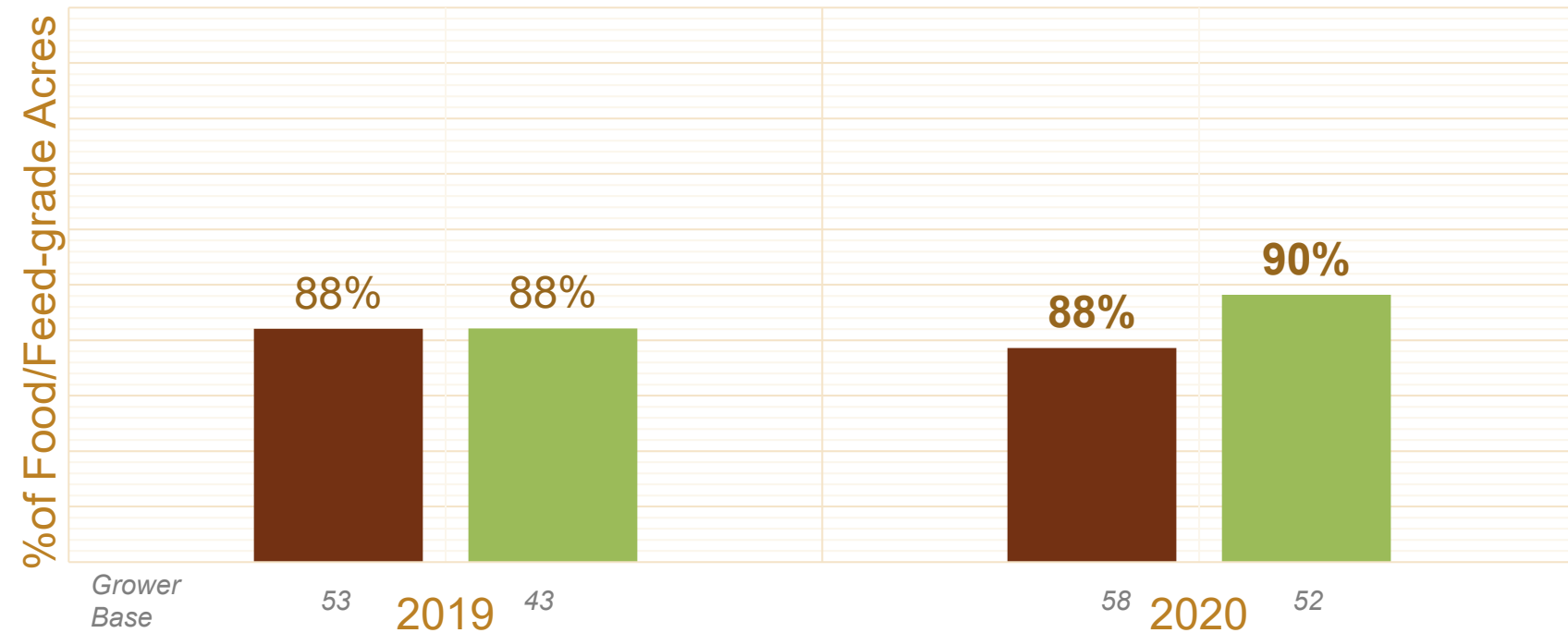
- 5.1% annual decline on average between 2016 and 2018.
- 2.5% average decline per year after 2018.
- Currently just over half of all non-GMO acres are food-grade (52%).



Food-grade and Feed-grade Acres Produced Under Contract

- Most non-GMO acres, both food and feed-grade are produced under contract.

■ Non-GMO Food-Grade Contracted ■ Non-GMO Feed-Grade Contracted



Source (2020 study): What percent of food-grade non-GMO is produced under contract? What percent of feed-grade non-GMO is produced under contract?

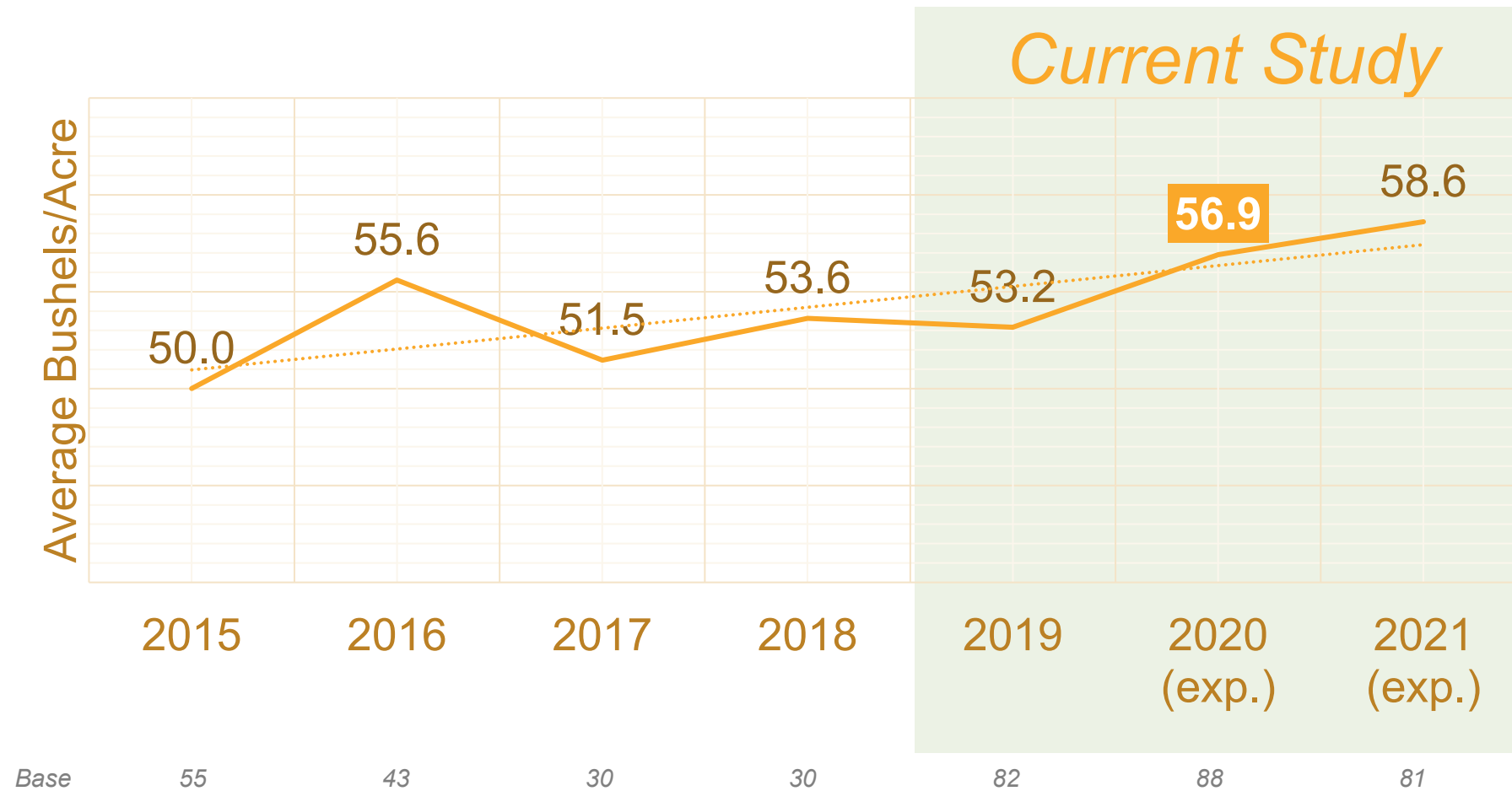


Non-GMO Growers Marketing Non-GMO Soybeans

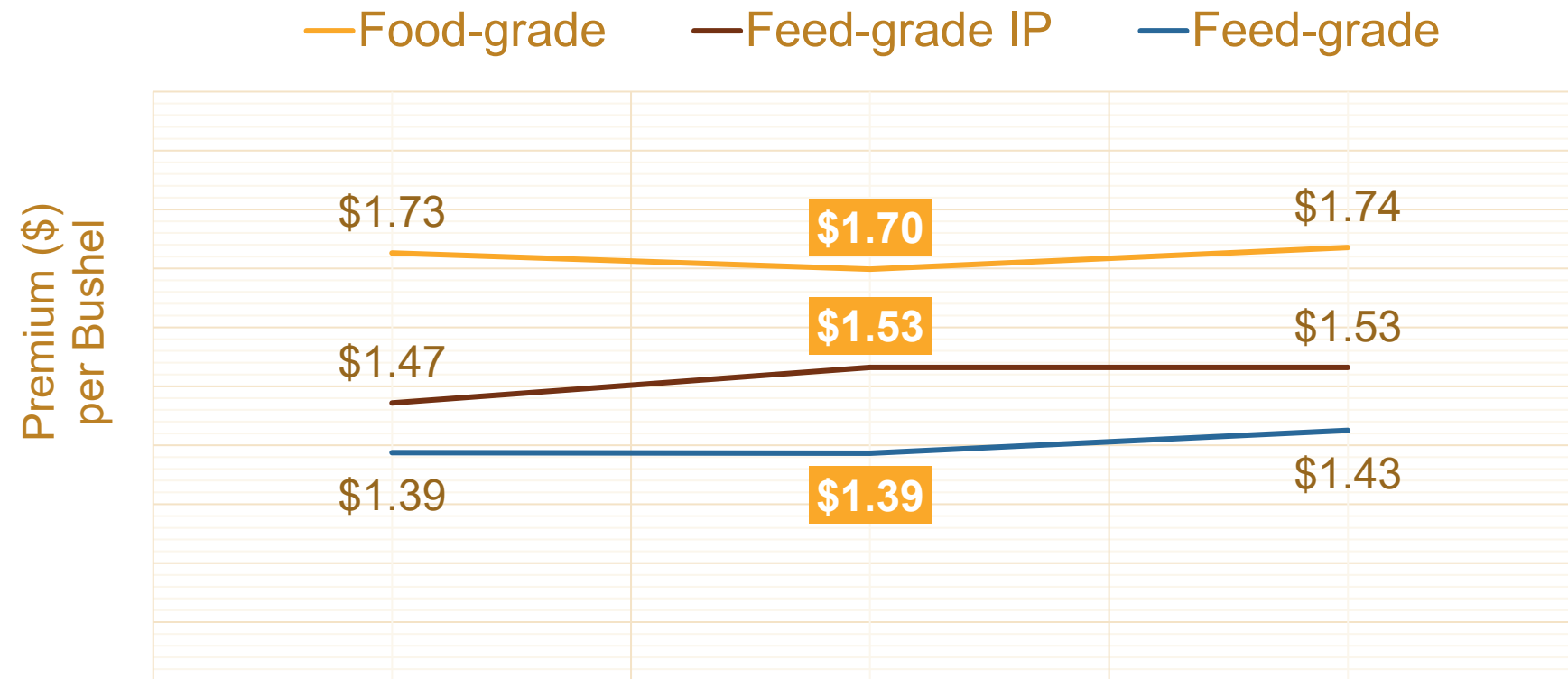
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Non-GMO Soybean Yields Trends

- Non-GMO soybean yields have increased by about 2.8% annually since 2015.



Non-GMO Soybean Premiums

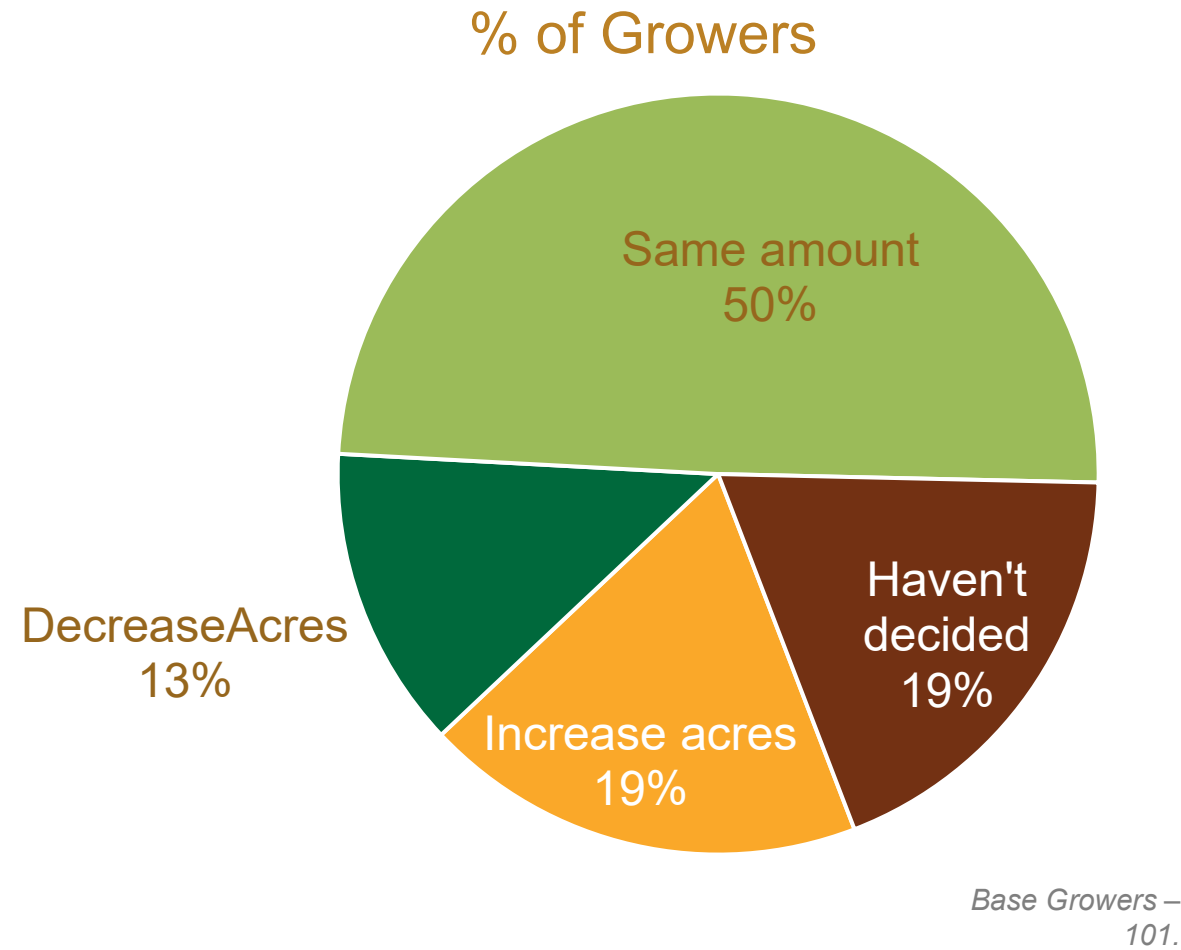


	2019	2020	2021 (exp.)
Base Growers (Food)	38	45	38
Base Growers (Feed IP)	25	28	22
Base Growers (Feed)	20	22	18

Source (2020 study): What premium did you/do you expect to receive for the following types of non-GMO soybeans in the following years? For 2020 and 2021, please give your expected premium. Food-grade non-GMO soybeans? Feed-grade non-GMO soybeans that are identity preserved? Feed-grade non-GMO soybeans that are not identity preserved? Organic soybeans?

Intentions to Plant Non-GMO Food-grade Acres in 2021

- More growers report they will increase rather than decrease their non-GMO food-grade soybean acres (19% vs. 13%).





Non-GMO Exporters, Purchasers, Contractors

Objectives - Exporters



22 Exporters

- Determine how food-grade soybeans are acquired (i.e., via contract or spot-purchase) and what portion is acquired using each method.
- Estimate of the number of non-GMO food-grade soybean acres in the U.S. that fall into end-use purpose categories such as soymilk, tofu, natto, miso and others.
- Determine from which states exporters buy non-GMO food-grade soybeans.
- Determine the countries to which U.S. non-GMO food-grade soybeans are exported and the quantity exported to each country.

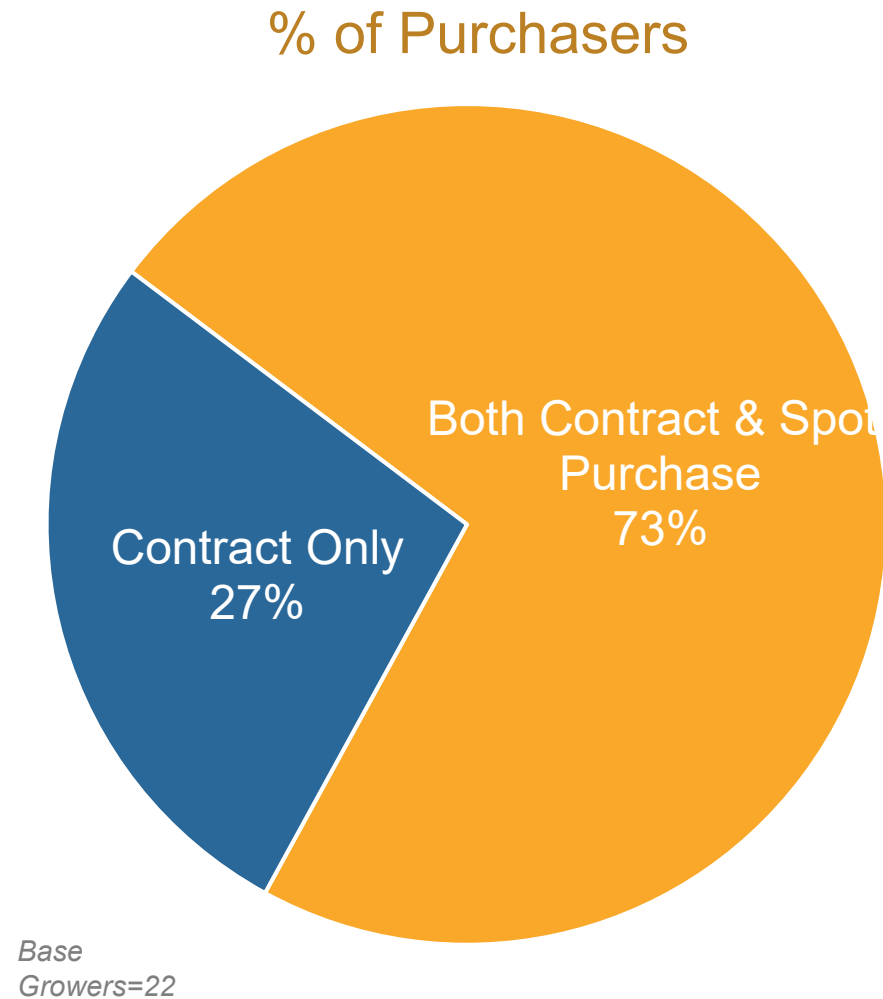


Purchasers/Exporters Soybean Purchase Behavior

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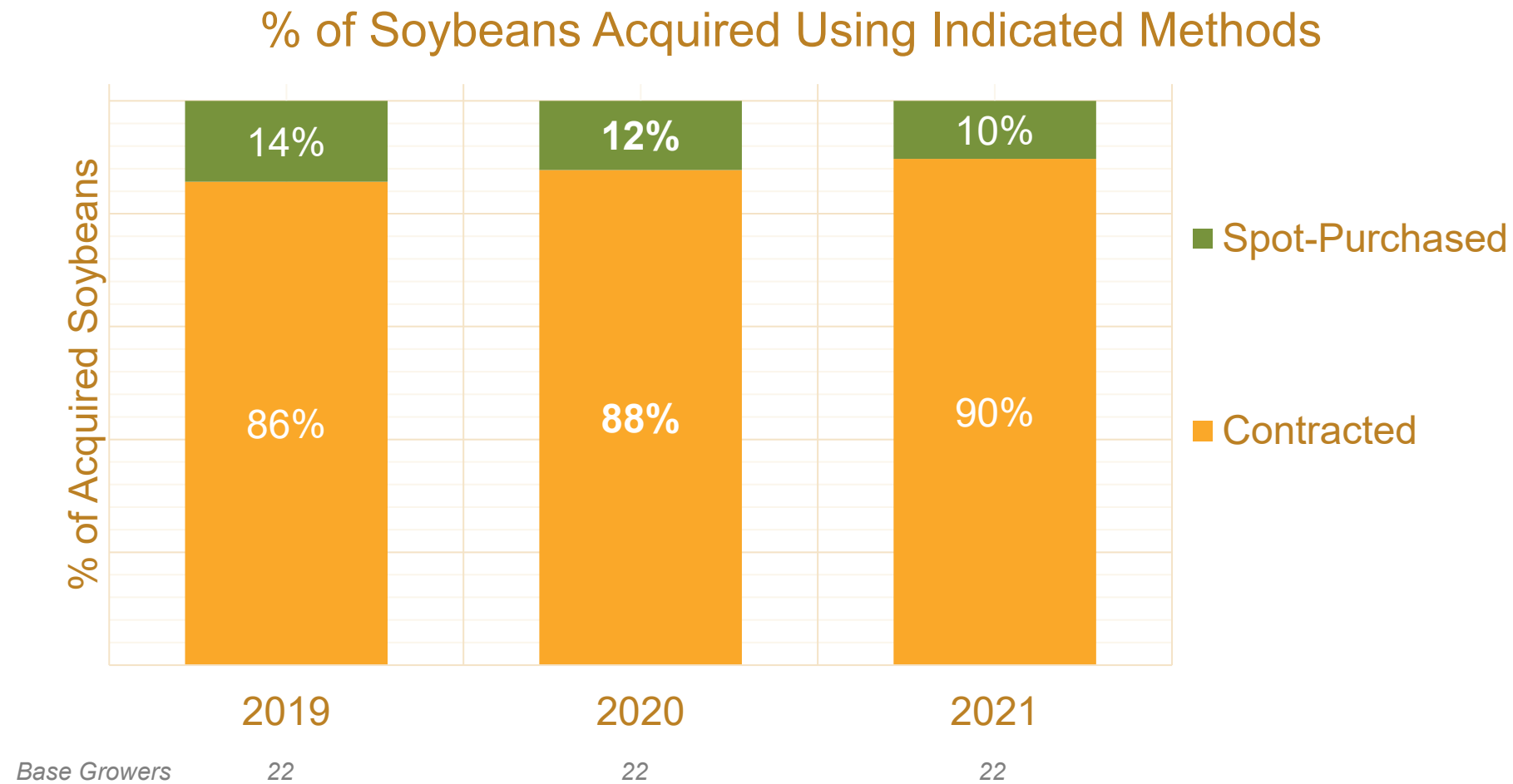
How Non-GMO Exporters Acquire Soybeans

- All exporters contract soybeans, with most using both contracts and cash purchases.



How Non-GMO Exporters Acquire Soybeans

- Roughly 10% to 12% of exporters soybeans are spot-purchased.



% of Soybeans Contracted

- Exporters contract for most all organic soybeans (92% in 2020) and IP non-GMO food-grade soybeans (99% in 2020) and for just over half of non-GMO feed-grade acres (62% in 2020).

	2019	2020	2021
GMO	72%	74%	78%
Organic	91%	92%	93%
Food-grade	99%	99%	99%
Feed-grade	58%	62%	58%

	2019	2020	2021
Base Growers:	22	22	22
Base Acres:	2,563,535	2,843,024	3,735,835

States In Which Food-grade Soybeans Are Contracted-Based on Exporter Feedback

Average = 2.9

of Contracted Acres	2019	2020	2021
Minnesota	22%	21%	22%
North Dakota	17%	17%	17%
Illinois	9%	15%	10%
Michigan	10%	10%	10%
Iowa	10%	10%	10%
Ohio	8%	8%	13%
Wisconsin	6%	6%	6%
Indiana	10%	4%	4%
Other States	3%	3%	3%
North Carolina	3%	3%	3%
Virginia	2%	2%	2%

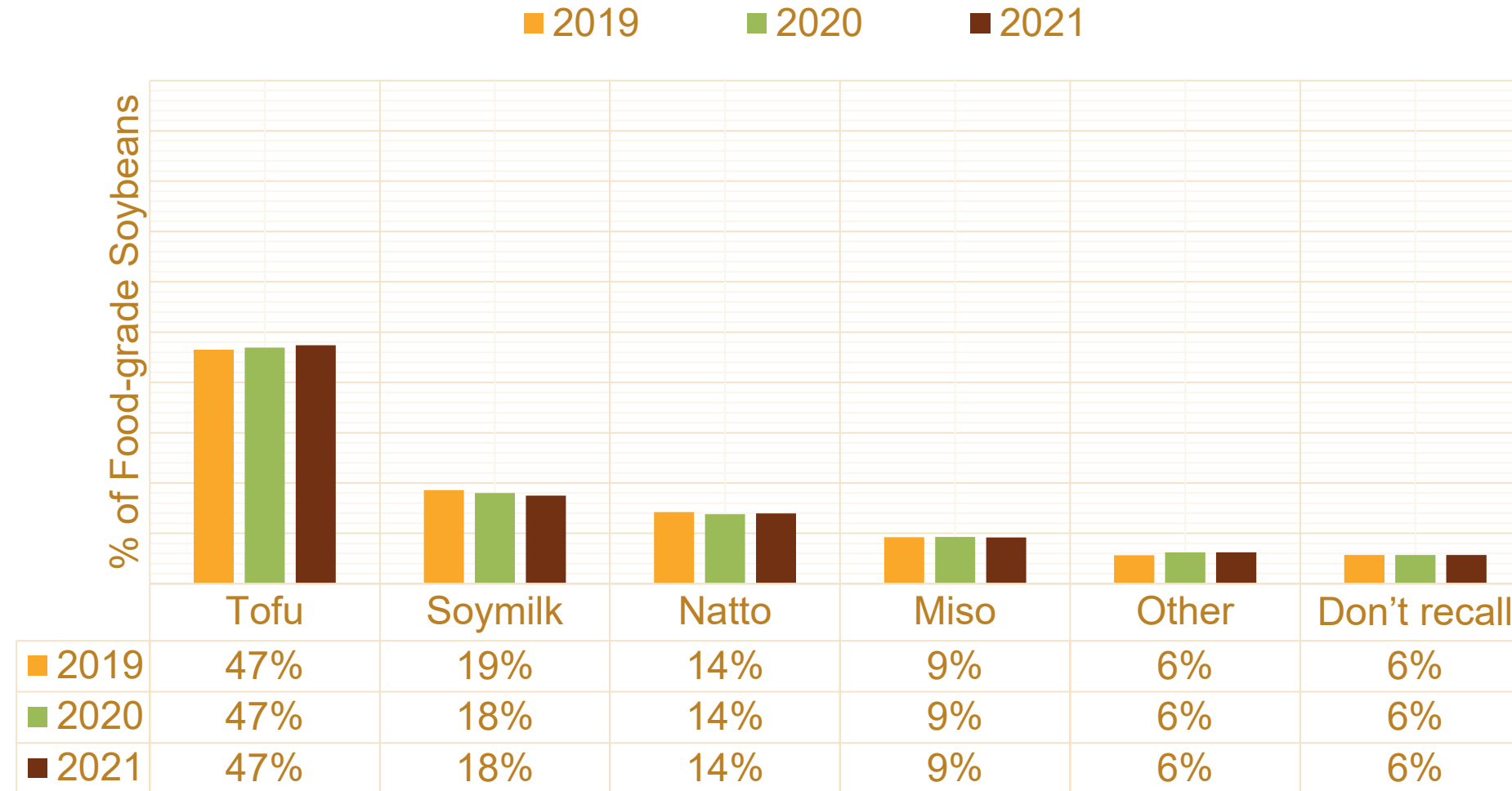
Base:

21

21

21

End-Purpose for Non-GMO Food-grade Soybeans



Bases: 2019=21, 2020=21,
2021=21.

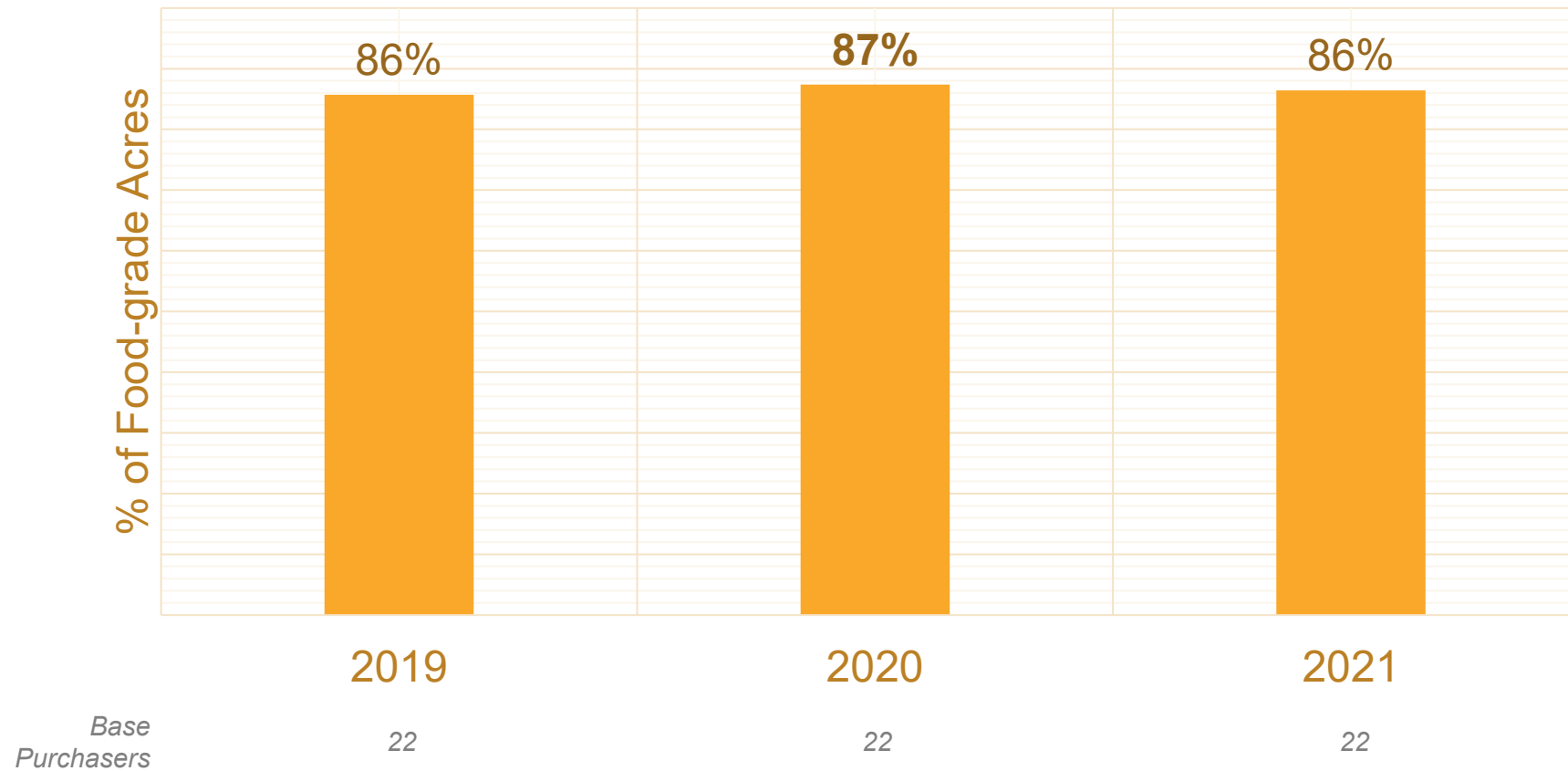


Purchasers/Exporters Non-GMO Soybean Exports

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Exported Non-GMO Food-grade Soybeans

Roughly 87% of non-GMO food-grade soybeans produced in the U.S. will be exported to other countries in 2020, as in the previous year and expected in 2021.



Reported Exporter Export Destinations for U.S. Non-GMO Food-grade Soybeans

% of Non-GMO Food-grade Soybeans Exported to Country

	2019	2020	2021
Japan	69%	68%	64%
Taiwan	7%	8%	8%
South Korea	9%	8%	9%
Thailand	6%	6%	7%
Malaysia/Singapore	2%	2%	3%
Vietnam	2%	2%	3%
The Philippines	2%	2%	2%
China	1%	2%	2%
Indonesia	1%	1%	1%
EU	<1%	1%	1%
Other Countries	<1%	<1%	<1%

Base: 21 21 21

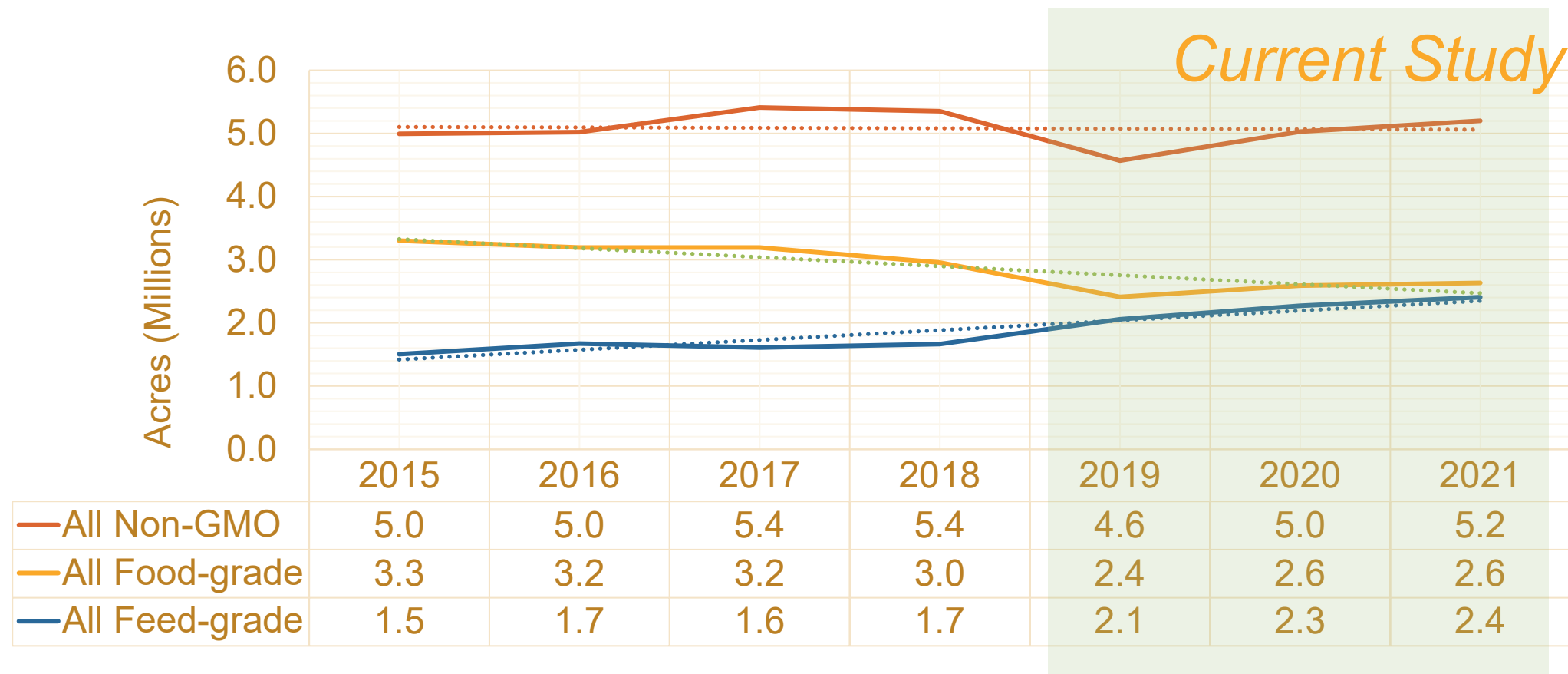


U.S. Non-GMO Soybean Production Estimates

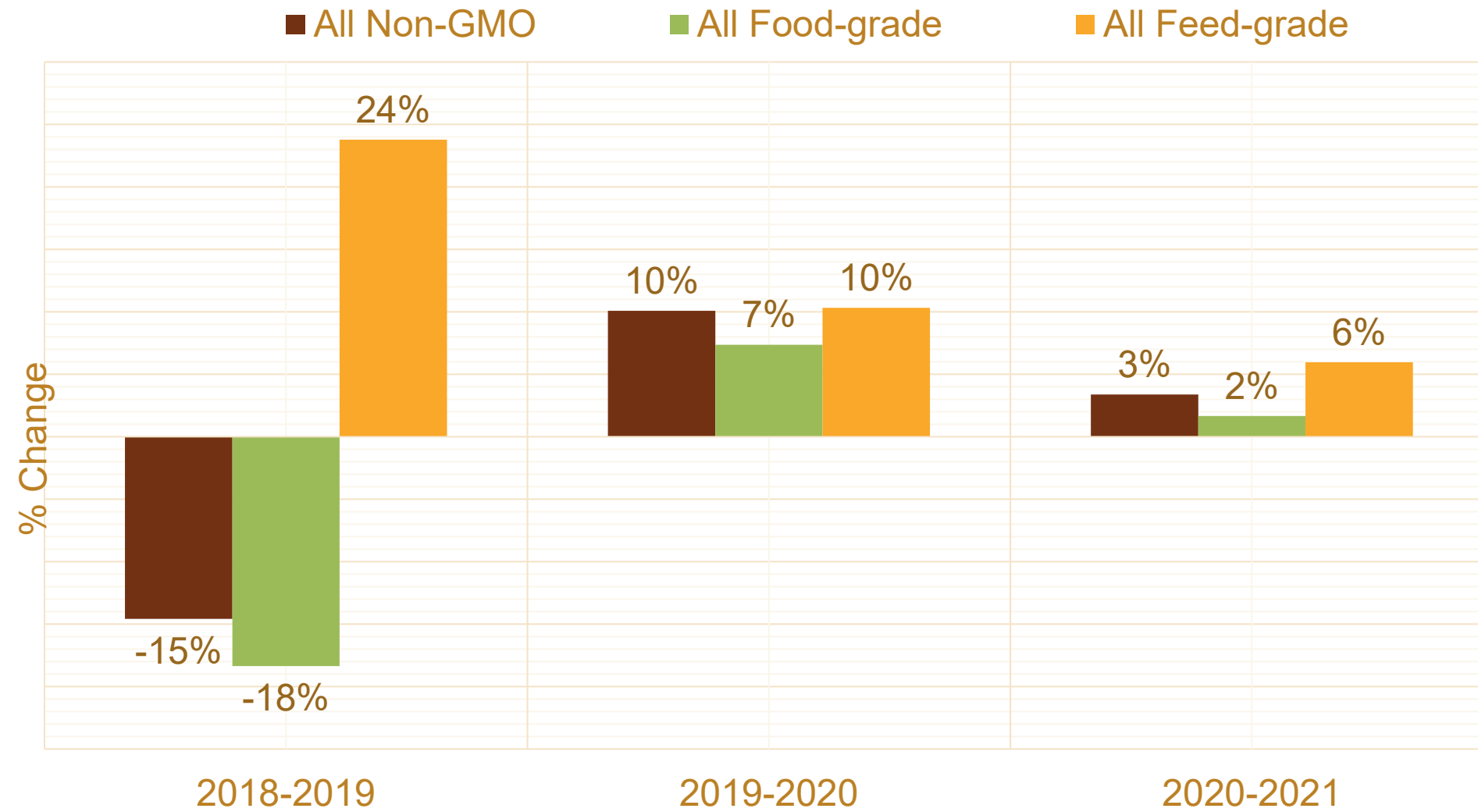
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Estimate of Non-GMO Soybean Acres in the U.S.

- U.S. growers produced about 2.6 million non-GMO food-grade soybeans in 2020, up seven percent from 2019.



% Change in Types of Non-GMO Soybean Acres in the U.S.



Contracted Non-GMO Food-grade Soybeans

Food-grade Soybean Acres (Thousands) Contracted by State

	2019	2020	2021
Minnesota	458.7	468.1	381.1
North Dakota	354.5	378.9	294.5
Illinois	187.7	334.4	173.2
Michigan	208.5	222.9	173.2
Iowa	208.5	222.9	173.2
Ohio	166.8	178.3	225.2
Wisconsin	125.1	133.7	103.9
Indiana	208.5	89.2	69.3
Other States	62.6	66.9	52.0
North Carolina	62.6	66.9	52.0
Virginia	41.7	44.6	34.6
Total Contracted Acres	2085.1	2206.8	1732.4

Estimate of Non-GMO Food-grade Soybean Acres Used for Indicated End-Purposes

	U.S. Soybean Acres (Millions)	% of All Soybean Acres	% of Food-grade Soybean Acres
All Soybeans	83.8	100.0%	-
Food-grade Soybeans	2.59	3.1%	100.0%
Tofu	1.29	1.5%	49.7%
Soy milk	0.50	0.6%	19.1%
Natto	0.38	0.5%	14.6%
Miso	0.25	0.3%	9.8%
Other	0.17	0.2%	6.6%



Non-GMO Food-grade Soybean Exports

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Conclusions & Implications

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Summary of Findings & Conclusions

Summary of Findings

- **83.8 million acres** of soybeans planted in the U.S. in 2020. Of these, 6% or **5.0 million acres**, are non-GMO soybeans.
- Food-grade soybean acres account for 52% of non-GMO acres or **2.6 million acres** of which **2.2 million acres** are contracted. Most of the remaining non-GMO acres are feed-grade (45% or **2.3 million acres**).
 - ❑ The proportion of non-GMO acres that are feed-grade soybeans increased, while non-GMO food-grade soybeans decreased. Non-GMO feed-grade soybeans increased from about **1.5 million acres** in 2015 to **2.3 million acres** currently. During the same time period, non-GMO food-grade soybeans went from **3.3 million acres** in 2015 to **2.6 million acres** in 2020.
- Minnesota and North Dakota account for 39% of food-grade non-GMO soybeans contracted in 2020, with contracts for **468 thousand acres** (Minnesota) and **379 thousand acres** (North Dakota) non-GMO food-grade soybeans.
- Half of the U.S. produced non-GMO food-grade soybeans are destined for the tofu market (50%). Another 19% will be used for soymilk.

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Thank you!

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