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RISK MANAGEMENT



Food or Fuel 2025

Hype or Reality

- Last 3 to 5 years a lot of talk of biofuel demand
 - Especially renewable diesel fuel
 - Sustainable aviation fuel
- Future for veg oil production looked strong, which will help support other grains
- Now future of Biofuels industry looks questionable

What is it?

Renewable diesel is a biofuel made by hydrotreating bio-based oil, fats, and grease.

This is the same method/technology used by petroleum refineries and is complex and expensive/capital intense.

Renewable diesel meets the diesel spec/is a drop-in fuel.

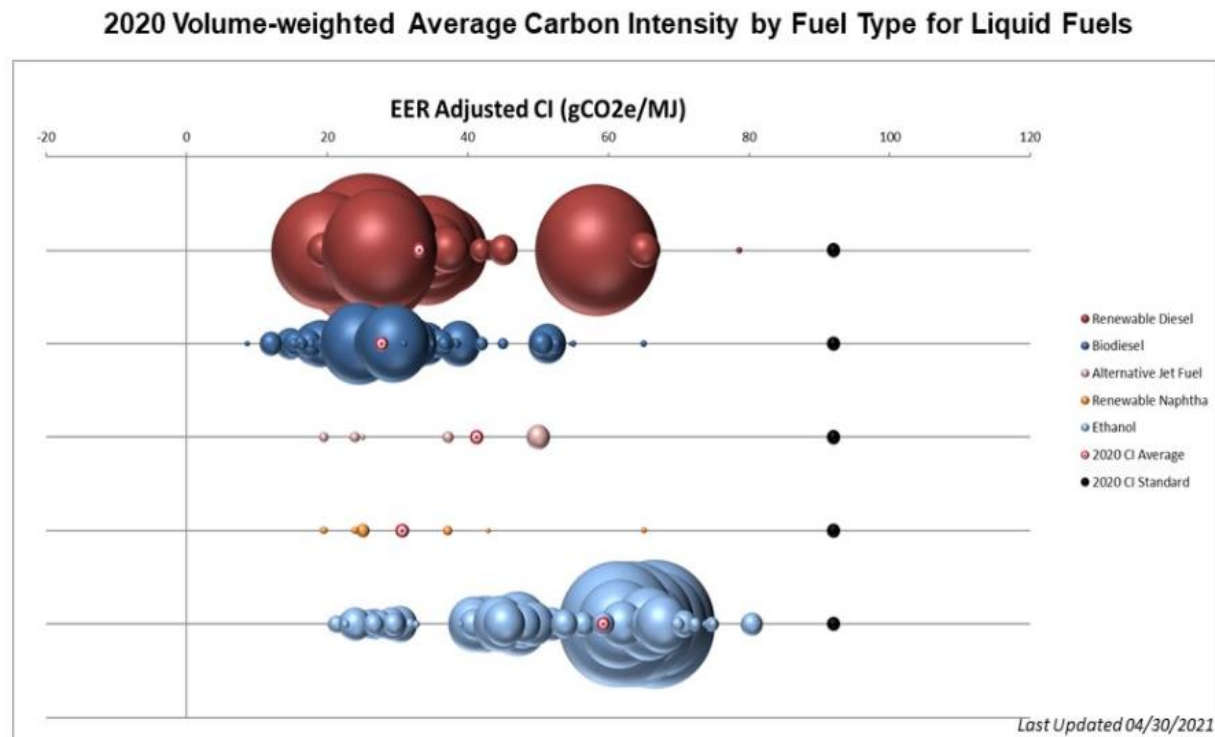
Why is there a market for Renewable Diesel?

California's low-carbon fuel standard, which incentivizes low-carbon fuels, has created a market with significant premiums for renewable diesel.

Other States with Biofuel Mandates or Incentives:
MO/FL/CT/OR/MS/AR/NE/MT/TN/NM/IA/IL/MN

Why is there a market for Renewable Diesel?

Renewable Diesel has an extremely small carbon footprint, as little as one-fifth that as petroleum-based diesel.



Source: California Air Resources Board

Crush Plants

- Green Bison – Spiritwood ND
 - Receiving soybeans
 - Not at full capacity yet, 150,000 bus per day
 - ADM/Marathon
- Casselton ND
 - Receiving soybeans
 - \$400 million
 - Capacity of 42.5 MB
 - MSP and CGB
- High Plains Processing - Mitchell SD
 - Completion expected by
 - Broke ground/under construction
 - \$500 million
 - BP

Crush Plants

- Epitome Energy – Grand Forks
 - \$418 million
 - Delayed, still expected to break ground
- SB Associates/CHS – Evansville WI
 - 70 MB
 - Two-thirds WI production
 - Breaking ground 2025
- Late 2024
 - Six new soybean crush plants or expansion on books in IA, NE, ND
 - Four more projects on drawing board in NE, OH, IN, and LA to be started by 2026

Crush Plants

- CA Air Resource Board – airline industry trade group established goal of increasing SAF use for intrastate air travel to 200 million gallons by 2035 from current 20 million gallons
- Meets around 40% of intrastate fuel demand
- US Energy Department approved conditional loan of \$3 Billion for two SAF project expansions to produce 315 million gallons of biofuels, mostly SAF
- White House goal – annual SAF production of 3 billion gallons by 2030, only 25 million gallons used in 2023

Concerns

- Some firms halted expansion or building plans in order to wait and see election impact on biofuel policy
 - Bunge Chevron plants in LA and IL
 - Bunge scrapped plan for massive plant in LA
- Trump's plan to roll out blanket import tariffs on China, Mexico, and Canada
 - Likely will result in end of importing used restaurant cooking oil from China
 - Will also impact US importing of Canada's canola and canola oil, which US is largest importer of
- Trump also expected to roll back IRA biofuel rebates
 - \$1 blending tax credit expires Jan 1
 - Impacts 1 billion gallons of imports, 20% of US supply
- New head of EPA not fan of biofuels

Concerns

- China beat US to the punch
 - Cancelled 13% export tax rebate on used cooking oil
 - Effective Dec 1
 - Will raise cost in US
- US RDF production increased 200% since 2021
- Global rapeseed oil supplies down 13%
- Global sunflower seed oil stocks down 24%
- Indonesian palm oil shipments dropped due to plans to boost biodiesel production

RDF

- IA Renewable Fuels Association Mtg
- Petroleum is 94% of current supply
- Biofuels are 6% of current supply
 - Ethanol is 70%
 - Biodiesel is 13%
 - Renewable Diesel is 14%
- California biobased diesel is 59% of total diesel demand
- To Produce 100% of 2022 US diesel fuel consumption would require
 - More than 160 MMT of feedstock
 - Which is 10 times US production of veg oil in 2022
 - Or 80% of global veg oil production

SAF

- IA Renewable Fuels Association Mtg
 - SAF Grand Challenge
 - Study done by Economic Research Group
 - Supply 35 billion gallons by 2050
 - First adopted would be SAF from fats, oils, greases (HEFA-SAF) supporting soybeans and livestock
 - As demand grows ethanol to jet (ETJ-SAF) supporting corn
 - Need 63 new 200 million gallon per year ethanol plants
 - Need 30 new ethanol to jet SAF production facilities
 - Need 6 new HEFA-SAF production facilities

Canada

- Canadian Oilseed Processors Association
 - Canola production, crush and oil/meal output could reach 23 MMT for processing by 2025
 - 70% or 16.2 MMT of production for crush
 - 30% export
- In 2022 renewable fuels accounted for 14 billion litres
- By 2025 expected to go to 16.6 billion litres.
- By 2030 expected to go to 23.3 billion litres.
- 5 large scale renewable diesel fuel plants are being build or in planning stages.

Global demand for canola oil and meal continues to grow, spurring investments in new processing capacity here in Canada.



In 2021 and early 2022, four major announcements will add 5.7 MMT of processing capacity by 2025 – representing a 51% increase from our current capacity of 11.1 MMT. These capital investments are an estimated \$2 billion, creating thousands of high paying jobs. Once a processing plant is built, it provides a steady source of employment for the community along with a steady source of demand for canola grown by surrounding farmers.

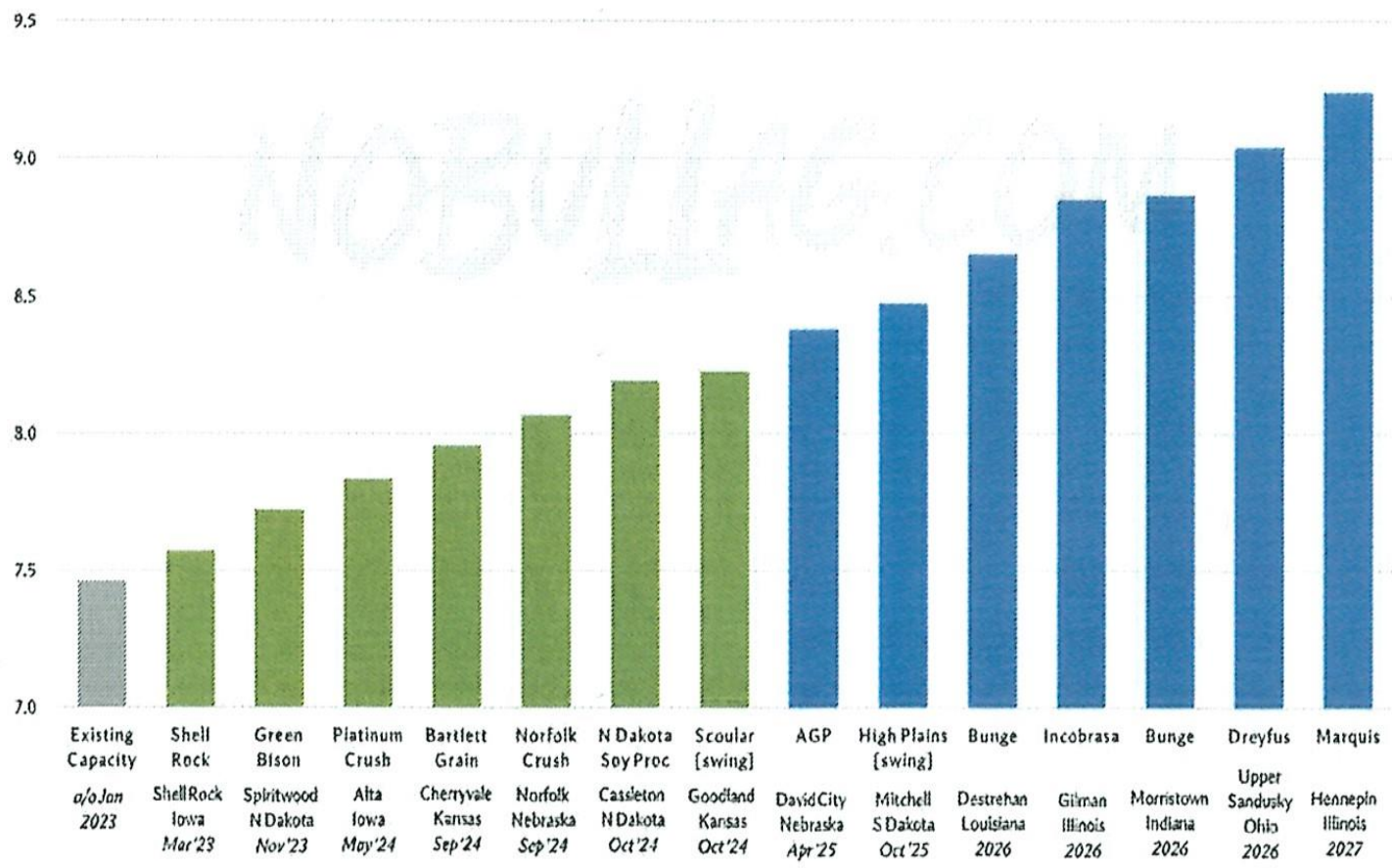
Canada Plants

- May 2022 - Parkland plans to build BC largest RDF complex, \$600 million, 6,500 barrels per day
 - March 2023 - cancelled, expand current plant instead
- Exxon Mobil moves forward with Imperial Oil plant in Alberta
 - \$560 million, 20,000 barrels
 - Construction on going now, open 2025
- Federated Coop LTD and AGT Foods building dual facility plant in Regina
 - \$2 B, 15,000 barrels/day
 - Also canola crush plant to crush 1.1 million tonnes/year and produces 450,000 tonnes oil
- Lloydminster in Saskatchewan built by Covenant Energy
 - \$900 million RDF plant
 - Begin in 2024, on line 2026



U.S. Soybean Crush Capacity | Maximum Daily

Existing + New Builds & Plant Expansions | Million bushels | As of Nov 2024



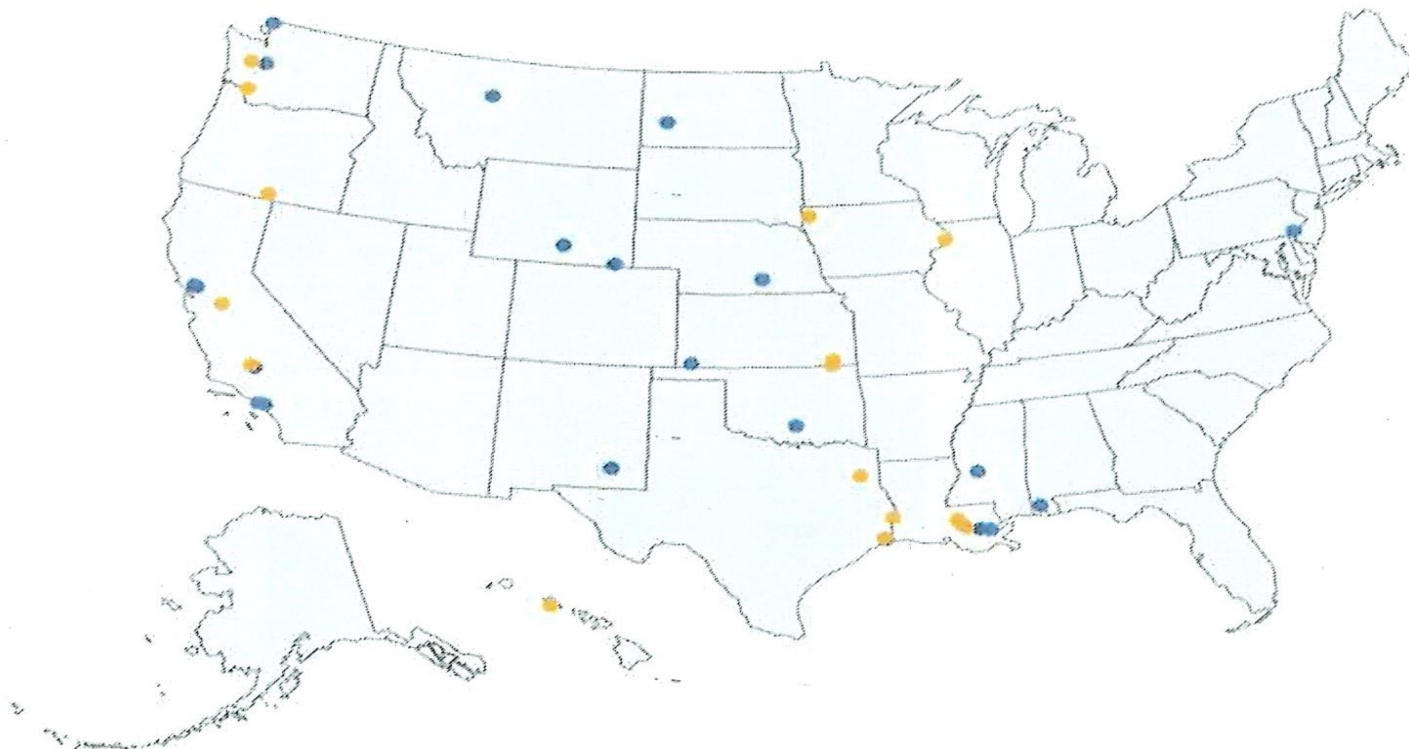
Source: No Bull Ag Solutions Group LLC | Based on announced expansions/new build capacities. Max daily run rate

Great chart from **Susan Stroud** showing the new crush facilities that have and will be coming online.



Figure 2. Location of HEFA Renewable Diesel Production Plants in the U.S., 2023-2026 and 2027 or Later

● 2023 - 2026 ● 2027 or Later



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Table 1. Annual Nameplate Production Capacity (million gallons) of HEFA Renewable Diesel Plants in the U.S., Actual for 2020 - 2023 and Projected for 2024 - 2026

Company	City	State	Starting Year	2020	2021	2022	2023	2024	2025	2026
REG-Geismar LLC	Geismar	LA	2010	100	100	101	100	340	340	340
Diamond Green Diesel LLC	Norco	LA	2013	337	982	982	982	982	982	982
Altair Paramount LLC	Paramount	CA	2016	42	42	42	42	42	42	42
East Kansas Agri-Energy Renewable Dies	Garnett	KS	2017	3	3	-	-	-	-	-
Wyoming Renewable Diesel CO	Sinclair	WY	2018	117	117	117	117	117	117	117
Dakota Prairie Refining LLC	Dickinson	ND	2020	192	192	192	192	192	192	192
Phillips 66 Co	Rodeo	CA	2021	-	120	180	180	800	800	800
Cheyenne Renewable Diesel Company LL	Cheyenne	WY	2021	-	92	92	92	92	92	92
BP Products North America	Blaine	WA	2021	-	66	111	111	111	111	111
Chervron USA Inc	El Segundo	CA	2021	-	31	31	184	184	184	184
Kern Oil & Refining	Bakersfield	CA	2021	-	6	6	6	6	6	6
Diamond Green Diesel LLC	Port Arthur	TX	2022	-	-	537	537	537	537	537
Montana Renewables LLC	Great Falls	MT	2022	-	-	184	184	230	230	230
HF Sinclair Renewables Holding Co LLC	Artesia	NM	2022	-	-	141	141	141	141	141
CVR Renewables Wynnewood LLC	Wynnewood	OK	2022	-	-	121	121	121	121	121
Seaboard Energy Kansas LLC	Hugoton	KS	2022	-	-	85	85	85	85	85
Shell Oil Products U.S. 1	Norco	LA	2022	-	-	54	54	54	54	54
Jaxon Energy, LLC	Jackson	MS	2022	-	-	25	25	25	25	25
Martinez Renewables LLC	Golden Eagle	CA	2023	-	-	-	731	731	731	731
St Bernard Renewables	Chalmette	LA	2023	-	-	-	307	307	307	307
Vertex Renewables LLC	Mobile	AL	2023	-	-	-	115	-	-	-
Monroe Energy LLC 1	Trainer	PA	2023	-	-	-	18	18	18	18
US Oil & Refining Co 1	Tacoma	WA	2023	-	-	-	5	5	5	5
Love's Heartwell Renewables	Hastings	NE	2025	-	-	-	-	-	80	80
Total Nameplate Capacity				791	1,751	3,000	4,329	5,120	5,200	5,200

Notes: Production capacity for 2020-2023 is from annual EIA surveys. The date of the surveys is January 1 of each calendar year. We assume that EIA data are as of December 31 of the previous calendar year in order to be consistent with our previous work where we defined capacity as end-of-year. For example, the capacities listed in the table for 2020 are reported by the EIA as of January 1, 2021. Several sources were used for the 2024 - 2026 production capacity estimates, including *Render* and *Biodiesel* magazines, Argus, and other industry sources. If no other data were available, we used the 2023 EIA survey results.

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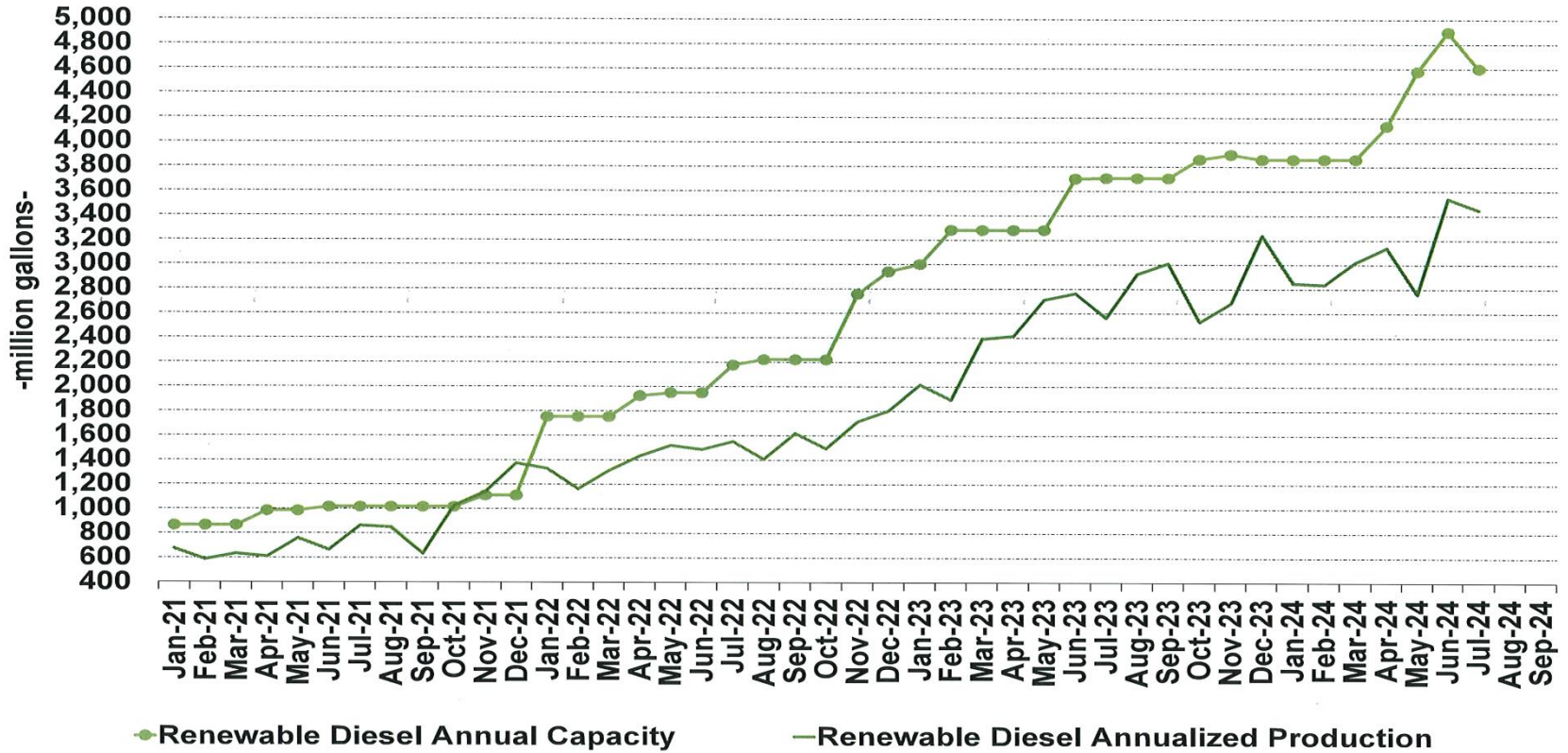
Table 2. Nameplate Capacity of Announced HEFA Renewable Diesel Projects (million gallons) in the U.S., 2027 or Later

Company	City	State	Maximum Renewable Diesel Capacity	Maximum SAF Capacity
Aemetis	Riverbank	CA	90	78
Azure Cherryvale SAF	Cherryvale	KS	135	118
CVR Energy	Coffeyville	KS	500	250
Emerald Biofuels	Port Arthur	TX	110	NA
Global Clean Energy	Bakersfield	CA	210	NA
Gron Fuels	Port Allen	LA	1,000	615
HOBO Renewable Diesel	Clinton	IA	120	NA
NXT Clean Fuels	Port Westward	OR	575	NA
NXT Clean Fuels	Lakeview	OR	31	NA
Par Pacific	Kapolei, Oahu	HI	61	37
ReadiFuels	Sioux Center	IA	36	NA
Topsoe & Santa Maria Renewables	East Texas	TX	46	25
Total Nameplate Capacity (million gallons)			2,914	1,123

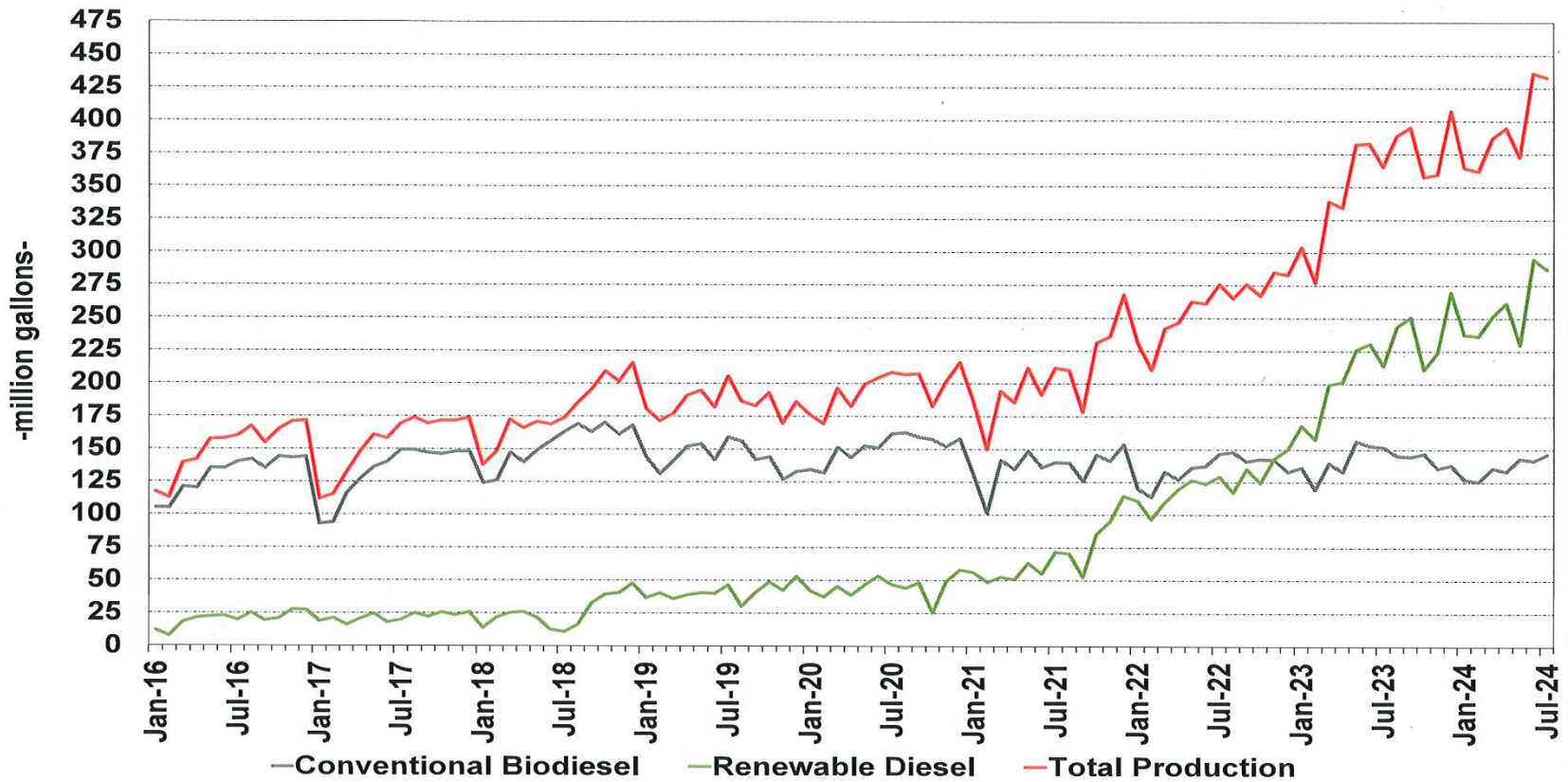
Sources: *Render* and *Biodiesel* magazines, Argus, and other industry sources.

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U.S. Renewable Diesel Production vs Capacity



U.S. Monthly Biodiesel/Renewable Diesel Production



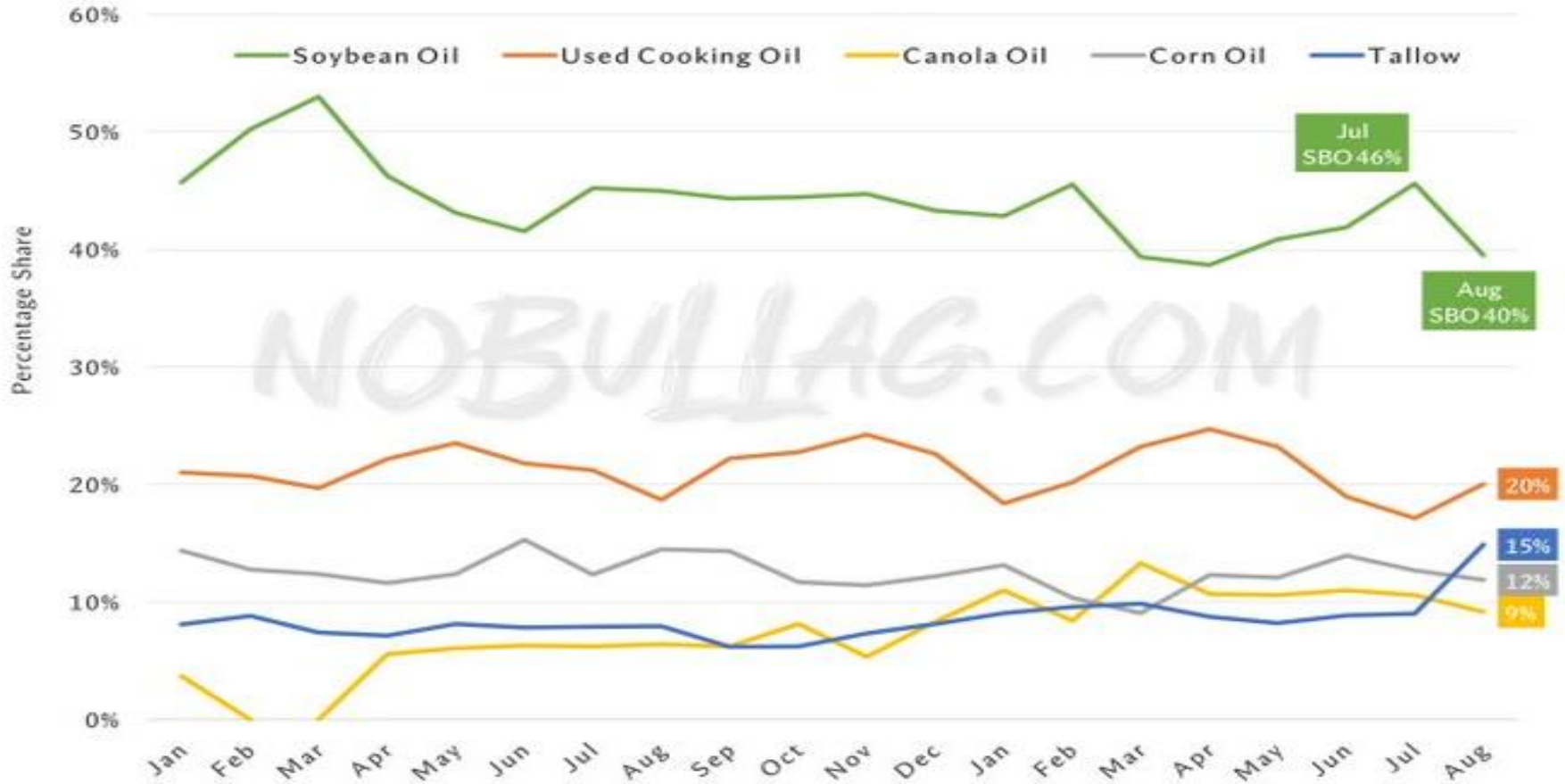


Biomass-based Diesel Production

Feedstock use by % share* | 2022-23



@SusanNOBULL



*Excludes Poultry Fat, White Grease & Other

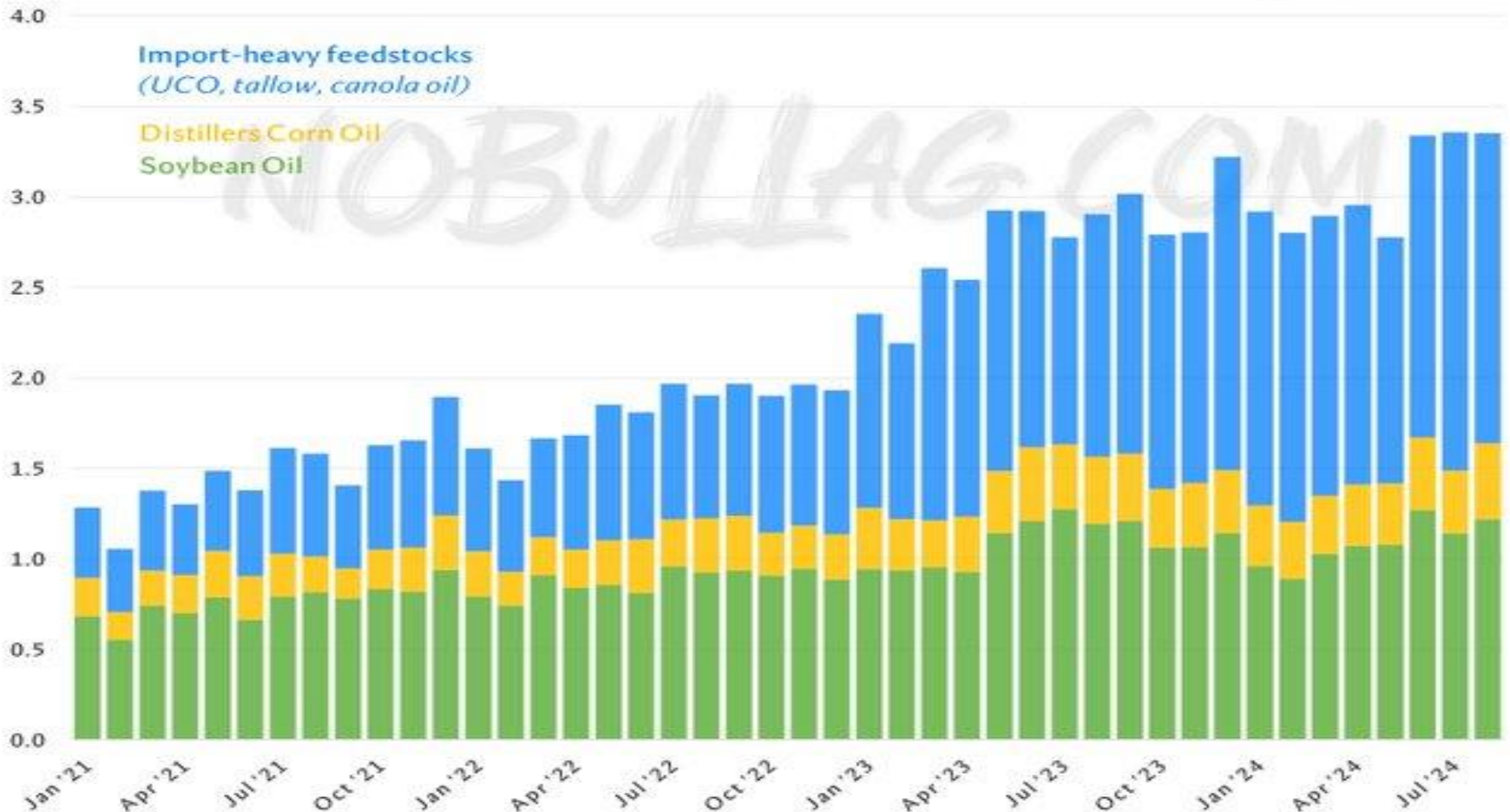


U.S. Biomass-Based Diesel Feedstocks*

Monthly demand | Billion pounds

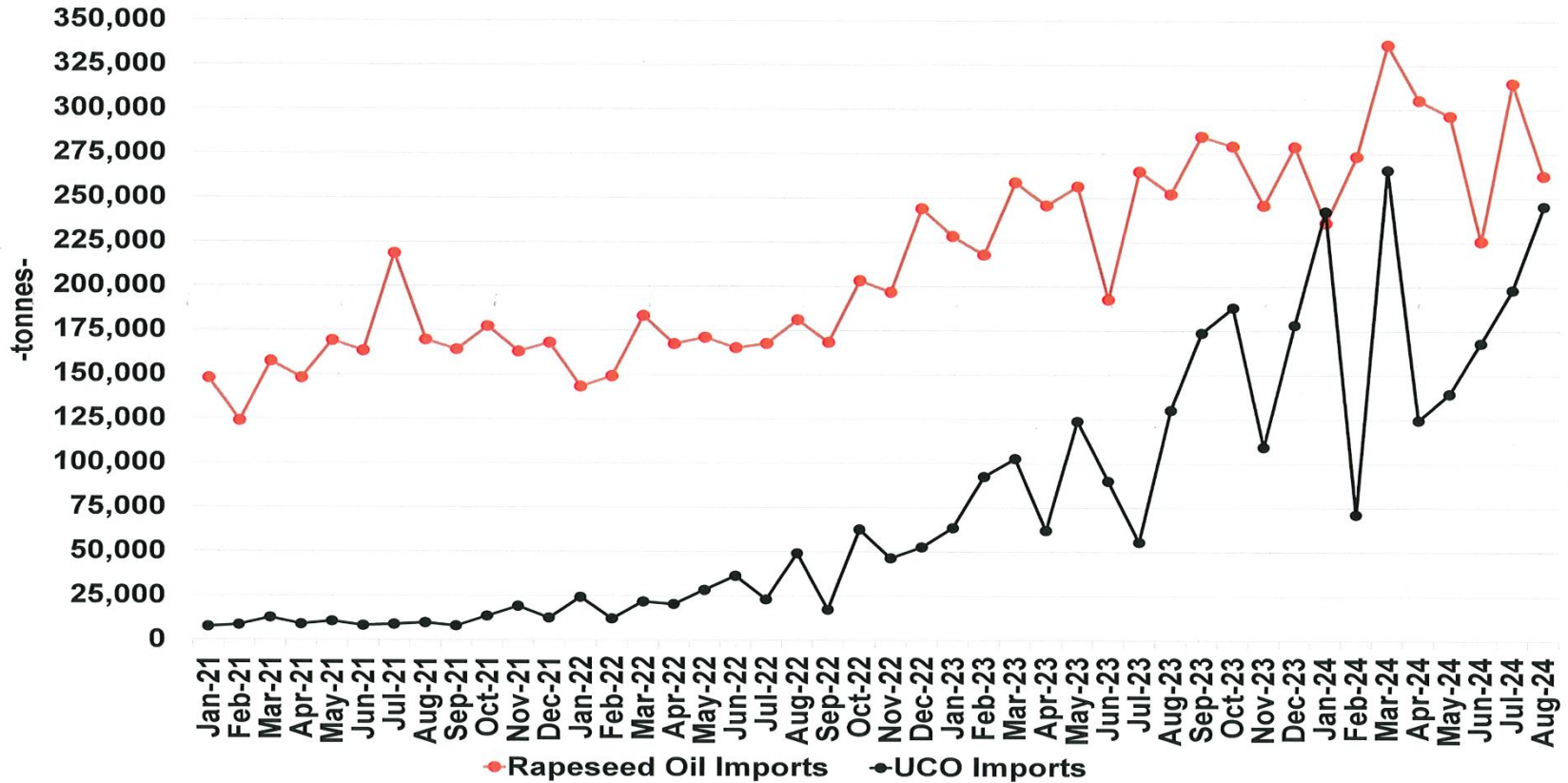
NO BULL

@SusanNoBull

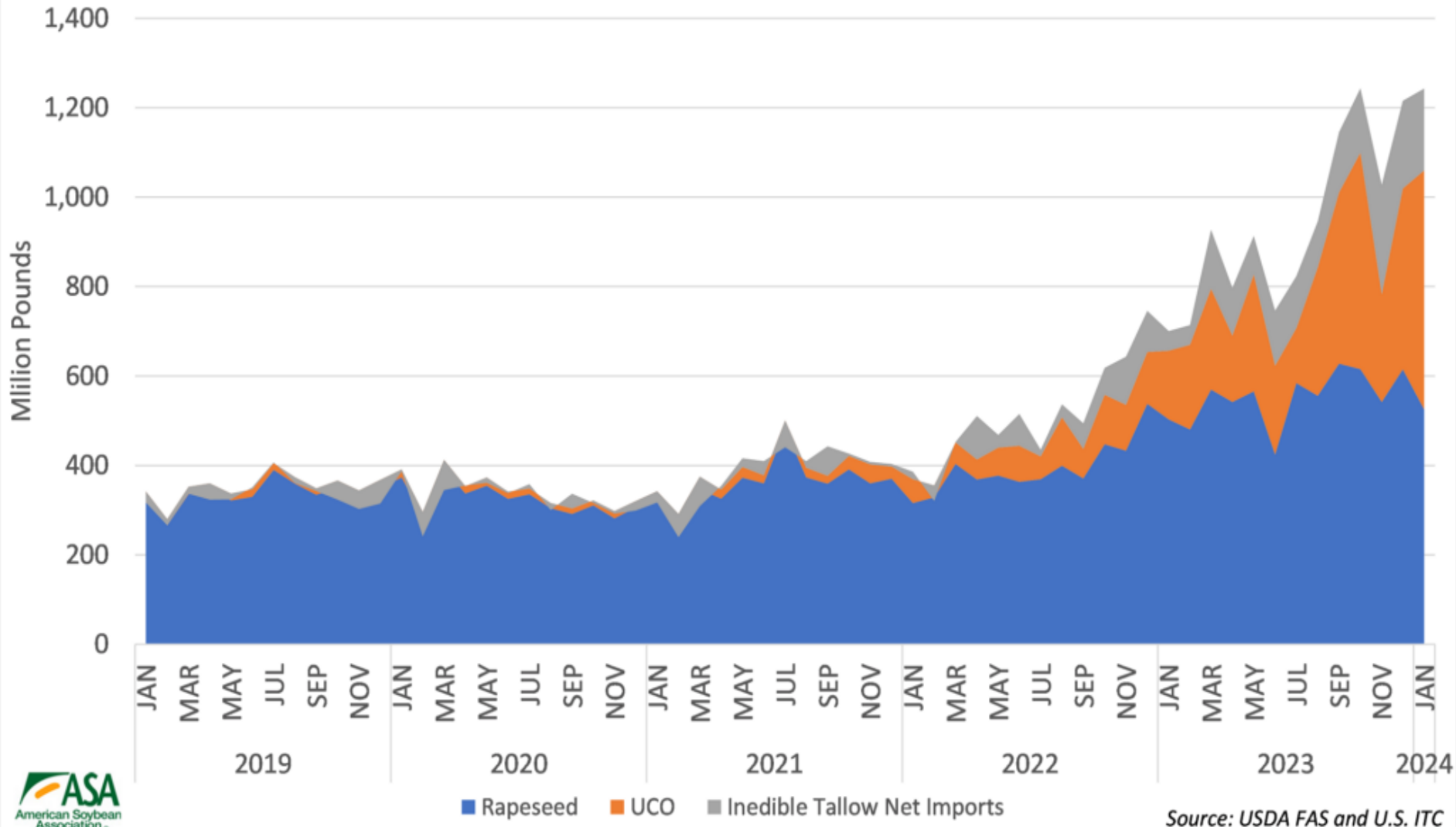


Source: EIA | *Includes Other Biofuels including renewable heating oil, renewable jet fuel, renewable naphtha, renewable gasoline, and other biofuels and biointermediates | Excludes other feedstocks

U.S. Monthly Rapeseed Oil and Used Cooking Oil Imports



Monthly U.S. Feedstock Imports



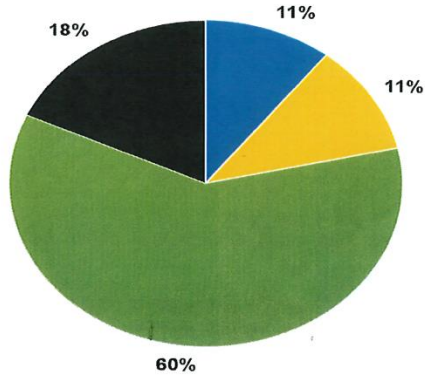
■ Rapeseed ■ UCO ■ Inedible Tallow Net Imports

Source: USDA FAS and U.S. ITC



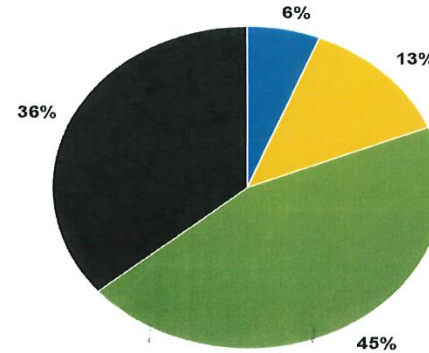
U.S. Feedstock Mix for Biodiesel/Renewable Diesel Production

Calendar Year 2020



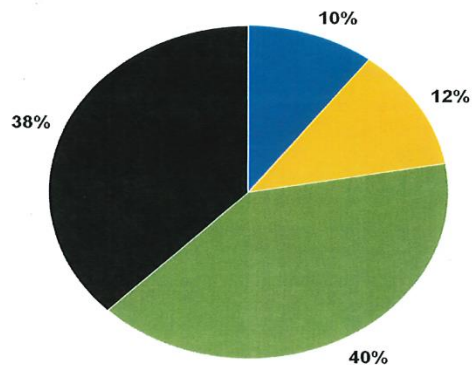
■ Canola Oil ■ Corn Oil ■ Soybean Oil ■ Waste Fats/Oils/Other

Calendar Year 2022



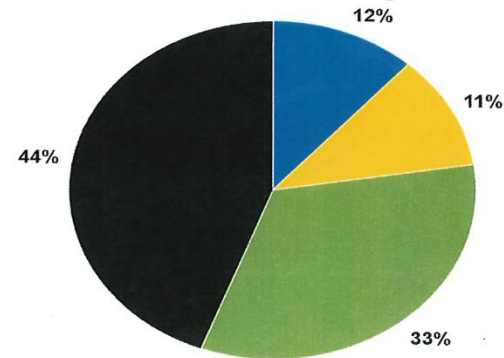
■ Canola Oil ■ Corn Oil ■ Soybean Oil ■ Waste Fats/Oils/Other

Calendar Year 2023



■ Canola Oil ■ Corn Oil ■ Soybean Oil ■ Waste Fats/Oils/Other

Calendar Year 2024 (Jan-Jul)

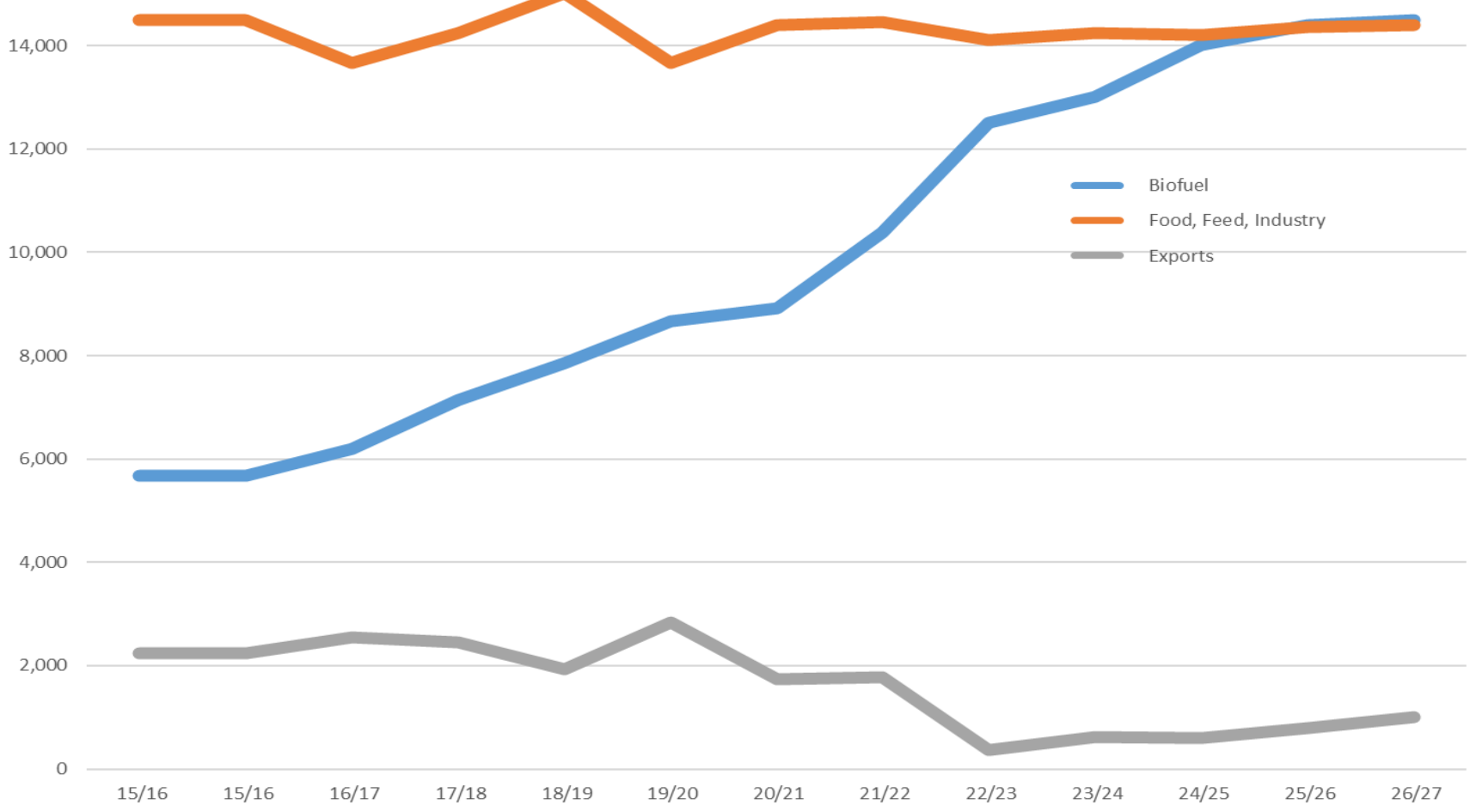


■ Canola Oil ■ Corn Oil ■ Soybean Oil ■ Waste Fats/Oils/Other

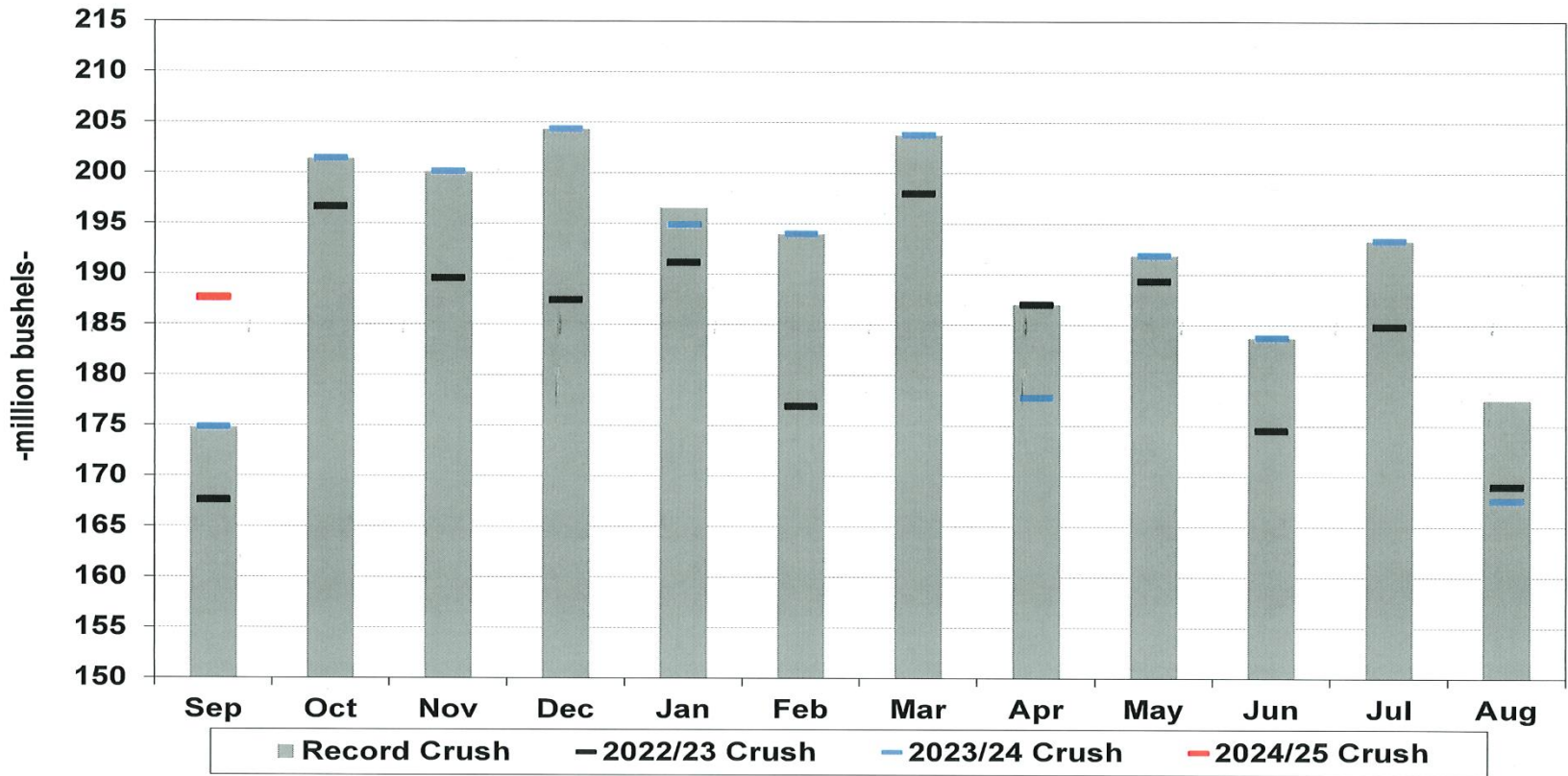


Soybean Oil (million lbs)												
											EST	EST
Category	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27
Supply												
Beginning Stocks	1,855	1,687	1,711	1,995	1,775	1,853	2,131	1,991	1,607	1,501	1,536	1,596
Production	21,950	22,123	23,772	24,197	24,911	25,023	26,155	26,227	27,130	28,335	29,210	29,610
Imports	<u>287</u>	<u>319</u>	<u>335</u>	<u>397</u>	<u>320</u>	<u>302</u>	<u>303</u>	<u>376</u>	<u>621</u>	<u>500</u>	<u>400</u>	<u>300</u>
Total Supply	24,092	24,129	25,819	26,590	27,006	27,177	28,589	28,594	29,357	30,336	31,146	31,506
Use												
Biofuel	5,670	6,200	7,134	7,863	8,658	8,920	10,379	12,510	13,000	14,000	14,400	14,500
Food, Feed, Industry	14,492	13,662	14,247	15,011	13,659	14,394	14,449	14,099	14,240	14,200	14,350	14,400
Exports	<u>2,243</u>	<u>2,556</u>	<u>2,443</u>	<u>1,940</u>	<u>2,837</u>	<u>1,731</u>	<u>1,771</u>	<u>378</u>	<u>617</u>	<u>600</u>	<u>800</u>	<u>1,000</u>
Total Use	22,405	22,418	23,823	24,815	25,154	25,046	26,598	26,987	27,856	28,800	29,550	29,900
Ending Stocks												
Total Ending Stocks	1,687	1,711	1,995	1,775	1,853	2,131	1,991	1,607	1,501	1,536	1,596	1,606
Stocks/Use Ratio	7.5	7.6	8.4	7.2	7.4	8.5	7.5	6.0	5.4	5.3	5.4	5.4
Average Price	29.86	32.48	30.04	28.26	29.65	56.87	72.98	65.26	47.28	43.00	40.00	38.00

SBO USE

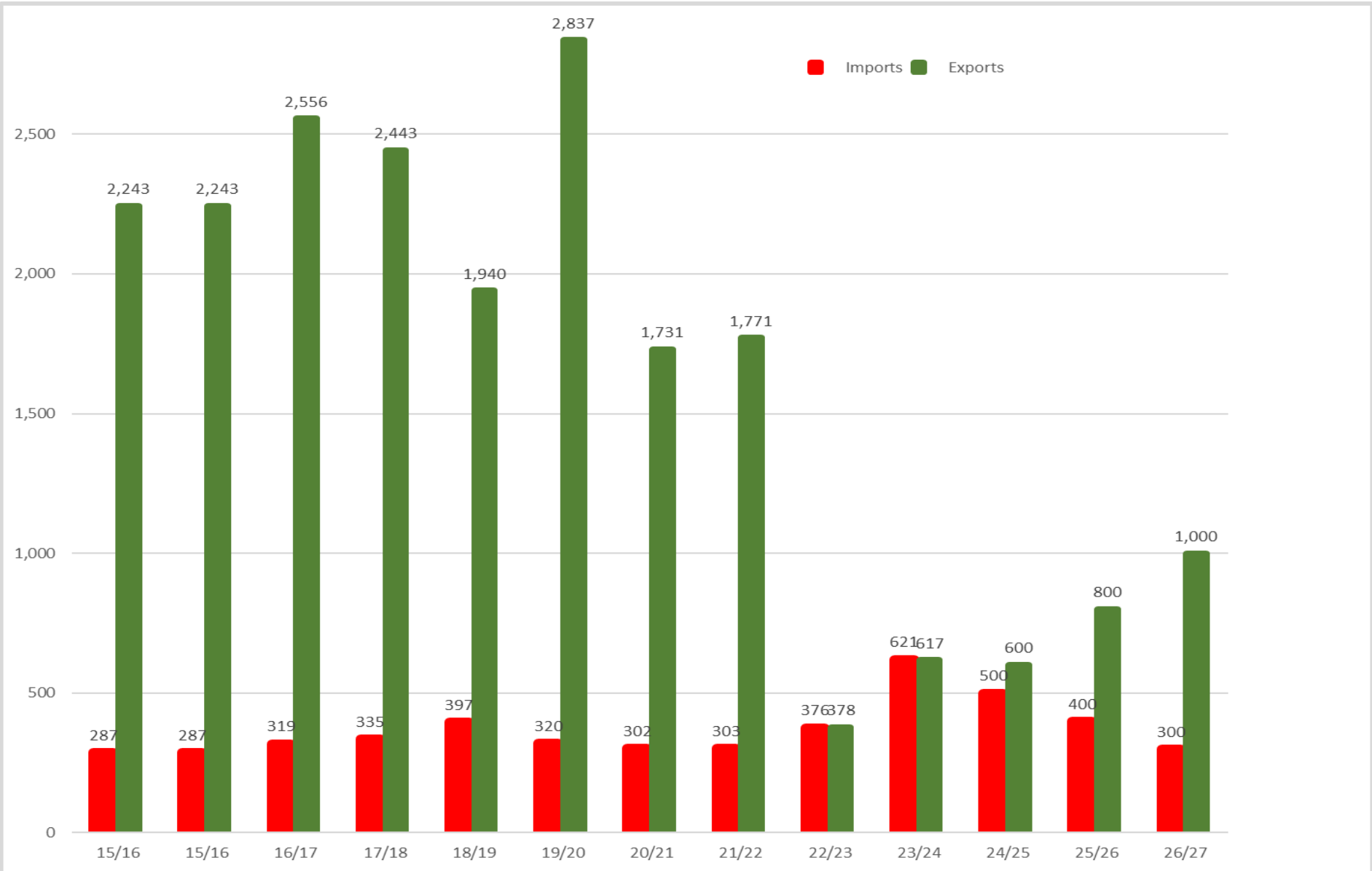


U.S. Monthly Soybean Crush 2024/25 vs 2023/24, 2022/23 & Monthly Record

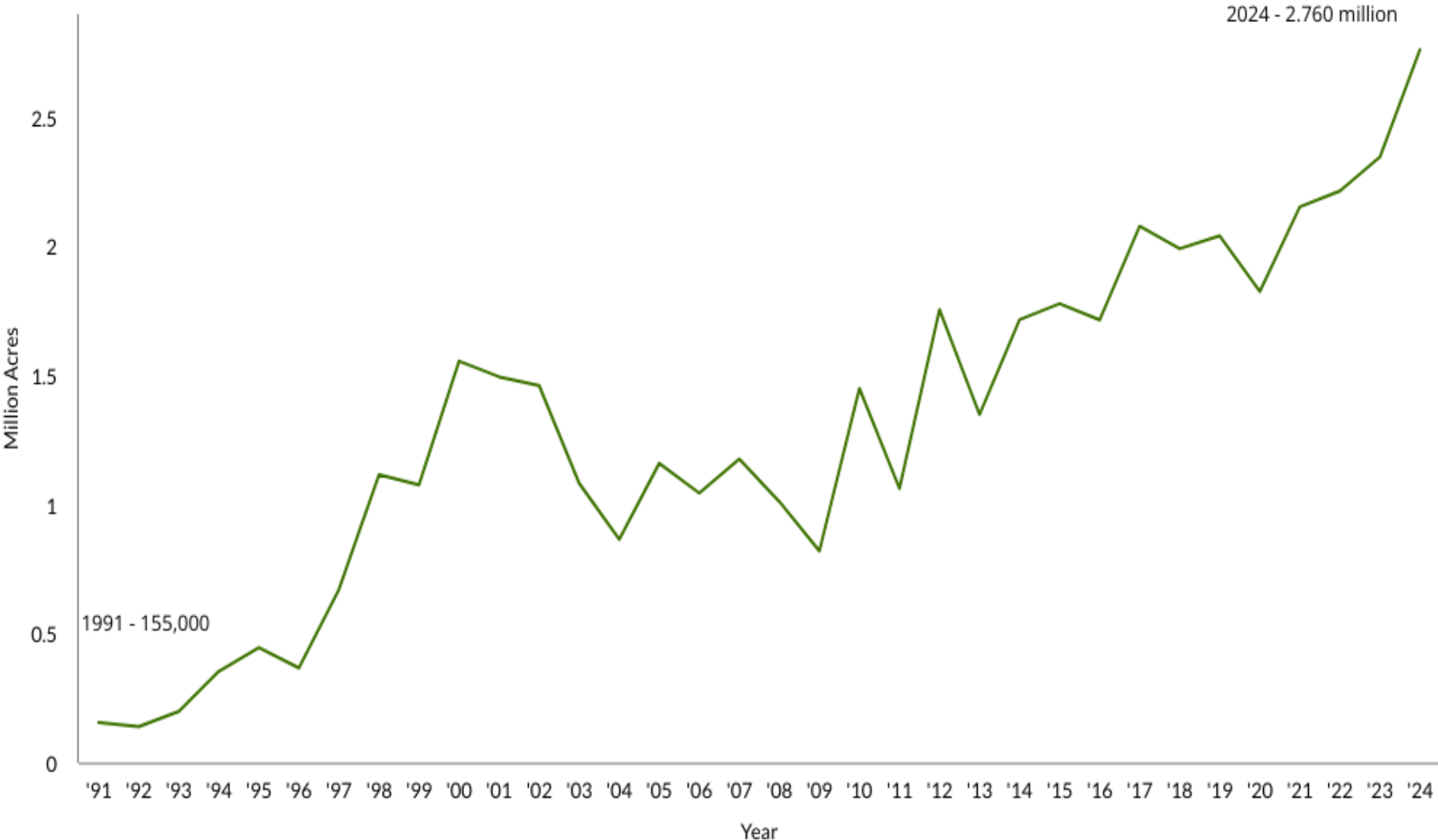


*September 2024 crush estimated based on NOPA data – up 7% vs last year.
 Monthly crush will need to average +6% vs last year to reach USDA’s 2.425 billion bushel annual estimate.

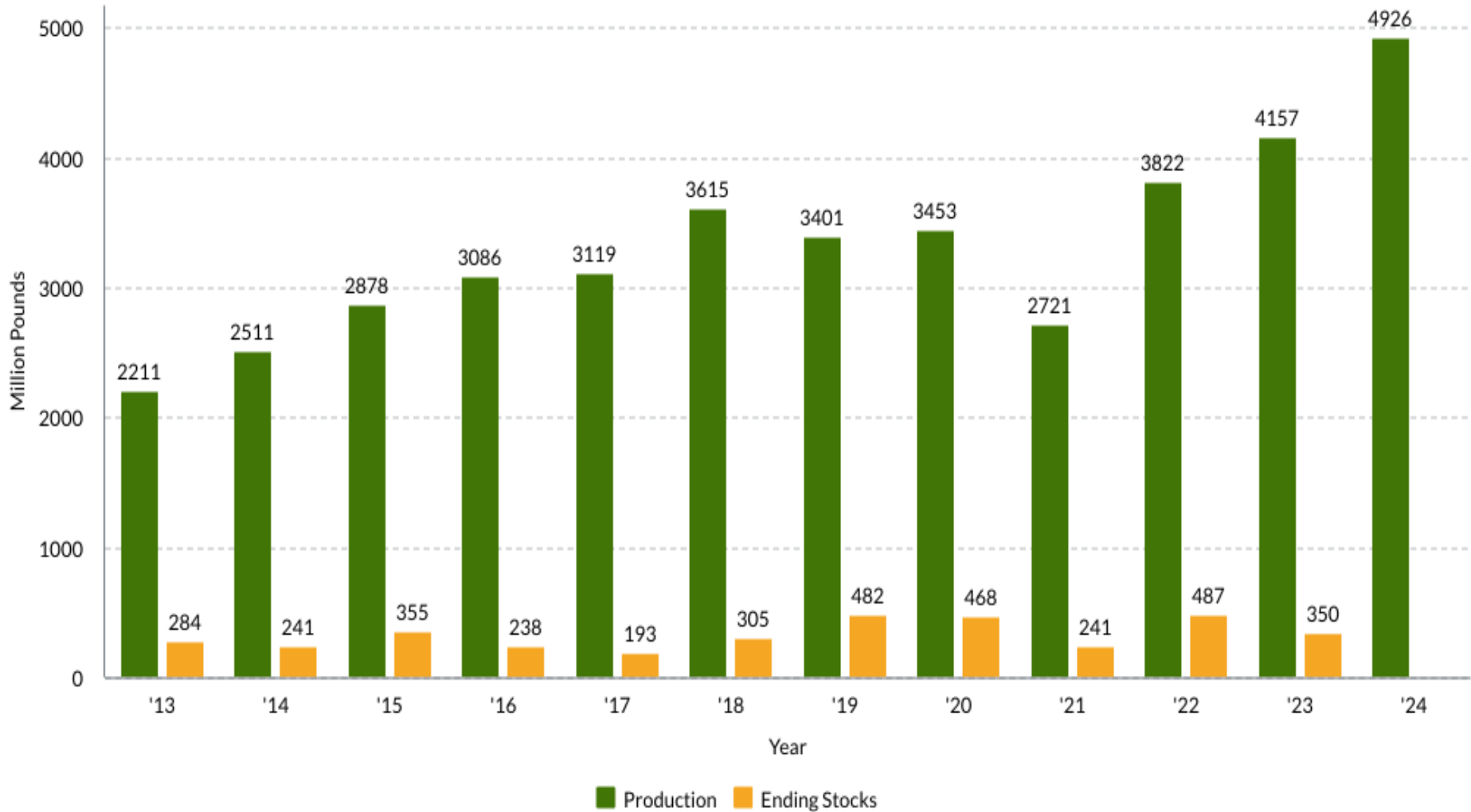




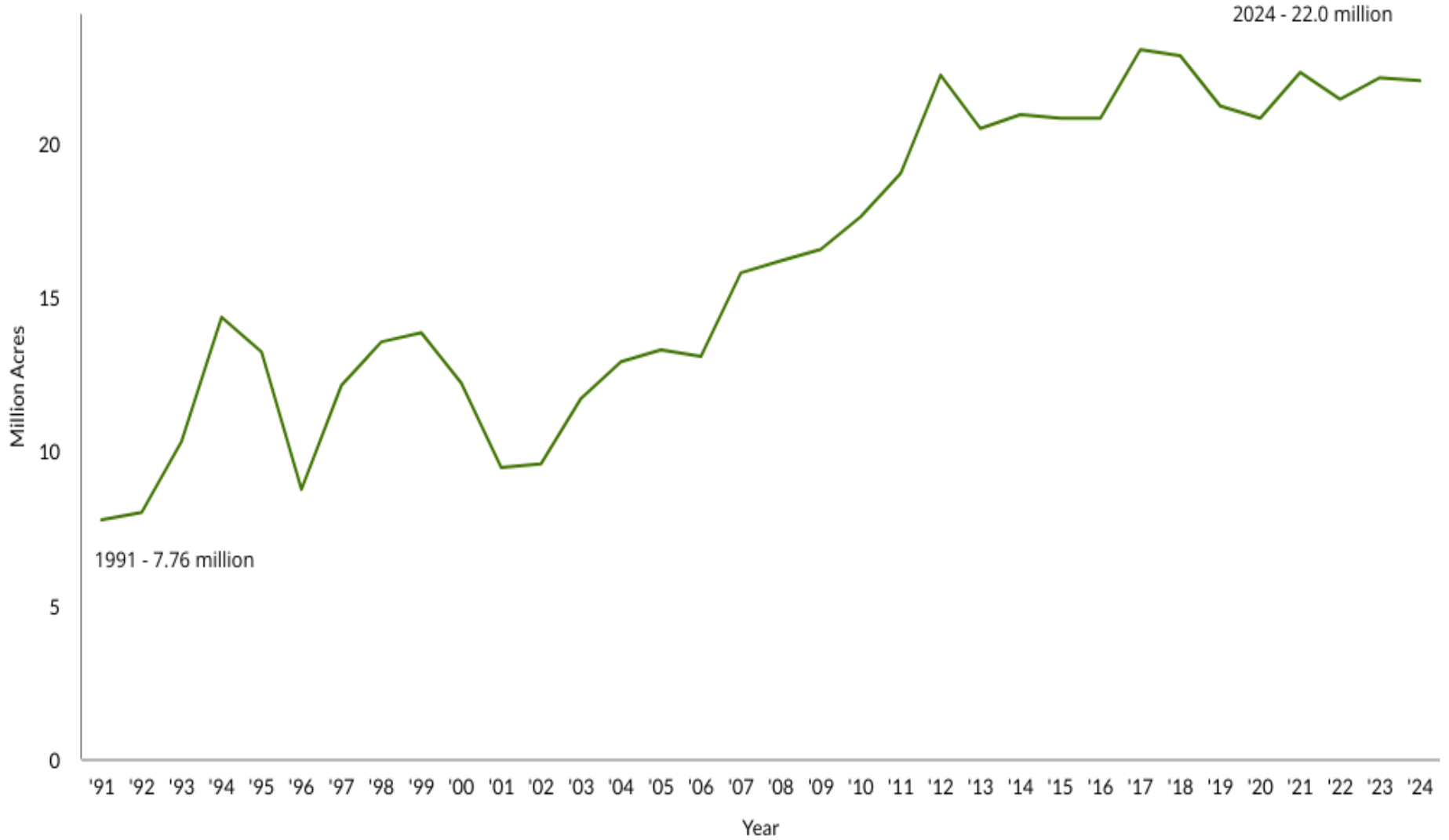
US Canola Planted Acres



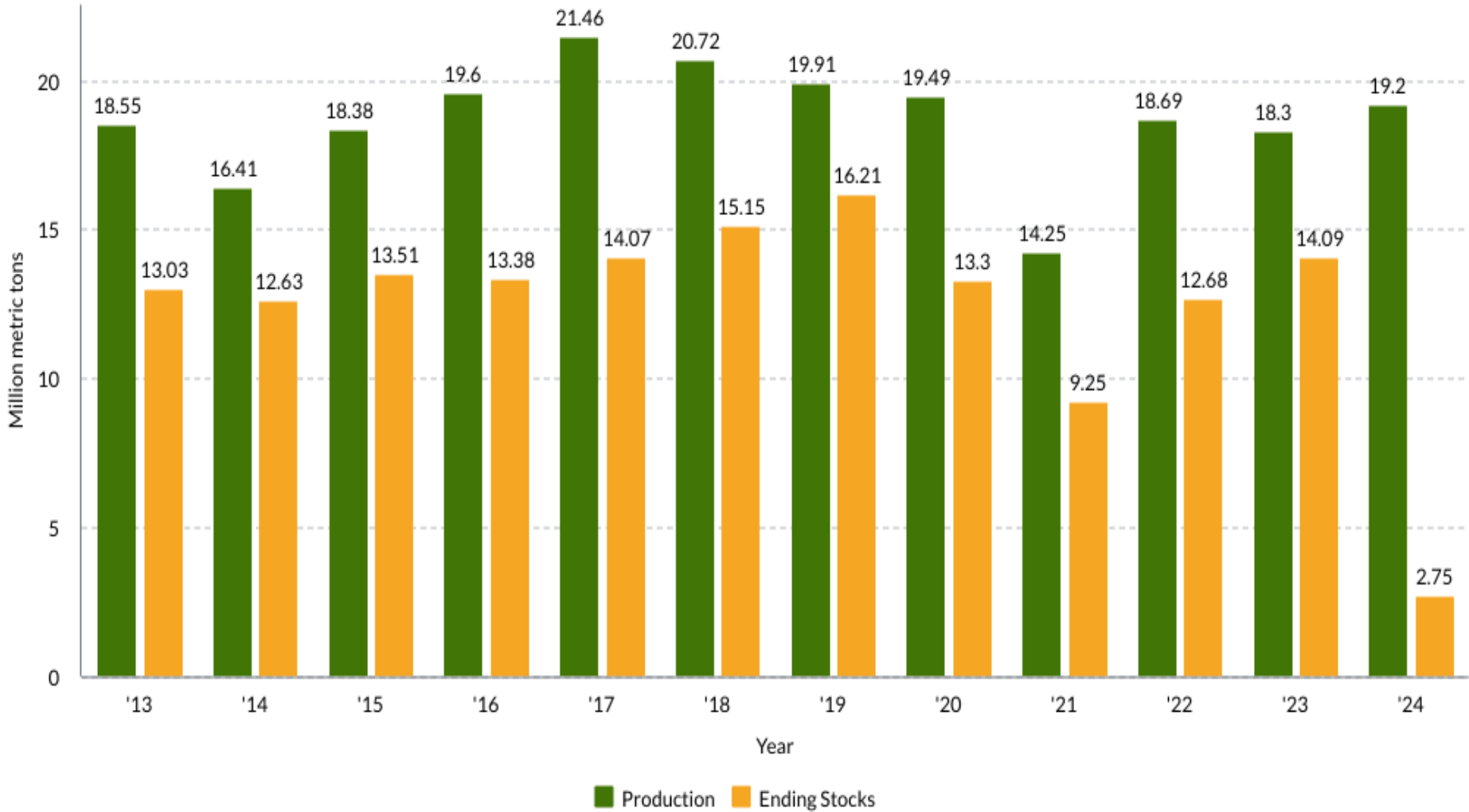
US Canola Production



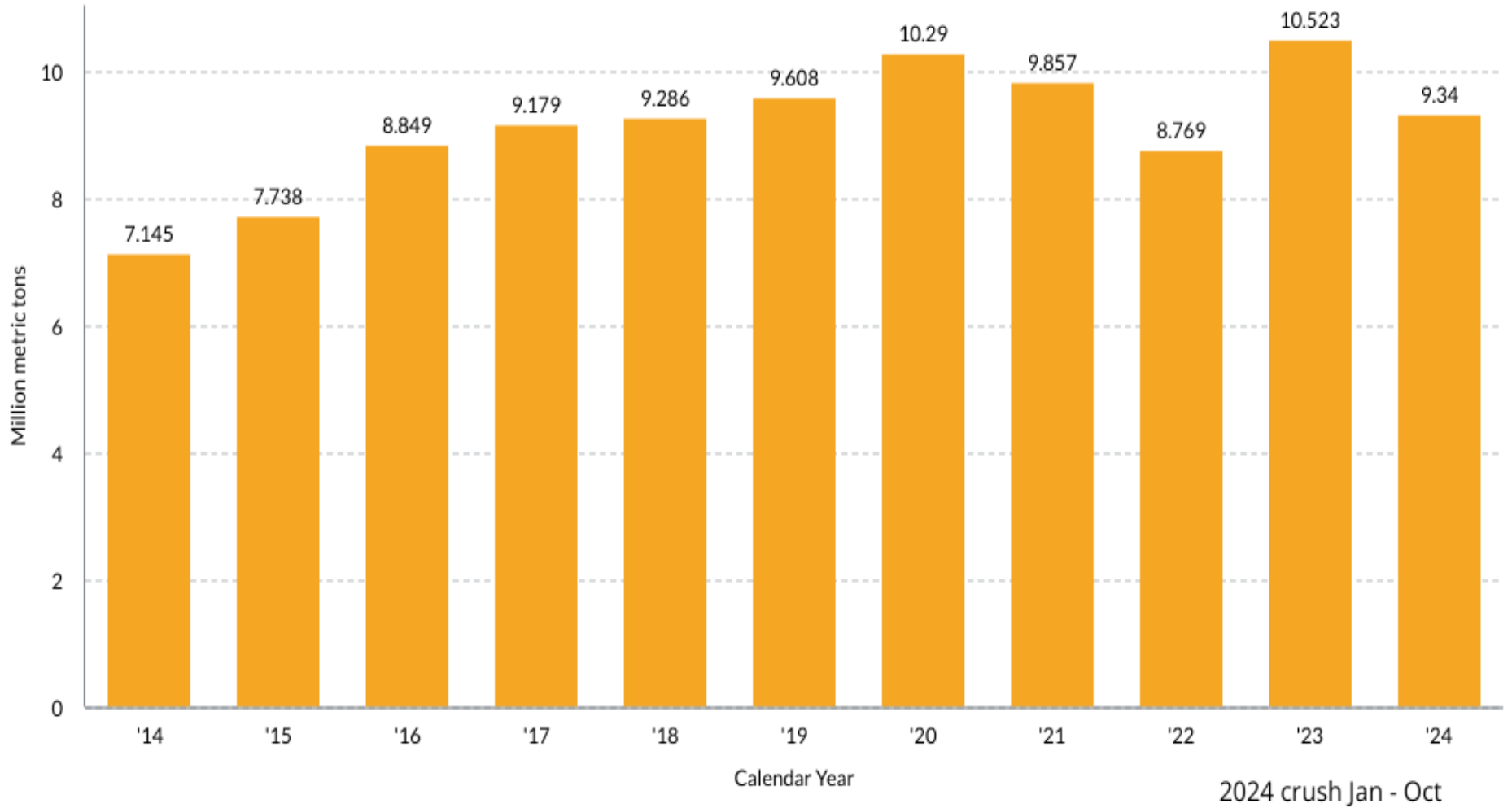
Canada Canola Planted Acres



Canada Canola Production



Canada Canola Used for Crush



Canada Canola Exports

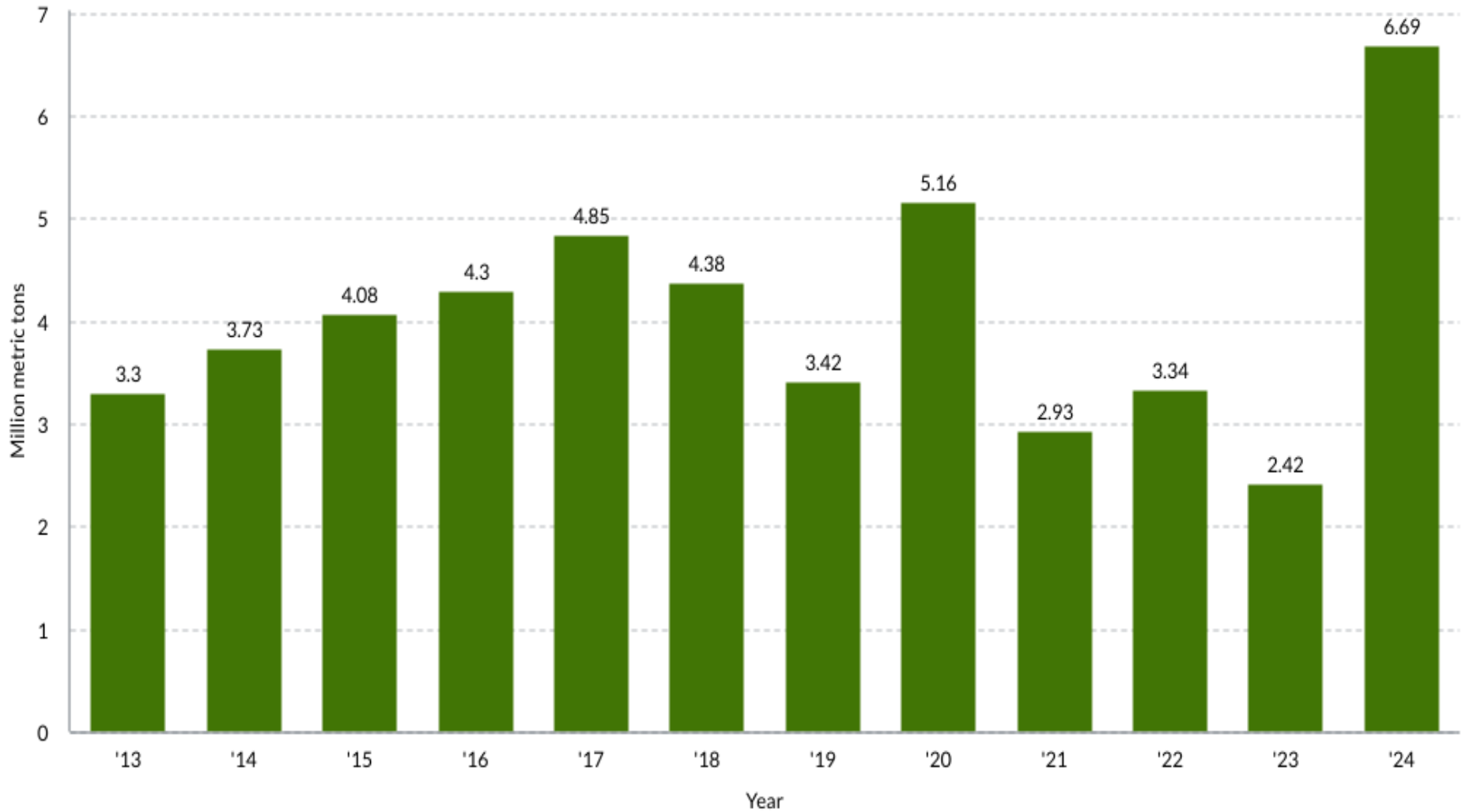
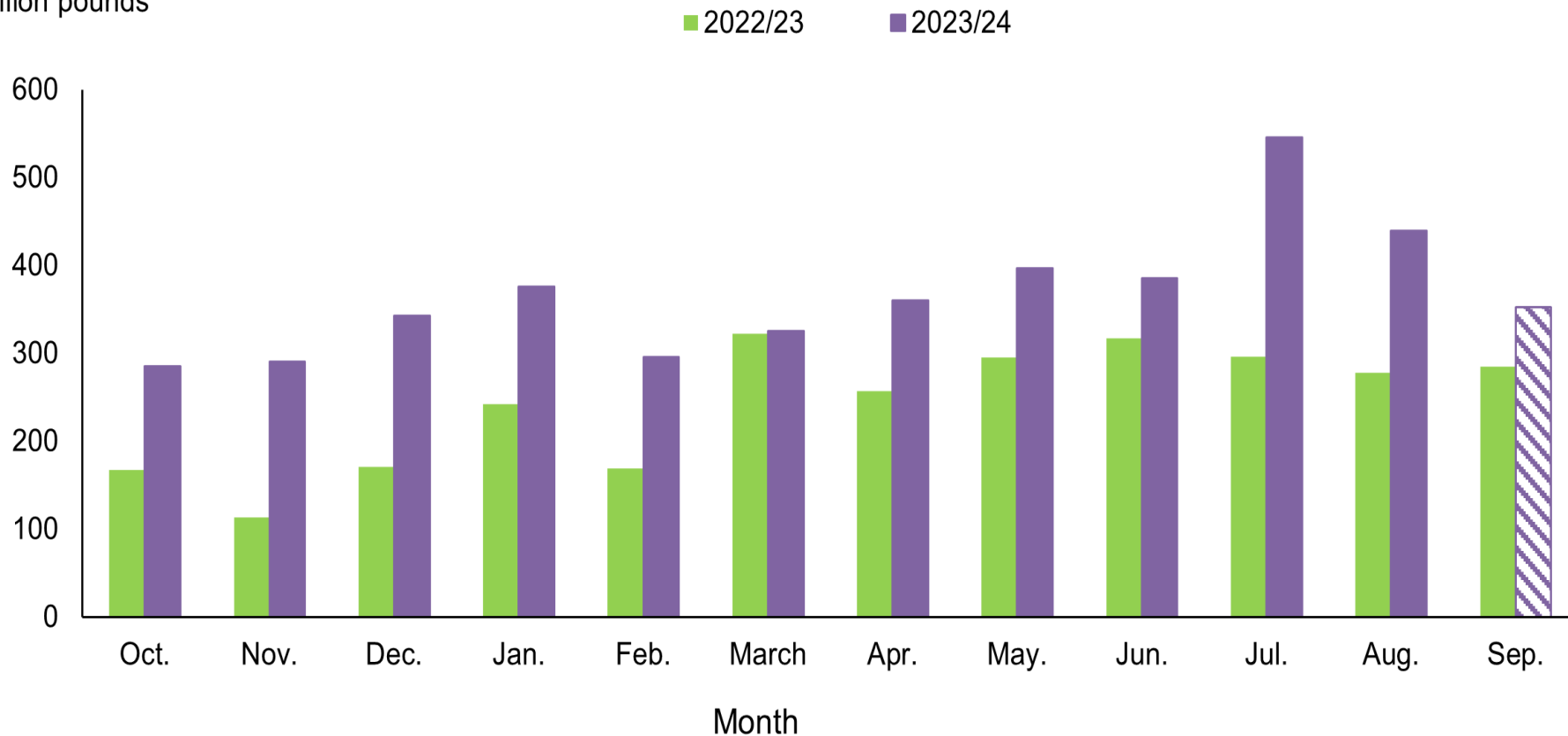


Figure 1
U.S. biofuel use of canola oil, MY 2022/23 and 2023/24

Million pounds



MY = Marketing year.

Note: The patterned September 2024 is forecasted.

Source: USDA, Economic Research Service using data from U.S. Department of Energy, U.S. Energy Information Administration.

Any Questions?

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