

# US Seed Oil Ban Scenario

A scenario off the November 2024 baseline

---

Prepared by:

**John Kruse, PhD** ([jkruse@waees-llc.com](mailto:jkruse@waees-llc.com))  
*Managing Principal*

**Marty Foreman** ([mforeman@waees-llc.com](mailto:mforeman@waees-llc.com))  
*Senior Agricultural Economist*

**Sarah Denny** ([sdenny@waees-llc.com](mailto:sdenny@waees-llc.com))  
*Senior Agricultural Economist*



World Agricultural Economic  
and Environmental Services

Website: [www.waees-llc.com](http://www.waees-llc.com)

Reissued April 15, 2025

Contents

**BACKGROUND ..... 4**

**METHODOLOGY ..... 6**

**RESULTS..... 10**

    IMPACTS ON US VEGETABLE OIL CONSUMPTION ..... 10

    US VEGETABLE OILS AND FATS PRICE IMPACTS ..... 11

    SOYBEAN AND SOYBEAN PRODUCT SUPPLY AND DEMAND IMPACTS ..... 13

    IMPACTS ON WORLD PALM AREA AND OLIVE OIL PRODUCTION ..... 16

    IMPACTS ON OILSEED, MEAL AND OIL PRICES ..... 18

    BIOFUELS ..... 19

    OVERALL US SOYBEAN OIL DEMAND IMPACTS..... 21

    CHANGES TO FARM INCOME ..... 22

    LIVESTOCK AND MEAT ..... 23

This material is based upon work supported by the United Soybean Board under project #3106-2025-001.

This report has been reissued from the original March 27, 2025, release to correct statements regarding peanut oil. Modern processing techniques can remove the protein that can cause peanut oil to have an allergen issue. Comments related to possible allergen issues have been removed. We apologize for the error.



## Executive Summary

This analysis focuses on the economic impacts of a ban on US seed oil food use on agricultural, biofuel, and consumer markets. The analysis includes two scenarios. The first scenario attempts to hold US vegetable oil consumption flat overall by increasing olive, peanut, and palm oil consumption to compensate for the loss of the seed oils including soybean oil, canola oil, sunflower oil, cottonseed oil, and corn oil. Per capita spending on vegetable oils and fats averages 42.8 percent per year higher than baseline levels. The second scenario allows US per capita vegetable oil to fall under the assumption that palm oil is not fully substitutable with all seed oils. In the second scenario, vegetable oil consumption falls an average of 21.1 pounds per capita per year over the 2025/26 to 2035/36 period but consumers spend an average of 8 percent more per capita on vegetable oil per year due to higher prices.

Since significant quantities of olive and palm oil are not produced domestically, the US becomes more reliant on imports of vegetable oils. The seed oil ban is not assumed to extend to any international countries allowing the rest of the world to respond to capitalize on the weaker seed oil prices resulting from the ban. As the US imports more palm oil, the price of palm oil increases even as the prices of seed oils fall. International vegetable oil consumers are motivated by lower seed oil prices to switch from palm oil to seed oils.

The loss of US food demand for soybean oil, canola oil, sunflower oil, cottonseed oil and corn oil is partially absorbed by increased exports, decreased US imports, increased biofuel use and a reduction in US production levels. The impacts on these five oils follow a similar pattern of significantly lower seed oil prices that is only partially mediated by increased exports, and in some cases, increased biofuel demand.

Under the flat veg oil consumption scenario, US soybean prices fall an average of 3.4 percent and farmer returns over variable costs are down an average of 6.7 percent over the 25/26 to 35/36 period. Lower prices result in a 3.0 million acre decline in soybean planted area by 35/36 and a 170 million-bushel decline in production.

Under the flat veg oil consumption scenario, the shift in US food consumption to palm oil results in higher palm oil prices with palm selling at a 78 percent average premium to soybean oil prices over the 2025/26-2035/36 period. Global palm area increases by 3.3 million acres by 2035 relative to the baseline.

The seed oil ban results in more overall biomass-based diesel production over the 25/26 to 35/36 period. However, while soybean oil feedstock use increases initially, after 30/31, soybean oil feedstock use falls below baseline levels due to increased use of canola oil. Canola oil prices fall relative to soybean oil prices because they are more impacted by the seed oil food use ban than soybeans.

Crop prices are lower across all crops but particularly for soybeans. Under the flat veg oil consumption scenario, overall crop cash receipts decrease an average of \$3.0 billion per year



over the calendar year 2026-2035 period. Soybean cash receipts decrease an average of \$2.6 billion per year.

The oilseed market has not experienced a shock of this magnitude and is outside the range of historical data variation used to train the WAEES partial equilibrium modeling system. Simulating market shocks of this magnitude requires assumptions detailed in the methodology section regarding the substitution among fats and oils that can occur and the ability to expand production of non-seed oils.

## Background

These scenarios originated from discussion of a possible ban on seed oil for human consumption due to health concerns. Assessing whether seed oils impact human health is not WAEES' area of expertise. However, WAEES can help provide insights on the impacts of a seed oil ban on agricultural, biofuel, and consumer markets.

The list of seed oils that might be included in a possible ban are canola, corn, cottonseed, grapeseed, rice bran, safflower, soybean, and sunflower. In the table below, the quantities of these seed oils consumed for food use are presented for the past decade. Note that there are no publicly available data sources for grapeseed oil and rice bran oil. Soybean oil data for food and other use has been further adjusted based on USB Market View database<sup>1</sup> estimate to reflect only the quantities used for food. However, this data is not available for the other seed oils and it is likely there are some non-food uses included. Soybean oil, canola oil, and corn oil dominate US seed oil consumption.

---

<sup>1</sup> Data accessed from the United Soybean Board's "Market View Database" URL:  
[https://marketviewdb.unitedsoybean.org/dashboards/?bi=US\\_Oil\\_IndustrialandFoodUseDetail\\_Annual](https://marketviewdb.unitedsoybean.org/dashboards/?bi=US_Oil_IndustrialandFoodUseDetail_Annual)



### US Food and Other Use (excluding biofuels) of Seed Oils

	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
<i>million pounds</i>											
Canola	3,575	4,075	4,311	4,554	4,223	4,181	4,313	4,436	4,310	5,011	4,731
Corn+	1,634	1,694	1,632	1,681	1,986	2,017	2,033	2,007	2,154	1,939	2,142
Cottonseed*	539	541	433	436	474	370	388	355	326	310	338
Grapeseed	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rice Bran++	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	132	N/A
Safflower*	104	69	67	80	63	102	74	78	119	204	194
Soybean**	12,754	12,547	12,961	12,170	12,305	12,455	11,695	12,119	12,076	11,593	11,653
Sunflower*	425	435	433	498	531	490	638	655	723	622	734
<b>Subtotal***</b>	<b>19,030</b>	<b>19,361</b>	<b>19,838</b>	<b>19,421</b>	<b>19,582</b>	<b>19,615</b>	<b>19,141</b>	<b>19,650</b>	<b>19,709</b>	<b>19,680</b>	<b>19,792</b>

Source: Primarily based on USDA Oil Crops Outlook Report (December 2024), PSD (December 2024), and Oil Crops Yearbook (March 2024)

\* May include non-food uses

\*\* Adjusted to USB Dash Board Estimates excluding non-food uses, 2024 projected by WAEES

\*\*\* With little or no historical data, grapeseed and rice bran are excluded from the subtotal

+ Estimates derived by WAEES based from 2009 forward

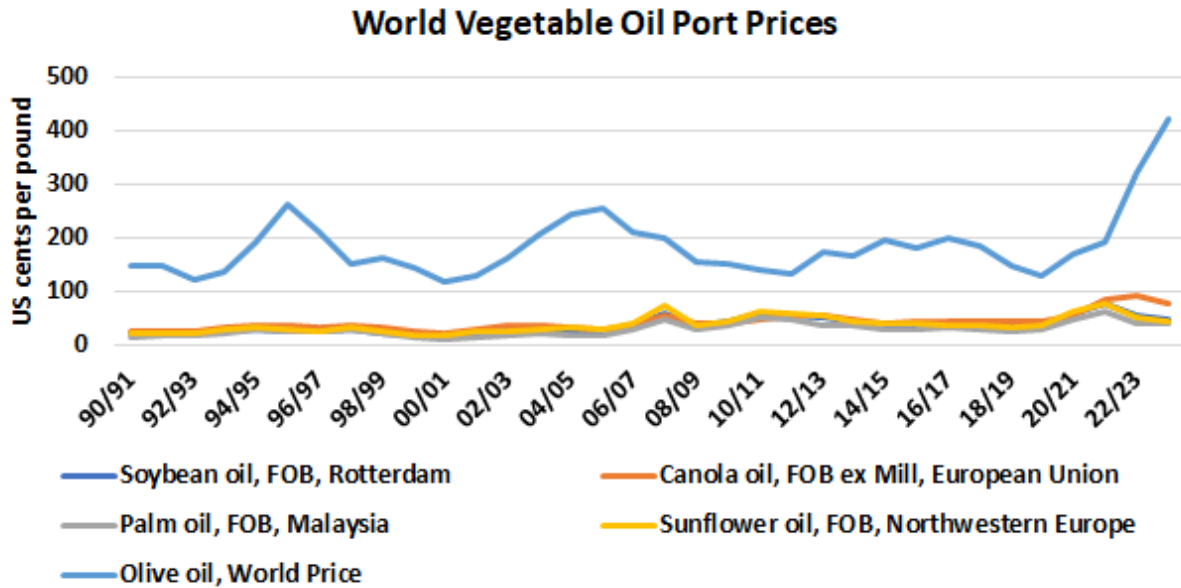
++ Based on an estimate of food use from Ken Research

The US share of world food use over marketing years 19/20 to 23/24 period averaged 13.7 percent for soybean oil, 1.6 percent for sunflower oil, 10.6 percent for canola oil, and 3.1 percent for palm oil. These shares suggest where a seed oil ban in the US might have more impact on prices because loss of food oil demand represents a larger share of global demand. Notably, the loss of US sunflower seed oil food demand is likely to have a smaller impact on global sunflower prices than the loss of soybean oil food demand or canola oil food demand on soybean oil prices and canola oil prices, respectively.

### US Food Oil Share of World Food Oil Consumption by Selected Oil

	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
<i>percent</i>											
Soybean Oil	16.9%	16.0%	15.3%	14.1%	14.7%	15.3%	13.5%	13.7%	13.7%	14.0%	13.6%
Sunflower Oil	1.4%	1.4%	1.3%	1.4%	1.4%	1.3%	1.5%	1.6%	1.9%	1.5%	1.6%
Canola Oil	9.1%	9.8%	9.8%	10.1%	9.4%	9.2%	9.8%	9.6%	8.9%	11.6%	13.1%
Palm Oil	2.4%	2.0%	2.5%	2.6%	3.0%	2.7%	2.7%	2.8%	2.9%	3.4%	3.5%

Another important consideration regarding all vegetable oils is their relative pricing. Vegetable oils falling in the same price range such as soybean oil, canola oil, sunflower, and palm oil tend to be more readily substituted. Olive oil is a premium-priced oil and is not price competitive with the other principal vegetable oils. The premium price of olive oil does not make it an easily affordable substitute for US consumers. In addition, by assuming that US per capita consumption of olive oil can double, the weighted average price of vegetable oils increases because of the inclusion of a significantly higher priced oil.



## Methodology

Of the eight oils listed in the table above, the WAEES global partial equilibrium model includes all but rice bran oil, safflower oil, and grapeseed oil. These three oils are excluded from this analysis. The remaining five tracked oils represent most of the food and other use. The WAEES global partial equilibrium model also tracks olive oil and palm oil for 48 countries and regions and lard, tallow, and peanut oil in the US. These oils and animal fats are not seed oils and would be the most likely substitutes for the eight seed oils. Palm oil is the largest and most scalable of the alternatives, while peanuts, olive oil, and animal fats have more limited expansion potential.

USDA reports food and other use for soybean, canola, sunflower, corn, and cottonseed oils. For soybean oil, data collected over the past two decades indicates that other non-food uses of soybean oil represent about 18 percent of the "food and other use" category (USB Market View database). Similar details for the other oils are not publicly available so we assume that approximately 15 percent of food and other uses is non-food use. Subsequently, when the food and other use is reported for these seed oils in the scenario tables, about 15 percent of the original consumption level of these oils continues to be reported under food and other use.

Given the short time frame allowed for this analysis, there was insufficient time to research how well-suited alternative food oils are for replacing seed oils. Food use of oils and fats typically involve salad oils, cooking oils, baking oils, frying oils, and margarine. A complicating issue was that detailed public data on these breakouts is not available for all seed oils and salad oil use is grouped with cooking oil use. Although we know that not all oils and fats are equally suited to each food use task, without the detailed breakdown of food uses for each oil and animal fat, it is not possible to exactly line up where there may be a sufficient volume of substitutes available and where there are insufficient volumes. For example, in the case of salad oil, olive oil and



peanut oil may be possible substitutes, but palm oil, lard, and tallow would not. For salad oil use, olive oil is likely to be the primary substitute.

Without ideal data, it was necessary to make some simplifying assumptions regarding how much US per capita consumption of seed oils could be replaced by olive oil, peanut oil, and palm oil. Banning seed oils results in the following US per capita consumption losses:

- Soybean oil: -33.2 lbs
- Sunflower oil: -1.2 lbs
- Canola oil: -18.1 lbs
- Cottonseed oil: -1.0 lbs
- Corn oil: -4.2 lbs
- Total loss: -57.7 lbs

Two scenarios were formulated based on the elimination of seed oils from food consumption. The difference in the scenarios is the amount of palm oil that is allowed to substitute for seed oils. The following assumptions were used for each scenario (averages over the 2025/26 to 2035/36 period):

#### **Flat Veg Oil Consumption Scenario:**

- Olive oil: +2.6 lbs (double current per capita consumption)
- Peanut oil: +1.9 lbs (double current per capita consumption)
- Palm oil: +52.6 lbs (increased to the point where per capita fat & oil consumption were at baseline levels on average)
- Lard & Tallow: +0.5 lbs
- Total substitution: +57.5
- Net loss in US per capita fats and oils consumption: 0.2 lbs per capita

#### **Substitution Constraints Scenario:**

- Olive oil: +2.6 lbs (double current per capita consumption)
- Peanut oil: +1.9 lbs (double current per capita consumption)
- Palm oil: +31.7 lbs (increased to the point where per capita fat & oil consumption expenditures increased by 8%)
- Lard & Tallow: +0.5 lbs
- Total substitution: +36.6
- Net loss in US per capita fats and oils consumption: -21.1 lbs per capita (-29%)

In both scenarios, a ban on seed oils is introduced in marketing year 25/26 and continues in place through the forecast horizon of 35/36. While the starting level changes in per capita vegetable oil consumption are carried through the forecast horizon, the model solves for changes in vegetable oil price levels that rebalance global supply and demand. Movement in vegetable oil prices still impacts production and consumption of each vegetable oil and the commodities they are derived from. Although it is likely that the processing industry would take several years to adjust, in this scenario it is assumed that there is no delay in the ability of the industry to substitute for the eight seed oils.

In the flat veg oil consumption scenario, the increase in the combination of olive oil, peanut oil, and palm oil was designed to offset the drop in seed oil consumption regardless of whether these products were fully substitutable with the seed oils.

Animal fats are generated as a by-product of animal production. However, these fats represent a small portion of the value of an animal and are unlikely to significantly affect the level of animal production. Animal production is primarily driven by the demand for meat. For lard, over 80% of lard supply is already used for food. In the case of white grease, about 1.4 billion pounds is produced with about 30% already used for food. The remainder is divided between feed use and biofuel use. In the past two decades, white grease food use has been price unresponsive. While unlikely, even if all white grease could be used for food, it would amount to less than 3 pounds per capita.

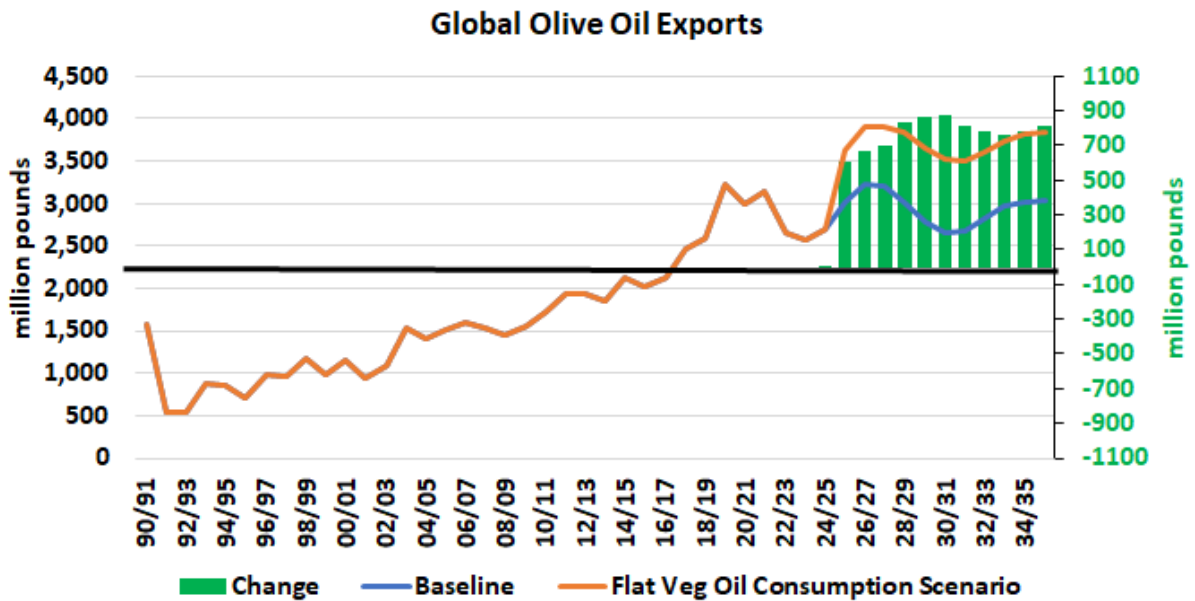
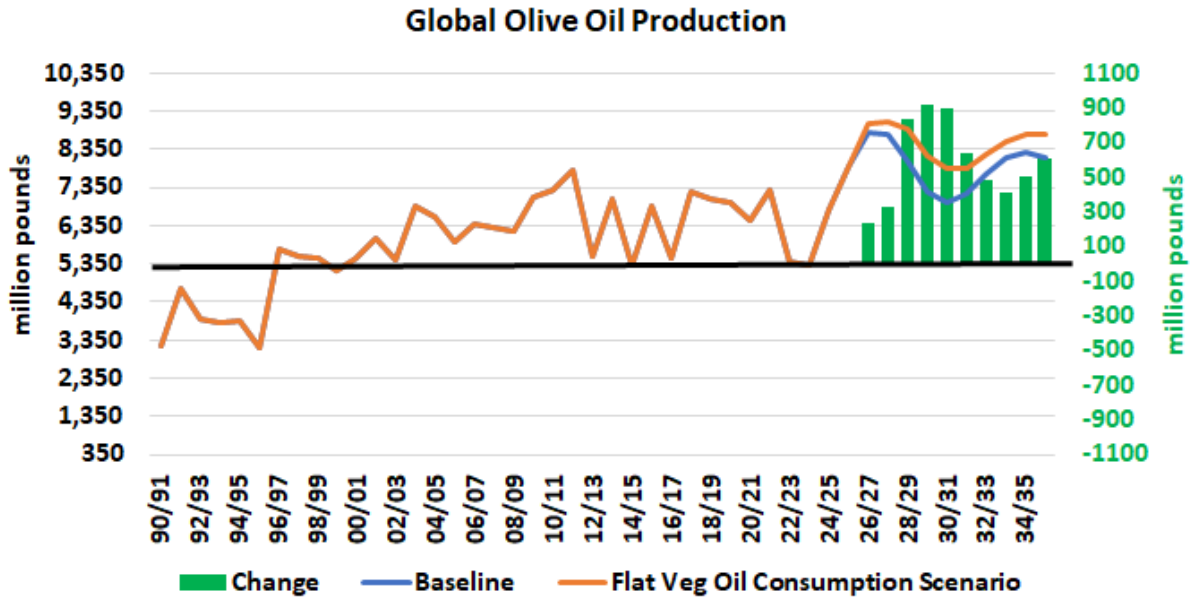
Tallow is typically divided between edible and inedible tallow. For edible tallow, USDA reports production of 2.3 billion pounds in 2023. It is difficult to determine exactly how much is currently used directly for food use. Based on USDA data prior to 2010, it appears slightly over half was directly used for food use. If that share is still accurate, then as much as 1.2 billion pounds might be able to be pulled into food use, but this would amount to 3.3 pounds per capita. Given past health concerns regarding saturated fats, we assume an increase of 0.5 pounds per capita could be achieved in the scenarios.

In the substitution constraint scenario, the baseline expenditure on fats and oils was used to guide how much of an increase in the substitute vegetable oils was possible. We used 8 percent above the baseline expenditure as a target for how much consumers would be additionally willing to spend on fats and oil. Given the price inelasticity of demand for vegetable oil, one could argue that a larger increase in baseline expenditure is possible. However, the magnitude of this change is very large and not observed within the historical experience of the data. In addition, we were interested in a lower bound if substitution was constrained.

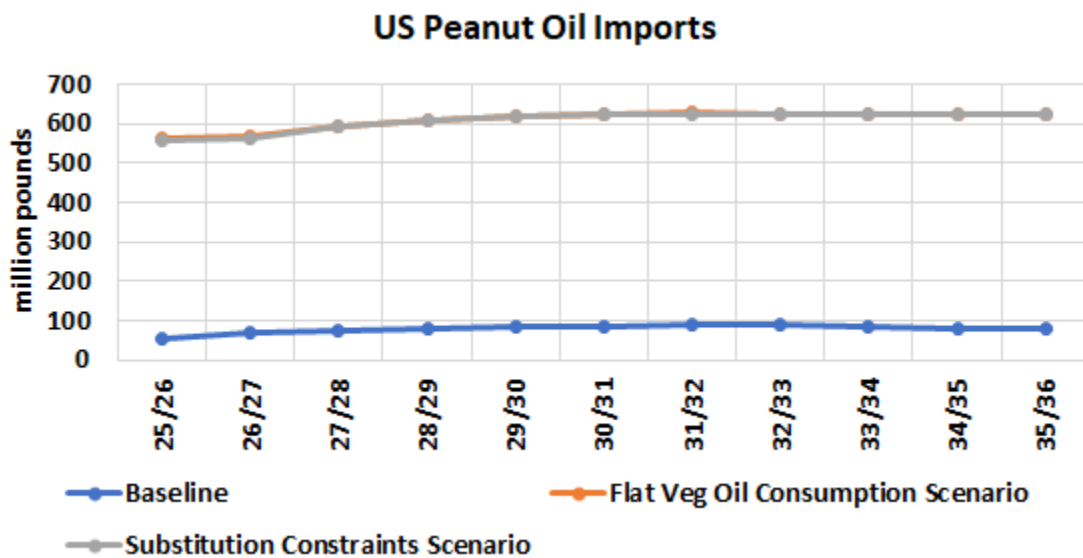
Both scenarios use the same assumptions regarding changes in US per capita consumption of olive oil and peanut oil. While doubling per capita consumption of US olive oil may seem an arbitrary assumption, this assumption was made after studying past olive oil production and trade. In response to the increase in US per capita consumption, global olive oil production increased an average of 7.1 percent and 7.3 percent across the 26/27-35/36 period for the substitution constraint scenario and the flat vegetable oil consumptions scenario, respectively. The level of global olive oil production in these scenarios was more than 15 percent above the



last historical production record (based on the last 4 decades). The expansion in production allowed olive oil trade to expand by an average of 29 percent versus the baseline, driven by the increase in US olive oil demand.



WAEES does not maintain an international peanut oil model, however, historical global production and trade were also considered. Peanuts are produced in more geographies than olive oil but trade is small relative to global production levels. Under both scenarios, the increase in US per capita peanut oil consumption increases US peanut oil imports by close to 530 million pounds, 6.8 times the current level of US imports. This level of imports would require global exports to increase by 137 percent. This suggests the assumed increase in per capita consumption is moderately aggressive.



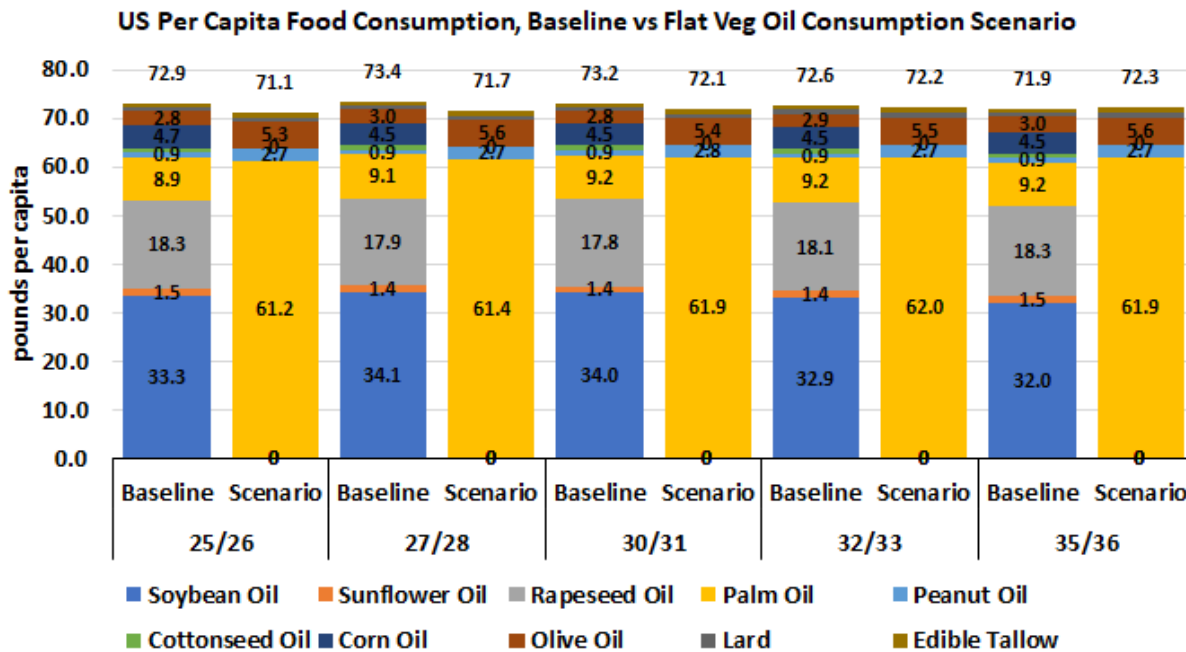
The third substitute, palm oil, is the largest available international source of non-seed oil and essentially was used to fill what could not come from olive oil, peanut oil, and the slight increase in animal fats in both scenarios. In the substitution constraints scenario, per capita palm oil food consumption was increased to bring the average per capita vegetable oil expenditures over the 25/26 to 35/36 period to 8 percent above baseline levels. In the flat veg oil consumption scenario, per capita palm oil consumption was increased to bring per capita fat and vegetable oil consumption back up to baseline levels.

## Results

### Impacts on US Vegetable Oil Consumption

The seed oil ban sharply reduces the supply of food oils available to US consumers. As discussed, the "food and other" consumption category for vegetable oils includes some non-food uses but does not include biofuels. To isolate the food portion of the category, we have assumed that the "other" portion of "food and other use" is 18 percent for soybean oil (based on USB data) and 15 percent for the other seed oils. The graph below illustrates the tradeoffs in per capita food oil used in the flat veg oil consumption scenario. Losses of soybean, sunflower, rapeseed

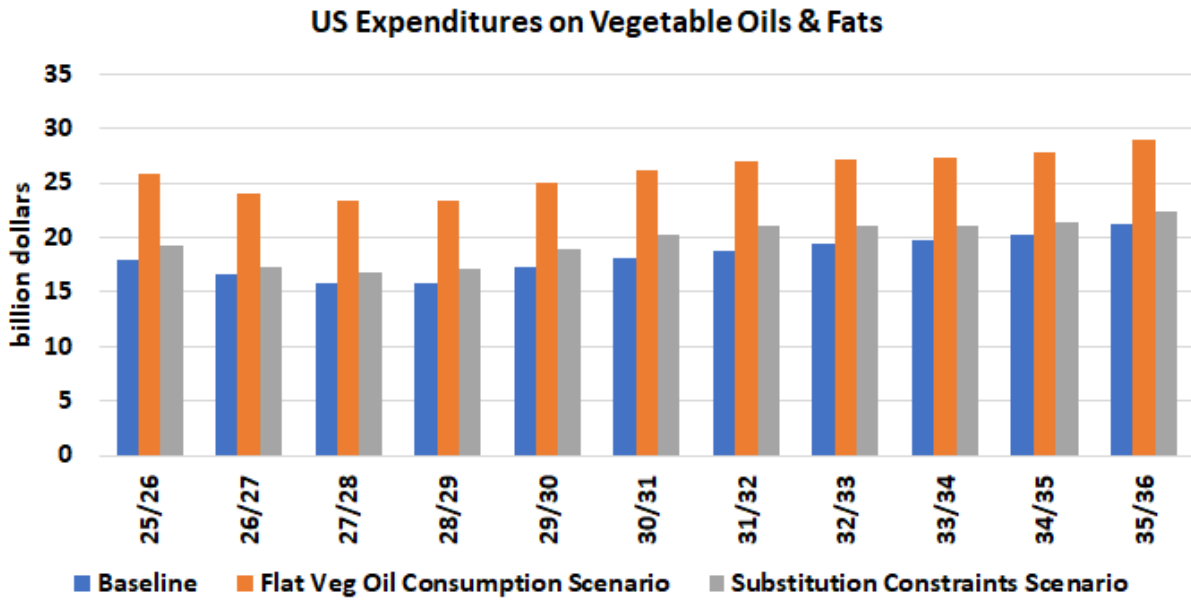
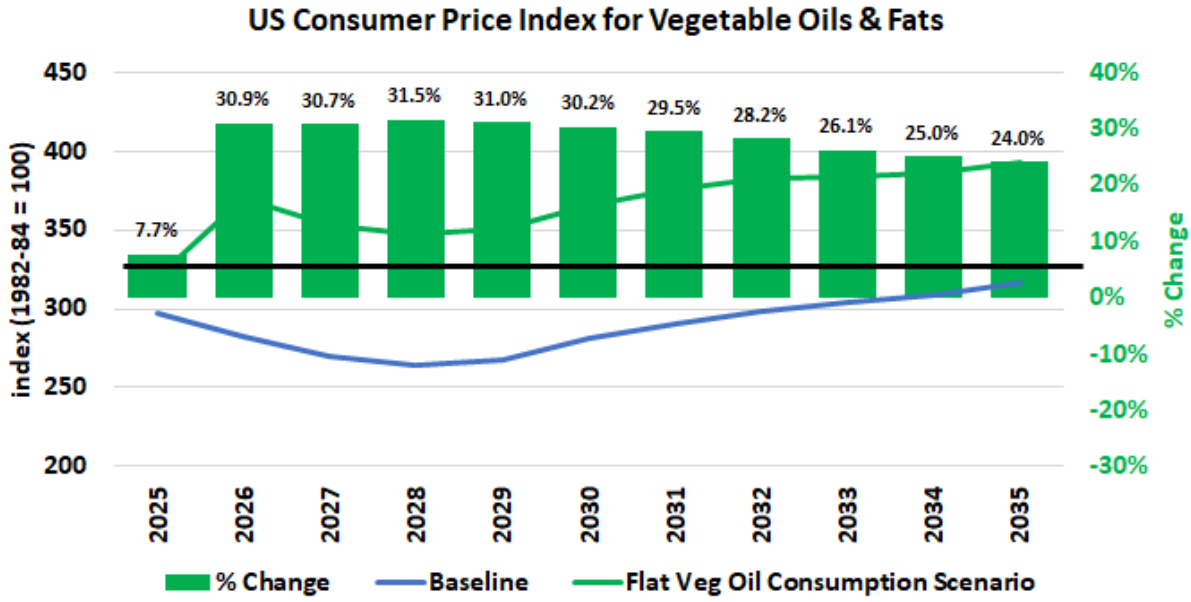
(canola), cottonseed, and corn oil under the seed oil ban are replaced by increased consumption of peanut oil, olive oil, palm oil, and a small increase in animal fats. For example, in the marketing year 2025/26, 33.3 pounds of soybean oil, 1.5 pounds of sunflower oil, 18.3 pounds of rapeseed oil, 8.9 pounds of cottonseed oil, 4.7 pounds of corn oil, and 2.8 pounds of lard are replaced by 52.3 pounds of palm oil, 1.8 pounds of peanut oil, 2.5 pounds of olive oil, and 0.5 pounds of edible tallow.



As discussed in the methodology section, we have assumed the starting level of per capita increases in these alternative fats and oils based on the ability to expand production and trade. Importantly, palm and olive oil production are negligible in the US forcing reliance on imports of these products to meet consumer demand. While peanut oil is produced in the US, limited production expansion is expected to make the US reliant of imported peanut oil to meet demand.

### US Vegetable Oils and Fats Price Impacts

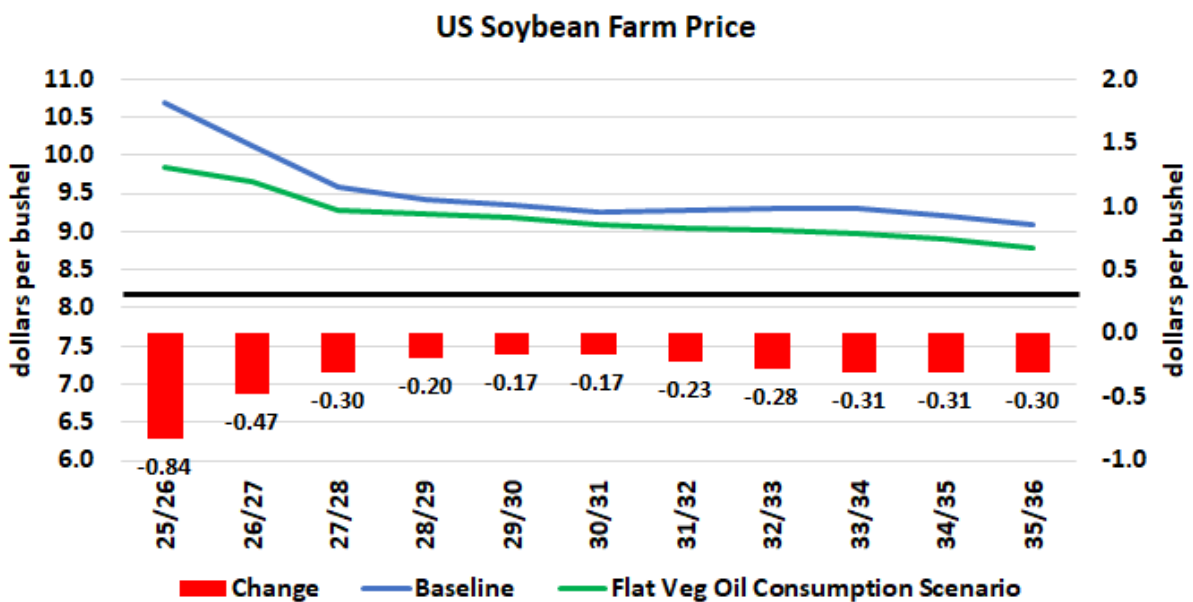
In the flat veg oil consumption scenario, the US consumer price index of oils and fats averages 28.7 percent higher over the calendar year 2026 to 2035 period. Imposing the seed oil ban causes the price of alternative or substitute fats and oils to increase, in some cases dramatically. Palm oil prices, which carried an average 26 percent premium to soybean oil prices in the baseline, move to a 78 percent premium to soybean oil prices in the flat veg oil consumption scenario. (Note that this compares relative prices, not the change in absolute price levels.) World olive oil prices average 15.4 percent higher in the scenario versus the baseline. Price increases in palm oil are moderated by substitution of soybean, canola and sunflower oil for palm oil particularly in China and India. Over the 2025/26 to 2035/36 period, Malaysian palm oil prices average 14.4 percent higher in the flat veg oil consumption scenario compared to the baseline.



In the substitution constrains scenario, we did not allow the full replacement of seed oils, allowing palm oil consumption to increase until total consumer expenditures on food vegetable oils and fats reached 8 percent. The overall decline in US per capita vegetable oil consumption is an average of 21.1 pounds over the 2025/26 to 2035/36 period.

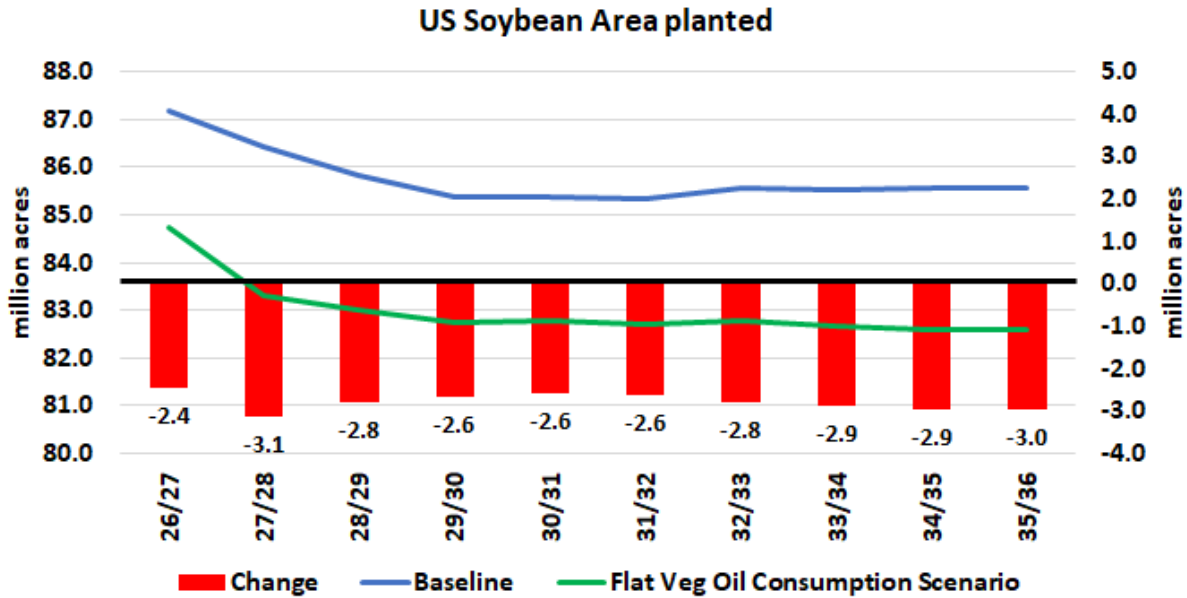
## Soybean and Soybean Product Supply and Demand Impacts

The price of soybeans is largely determined by the value of the meal and oil produced from raw soybeans. In the flat veg oil consumption scenario, the US food demand for soybean oil went to zero but there was some offsetting increase in exports and biofuels demand at least in the first few years. International demand for US soybean oil increased because the price of soybean oil declined 19.2 percent which reduced the crushing margin for soybeans. With a lower crushing margin, soybeans demanded for crush declined and farm level soybean prices fell by an average of 33 cents per bushel or 3.4 percent from 25/26 through 35/36. The negative soybean price impact moderates somewhat midway through the forecast as lower returns prompt farmers to reduce soybean area and production. Farmer returns become increasingly negative again later in the forecast as soybean oil prices weaken on softening soybean oil use for biomass-based diesel production. The impacts on soybeans are similar in the substitution constraints scenario.

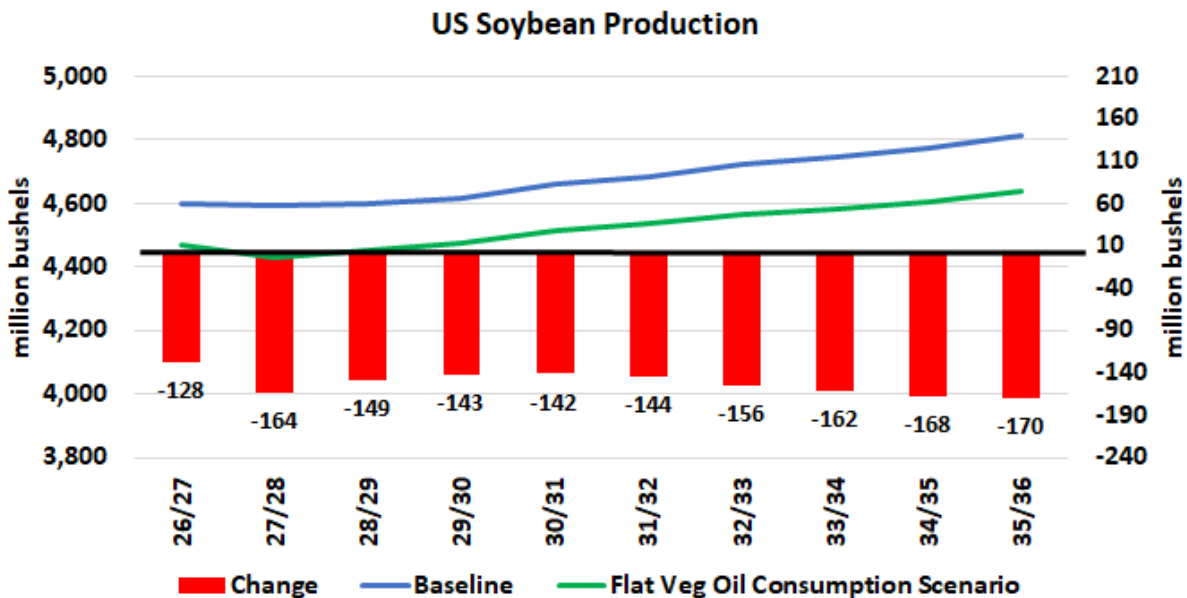


## Soybean Supply

In the flat veg oil consumption scenario, US soybean farmers respond to lower soybean prices and lower returns by reducing soybean planted area in favor of planting alternative crops or leaving land fallow. Farmers adjust to lower returns in the first few years of the scenario by trimming soybean area. After the initial adjustment, soybean area remains fairly stable at the lower level through the rest of the forecast. In the baseline, soybean area averages 85.8 million acres from 25/26 through 35/36 compared to 83 million acres under the scenario for an average decline versus the baseline of 2.8 million acres.

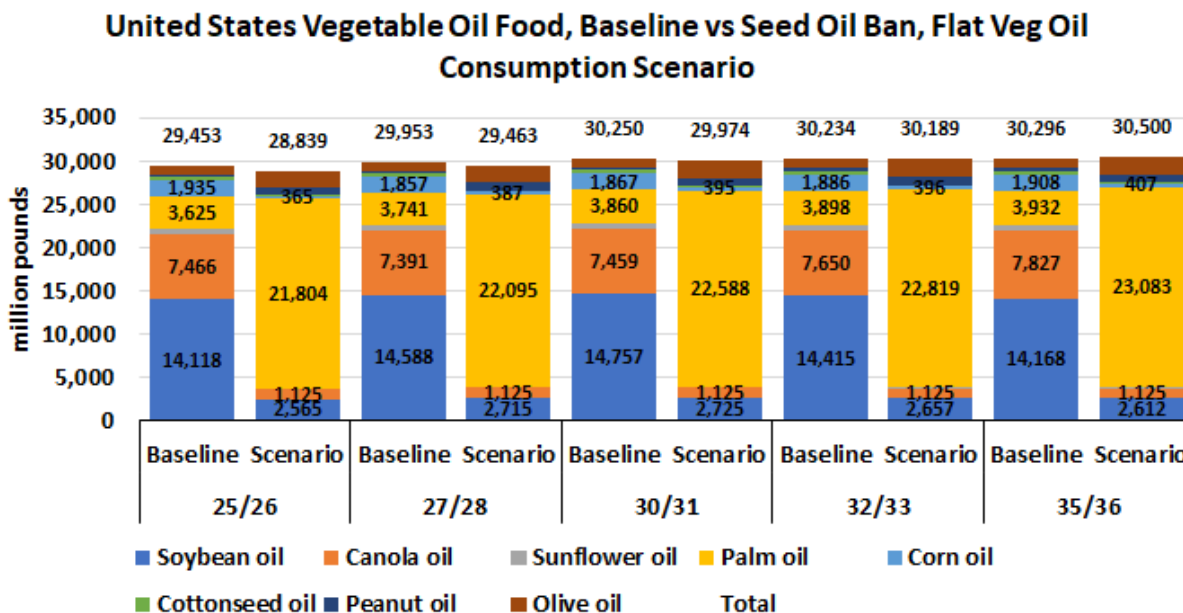


Lower soybean area results in lower soybean production. Little impact is expected in 25/26 because the seed oil ban is assumed to start in September with the 25/26 marketing year, but lower area and production are seen in the 26/27 crop marketing year through the balance of the forecast. Production falls by an average of 161 million bushels each year under the seed oils ban scenario. There is a slight decline in soybean yields associated with lower prices but nearly all the decline in soybean production is driven by lower area.



## Tradeoffs in US Vegetable Oil Food and Other Non-Biofuel Consumption

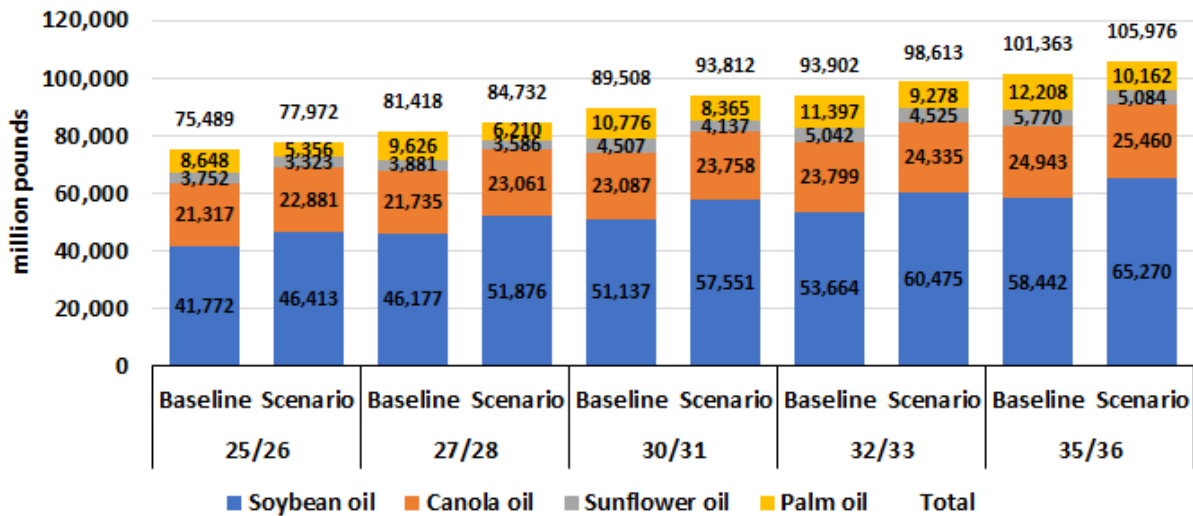
The graph below illustrates the trade offs in vegetable oil food and other non-biofuel consumption between the baseline and the flat veg oil consumption scenario for the US for soybean oil, canola oil, sunflower oil, palm oil, corn oil, cottonseed oil, peanut oil and olive oil. Total vegetable oil food and other non-biofuel consumption are listed at the top of each bar and the levels of the largest vegetable oils are labeled. As intended, total vegetable oil consumption is relatively flat across the baseline. The loss of seed oils in food consumption are replaced by olive oil, peanut oil, and to a large extent, palm oil.



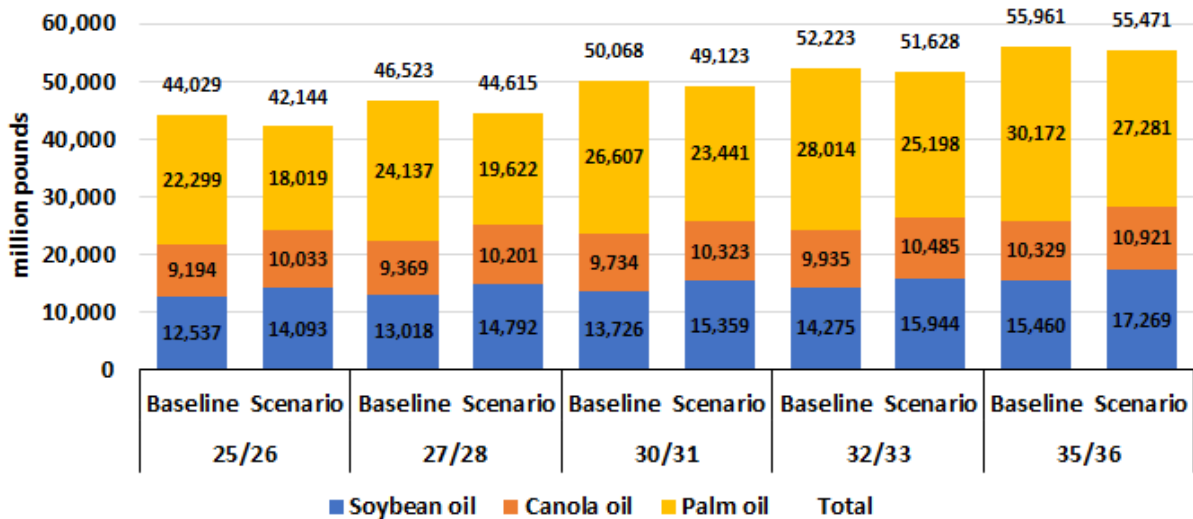
While the US vegetable oil consumption is held flat, other countries respond to the changes in vegetable oil prices motivated by the US ban on seed oils. In China, soybean oil food and other non-biofuel use increases significantly. Canola oil use also increases both from lower canola prices and lower canola prices relative to soybean oil. Sunflower oil consumption is down because sunflower prices don't fall as much relative soybean and canola oil. Palm oil consumption is down significantly because palm oil prices increased significantly with more demand from the US. The total food and other non-biofuel use totals at the top of each bar indicate that under the scenario, overall vegetable oil consumption is higher in China due to the fall in seed oil prices.

The story is very similar in the case of India with the exception that the increases in soybean and canola oil do not quite offset the declines in palm oil consumption. This is because palm oil consumption represents a large share of the vegetable oils consumed in India and the price responsiveness of soybean oil and canola oil (cross price elasticity) is lower than China's.

### China Vegetable Oil Food, Baseline vs Seed Oil Ban, Flat Veg Oil Consumption Scenario



### India Vegetable Oil Food, Baseline vs Seed Oil Ban, Flat Veg Oil Consumption Scenario



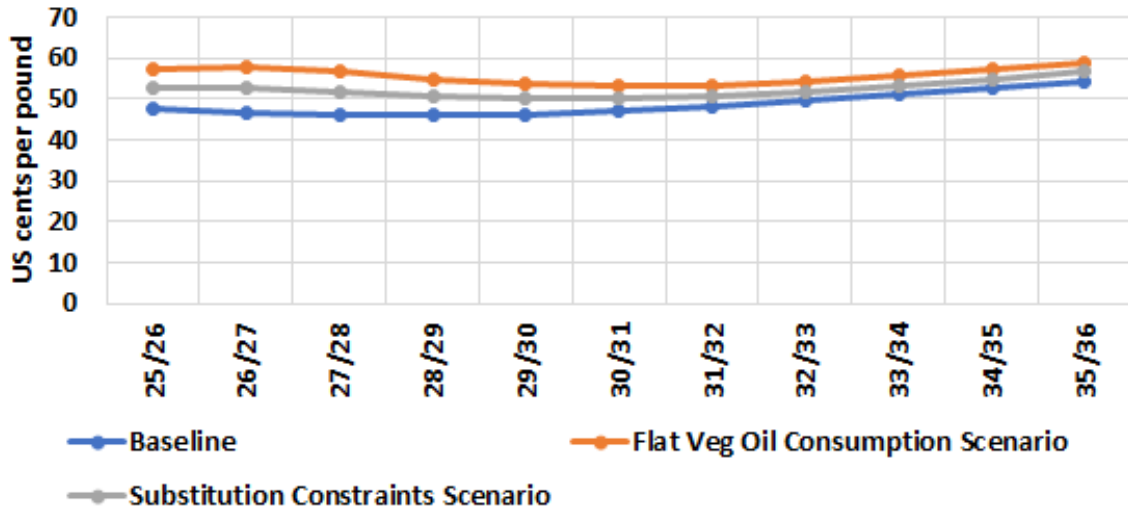
## Impacts on World Palm Area and Olive Oil Production

In both scenarios the increase in demand for palm oil as a substitute for seed oils in the US market drives palm oil prices higher. In the flat veg oil consumption scenario, palm oil prices increase an average of 14.6 percent and in the substitution constraints scenario, palm oil prices increase 7.4 percent. Note that the initial increase over the 25/26 to 27/28 period in palm oil prices is larger until expansion in palm area begins easing palm oil prices. As a perennial crop,

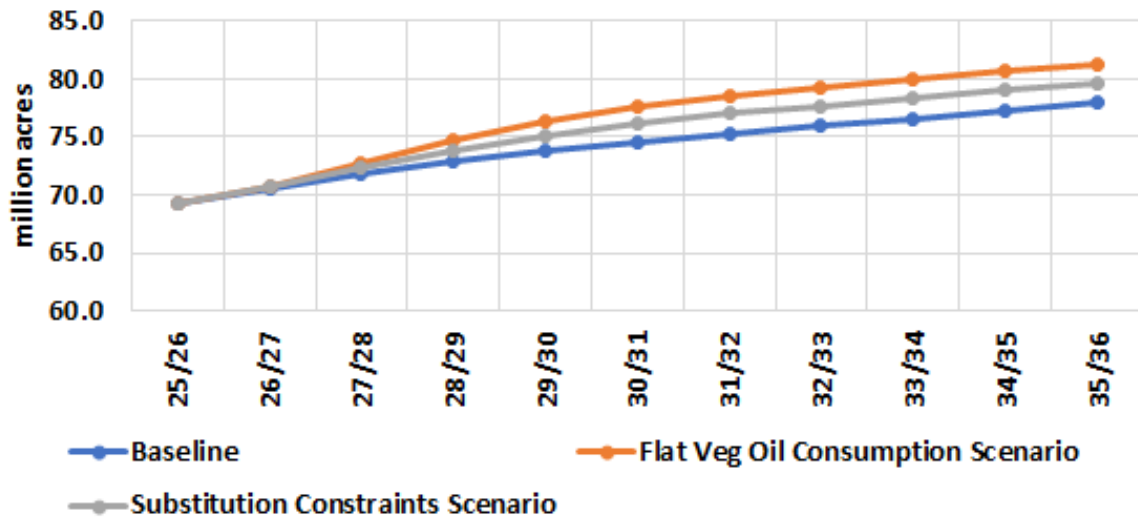
new palm trees take about 3 to 4 years before they begin to produce. By 2035, palm area expands 3.3 million acres and 1.7 million acres under flat veg oil consumption scenario and substitution constraints scenario, respectively.

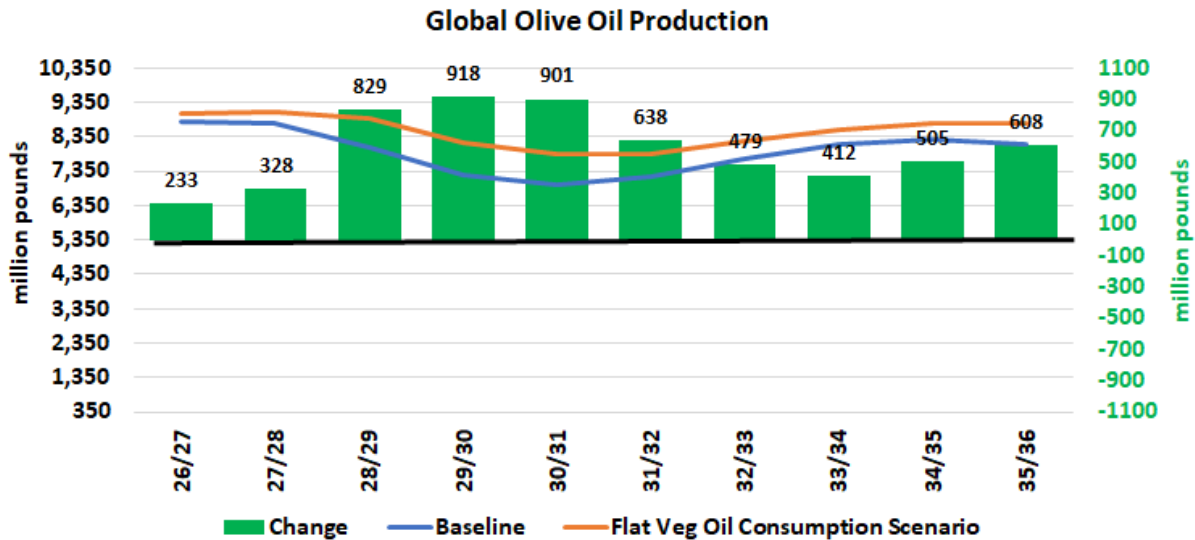
Similarly, olive oil production increases an average of 585 million pounds in response to olive oil prices which increase an average of 15.4 percent from baseline levels over the 25/26 to 35/36 period.

**Malaysian Palm Oil Price**



**World Palm Area Harvested**





## Impacts on Oilseed, Meal and Oil Prices

As discussed, loss of US food demand for seed oils has negative impacts on not only their oil prices but also on oilseed prices as the table below indicates. However, the ban does not affect all seed oils equally because the US share of world consumption varies by oilseeds. As presented in the background section, the US share of world food consumption over the past 5 years is 13.7 percent for soybean oil, 1.6 percent for sunflower oil, 10.6 percent for canola oil, and 3.1 percent for palm oil. As expected, soybean and canola oil prices fall more than sunflower oil since US food consumption of these oils is a larger portion of world food consumption.

In the case of oilseed prices, the percent decline in canola oil prices is larger than soybean prices despite having similar share of world oil food consumption. However, the larger impact on canola prices is due to canola oil being a larger share of the content of the canola seed (44 percent) versus soybean oil's share of the soybean seed (19 percent). Loss of US food demand results in a larger impact on the canola crush margin and subsequently more impact on canola prices than soybean prices. The more modest impact on sunflower prices reflects lower impacts on sunflower oil prices.

In the case of meals, canola meal price impacts are somewhat stronger than soybean meal impacts due to larger relative impacts on canola crush. For sunflower meal, the near-term results are similar to soybean meal impacts which is what is expected given similar impacts on oilseed prices. But over the longer term, the meal price impacts are somewhat larger and this is unexpected. Sunflower meal demand is somewhat more inelastic than soybean meal demand which causes a stronger increase in prices over the longer horizon.

## Percentage Change in Oilseed, Meal, and Oil Prices, Flat Veg Oil Consumption Scenario

### Scenario % change from Baseline

	25/26	27/28	30/31	32/33	35/36
<b>Oilseed Prices</b>					
Soybeans, Average Farm Prices, US	-7.8%	-3.2%	-1.9%	-3.0%	-3.3%
Sunflowers, FOB, Argentina	-2.1%	-1.3%	-2.2%	-3.4%	-1.7%
Canola Average Prices, Pacific Coast, Canada	-8.6%	-7.2%	-5.8%	-6.7%	-7.4%
<b>Meal Prices</b>					
Soybean Meal, Decatur, 48% Protein, US	4.0%	7.4%	6.7%	9.0%	11.9%
Sunflower Meal Pellets, Expellers, FOB, Argentina	4.0%	7.5%	10.9%	14.3%	21.2%
Canola Meal Average Prices, FOB, Canada	5.0%	9.4%	11.1%	13.5%	17.3%
<b>Oil Prices</b>					
Soybean Oil, FOB, Decatur, US	-30.4%	-18.8%	-13.2%	-18.4%	-20.8%
Sunflower Oil, FOB, Argentina	-3.6%	-2.9%	-5.1%	-6.7%	-6.2%
Canola Oil, FOB, Crude Degummed, Canada	-13.8%	-14.5%	-14.7%	-15.8%	-16.9%
Palm Oil, FOB, Malaysia	20.2%	22.3%	13.1%	9.3%	8.4%

## Biofuels

While biofuel feedstock demand is usually capped by the RFS, the severity of the drop in soybean oil prices results in RIN prices falling to zero in 26/27 and 27/28 allowing biomass-based diesel production to briefly exceed volume obligations (occurs in both the flat veg oil consumption scenario and the substitution constraints scenario). As soybean oil prices recover and the California LCFS biodiesel and renewable diesel 20 percent mix limits on the use of soybean oil, canola oil, and sunflower oil come into force in 2028, the volume obligations again become binding. Positive RIN prices are needed to incentive production to meet the volume obligations.

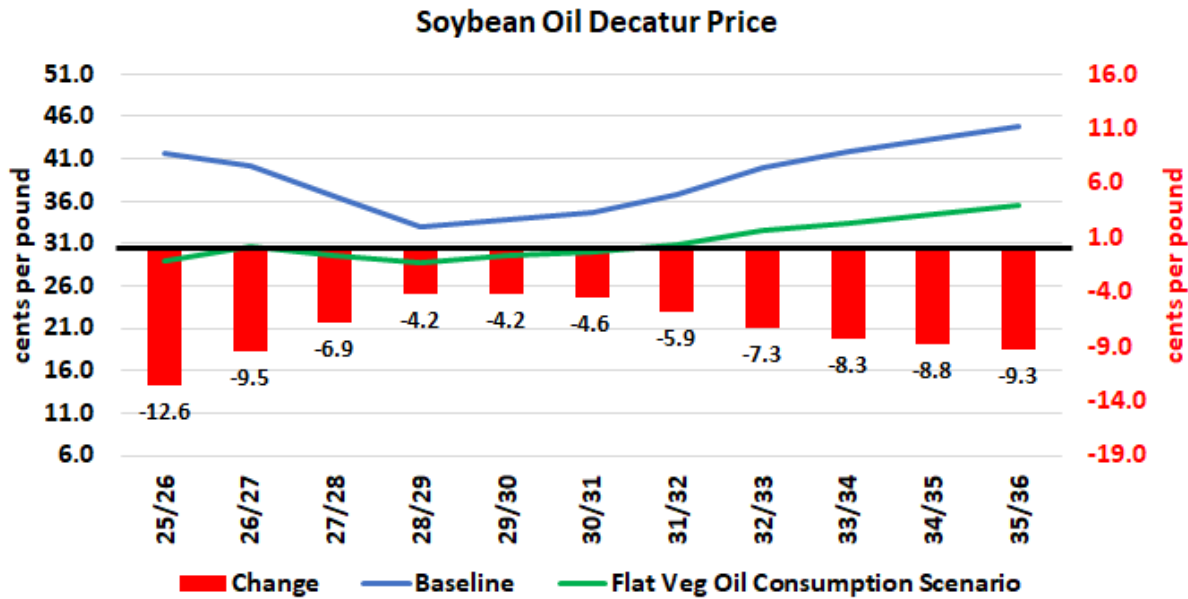
In the flat veg oil consumption scenario, feedstock use for biofuels is higher on average by 1.4 billion pounds per year. However, the results are mixed for soybean oil biomass-based diesel used because canola oil prices fall relative to soybean oil prices over the projection period allowing more canola oil to be used for biomass-based diesel production. Over the 25/26 to 30/31 period, soybean oil used for biomass-based diesel production is up an average of 585 million pounds per year from baseline levels. However, from 31/32-35/36, soybean oil used for biomass-based diesel production is down an average of 1.3 billion pounds per year from baseline levels because canola oil is cheaper relative to soybean oil (as discussed earlier).

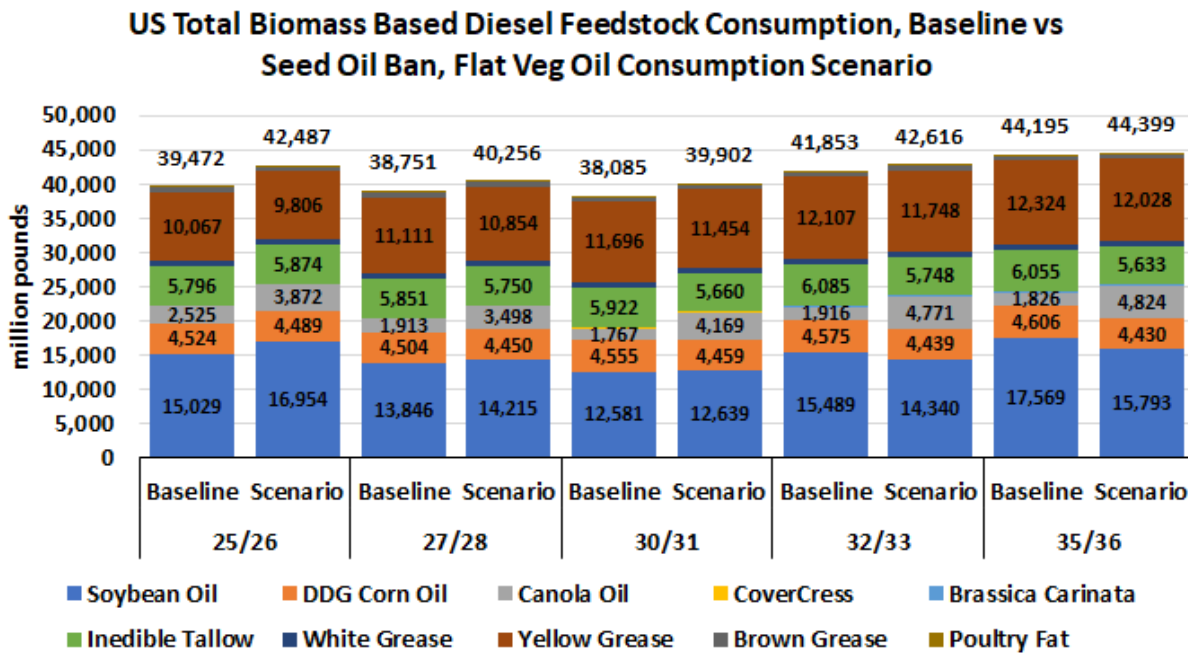
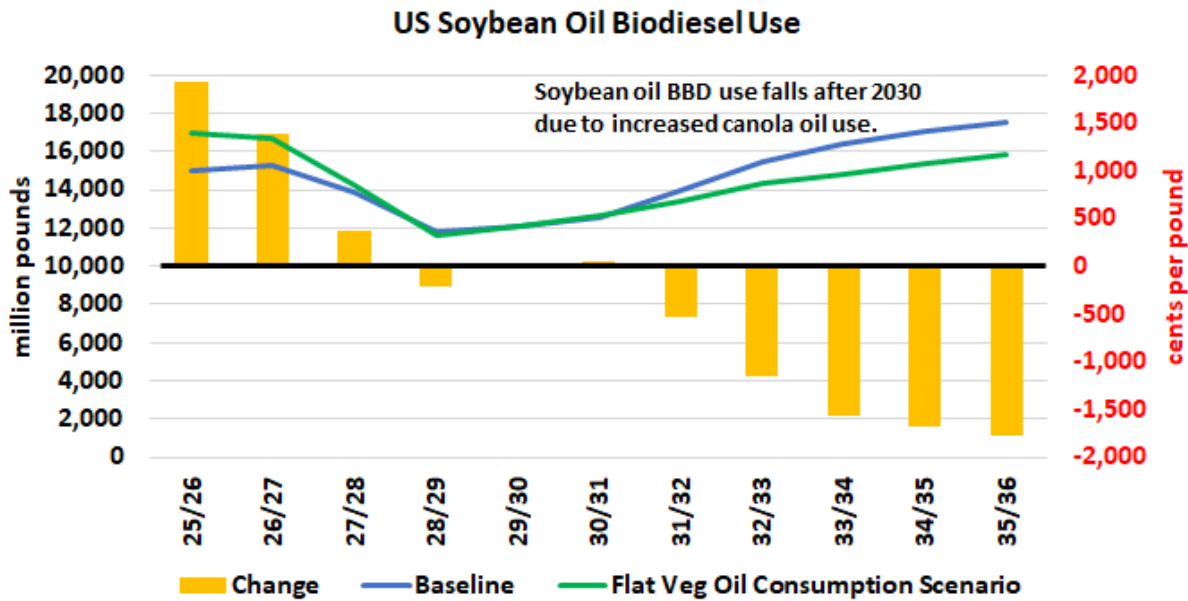
The graphs below illustrate the change in soybean oil prices versus the baseline, the change in soybean oil use as a feedstock for biomass-based diesel production and the comparison of consumption of all the feedstocks under the baseline versus the flat veg oil consumption



scenario. The stacked bar graph shows that after 30/31, soybean oil feedstock use falls versus the baseline while canola oil feedstock consumption increases compared to the baseline.

Yellow grease and inedible tallow consumption are down on average 2.5 percent and 3.9 percent, respectively versus the baseline. Corn oil from DDG production as a feedstock is down 2.8 percent. While results over time are mixed over the forecast for soybean oil and canola oil, on average soybean oil feedstock use is down 1.8 percent versus the baseline and canola oil is up 130 percent.



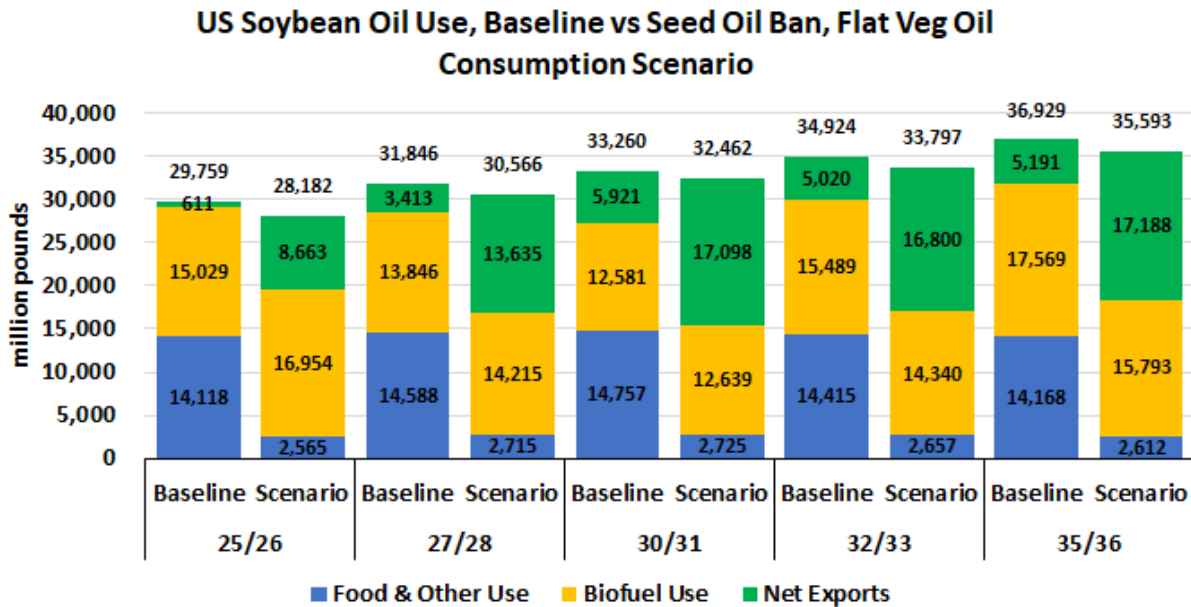


## Overall US Soybean Oil Demand Impacts

The graphic below breaks down the level of US soybean oil use by category and compares them under the baseline versus the flat veg oil consumption scenario. The large decline in soybean food use results in a moderate increase in soybean oil biomass-based diesel consumption, at least early in the forecast, along with a very large increase in soybean oil exports through the entire

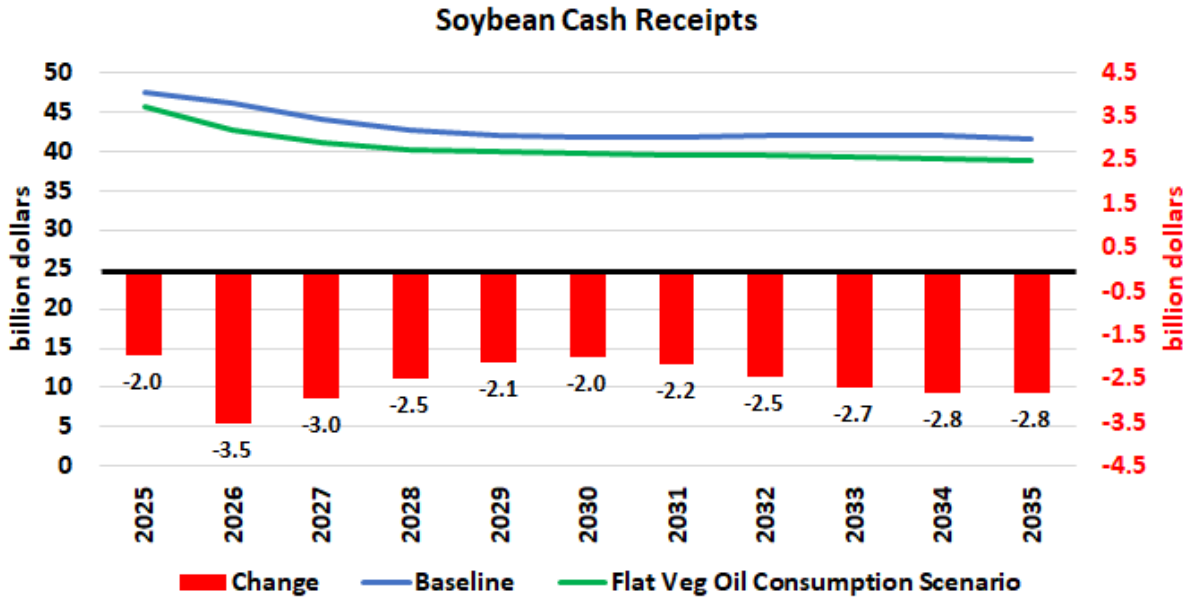
forecast. US soybean oil exports grow significantly as countries substitute soybean oil for other oils due to significantly weaker US soybean oil prices relative to palm oil, in particular. In this extreme scenario, the decline in soybean oil prices is large enough to incentivize growth in total per capita vegetable oil consumption over baseline levels in some countries.

As the totals in the graph below demonstrate, US exports of soybean oil are significantly larger. While there is some growth in total biomass-based diesel feedstock demand, soybean oil demand is down under the scenario. Total soybean oil use is down 2.0 percent on average versus the baseline across the projection period.



### Changes to Farm Income

Under the flat veg oil consumption scenario, farm income is down on average \$1.9 billion (-1.6 percent) annually over the 2026-2035 period. Farm cash receipts for both crops and livestock are lower versus the baseline. Lower crop receipts are driven mostly by lower soybean production and prices.



While crop prices are lower with the seed oil ban, for the most part, prices don't fall significantly below reference prices so government support payments aren't triggered or are quite limited. Lower prices hold crop cash receipts down by an average of \$3 billion each year from 2026-2035.

## Livestock and Meat

The seed oil ban scenario leads to higher feed costs, lower meat production and higher meat prices. Lower soybean processing margins and lower soybean production results in lower soybean crush, lower soybean meal production and higher soybean meal prices. Poultry and pork producers utilize a higher proportion of soybean meal in their feed rations so higher soybean meal prices have a larger impact on their feed costs and returns compared to other livestock producers. As production margins fall, livestock producers curb production, thereby reducing meat supplies available to consumers.

### Soybean Meal Decatur Price

