Food & Agricultural Policy Research Institute
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Renewable diesel. Where can all the soybean meal go?

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Abner W. Womack Outlook Conference

April 20, 2022

Challenges and unknowns

Given current alternatives, such as US canola acres, US sunflower acres and growth in used fats/greases, the majority of feedstock supply for renewable diesel production expansion in the US looks to fall largely to soybean oil

Industry opinions on capacity and production volumes for both crush and renewable diesel between 2024 and 2030 vary greatly

The volume of renewable diesel substitution with biodiesel (FAME) is uncertain

If announced volumes of US renewable diesel production are realized, it may require paradigm shifts across major soybean and soybean product players

Renewable diesel capacity/production

- Mac Marshall VP, Market Intelligence, United Soybean Board and USSEC, Dec. 2021 USSEC webcast
  - 2.75 billion gallons announced capacity by 2023
  - 5.97 billion gallons announced capacity by 2024+
- Pete Meyer head of Grain & Oilseeds from Platts, S&P Global; Oct. 2021 in AgWeb article
  - 5 billion gallons produced by 2025
- Rabobank Dec. 2021; DTN report
  - 6.1 billion gallons produced by 2030

Soybean crush facilities

- Current capacity 2.45-2.6 billion bushels (ERS-Oil Crops Outlook estimate Feb. 2022)
- New capacity announcements 337 million bushels by the end of 2025 (public sources)
- Numerous announced investments in modernization/expansion without stated volumes
- By the end of 2025 near 3 billion bushels soybean crush capacity

How much is it?

6.1 billion gallons of renewable diesel

- 8 lbs soybean oil per gallon = 48.8 billion lbs of soybean oil
- 48.8 billion lbs of soybean oil ~ 4.16 billion bushels of soybeans crushed
- Produces ~ 98 million short tons of soybean meal (89 MMt)

FAPRI baseline 2030/31

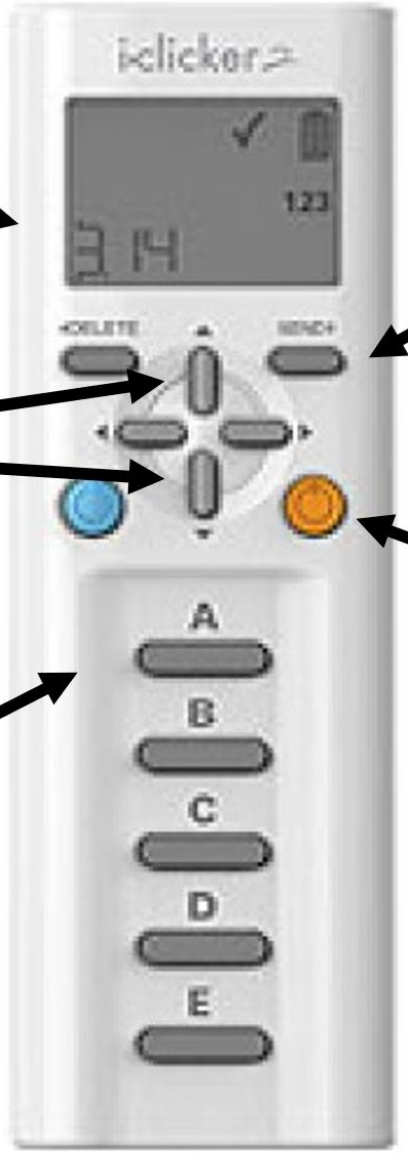
- Soybean area harvested 87.2 million acres
- Yield 55.5 bushels per acre, production 4.83 billion bushels
- Soybean exports 2.22 billion bushels
- Crush 2.47 billion bushels = 29 billion lbs oil & 58.1 million short tons meal
- 13.6 billion lbs of soybean oil for biofuel

Directions- don't hit send yet

When you submit an answer- your answer will show here:

To input an answer- use the "UP" "DOWN" arrow keys to select numbers 0-9. For double digit numbers, input first number then hit -> and select second number.

Step 2- press "A" "A" to sync to the frequency.



Final Step- Press send to submit your answer. You'll see a check mark in the top right corner of the screen.

Step 1- press the orange power button and make sure the screen turns on

Poll

A. There will be 6 billion gallons or more of renewable diesel (RD) produced in the US by 2030/31

B. There will about 4 billion gallons produced of RD by 2030/31

C. There will be 2 billion gallons or less produced of RD by 2030/31

Renewable Diesel production scenario

74% of 6.1 billion gallons by 2030/31 = 4.5 billion gallons

4.5 billion gallons = 36.1 billion lbs of soybean oil

Assume 50% of current baseline of 13.6 billion lbs for biofuel will be for renewable diesel with no substitution from food use

This leaves 29.28 billion lbs more of soybean oil needed

Renewable Diesel production scenario

At 11.7 lbs of soybean oil per bushel we would need 2.49 billion more bushels of soybeans

If we take all of baseline exports of 2.22 billion bushels and given trend yields at 55.5 bu/acre, we need 4.8 million acres more than the baseline in 2030/31

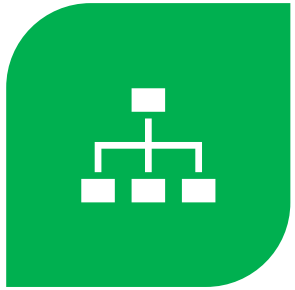
Equal to a bump of soybeans harvested acres from 87.2 to 91.9 million

If 100% of the increase comes from US domestic crush of 2.49 billion bushels, then we get 58.7 million short tons more of soybean meal produced in the US (53.3 MMt)

EU Farm to Fork & Biodiversity Strategies by 2030

REDUCE THE USE OF MINERAL FERTILIZERS BY 20%

REDUCE THE USE OF PESTICIDES BY 50%



SHARE OF HIGH DIVERSITY LANDSCAPE FEATURES OF AT LEAST 10% (SET ASIDES)

SHARE OF ORGANIC FARMING AT LEAST 25%

REDUCE ANITMICROBIALS IN LIVESTOCK BY 50%

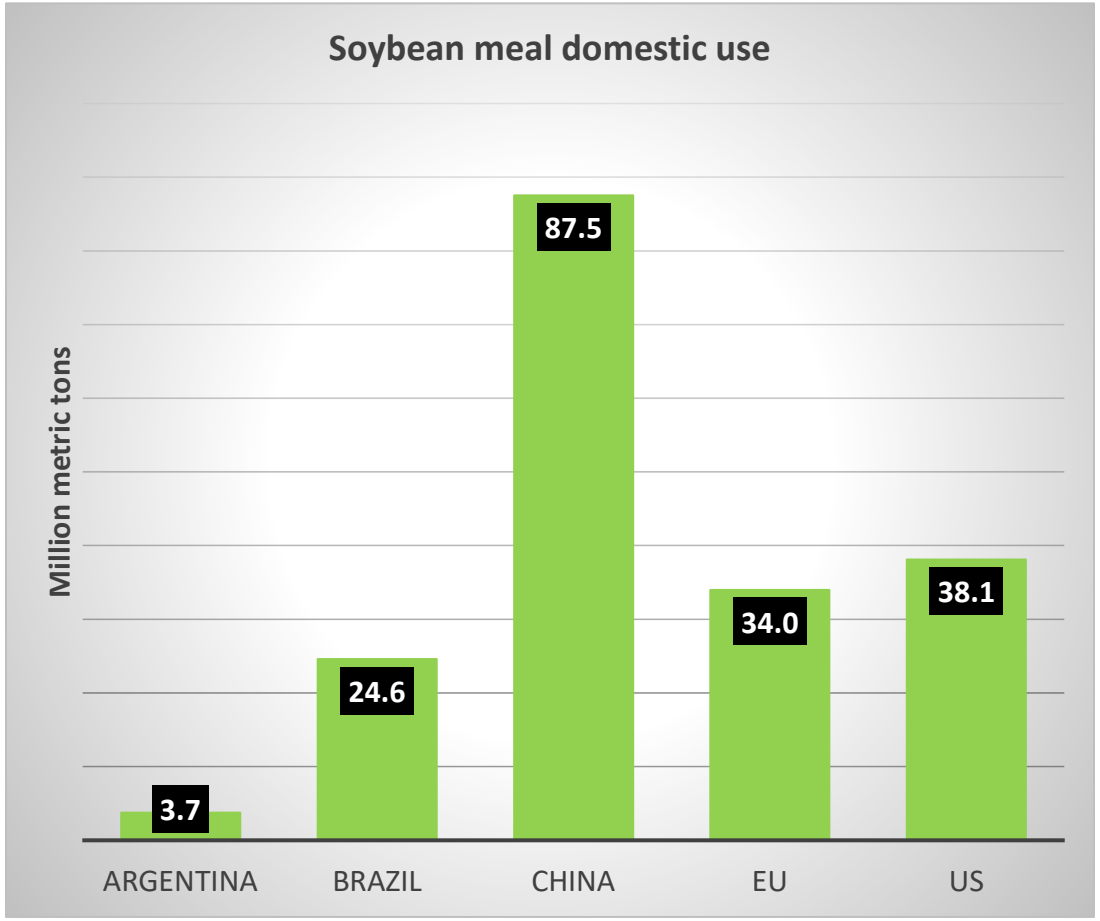
Projected production declines in the EU

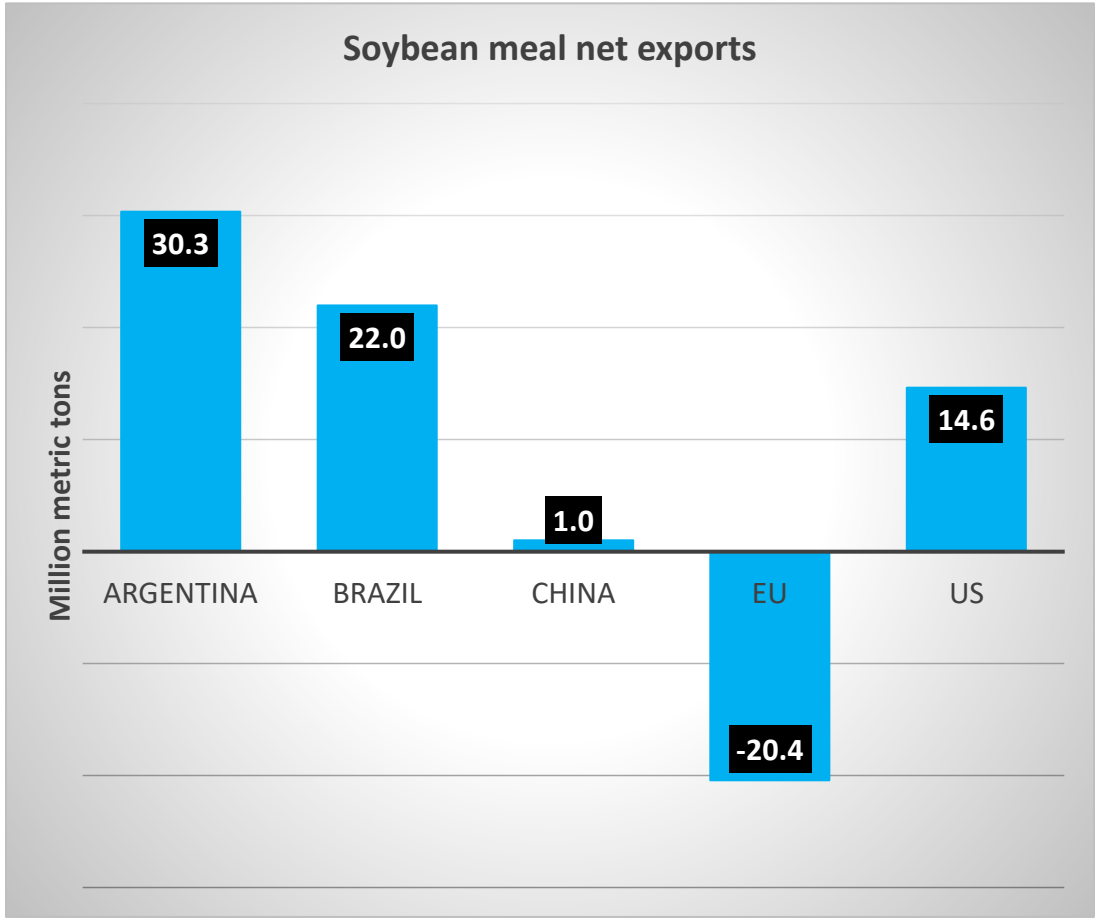
	ERS (% production)	HFFA (% production)	Henning (% production)
Wheat	**48.5**	**26**	
Cereals/grains	**20**		**21.4**
Oilseeds	**60.7**	**24**	**20**

Decline of EU oilseed production of ~60% across rapeseed, sunflower and soybeans would leave up to 11.5 MMt of meal production on the table for soybean meal to backfill

- Assuming at least 5.3 MMt from the US leaves 48 MMt of soybean meal

Potential countries for 48 MMt in 2030/31





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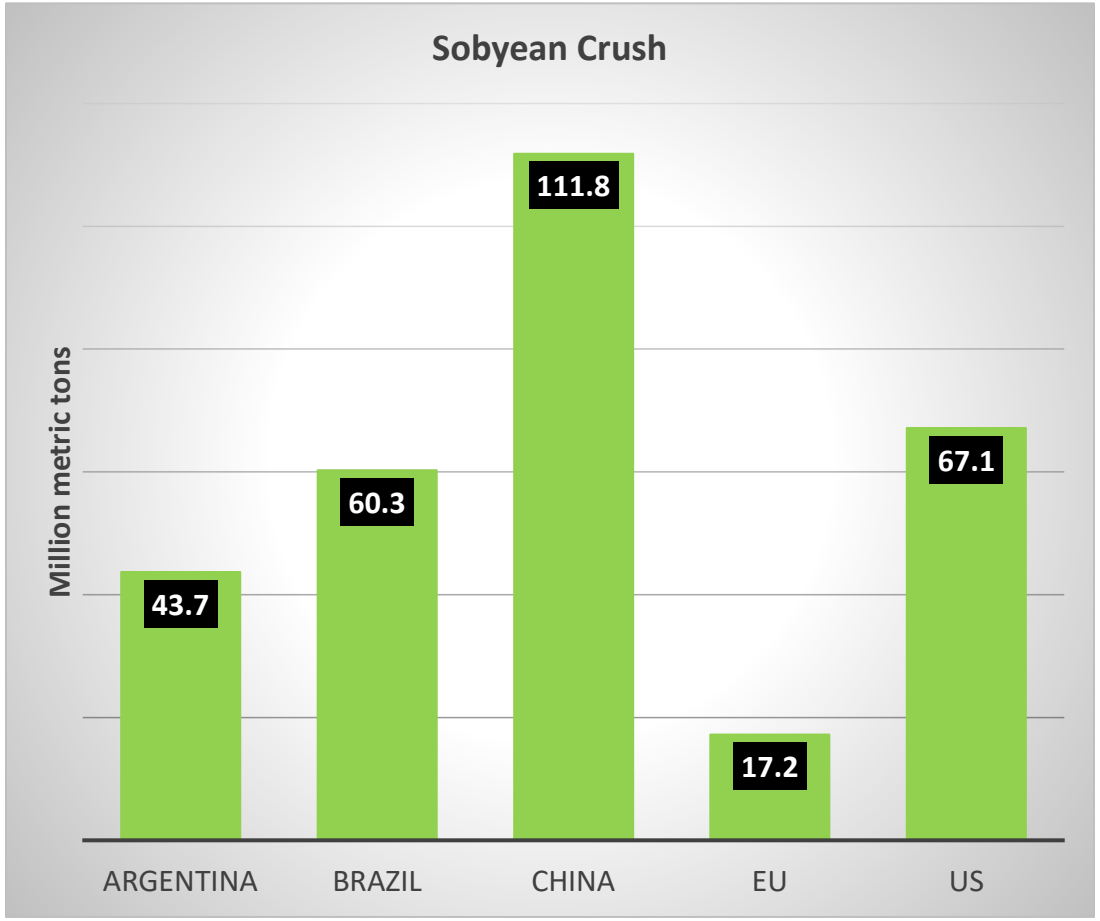

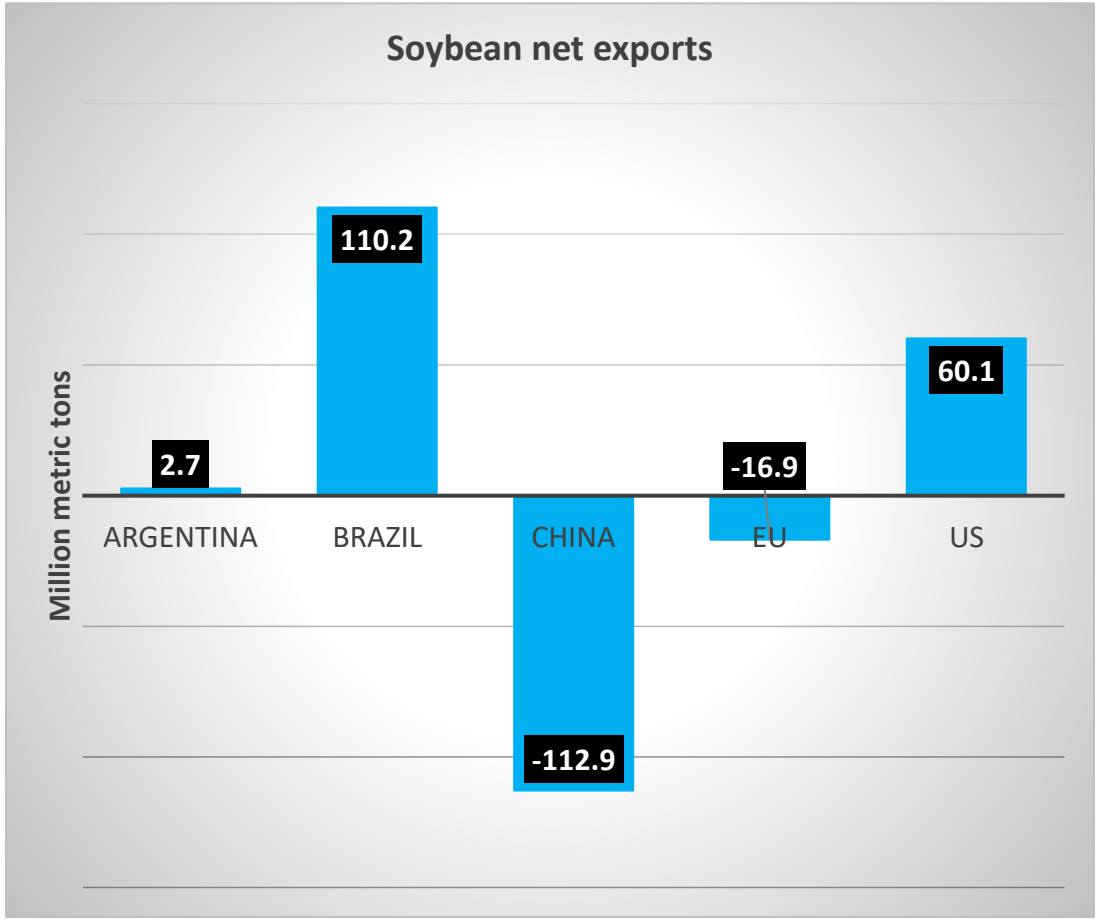

Equal share approach

Argentina decrease net exports of soybean meal by 16 MMt, decreases crush and increases net exports of soybeans by 20.5 MMt

Brazil decreases net exports of soybean meal by 16 MMt, decreases crush and increases net exports of soybeans by 20.6 MMt

China switches to become a net importer of soybean meal by 14.97 MMt, decreases crush and decrease net imports of soybeans by 20.2 MMt


Questions?
Comments

More numbers

- US exports of 2.22 billion bushels ~ 60.5 MMt soybeans versus 61.3 MMt from changes to AR, BR, CN; export differences attributed to different extraction rates

- Baseline 3 country soybean crush growth 21/22 – 30/31 (30.3 MMt)
  - Argentina 2.5 MMt (30/31 level – 43.7 MMt)
  - Brazil 13 MMt (30/31 level – 60.2 MMt)
  - China 14.8 MMt (30/31 level – 111.8 MMt)

- Selected 3 country crush change impacts to soybean oil ~ 12 MMt
  - Argentina 4.26 MMt (~1.5 MMt for biofuel)
  - Brazil 4.19 MMt (~8.3 MMt for biofuel)
  - China 3.62 MMt

- 2030/31 baseline world net exports other vegetable oils
  - Palm oil 55.4 MMt (net exports + dom cons: ID ~ 65.3 MMt, MY ~ 25.4 MMt)
  - Sunflower oil 12.7 MMt (42% oil)
  - Rapeseed oil 3.9 MMt (40% oil)