

*United Soybean Board
Composition Workshop
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Gordon Denny, LLC
gbdenny@gmail.com

314-409-4220



Topics

- Soybean Test Weight
- Soybean Oil Content / Value
- Data / Industry Communication and Information Sharing





12 Commandments of Soybeans

1. Two main products come from a soybean: Meal and Oil.
2. ~70% of the value of the soybean comes from Meal.
3. Protein is the driver of meal.
4. Amino acids are the building blocks of protein.
5. 97 percent of U.S. soybean meal goes to animal ag.
6. Animal ag values soybean meal because of





12 Commandments of Soybeans

8. Protein levels in U.S. soy have been consistently dropping.

9. Raising soybean protein levels keeps our No. 1 customer happy and increases the crop's value per acre.

10. Processors are willing to pay more for high-protein soybeans because the additional protein is worth more to them, too.

11. The combined value of soybean meal, oil and hulls, makes up the estimated processed

value and drives the price of soybeans

Soybean Test Weight

- Soybean Test Weight Considerations
 - Trend is toward lighter test weights
 - Impacts field yield for farmers, they are paid by the pound
 - Impacts efficiencies of SB Processors, Logistics
 - Impacts feeding of animals
 - Nutrient Density
 - Diet Space
 - Feed Conversion Ratios
 - Soybean Quality = Bulk Density



Typical, General and Historical SB Data

- Oil
 - Typically worth twice the value of meal per pound
 - But the bean yields 4 times more meal
- Oil is between 28%-37% of the soybean's value
- Soybean meal provides 72%-63% of crush margin
- Half of U.S. soybeans crushed domestically
- US soybean quality has gradually diminished
 - Result is lower protein in finished soybean meal
- Lower protein has diminished:
 - Processing yields
 - Gross Processing Margins
 - Over-all value of soybeans
 - Plus allowed competing protein sources and foreign soybeans to displace some market share



Soybean Gross Processing Margin*

CME Price +/- Basis = Cash Price

Soybeans \$10.66/bu - \$0.10 SH =
\$10.56

Soybean Meal \$348.00/ton - \$1 SMH =
\$347.00

Soybean Oil \$0.3525/lb - \$.0150 BOH =
\$0.3375

Cash Price x Yield = Margin/Bushel % Margin

SBM: \$347.00 x .0236 = \$8.19 (69% GPM)

SBO: \$0.3375 x 11 = \$3.71 (31% GPM)



Soybean Meal Economics

- **Protein:** Guarantee 48%, not claimable till 47.5%. Everything else in soybean meal (moisture, oil, fiber, kaolin, gums, refinery by-products, inert matter, etc.) all compete with protein for total % / weight in the final product.
All buyers want Amino Acid Profile. If 46.5% shipped vs 48% sale, delivered price \$320, $320/48=\$6.66 \times 1.5\%=\$10 \times 2 = \$20$ / ton claim on entire rail car. Millions \$ Paid EVERY Year!



Soybean Oil Economics Processor Controlled

Flake Fats: Actual	1.5%
Goal	.8%

Difference = .7% x \$340 / ton oil-meal
differential = \$2.38 / ton loss selling oil as
meal vs. crude SBO, \$8,330 / day, or
\$250,000 / month lost opportunity



Soybean Quality Value - Oil

- Soybeans at 11.4 pounds per bushel (19%) vs. Soybeans at 10.8 pounds per bushel (18%)
- Soybean oil worth \$.34 per pound, average 150,000 bu/day plant, 90,000 pounds less soybean oil. SBM = \$340 / Ton
- Meal / oil price differential of \$.17 / lb.
- \$15,000 less margin / day = **\$450,000 / Month** or **\$.10 / bushel in lower cash basis.**



Domestic Soybean Meal

Competition

- DDGS – improved handling, de-oiled value, China tariffs
- Canola Meal – improved protein
- Synthetic Amino Acids – 100% consistent & digestible
- South America – exchange rates, quality, logistics

*SBM is the Gold Standard others are priced by
& compared with!



Options to Improve SB Quality

- Constituent pricing (pay for quality)
- Improved processing (takes no new capital or manpower)
- Better soybean seed selection (Farmer Education)
- Better soybean seed breeding (Demand Pull)
- Better communication and appreciation of real soybean meal value combined with a willingness to pay for quality by animal nutritionists.



Questions?

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Tools for Increased Farmer Participation in Specialty Programs

- Send market info / newsletters / emails on prices, market direction, etc.
- Allow every contract option / alternative that commodity soybeans / corn have for delivery to elevator / terminal.
- Allow first delivery or special "Partner Hours" of other grain or soybeans that farmers sell, in addition to special hours for IP beans. For example, when elevator is full, allow "preferred growers" first delivery to show appreciation and increase their on farm flexibility.
- Allow Free DP first on both IP and commodity beans from the "partners."



Tools for Increased Farmer Participation in Specialty Programs

- Allow multiple slots for farmers to sign up for delivery.
- Have marketing dinners or lunches with speakers on markets, agronomy, etc.
- Consider "yield Guarantee" pricing.
- Enter them in contests for awards, trips, equipment, pricing premiums, etc.
- Consider "special pricing" or rebates on seed or tech fees for all purchases based on volume of IP
- Inverse years will require special handling and someone might lose some money. But, this should be discussed up front and contract alternative explained to protect both parties.



Contract Alternatives

1. Spot

2. Cash

3. Forward

4. Basis

5. DP - Delayed Price, Deferred Price, NPE
(No Price Established). Can be with in



Contract Growing

General Contract Growing: A processor should like the known guarantee that a portion of their annual purchases are locked in and they do not have to source them. This is a way to buy more soybeans directly from farmers...a goal of all grain companies. There is superior quality in IP programs in terms of no blending of moisture, damage, FM. These programs increase the relationship of farmer to processor. It is a competitive advantage for processor to get soybeans away from other processors or rail



~~P~~ **Processor / Seed Tech Synergies**

Potential areas of common needs and goals where Seed Technology and Soybean Processing companies might find mutually beneficial shared areas of knowledge and cooperation on both Specialty Programs and Industry Opportunities:

1. If Seed Tech companies could share any crop / seed sales information (i.e. - soybean planting vs. corn plantings), to a traders, any processor would jump at the



5. Processor / Seed Tech Synergies

Talk to the "right" people in the company. Canola means Canadians. Plant production folks hate specialty programs and are vocal, sometimes inflating costs to project managers. Oil guys do not understand farmers. Commercial traders don't like to juggle more programs, but, the specialty programs gives them a known, base load of raw material. Flush Cycle costs are nil. Logistics costs are big but can be mitigated with some of the above delivery options. Value chains within a processor can be selfish. poor communicators.



Holy Grail of Soybean Value Chain

- High Oleic (compares to HO canola)
- Better Amino Acid Profile (Better Varieties, Low Oligosaccharide=52-54%)
- Low Trypsin (reduced toasting, higher palatability/digestability)
- Other: Non-GMO varieties, non-solvent extraction
- End User Pull - understand intrinsic & extrinsic value bundle, amino acid value



Questions or Comments?

Thank You !

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Recent Market Factors

- Hog Prices are at 6 year lows. Three new hog packing plants announced in Iowa, Michigan & Minnesota.
- 46% of all global feed goes to broilers, egg layers, turkeys & other poultry
- In US, Broilers consume 40% of SBM made, Layers 7%, Turkeys 7%, Hogs 28%, Dairy 10%, Aquaculture .5%. US Broiler production increase 2.5% in 2016, US consumption up to 90 lbs per capita, exports +7.1%. Pork prod +2.2%, exports +3.7%.
- Feb 1, Ajinomoto announced plans to build Iowa synthetic Amino Acid (Tryptophan) to start by May 2017, making 3,000 tons/yr, displacing 500,000 tons of SBM.
- Record 2.1 Bil Gals of biodiesel used in 2015.
- World food prices at 7 year low.
- 2017 Obama budget cuts \$18 billion from Crop Insurance.
- USDA-2016 net farm income down 3% to \$54.8 bil, lowest since 2002.
- CME board crush (synthetic) went from +\$2.50/bu in 2014 (all time high) to \$1.00 in Sep 2015. Now ~\$.50. Lag in prices with SBM leading SB.

Recent Market Factors

- China bought Syngenta for \$43 billion.
- ADM bought Harvest Innovations- expeller pressed SB, non-GMO, gluten free soy chips, flour, TVP, etc.
- China has 22% of worlds population (1.4 bil), but only 9% of world's arable land.
- The US will crush about 200 million more beans (48% of total SB production) than it will export in 2016 (43% of Total US SB Prod).
- US soybean carryout at 450 mil bu is largest since 2006/07.
- US SBM exports will slip from 13,150 k/st to under 11,200 k/st in 2016.
- The reported \$10 Billion in Argentine soybeans in store is closer to \$7 Billion, due to overstatement by previous admin, & quality losses.
- US Prices vs. last year for Corn -12%, DDGs -23%, SB -11%, SBM -24%.
- Some California biodiesel refiners / blenders are getting soy oil for free due to the way contracts are written and current subsidies.
- CME is delisting 2019 SBM contracts so they can change delivery specs to lower protein guarantees. Currently 33 locations, 6 zones, \$12 Diff.