John Jansen, United Soybean Board

**The Benefits of High Oleic Soybean Oil & Shortening**

Welcome, and, uh, thank you very much for taking the time to hear about the benefits of U.S. grown high oleic soybean oil.

Uh, basically this story starts, uh, a while back. Probably 10 years ago it was noted first that partial hydrogenation and trans fatty acids, uh, were causing issues with people's health. And so our farmer directors at that time began to implement a program and began to think about developing alternatives, uh, to existing fats that would, uh, come into play once partial hydrogenation was gone. Um, there's a lot of alternatives in the way of, uh, fat choices. But for the most part there're salad oils. So you've got soybean oil, canola oil, uh, corn, peanut, cotton and sunflower seed in abundance here in the North America. And I'm sure you have to access to many of those same products in your markets.

This issue becomes that without partial hydrogenation there's no way to take a liquid oil and make it into a solid. Um, partial hydrogenation allowed soybean oil is an example, to be used in a number of applications, uh, especially in bakery and margarine applications here in the U.S. Without the technology of partial hydrogenation, there was a real roadblock, um, to making the products the same time after time without that issue of partial hydrogenation. In 2018, uh, we actually saw a ban from the U.S. government, and that's when things got critical, and, uh, our farmers at the United Soybean Board had already taken steps to try and put alternative products in place. Uh, alternative product like high oleic soy was first, uh, determined to be an option that resonated well with end users, uh, and had many applicable options as far as drop and replacement, uh, in place of partial hydrogenation.

The reason for our directors saw this need is, again, you have to have an extended fry life, an extended stability product, uh, to compensate for the loss of the partial hydrogenation, especially in solid fats, uh, that are, need to have creaming capabilities and texture capabilities, uh, either at room temperature, or in the United States, often at cold temperatures. So a physical blend of a high stability soybean oil like high oleic, uh, combined with fully hydrogenated soybean oil or a fully hydrogenated, uh, feed stock of any kind, uh, basically creates a product that's free from trans fatty acids that allows end users to take off some of the onerous ingredients that they had in there for high stability type applications to get products to last on the shelf long enough, uh, for them to not develop off flavors, the TBHQs the BHTs, um, things that consumers just don't like. And by the use of the enzyme interesterification in co- combination with high stability high oleic soybean oil, we're able to create products that have that drop-in functionality, uh, that our end users are used to.

So basically in, uh, 2015 our directors began investing in earnest in the development of high oleic soybean oil. Uh, we have invested over $16 million over this five year period, uh, supporting geographic disbursement of acres. Obviously it's important to get a lot of variation and a lot of products that can grow in different, uh, climates. So that was a major expense and a major development, uh, for us to undertake. And we did that, uh, over the last five years. Um, there's been a tremendous amount of farmer commitment here, and there's been a lot of alignment along the value chain in order to get this done. So partners in the crushing area, um, partners in industry and outreach, and basically food processing customers, uh, we- we've really identified needs, identified products, identified end use, and then worked toward insuring that we had products developed using high oleic soy that met those requirements.

Uh, in addition, you'll find that high oleic soy, uh, is a product that is committed to sustainability over time. Uh, 95% of all U.S. farms participate in the USDA Conservation Program. Uh, basically you can be assured that the varieties in the seeds that you're getting imported into your country meet all the requirements of the soy sustainability assurance protocol, uh, which is key. You've got no issues with deforestation in the United States, no issues with indigenous people being off land, no issues with slave labor. Uh, again, high oleic thrives. As you look at your screen, you've got a clear no till field here where high oleic soy has been put in right over the top of a previous crop. It looks like corn. Um, and the beans, look at that perfect row, no weeds. Uh, we get a tremendous yield, tremendous, uh, output at the farm level, uh, clear benefits for water management. Uh, cover crops can be used in the interim, all great things when it comes to high oleic soy and the environment.

And let me just say that- that the strength of high oleic soy extends well beyond the fatty acid profile and the benefits, uh, that comes from that profile. Today after investment, we can claim numerous varietal options. Uh, you have roughly a map here of the United States and Canada. Um, we are producing today high oleic soy in 13 different states. Uh, you can see the top competitors, um, that are in the same geographies, basically canola oil at 20 million. So you've got the opportunity to grow high oleic soy on 80% more acreage in the United States than canola, uh, can. In the case of sunflower, only 1.4 million acres can come into play, and safflower you can see is- is really a non-factor.

So the opportunity to grow high oleic soy across a wide geography is a real advantage that leads to lower cost in the form reduced freight, um, a better opportunity to reach processors. Again, freight savings, uh, less pollution because you're not moving this, these seeds, uh, in a lot of different directions. And the same can be applied to your products on a, an export/import, um, level. So, uh, just a real nice product and a- a real bountiful opportunity to grow, to not be affected by weather, uh, because of the large geographic footprint. If we have any issues at all in specific geographies due to weather, and we've had those over the last couple years, there's plenty of acres, plenty of opportunity to continue the viability of these products, uh, and supply is not an issue. Demands an issue because there's a lot of demand for these products and we're still, uh, kind of in the infancy and growing, so it's very difficult at this time to have really enough to meet all requirements.

Premiums for high oleic today average 60 cents per bushel on conventional varieties, and roughly $1.50 a bushel on non-GMO varieties. Today that's, uh, 80% of the volume is roughly conventional and 20%, uh, non-GMO. These products are grown under soft IP. That means that our farmers have the option of, uh, really not having to- to take a hard line on co-mingling and mixing, which leads to a lower cost product for you to export. Uh, we are applying for Codex standards and, uh, those applications just went in, and anticipate positive results here with the next meeting of the Codex Alimentarius. Uh, I would imagine that these pro, these, uh, premiums are also going to reduce. We see an optimum level for our supply chain happening at roughly a million acres in the ground of high oleic soy, and we achieve that through production in next year's crop, and then the year after.

So let's take a look at the volume so far. Um, you're basically looking at 600 million pounds of high oleic soybean oil available by 2023. This is a ultra conservative number. We don't want to over commit at this point, uh, because this is a- a new supply chain and the demand is pretty high. But this year you'll find that we had about 500 thousand acres under cu- cultivation. Our directors put in place a stimulus program that works to incent end users to convert to high oleic over time here in the United States. And these, um, again, these bars for growth expectations are clearly, um, minimal growth expectations. The expectation is that we'll grow a lot faster than that. But by next year we should have over a million acres in cultivation and, uh, probably around 500 million pounds of oil.

In addition, uh, we found that high oleic soy and that fatty acid profile can be used beyond food alternatives. Um, areas of industrial application are popping up every day. While we've had great success using this product in asphalt applications for repaving roads where it, uh, makes for a road surface that doesn't crack, and that doesn't rut or- or go, um, depressed as semis, traffic goes over it repeatedly. We've also found, uh, areas in the form of surfactants where, again, you're trying to replace a petroleum in a soap or a detergent, better for the environment. High oleic fatty acids work well in surfactant markets, a large volume opportunity. And in, believe it or not, in tires. Uh, Goodyear tire company has, uh, been using soy to replace their petroleum inputs for the last few years, and by 2040 will have converted their entire, uh, tire, uh, operation to soy inputs. And the soy has a benefit of a softer tread at cold temperatures. So we're just learning a lot about high oleics and the opportunity to use them in alternative products. Uh, and none of that is reflected in the volume expectation growth that you see on the screen.

Let's look at, uh, the fatty acid profile for high oleic soy. Um, as you can see, it has a minimum range, minimum oleic value of 75. Well, let's drop down and look at high oleic soybean oil versus an olive alternative. You'll note that they're virtually the same product. Um, consumers love olive oil. They love the health benefits of that high monounsaturated product. And this high oleic soy has the exact same, uh, fatty acid profile, but not the flavor. And the key for high oleic is the performance without alternating the flavor of your products, the flavor that your customers and consumers have come to like and enjoy. So, you get a great performance without any, um, flavor implication. It allows the flavor of your food that you're trying to produce to come through and, uh, make a product that's, uh, delightful for end use application.

Canola oil, high oleic, and high oleic sun, are in that same area. But the benefit that high oleic brings is the ability, the residual tocopherols that are left in it after refining make it an immensely stable product, a product that fries for an extended period of time, double that of a conventional soy or canola product. So again, we lead back to a tremendous frying opportunity. Uh, it's so good, actually, that you find people, uh, basically are even cutting the high oleic soy back over time. So they start with using high oleic in their applications to see how it does, but then they find that basically 25% of the volume, 50% of that high oleic can use a conventional U.S. grown soybean oil, um, and you still get that same outstanding performance.

And for products that need solid shortenings, that bakery category again, enzymatic interesterification allows us to take a liquid component with a fully hydrogenated feed stock, whether it's fully hydrogenated soy or an interesterifying and fractionated, um, kernel fraction. You combine it, uh, with roughly a 70% liquid fraction and 30% fully hard fraction, and run it through the interesterification system, and you come out with a shortening that looks like the picture above. It's able to support, uh, bakery applications, margarine applications, either industrial or food service. Uh, so there's a lot of options, a lot of end use applications that allow you to use, um, this product in place of palm oil if that's a concern.

So, where are we? We've spent five years developing the seed companies like Corteva, um, this product. We've invested $60 million in varieties that now exceed a hundred over 13 states. Uh, the primary seed companies and manufacturers are Calyxt, Corteva, and Missouri Soybean Council. Uh, these products are conventional. They're non-GMO. You can purchase them from three large core conventional GMO manufacturers, ADM, Bunge, and Purdue that can be shipped from the Midwest, Indiana, Ohio, the, uh, Eastern Shore, Maryland, um, Massachusetts, really good geographic coverage there. And you can see all other alternative companies that have the product like CHS.

Additionally, if you want a whole bean, uh, you can get this product from [inaudible 00:15:38] Seeds, Clarkson, Grain, Landis, um, Schoular, Benson Hill, other companies that basically have the ability to ship the whole bean. Uh, the first processors can ship you oil, meal, or, uh, the equivalent whole bean seed if you desire. So lots of choices, lots of opportunities for high oleic soy.

And I've basically right up against my time. So again, thank you for listening. Thank you for your attention. We look forward to talking to you more about this opportunity to use high oleic soybean oil in your formulations going forward. Thank you very much.