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| Project Number:  | 2020-162-0132 |
| Project Title:  | Non-GMO High Oleic Low Linolenic Soybean Commercialization and Variety Expansion |
| Organization:  | Clutch |
| Principal Investigator Name: | David Miller |
| **National Soybean Checkoff Research Database** [**https://www.soybeanresearchdata.com/**](https://www.soybeanresearchdata.com/) **(public website funded by USB). Please include a non-technical summary along with your project status. The non-technical summary will be published to the website. If a non-technical summary is not provided, the contents of this entire report will be published.** |
| Project Status - What key activities were undertaken and what were the key accomplishments during the life of this project? Please use this field to clearly and concisely report on project progress. The information included should reflect quantifiable results (expand upon the KPIs) that can be used to evaluate and measure project success. Technical reports, no longer than 4 pages, may be included in this section.  |
| This project intended to advance the development and commercialization of non-gmo high oleic soybean varieties that serve the MN, ND and SD region. The project had three primary activity tracks:* Advancing development of non-gmo high oleic varieties
* Building awareness among growers of the opportunity to plant non-gmo high oleic
* Build awareness and demand for non-gmo high oleic soybean oil among food companies.

The research and development of non-GMO high oleic soybean varieties through Brushvale Seed progressed nicely over the past year. There were a few unexpected developments during the year but overall progress was made to begin introducing new varieties into the future lineup. Due to the wet, late and cold fall in 2019, there was very little time to get MN-grown soybeans harvested and sent to winter nursery in Chile. A decision was made to to focus on bulk selections since they could be grown and then selected as new varieties for first year yield testing in 2020. This provided the best path forward in advancing the development. Thus, F4 plants were selected and F4:5 rows were sent and produced in Chile for 2019-2020 winter. Roughly 5% of the progeny rows which included the desired high oleic, low linolenic and protein combinations were harvested there and sent back to us. These selections were then grouped into tests to compare with top industry varieties. There were 19 preliminary Chile tests set up and all were grown in 2 rep. yield trials at 5 different locations throughout the Red River Valley. The 2020 crop season was a very good year in terms of weather conditions and all yield trial locations had nice variability which provided valuable data for all entries.Since 2019 fall conditions made Brushvale unable to get the newer populations packaged and sent south for two generation advancements in adequate time for planting 2020, Brushvale decided to send them to Costa Rica for 2-3 generation advancements. Hence, Brushvale will be planting approximately 125 bulk populations in 2021 which includes all F1, F2 and F3 material from 2019.The molecular marker lab that had been used for high oleic and low linolenic testing decided to no longer run samples for Brushvale. This caused a temporary setback while a new resource was found. In the meantime, we have been working on calibrating our Perten NIR machine and making selections based on the fatty acid results from this. By sending soybean samples in for wet chem in order to get biasing set Brushvale is able to make first selections off this data. A new lab for the molecular markers is now being used and will enable continued sending the advanced material to for trait confirmation.Throughout the project, a number of activities created awareness of the opportunity to grow non-gmo high oleic soybeans among farmers in the tri-state region. Early in the project, a sell story to growers was developed as was a direct mail letter that was sent to more than 1,000 growers in the region. In late 2019/early 2020, Brushvale participated in the MN Ag Expo as well as made presentations at SD soybean grower meetings. These activities allowed Brushvale to expose non-gmo high oleic to hundreds of growers. The COVID outbreak in early 2020 caused the cancellation of several other trade outreach activities planned for the balance of the fiscal year. The team rescoped and requested a budget reallocation to support grower development through execution of two plot days in late August as well as a paid online content package through Farm Progress.Clutch and Brushvale partnered with Farm Progress to film a 5 minute editorial-style video. The video focused on the opportunity to improve margins with identity preserved soybeans and highlighted the non-gmo high oleic. The video was distributed on multiple Farm Progress online media properties. The video received more than 300,000 impressions across their network and, as part of their emailed content, received more than 1,000 unique opens and more than 2,600 opens. These numbers were unparalleled by previous Farm Progress programs, demonstrating the relevance of the topic. The two plot days featured presentation of the non-gmo high oleic soybean opportunity, a tour of Brushvale’s facility and a product tasting of items fried in non-gmo high oleic soybean oil. More than 50 growers with operations close to Brushvale’s location attended the events across the two daysSimultaneous to grower recruitment, Clutch was also focused on developing awareness and demand among regional and small to medium scale food manufacturers. To enable selling to the food trade, Clutch executed a processing, refining and testing project in late 2019. This project provided test results that demonstrated Brushvale’s non-gmo HO oil performed consistently with other HOSO and delivered an updated fatty acid profile and smoke point. This data was incorporated into a sell story to communicate the beneifts to end users.Direct outreach was conducted to a set of more than 50 processors, food companies, oil distributors and foodservice outlets. A number of phone meetings occurred and at least two oil distributing companies are interested in exploring the opportunity to distribute Brushvale’s non-gmo HO oil. The companies are currently in meetings to explore the opportunity. |
| Did this project meet the intended Key Performance Indicators (KPIs)? List each KPI and describe progress made (or not made) toward addressing it, including metrics where appropriate.  |
| The following seven KPIs were established for the project. Each is listed with results below the individual item.1. Online presence and two pieces of sales collateral completed in advance of selling window.
	* Clutch created a number of selling materials in the first three months of the project including a sell sheet targeting growers, table top signage to support meetings and trade shows, and a sell story aimed targeting end users. Additionally, Clutch created and delivered a grower direct mail letter and multiple grower recruitment post cards to support a 2020 plot day.
2. Connection with at least 150 growers to recruit to drive recruitment of 50 for 2020 season.
	* In Nov 2019, Clutch delivered more than 1,500 direct mail letter to growers in ND, SD and MN to recruit for the upcoming season. In Aug and Sept. 2020, a two plot days were held to recruit growers with each event attracting roughly 25 growers. Each event was supported by direct mail and email announcement campaigns.
3. Measurement of contracted acres for 2020 growing season.
	* Brushvale planted approximately 350 acres of non-gmo high oleic varieties in 2020.
4. Verified meetings/discussions with at least 50 potential oil customers.
	* Clutch conducted outreach via direct phone calls and email to 53 regional and mid-scale oil distributors and food companies. Two companies have expressed interest in exploring an agreement to purchase oil from Brushvale.
5. Sample quantity of soybeans processed to support fry test and sales samples by Nov 30, 2019.
	* Approximately 8,000 lbs of non-gmo HO soybeans were crushed at American Natural Processors in December 2020. A subsequent frying test provided expected results in line with other high oleic soy testing. Product samples in 5 gallon JiB, ½ gallon and quart sizes were also produced during the processing.
6. Successful breeding through F1-F3 populations, progeny rows and yield trials.
	* The project advanced F4 lines through a winter nursery in Chile and advanced F1-F3 populations in two growth cycles in Costa Rica. The project continues to have success in producing progeny with the high oleic, low linolenic and protein combination necessary.
7. Monthly progress review of contacts, meetings, relationship status with growers and end user customers in Customer Relationship Management (CRM) system.
	* Clutch and Brushvale met on a regular basis to review grower recruiting and oil customer outreach efforts. An informal CRM was kept through to track leads.
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| Expected Outputs/Deliverables - List each deliverable identified in the project, indicate whether or not it was supplied and if not supplied, please provide an explanation as to why. |
| The project had four expected outputs, each of which the project delivered upon advancing.1. Expansion of available non-gmo high oleic soybean varieties.
	* The project further advanced the development of non-gmo high oleic varieties for the MN and Dakotas region.
2. Demonstrated adoption of non-gmo high oleic soybean oil by regional end users.
	* Two companies are in active discussion with Brushvale to test and purchase non-gmo HOSO.
3. Creation of a viable non-gmo high oleic soybean market in the MN/ND/SD region.
	* More than 1,500 growers had the opportunity to learn about the potential to grow non-gmo HO in their operation.
4. Overall expansion of high oleic soybean oil market penetration.
	* The project demonstrated interest among growers to plant non-gmo HO and end users to purchase oil made from the soybeans. The project also expanded the geographic region for growers to plant a non-gmo HO variety.
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| Describe any unforeseen events or circumstances that may have affected project timeline, costs, or deliverables (if applicable.) |
| Soybean processing through Texas A&M was delayed approximately one month vs plan due to maintenance and staff travel at the facility.The project was impacted by the COVID pandemic which reduced the ability of both Clutch and Brushvale personnel to travel to meet customers or to participate in trade shows. Many targeted trade shows/events were cancelled due to the pandemic. Neither events materially impacted the end results of the project as samples were available in a timely manner and grower recruitment occurred in different manners. |
| What, if any, follow-up steps are required to capture benefits for all US soybean farmers?Describe in a few sentences how the results of this project will be or should be used. |
| The project continues to put non-gmo high oleic soybeans on a path to success. Further support of this and other non-gmo high oleic soybean varieties can help round out a portfolio of soybean products that meet the needs of varied customers. USB should work to educate the marketplace that soybeans provide a versatile product portfolio. |
| **List any relevant performance metrics not captured in KPI’s.** |
| None |
| **Non-technical summary:** |
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