

SOJABONE / SOYBEANS

Webstudieopdatering / Website update

Augustus / August 2013

Die vorige opdatering van webwerwe is gedoen tot begin Augustus 2012.
Hierdie opdatering dek die periode Augustus 2012 tot einde Julie 2013 binne die onderstaande breë raamwerk:

Aktiwiteite van:

United Soybean Board (USB)
American Soybean Association (ASA)
US Soybean Federation (USSF)

Research results from USDA-ARS(Agricultural Research Services), Beltsville, MD.
National Institute for Food and Agriculture (NIFA).
Committee on New Usages of USB.

Tendense / Ontwikkeling mbt. Kwaliteit van sojaolie

Research programs on soybean oil quality
Consumer benefits / interests in this regard.

Aktiwiteite van saadmaatskappye:

Monsanto
Bayer CropScience
DuPont Pioneer
Cargill
Dow Agro Sciences
Syngenta

Ander maatskappye / organisasies wat betekenisvolle bydraes maak tot sojaboonontwikkeling.

Ander belangrike ontwikkelings in bogemelde velde en ook in die sojaboonbedryf in die algemeen.

United Soybean Board (USB)

1. Long-range Strategic Plan 2011-2016

"UNITED SOYBEAN BOARD/SOYBEAN CHECKOFF LONG-RANGE STRATEGIC PLAN 2011-2016

After 20 years of steady successes, the checkoff is now facing a worldwide demand that requires a 50 percent increase in protein by 2030.* We must continue striving for even greater yields to meet this growing demand while differentiating our U.S. soy products and services in the global marketplace.

CORE VALUE:

The board, with honesty and integrity, collectively and individually, is committed to working within the letter and spirit of applicable law and regulation to achieve maximum value for each soybean farmer's checkoff dollar.

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MISSION:

Effectively invest and leverage soybean checkoff resources to maximize profit opportunities for U.S. soybean farmers.

VISION:

U.S. soybeans will be the leader of the global oilseed industry.

STRATEGY:

Create and maintain partnerships that differentiate and increase the utilization of U.S. soy in a changing global market.

STRATEGIC OBJECTIVES

MEAL:

Increase the value of U.S. soybean meal to the entire value chain.

Measurement:

Changes in volume and value of U.S. soy meal.

OIL:

Increase the value of U.S. soy oil to the entire value chain.

Measurement:

Changes in volume and value of U.S. soy oil.

FREEDOM TO OPERATE:

Ensure that our industry and its customers have the freedom and infrastructure to operate.

Measurement:

Increase in acceptance of today's agriculture practices by influencers, customers, regulators and influential consumers.

CUSTOMER FOCUS:

Meet our customers' needs with quality soy products and services to enhance and expand our markets.

Measurement:

Improvement in customer relationships by key segments.

PRIORITY ISSUES

PROTECT AND SUPPORT THE U.S. ANIMAL AGRICULTURE INDUSTRY

Measurement:

Number and size of production facilities by species.

INVESTMENT IN TRANSPORTATION INFRASTRUCTURE

Measurement:

Increase in public and private investment in soy transportation modes.

*United Nations Food & Agriculture Organization."

http://www.unitedsoybean.org/wp-content/uploads/44346_FINAL_LRSP2.pdf

Date: 2011

2. 2013 Action Plan

For each of the four Strategic Objectives of the USB , namely Meal, Oil, Freedom to Operate and Customer Focus, the USB, as in previous years, compiled an action plan to be implemented by five subcommittees for each of the four Strategic Objectives:

USB Long Range Strategic Plan

Financial References

FY 2013 Summary Budget

FY 2013 Committee Allocations

Meal

- Communications Committee
- Domestic Marketing Committee
- International Marketing Committee
- New Uses Committee
- Production Committee

Oil

- Communications Committee
- Domestic Marketing Committee
- International Marketing Committee
- New Uses Committee

- Production Committee

Freedom to Operate

- Communications Committee
- Domestic Marketing Committee
- International Marketing Committee
- Production Committee
- Global Opportunities

Customer Focus

- Communications Committee
- Domestic Marketing Committee
- International Marketing Committee
- New Uses Committee
- Production Committee

Audit & Evaluation

The plan gives a "Market Environment Overview" for each of the committees together with its goals, spells out its Strategy goals / Tactics, define the Key Performance Indicator(s) for each goal as well as giving a budget allocation.

This is a comprehensive, detailed action plan and gives valuable information on developments in the industry, the US and global markets as well as on the products: soybean oil and soybean meal.

The Action Plan is a document (pages unnumbered) of approximately 150 pages and hereunder is given, as an example, one of the shorter versions of just the goals and relevant actions.

The Strategic Objective addressed in this example, is Customer Focus and namely that of the Production Committee:

GOALS

Goal – Develop analytical techniques that accurately and rapidly characterize the true value of soybeans and soybean meal to benefit livestock producers.

Strategy Goals/Tactics

1. Identify key compositional traits responsible for improved animal performance
2. Develop rapid analytical techniques that measure metabolizable energy in soybeans and soybean meal
3. Improve accuracy of analytical techniques for measurement of amino acids in soybean
4. Ensure global acceptance of accurate analytical standards for soybeans and soybean meal.

Key Performance Indicators

Standard analytical practices for amino acids and metabolizable energy are accepted worldwide by 20xx.

Goal - Characterize compositional differences among soybeans of varying origin, domestically and globally.

Strategy Goals/Tactics

1. Survey the composition of South American soybeans compared to U.S. Soybeans based on region of origin
2. Determine environmental and climatic factors responsible for compositional differences
3. Match composition of U.S. soybeans of differing origin to nutritional requirements of key classes of livestock

Key Performance Indicators

Relative value of U.S. soybean meal accurately evaluated in comparison to soybeans of other origins including various points in South America.

Goal - Develop feeding practices to optimize enzymes in rations containing soybeans with improved compositional traits

Strategy Goals/Tactics

1. Identify optimum combination of reduced phytate soybeans and phytase enzyme for feed
2. Determine whether there are advantages to feeding enzymes designed to improve digestion of soybean complex carbohydrates.

Key Performance Indicators

Majority of feed industry accepts a combination of addition of enzymes to livestock diets that maximize soybean meal use."

http://www.unitedsoybean.org/wp-content/uploads/44346_FINAL_FY2013-ActionPlan.pdf

Date: July 2012

3. US Soy Industry is in it to Win It

"----- when the soy checkoff began planning its CONNECTIONS 2012 event, it looked for a good roster and strong playbook to come up with the best strategy to change the game for the benefit of all involved in the U.S. soy industry.

The event brought together nearly 400 farmers and other industry stakeholders for discussion sessions that focused on the soy checkoff's four strategic objectives:

- Increase the value of U.S. soy meal.
- Increase the value of U.S. soy oil.

- Ensure the U.S. soy industry and its customers have the freedom and infrastructure to operate.
- Meet soy customer needs with quality soy products and services.

Here are the strategies the CONNECTIONS participants voted most important for each objective:

Customer Focus

- Preserve the Renewable Fuel Standard (RFS2).
- Gain acceptance and understanding of the benefits of biotechnology.
- Increase promotion of biodiesel and Bioheat.
- Research to improve the advantages of U.S. Soy.

Meal

- Reconstruct soybean composition to maximize content of value components through integration of research, breeding and different processing.
- Continue to characterize genes that affect composition and yield by supporting public and private research.
- Support specialized U.S. soy meal products to boost animal use of soy meal.
- Develop a transparent system that recognizes component value.

Oil

- Protect and responsibly grow the RFS2.
- Strengthen the RFS2 as a price driver for soy oil, causing it to price at its higher energy value and making soy meal more competitive for livestock producers.
- Regain market share by rapid adoption of high oleic soybeans.
- Collaborate with the entire soy value chain to improve composition and increase yield by defining economic incentives, including increasing grower support and leadership and speeding up the trait-approval process.

Freedom to Operate

- Influence the decision makers; engage the public, consumers, food companies and farmers.
- Promote efficient and innovative funding processes.
- Focus on consumer education with emotion through USFRA and CommonGround.
- Gain access for the biodiesel industry to pipelines."

http://www.unitedsoybean.org/issue_entry/january-3/

Date: January 2013

4. High Oleic Soybeans: Reconquering the Oil Market

"With high oleic soybeans coming down the pike, U.S. soybean farmers have an opportunity to meet the needs of a long-term market and add demand in key areas with new, innovative soybeans: those that produce high levels of oleic acid. The United Soybean Board (USB), along with others in

the soy industry, identified high oleic as an opportunity to recover lost edible-soy-oil demand and increase uses throughout the value chain."

"----- a law requiring foods containing trans fats to be labeled went into effect in 2006. That posed a challenge for soy oil. Processors use partial hydrogenation to increase soy's stability for frying and baking. However, partial hydrogenation produces trans fats. Due to growing consumer concern with trans fats and the labeling law, food companies began seeking out other vegetable oils.

The U.S. soy industry began losing market share, resulting in a loss of 4 billion of pounds of edible-oil demand annually." (Soy oil market share in the US edible oil market drop from 81% to 63%). "Additionally, the industry could lose another 700 million pounds per year if the current situation persists."

"Because of its high heat stability, high oleic soy oil could help remedy this problem. USB has set an industry-wide goal to have high oleic soybeans planted on 25 million acres by 2023, which is expected to equate to 30 percent of the soybean-growing acres in the United States. To help reach this goal, USB committed to invest \$12 million per year to expand varieties and broaden market development."

http://www.unitedsoybean.org/issue_entry/may/

Date: May 2013

5. Checkoff Projects Identify Solutions Farmers Can Use

"As farmers, production research is the easiest thing for us to understand,"
----- take a look at three unique projects making significant progress for farmers.

Maximization of Soybean Yield Through Agronomics Project

Yield is the No. 1 priority for most soybean farmers.

The project developed best-management practices for all states where soybeans are grown. Surprisingly, treatment figures across states showed similar trends. Because of this, researchers developed a set of general recommendations that apply to most U.S. farmers, including:

- Narrow rows: Return per acre can be maximized by planting rows narrower than 30 inches without any additional inputs.
- Select inputs carefully: A well-oiled soybean machine is not built with just a single product. However, there is no guarantee that additional inputs will increase yield, so have a good reason for every product you use.
- Increase seed rate: Higher seed rates lead to slightly higher yields, as well as provide some additional yield stability, so there is enough return on investment for the extra seed.
- Mind the fundamentals first: It's important to do a good job with the three basics — fertilizer, timeliness of planting and managing diseases, insects and weeds.

For more findings from the project, visit the Extreme Beans website or download the Extreme Beans app on your Apple iPhone and Android-enabled smartphones and other devices.

Kudzu Bug Project

"Relatively new to the United States, the kudzu bug is a nuisance pest that feeds on the stem and leaf petioles of soybean plants. The checkoff funds research to manage this insect and develop

economic thresholds for spraying.

First found in a nine-county area in northeastern Georgia in the fall of 2009, this invasive species has spread to most of the southeast United States.

“We’re working on numeric thresholds to find out how many of these insects per plant or sweep net justifies an insecticide application,” ----- . “As of now, there’s no natural control in containing this bug, and it’s about to jump over the Mississippi River and get into some serious soybean acres in the Midsouth. This insect usually outcompetes all other species in a field and can cause yield losses exceeding 50 percent when left unchecked.”

The species prefers legumes and uses kudzu plants and soybeans as primary reproductive hosts. It also feeds on other vegetable bean crops and can be found infesting numerous other plants it uses as transient hosts.

Luckily, insecticides can kill this species to minimize yield loss, ----- .

For other treatment recommendations, and to see a map of kudzu bug infestation, visit the Soy Checkoff Kudzu Bug Informational Guide.

Nested Association Mapping Project

"The Nested Association Mapping (NAM) project’s primary goal is to locate genes that control yield and seed composition, as well as other agronomic traits, so that those genes can be exploited to create better varieties more quickly.

“This genetic-mapping information will help soybean breeders become more efficient in selecting new soybean varieties with high yield and improved protein concentration,” says Brian Diers, who leads the project at the University of Illinois.

http://www.unitedsoybean.org/issue_entry/april-3/

Date: April 2013

6. Better Soybeans Developed Using Genome

"The checkoff funds four other projects in which researchers are using the mapped soybean genome to increase yield and create improved soy products for end users, including:

Generation study — This retrospective look at changes in the soybean genome is giving researchers at Iowa State University clues into what’s been responsible for continued yield improvement. Crossing two successful genotypes together creates varieties that are better than either of the parents. Over the 90 years that breeders have been developing improved soybean varieties, yield has increased approximately 0.33 bushel per acre, per year.

Resequencing — University of Missouri researchers are sequencing important soybean genotypes, to understand how they differ from Williams 82, the first soybean genome sequenced. As data is generated from many soybean varieties and genotypes, it will be easier to determine which genes control which traits, which is a helpful tool for plant breeders. This could help with plant development, disease resistance and seed quality. This project is jointly funded by USB, Bayer, Dow Agrosiences and Monsanto

Soybean Cyst Nematode (SCN) Resistance— Rhg1 is the most widely deployed resistance for SCN, and although genetic markers linked to Rhg1 were discovered more than a decade ago, the gene or genes responsible remained elusive. In late 2012, researchers at University of Wisconsin-Madison and University of Illinois demonstrated that not one but three genes are responsible for

SCN resistance. In addition, each of the three genes are present in 10 copies in the chromosomes of SCN resistant varieties. Using this information, coupled with the soybean genome, soybean breeders can incorporate Rhg1 more effectively into new germplasm, and researchers can develop better versions to push back against SCN populations that are gradually overcoming this gene.

Epigenetics — New technology, being used at the University of Georgia, measures soybean epigenetics, which is variation caused by nongenetic factors. Researchers are looking at this variation to determine how it contributes to soybean physical characteristics, also called phenotypes. Use of this knowledge could lead to developing higher-yielding soybeans.

http://www.unitedsoybean.org/issue_entry/april-3/

Date: April 2013

7. Animal Action

"The recent checkoff-funded Animal Agriculture Economic Analysis breaks down the economic value animal ag creates for U.S. soybean farmers, individual states and the national economy as a whole.

The study showed that the success of U.S. soybean farmers depends heavily on the success of animal farmers.

Animal agriculture is so closely tied to soybean farming that a significant blow to the animal ag sector would likewise deal a significant blow to U.S. soybean farmers. Last year, U.S. poultry, livestock and fish farmers used 97 percent of the domestic supply of U.S. soy meal."

"One big thing that we like to do is make farmers aware that the animal ag industry is their No. 1 customer," -----, "Once they know that, we think they'll find different ways to support poultry and livestock farmers in their communities, such as by supporting expansion of animal facilities near them."

The campaign, which launched in 2011, ultimately aims to persuade soybean farmers to take action in support of their customers whenever necessary, such as by improving soy quality to meet animal needs. Doing so can have a positive effect on farmer profitability."

http://www.unitedsoybean.org/issue_entry/november-2/

Date: November 2012

8. The Little Seed that Could Mean Big Things for US Soy

"High-oleic soybeans followed an extensive research timeline prior to becoming commercially available.

"For the high oleic varieties to advance in the research pipeline, they had to meet the same criteria as our elite commercial varieties

Monsanto and DuPont Pioneer both plan launches of this trait in limited markets, with Monsanto introducing Vistive® Gold and Pioneer selling their seed as Plenish™ high oleic soybeans.

Our varieties will come with our current traits, including Genuity® Roundup Ready 2 Yield® and defensive traits to help farmers fight SCN, phytophthora root rot, white mold and other diseases commonly found in soybean fields."

<http://www.unitedsoybean.org/article/the-little-seed-that-could-mean-big-things-for-u-s-soy/>

Date: April 5, 2013

9. Contracts Solidify Soy Industry Commitment to High Oleic

"In a history-making move, the soy checkoff has entered into agreements with DuPont Pioneer and Monsanto to help put high oleic soybean varieties into the hands of farmers across the U.S. soy-growing region.

The contracts call for each company, both of which hold high oleic patents, to roll out these varieties to farmers in additional maturity groups more quickly than they had originally planned. "Usually, you don't see seed-technology companies entering into agreements like this with their customers," said Jim Stillman, chairman of the United Soybean Board (USB) and a soybean farmer from Emmetsburg, Iowa. "These collaborations show how committed the soybean industry is to developing quality, high-yielding high oleic soybean varieties and to developing the markets for them."

The soy checkoff has set an aggressive goal of achieving 20-25 million acres planted to high oleic soybeans by 2023."

<http://www.unitedsoybean.org/article/contracts-solidify-soy-industry-commitment-to-high-oleic/>
Date: June 19, 2013

10. Checkoff Serves up an Appetizer for High Oleic Information

"Soy checkoff farmer-leaders will soon meet with food companies in an effort to boost U.S. soybean farmers' edible-oil market share, demand and, ultimately, their bottom lines.

The soy checkoff plans to conduct in-person meetings and demonstrations with food-company representatives to market high oleic soy oil, a promising new oil with no trans fats and better functionality than commodity soy oil.

Checkoff farmer-leaders and industry experts will educate companies on the advantages and benefits of high oleic so they will be more likely to use the oil when it becomes available.

The food industry remains the biggest customer of U.S. soy oil, consuming nearly 70 percent of U.S. soy oil produced in the United States each year."

www.unitedsoybean.org/article/checkoff-serves-up-an-appetizer-of-high-oleic-information/
Date: June 27, 2013

11. Perfecting the Soybean Line

"Determining the yield success of different soybean lines is a long, intensive process, and researchers are always looking for new ways to make breeding better varieties easier. Now, a new method may point the way to a more efficient soybean-breeding process.

Spectral analysis determines the level of photosynthetic activity occurring in a plant by measuring its reflectance of intercepted sunlight. The Kansas Soybean Commission helped fund a Kansas State University (KSU) study into utilizing spectral analysis to weed out low-yielding soybean lines."

"The most time-consuming, land-intensive and expensive aspect of our breeding program is harvesting the many thousands of early generation lines, weighing the seed and determining yield," says Bill Schapaugh, a KSU soybean breeder. "The goal of the study is to find out how effective this technology might be in predicting yields, stress tolerance and disease resistance as a way to eliminate unpromising lines early in the process."

Researchers used ground-based tools to record light reflectance data at various stages of the

soybean crop's life. They compared the data to overall yield success and found a correlation.

Because of the study's success, KSU plans to continue the research in hopes of perfecting the model."

<http://www.unitedsoybean.org/article/perfecting-the-soybean-line/>

Date: April 9, 2013

12. For Fields With High Yields

'Arkansas soybean yields are higher than the national average, but University of Arkansas doctoral student Ryan Van Roekel has research that shows farmers can do even better. Last year, Van Roekel achieved 115-bushel-per-acre yields in a test plot.

Van Roekel cautions against expecting 115-bushel yields, but he believes many farmers can use these five tips to boost their yields.

- 1. Plant Early** – In Van Roekel's test plots, soybeans planted in the first half of April had a better chance of success because podset will more likely correspond with the longest days of summer. Bonus: this method costs nothing extra.
- 2. Choose the Right Soybean Varieties** – Several criteria will lead farmers to water regarding variety selection. Be certain to consider each variety's traits with regard to the growing environment of your beans.
- 3. Control Pests against Current Value of the Grain** – There is a balance between yield loss and the costs of pest control. Farmers who seek maximum yield should take into account the current value of soybeans to find the real balance.
- 4. Intense Irrigation Schedule** – Van Roekel applied 26 inches of water, higher than average, with overhead sprinkler irrigation to one of his test plots.
- 5. Match Potassium Levels with Your Yield Goals** – If your yield goals are higher than 50 bushels per acre, increase your potassium applications. Soybeans need potassium!"

<http://www.unitedsoybean.org/article/for-fields-with-high-yields/>

Date: March 12, 2013

13. What's Next For Food Labels

Should foods containing biotechnology-enhanced ingredients be labeled?

In research conducted last year, the partially checkoff-funded Center for Food Integrity found that after given educational information, consumers surveyed not only have a greater understanding of biotech, but also a more positive attitude toward the science. The study also offered insight into which facts and messages, when shared with consumers, seem to matter to them most:

- Consumers have eaten billions of meals and snacks containing ingredients from genetically modified (GM) crops without any evidence of illness or harm.
- Leading health and medical organizations around the world agree that GM crops are safe to eat.
- The use of GM crops helps keep food affordable. "

<http://www.unitedsoybean.org/article/whats-next-for-food-labels/>

Date: May 8, 2013

14. Checkoff Partnerships Arm Farmers with Tools to Battle Weeds

"Right now, the International Survey of Herbicide Resistant Weeds says as many as 143 different species of weeds that stubbornly refuse to succumb to herbicides are growing in the United States. Worse yet, they're spreading.

According to the results of a recent soy checkoff survey, most U.S. soybean farmers consider herbicide-resistant weeds to be an issue that will have only a minimal effect on their profitability. Additionally, many farmers believe these weeds will require action in the future, but not now. The checkoff, however, considers herbicide-resistant weeds a major problem that merits immediate attention. In response, it has organized the *Take Action* program ----- .

The program, in collaboration with 15 land-grant universities and a half-dozen agriculture-technology companies, encourages farmers to develop more diverse weed-management plans to keep these weeds from spreading further.

"We can't rely on one input or one mode of action to effectively treat these weeds; we're way past that point," says Todd Gibson, a United Soybean Board (USB) director and soybean farmer from northwest Missouri. "Managing this issue will require farmers to adapt to new methods in the same way these weeds are adapting to survive our old methods."

The program encourages farmers to arm themselves with more weapons to wield against weeds, such as crop rotation, residual herbicides and multiple herbicide modes of action. These tools can help farmers manage herbicide-resistant weeds growing in fields already and prevent the development of new herbicide-resistant species.'

For further information go into this site and follow links to the Action Program and also videos available.

<http://www.unitedsoybean.org/article/checkoff-partnerships-arm-farmers-with-tools-to-battle-weeds/>

Date: July 2, 2013

15. Managing Glyphosate-Resistant Marestalk

"On the growing list of glyphosate-resistant weeds, marestalk (horseweed) lives near the top. With the ability to produce up to 200,000 seeds per plant, which can travel long distances, this weed has concerned soybean farmers for many years. To add to the problem, this weed has developed resistance to not only glyphosate, but other herbicides as well.

----- five tips to gain ground on this persistent weed:

1. Rotate crops.
2. Use spring, pre-plant tillage since marestalk does not easily survive tillage.
3. Use multiple burn-down applications – both fall and spring treatments.
4. Use full rates of residual herbicides in the spring.
5. Do not rely on glyphosate or 2, 4-D alone.

"Farmers need to do as much damage to marestalk before soybeans come out of the ground as possible. Once they come out of the ground, there are very few tools to use,-----".

<http://unitedsoybean.org/article/managing-glyphosate-resistant-marestalk/>

Date: July 5, 2013

16. Control Palmer Amaranth With Metribuzin

"Palmer amaranth plagues many U.S. soybean farmers, and its resistance to glyphosate makes controlling this weed an even greater challenge.

This leaves some farmers relying heavily on PPO inhibitors in both pre- and post-emergence herbicide applications. In order to avoid further resistance issues, reliance on PPO inhibitors must be reduced.

Metribuzin is a viable pre-emergence herbicide option for controlling Palmer amaranth, reducing the need for PPO inhibitors.

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17. Extreme Beans

"One of the soy checkoff-funded projects that resulted, which we've affectionately dubbed "The Kitchen Sink Project," set out to develop an overarching set of practical production recommendations for U.S. soybean farmers to help them in their quest to grow high-quality soybeans.

The project, which ran from 2009-2011, consisted of conducting research in multiple locations across several states to determine the impact of various combinations of inputs and agronomic practices on soybean yield and return on investment.

Scientists conducted the research in six states – Arkansas, Iowa, Kentucky, Louisiana, Michigan and Minnesota – with three locations in each. Researchers used their universities' recommendations and planted at what was considered the ideal time and season and selected soybean varieties suited for each location. Some plots were planted in no-till environments, while others were planted in conventional-tillage systems. The study used local systems, replicating what farmers in that area would normally do to grow their crop.

This year, a new phase of the project was approved by soy checkoff farmer-leaders. The project expanded to nine states and will utilize what we learned in the initial research, while taking the next steps toward providing the best possible recommendations to U.S. soybean farmers.

We're confident the results of the initial Kitchen Sink Project contained in this supplement will provide valuable information that you can use to improve your production practices as well as your farm's profit potential."

(Vanessa Kummer, Colfax, N.D., soybean farmer, United Soybean Board Chair)

Die onderstaande is enkele uittreksels van verslae oor die navorsing waarvan beknopte inligting onder drie punte hieronder gegee word .

Die bevindings behoort vir agronome en produsente van waarde te wees.

Die verslag kan verkry word deur in te gaan op;

www.usb-extremebeans.com

Rol af tot by die drie fasette : Inputs

Agronomics

Research & Education

en klik op " Read more" onder elk van die drie fasette om die kort verslag van elk te kry. Die eerste

twee gee bevindings van die 2009-2011 projek terwyl die derde meer toespits om die voortspruitende aspekte vir die 2012-2014 SOYA (Systematic Optimization of Yield-enhancing Applications) projek aan die hand van die 2009-2011 bevindings, te behandel.

The Soybean Input Payoff

"The "Maximum Yield Through Inputs" study of the United Soybean Board (USB)-funded Kitchen Sink Pro-ject was developed to shed light on which elements of an intensive soybean production system could help increase yields and economic returns to soybean growers in the Midwest and South. Basically, researchers decided to see what would happen if they threw "everything but the kitchen sink" at the crop and compared it to plots raised without the additional inputs. On the surface level, the three-year, six-state, research-plot study showed a 6.9-bu./acre difference in its most extreme comparison (see charts), between control plots planted on 30-in. rows and the high-input system on narrow-row soybeans (20 in. or less). However, because of its intricate design, the Kitchen Sink Project allows investigators to dig deeper into the variables that impact yield and economics. Some of the results surprised the researchers – and they're likely to surprise growers, too."

The Big Agronomic Change

"When on the road to higher yielding soybeans, it's wise for farmers to consider how the more physical aspects of soybean production – such as row spacing, plant population, tillage, light interception – play a important role beyond adding products. And there's a wide array of choices. The big news is that those choices are vital – the Kitchen Sink study found that fundamental agronomic practices may in fact deliver the greatest impact on yield and profitability."

Of all the variables in the Kitchen Sink study – all the chemistry and interactions and decisions that boosted yield – the most important one turned out to be row spacing.

"Some farmers are trying to add more inputs while at the same time, move away from narrow rows," he says. "They're basically moving from the control/narrow-row program to our high-input/wide-row program – so they're basically going downhill."

Kitchen Sink Research Expands

"High-input soybean production remains the focus. "The current states participating in the research provide better coverage across the U.S. soybean production range," says principal investigator Seth Naeve, agronomist at the University of Minnesota.

The research goal is to determine whether soybean varieties respond differently to inputs, or if all varieties respond similarly. "This study will help farmers to determine how to best optimize the performance of new high-yielding soybean varieties," Naeve says."

<http://usb-extremebeans.com/>

Date: 2013

18. Sustainability

"As more customers demand sustainably produced products, it's important for all soybean farmers to consider practices that will meet those demands for their farms."

<http://www.unitedsoybean.org/topics/sustainability/>

18.1 Be Proud of US Soy's Sustainability Performance

Different customers have different demands for U.S. soy, but one of the demands many of them have in common is soybeans grown in a sustainable manner. That's why the soy checkoff decided to demonstrate why it thinks U.S. soy and the farmers who grow it should already be considered sustainable.

The checkoff and other farmer-led U.S. soy organizations recently adopted the "U.S. Soy Sustainability Assurance Protocol," which outlines the regulations, processes and practices that define U.S. soy production as sustainable. A related guide (http://unitedsoybean.org/wp-content/uploads/USB_MessageGuide_Final_High_Com3.pdf) introduces farmers to the protocol and the information it includes (12 pages).

<http://www.unitedsoybean.org/article/be-proud-of-u-s-soys-sustainability-performance/>

Date: August 2, 2013

18.2 Three Things Customers Want to Know about Your Farm's Sustainability Performance

"As consumers discuss sustainability more and more, U.S. soybean farmers are looking for ways to measure their sustainability performance and a soy-checkoff-supported initiative can help.

----- the National Soybean Sustainability Initiative (NSSI) ----- how farmers must address the three pillars of sustainability in order to meet customers' expectations:

- **Social Aspects**, including human resources, waste management, recycling, community involvement and maintaining lands for farming.
- **Environmental Aspects**, including developing conservation plans, fertility management and water management.
- **Economic Aspects**, including cost of production and net returns, working with financial or business advisors, insurance and disaster plans, and farm succession.

"As we move forward, our goal is to identify the junction of all three pillars and move forward with those three elements together in order to improve the sustainability performance of U.S. production as a whole," says Conley.

The soybean sustainability tool can be found at www.coolbean.info. Within this site you can access the whole-farm assessment tool and the soybean-specific assessment tool, which includes soybean-production management practices such as weed, pest and disease management specific to soybeans. The NSSI is funded in partnership with the United Soybean Board, Illinois Soybean Association, Wisconsin Soybean Marketing Board and the National Initiative for Sustainable Agriculture (NISA).

<http://www.unitedsoybean.org/article/three-things-customers-want-to-know-about-your-farms-sustainability-performance/>

Date: July 18, 2013

19. Biodiesel

"Biodiesel helps drive demand for U.S. soy oil, which continues to serve as the primary feedstock for U.S. manufacturing of the beneficial renewable fuel. Biodiesel is the only domestically produced and commercially available fuel to meet the Environmental Protection Agency's definition of an advanced biofuel.

For the third year in a row, biodiesel production is projected to surpass 1 billion gallons, according

to the National Biodiesel Board (NBB). Thanks in part to the soy checkoff's efforts; U.S. biodiesel production has increased from nearly 500,000 gallons in 1999 to nearly 1.1 billion gallons in 2012. This is good news for consumers because the fuel represents an economic engine that has benefits for the environment. And consumers can rest easy knowing it won't affect their food costs. "Demand for biodiesel creates demand for soy oil, which, in turn, lowers the cost of soy meal and the price of rations for our poultry and livestock farmers," ----- helps lower prices consumers pay at the supermarket for meat, milk and eggs."

<http://www.unitedsoybean.org/article/biodiesel-production-beneficial-to-all/>
Date: July 31, 2013

19.1 Tractors Fuelled by Soy

"This summer, some of the massive power on display at National Tractor Pullers Association (NTPA) events will be fueled by 100 percent biodiesel, also known as B100.

The use of biodiesel in lower concentrations has long been allowed by the NTPA. This season, after a successful trial last year, the NTPA will allow it in all diesel classes. This authorization makes it official: After millions of miles of checkoff-funded testing, biodiesel stands up to the grueling challenges of a tractor pull."

<http://www.unitedsoybean.org/article/tractors-fueled-by-soy/>
Date: May31, 2013

19.2 Chevy Introduces Biodiesel-Friendly Cruze

"----- more and more cars have the capability to run on biodiesel, including the newly-unveiled Chevrolet Cruze.

Although its existence had been discussed for months, official details of the new Cruze, which runs on a 20 percent blend of biodiesel (B20), were released ----- . The light-duty diesel passenger car is expected to get an estimated 42 miles to the gallon on the highway. Chevrolet said that by using B20, the Cruze will be "the cleanest diesel passenger car ever produced by General Motors."

Many people do not realize that today's new-technology diesel engines powered by ultra-low-sulfur biodiesel blends provide tailpipe emissions as clean or cleaner than natural gas or gasoline, while providing superior fuel economy, horsepower, and durability," said Steve Howell, NBB technical director. "In addition, when you combine the increased-efficiency diesel engines with the low-carbon nature of an Advanced Biofuel like biodiesel, new-technology diesel engines are positioned to become the clean – and green – technology of the future, ----- .

<http://www.unitedsoybean.org/article/chevy-introduces-biodiesel-friendly-cruze/>
Date: May 30, 2013

20. Soybean Checkoff Research Database

"Soybean growers are investing in a wide array of research projects that focus on soybean production and developing new soybean uses. This database provides an overview of the soybean checkoff research program and a method to

search for soybean research projects of interest.

The Historical Research Information link provides background information on the soybean checkoff research program. The Executive Summary Report link provides an overview for the checkoff research program, and Soybean Research Links provides quick access to the Qualified State Soybean Boards."

<http://www.soybeancheckoffresearch.org/>
Undated.

American Soybean Association (ASA)

1. ASA Welcomes Senate Passage of Waterways Bill

"----- the Senate overwhelmingly passed the Water Resources Development Act (WRDA), a move cheered by the American Soybean Association (ASA), whose members rely on a healthy waterways infrastructure to move their soybeans to market.

“Improving and investing in our waterways infrastructure is vital to the U.S. soybean industry,” ----.

“With more than half of our crop exported, soybean farmers depend on an efficient transportation system to remain competitive in global markets. We face stiff global competition from many countries, and our ability to get our products quickly and efficiently to market is one of the aspects that sets our industry apart from those competitors.”

<http://soygrowers.com/asa-welcomes-senate-passage-of-waterways-bill/>

Date: May 15, 2013

2. ASA Welcomes Supreme Court Decision in Bowman v. Monsanto

"American Soybean Association (ASA) President and Canton, Miss.-based soybean farmer Danny Murphy welcomed the Supreme Court’s unanimous ruling today in Bowman v. Monsanto. The court’s 9-0 ruling expresses support for the protection of intellectual property.

“By ruling unanimously in favor of maintaining the integrity of intellectual property laws, the Supreme Court has ensured that America’s soybean farmers, of which Mr. Bowman is one, can continue to rely on the technological innovation that has pushed American agriculture to the forefront of the effort to feed a global population projected to pass 9 billion by 2050.

“Revolutions in seed science have enabled soybean farmers to produce more food, feed, fiber and fuel with significantly reduced strain on resources. Without the protection of intellectual property that the court reaffirmed today, the companies on whom my fellow soybean farmers and I rely would have no real incentive to make the investments necessary to develop new soybean varieties that yield more, resist disease, weeds, and pests, are drought tolerant, or have improved nutritional profiles.”

<http://soygrowers.com/asa-welcomes-supreme-court-decision-in-bowman-v-monsanto/>

Date: May 13, 2013

3. APHIS Decision on 2,4-D, Dicamba-Tolerant Traits an Unnecessary Barrier for Soybean Farmers

"Soybean farmers expressed their disappointment with today's announcement that the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (USDA-APHIS) will conduct a full environmental impact statement (EIS) on soybean, corn and cotton crops designed to tolerate the 2,4 dichlorophenoxyacetic acid (2,4-D) and Dicamba herbicides. The move could delay the introduction of new products containing these herbicide-tolerant traits to the market for an additional two to four years, according to industry sources.

Even in APHIS' own press release, the agency cites the sustained, safe use of 2,4-D since the 1940s and Dicamba since 1967.

Tools like 2,4-D and Dicamba-tolerant traits are critical to our mission as farmers, and for USDA to require an EIS without any scientific justification is troubling."

<http://soygrowers.com/aphis-decision-on-24-d-dicamba-tolerant-traits-an-unnecessary-barrier-for-soybean-farmers/>

Date: May 10, 2013

4. Tools like 2,4-D and Dicamba-tolerant traits are critical to our mission as farmers, and for USDA to require an EIS without any scientific justification is troubling."

"Key members of the U.S. agricultural value chain have joined together to applaud the work of the United States and like-minded governments to promote the importance of science-based regulations to facilitate trade of agricultural commodities derived from agricultural biotechnology.

In a joint statement, the United States was joined by the governments of Argentina, Australia, Brazil, Canada and Paraguay to announce their intention to work collaboratively to remove global barriers to the trade of agricultural biotechnology and promote science-based, transparent and predictable regulatory approaches."

<http://soygrowers.com/ag-organizations-applaud-six-countries-for-support-of-ag-production-technologies/>

Date: May 2, 2013

5. ASA Defends Checkoff, Voices Strong Opposition to DeMint Amendment

"In a letter to Senate Agriculture Committee Chairwoman Debbie Stabenow (D-Mich.) and Ranking Member Pat Roberts (R-Kan.), the American Soybean Association (ASA) joined agricultural stakeholder groups from all corners of the industry in expressing its firm opposition to an amendment to the 2012 Farm Bill that would make federal research, promotion and marketing programs—also called "checkoffs"—voluntary.

The checkoff is not a tax. It is not something that is imposed upon us as farmers. Rather, it allows farmers to invest our own dollars to conduct research, build markets and create new uses for soy,"---
----- "Our checkoff program has produced a strong return of \$6.40 in increased profit for every dollar invested."

With oversight provided by USDA, producers have taken it upon themselves to fund over \$905 million of research, promotion and consumer education programs annually through checkoff activities at no cost to the federal government,"

Since ASA worked to establish the checkoff in 1992, demand for U.S. soy has soared. In those two decades, ASA and the United Soybean Board, which directs checkoff funds, has worked hard for American soybean farmers and seen very positive results. In that time, the annual value of American-grown soybeans has more than tripled, exports have more than doubled, and soy

biodiesel has grown from simply a good idea to a 1 billion gallon industry, creating jobs and economic opportunities in rural communities."

<http://soygrowers.com/asa-defends-checkoff-voices-strong-opposition-to-demint-amendment/>

Date: June 14, 2012

US Soybean Federation (USSF)

1. The U.S. Soybean Federation

"Created by the Minnesota Soybean Growers Association and the Missouri Soybean Association, the sole mission of the U.S. Soybean Federation (USSF) is to represent the voice of U.S. soybean farmers through advocacy and policy.

The USSF will primarily be made up of existing state soybean associations and new state soybean federations. As opposed to the ASA, USSF will not serve as a member organization, but instead work to focus and coordinate the representation of U.S. soybean farmers on Capitol Hill.

One of the most important features of this new organization is that every state affiliate will have equal representation."

This Question and Answer article give more information on the USSF. A few important facts are:

- Our mission in forming USSF is quite simple: to create an organization that is solely focused on policy and advocacy that best represents U.S. soybean farmers. We will have no other objectives to distract us.
- USSF is a federation comprised of multiple state associations and federations with a sole focus on advocacy and policy development. ASA offers additional membership services and educational opportunities.
- We anticipate having a very strong and productive working relationship with USB. Our organization is supportive of the current national checkoff program and its volunteer farmer-leaders appointed by the U.S. Secretary of Agriculture to oversee checkoff investments.
- The USSF was created by soybean farmers in Minnesota, Missouri and Mississippi who believe in the importance of an organization that is solely dedicated to serving the best interests of U.S. soybean farmers through policy and advocacy."

<http://mosoy.org/msa/ussf/>

Date: 2013

2. Soy Products Guide

"Soy offers manufacturers a greener, cleaner and safer way to make everything from candles and couches to fuels and paints. This interactive guide will give you a closer look at the soy-based products available today

"The Soy Products Guide is an online catalog produced by the United Soybean Board that identifies commercially available industrial soy products and ingredients for consumers and businesses."

To obtain this Guide go to <http://soynewuses.org/soy-products-guide/>

<http://mosoy.org/soy-products-2/biobased-products/>

Date: 2013

Results from Research by the USDA-ARS, Beltsville, Maryland

1. Agricultural Research Services

The Agricultural Research Service (ARS) is the U.S. Department of Agriculture's chief scientific in-house research agency. Here are a few numbers to illustrate the scope of our organization:

- 800 research projects within 18 National Programs
- 2,200 scientists and post docs
- 6,200 other employees
- 90+ research locations, including overseas laboratories
- \$1.1 billion fiscal year budget

<http://www.nano.gov/node/811>

Date: 2013

2. New Partnership Furthers USDA ARS Research Efforts

Nine economic development organizations form the new Agricultural Technology Innovation Partnership Foundation

"Nine technology-based economic development organizations from across the U.S. have joined forces to form the Agricultural Technology Innovation Partnership Foundation, which will facilitate public-private research and technology licensing partnerships, and promote USDA Agricultural Research Service research.

The ATIP Foundation will receive USDA requests to develop public-private collaboration on two specific initiatives: land management practices to sustain soil health for producing food, feed, fiber and biofuels; and improving food and public health, specifically translating nutrition research results to the food supply to combat obesity.

The Foundation will assist in the formation of partnerships between government, industry and academic research and development. Similarly, the ATIP Foundation will approach the USDA with private sector research needs to seek the expertise of the USDA's science and technology agencies. In January 2013, the ATIP Foundation's members appointed Richard Brenner, Ph.D., as Director. Brenner's role is to coordinate activities of the member organizations in planning regional events to deliver solutions to the agricultural sector, and to develop outreach strategies for the private sector.

http://farmfutures.com/story-new-partnership-furthers-usda-ars-research-efforts-0-96928-spx_0

Date: April 8, 2013

"This Foundation represents a new model for enhancing economic sustainability and U.S. competitiveness through public-private partnerships capitalizing on federal scientific research." The ATIP Foundation is a 501(c)(3) non-profit entity with offices in Arlington, Texas, and member offices in eight states. It is governed by members comprised of its founding economic development organizations -----

Each member of the Foundation also has a separate agreement with ARS.

"ARS scientists look forward to working with the ATIP Foundation and its member organizations to enhance transfer of important research results and technology to private use ----- .

For more information on the ATIP Foundation and its members, visit www.atipfoundation.com.

http://farmfutures.com/story-new-partnership-furthers-usda-ars-research-efforts-0-96928-spx_1

Date: April 8, 2013

3. New USDA-ARS Study Finds Big Improvements in Breakfast Cereals: Whole Grains as Key Ingredient; More Fiber, Less Sugar and Sodium

Major Manufacturers, including General Mills, Answer Public Health Needs, Demand for Better-for-You Products

"New research from the U.S. Department of Agriculture (USDA) Agricultural Research Service (ARS) published in the second issue of *Procedia Food Science* shows the nutrition profile of ready-to-eat cereals has markedly improved, according to data collected between 2005-2011.¹ The study found that whole grain is now a key ingredient in two-thirds of cereals made by leading ready-to-eat cereal manufacturers, ----- .

According to the U.S. Dietary Guidelines, Americans are falling short when it comes to whole grain.² Health benefits of eating adequate amounts of whole grains include healthier body weight and, potentially, protection against cardiovascular disease and type 2 diabetes.²

"The 2010 Dietary Guidelines for Americans recommend making half of your grains whole grains, which for most people is at least 48 grams of whole grain every day ----- .

In addition to whole grains, supermarket shoppers----- will find more fiber and less sugar and sodium than they did seven years ago. Fiber in breakfast cereals increased 32 percent on average, while sugar and sodium decreased on average 10 percent and 14 percent, respectively.

For more information on the study, visit the USDA ARS website.

<http://www.prnewswire.com/news-releases/new-usda-ars-study-finds-big-improvements-in-breakfast-cereals-whole-grains-as-key-ingredient-more-fiber-less-sugar-and-sodium-210156111.html>

Date: June 4, 2013

4. SoyBase, the USDA-ARS soybean genetics and genomics database

SoyBase, the USDA-ARS soybean genetic database, is a comprehensive repository for professionally curated genetics, genomics and related data resources for soybean. SoyBase contains the most current genetic, physical and genomic sequence maps integrated with qualitative and quantitative traits. -----

SoyBase can be accessed at <http://soybase.org>.

<http://www.ncbi.nlm.nih.gov/pubmed/20008513>

Date: January, 2010

5. USDA-ARS Research

Uiteraard is die navorsing van die "USDA-ARS" omvangryk en kan die huidige projekte waar sojabone by betrokke is, gevind word by:

Search at: USDA-ARS

Click on: "Research"

Click on: Either of "research project"/ "Search for an ARS Project"/ "Find Research Projects"

Click on: "Search" under "Find ARS Research Projects"

Type in : 'Soybeans' against 'Criteria'

Click on: "Go"

(Alternatively: click on Keyword , Scroll down to Soybean and click on it:)

View list of project titles

Click on any project title to obtain Objective and Approach of the particular research project.

(There appear to be some inaccuracies present in the information on these lists)

<http://www.ars.usda.gov/Research/Research.htm>

Date : Various dates are given

6. Publications

Publications of the USDA-ARS can be obtained by going in on USDA-ARS (or Research ARS), go to Research, to Products and Services, to Publications, to TEKTRAN, type in "soybeans" into the window "Search for", click on Search and view list of publications – 317 in total on 23/8/2013 and unsorted datewise.

<http://www.ars.usda.gov/services/TekTran.htm?criteria=soybeans&field=all&search.x=0&search.y=0>

Date: Last modified 08/23/ 2013

National Institute of Food and Agriculture (NIFA)

1. NIFA: future of agricultural research

"Launched in early October, the new National Institute of Food and Agriculture carries the hopes of many: hope that NIFA will find answers to increasingly daunting questions about feeding the world, hope that agricultural science will attain the status in the United States that it deserves, hope that the institute will streamline funding for agricultural research. "

<http://deltafarmpress.com/nifa-future-agricultural-research>

Date: October 29, 2009

Hoewel op hierdie wyse (webstudieverlag) slegs vanaf 2012 oor NIFA verslag gedoen word, is dit van waarde om die agtergrond en motivering vir die totstandkoming daarvan in 2009 te verkry. Bogemelde paragraaf gee die kern daarvan weer en meer volledige agtergrond kan uit die bovermelde webwerf verkry word.

2. The Oomycete-Soybean Coordinated Agricultural Project (CAP)

"----- is a community, transdisciplinary effort of 29 co-project directors at 17 institutions. The Department of Plant Pathology, Physiology, & Weed Sciences at Virginia Tech is the lead institution. Brett Tyler is the Project Director.

The project is funded by the the Agriculture and Food Research Initiative (AFRI) of the National Institute of Food and Agriculture (NIFA), an agency within the U.S. Department of Agriculture (USDA).

Losses to oomycete pathogens on soybean, such as *Phytophthora sojae* and *Pythium* species, have quadrupled in the past 10 years to an estimated \$500 million.

The goal of this project is to take our knowledge of the biology of oomycete pathogens, especially *P. sojae*, to create new disease management technologies that integrate with current practices to improve the sustainability of soybean production and other crop plants in the US.

<http://www.oscap.org/>

Date: Updated May 20, 2013

2. United States Government Accountability Office (GAO)

Report to the Chairwomen, Committee on Agriculture, Nutrition and Forestry, US Senate Agricultural Research

Why GAO Did This Study

The USDA's principal research agencies ARS and NIFA, play a key role in supporting agricultural science and questions have been raised about the extent to which the two agencies may be performing duplicative research and whether the agencies collaborate in planning research.

In this context, GAO was asked to assess how these agencies ensure the efficient use of their resources for research.

What GAO Recommends

GAO recommends , among other things, that ARS issue guidance that project information be provided to CRIS on a quarterly basis and that ARS and NIFA enhance collaborative planning. USDA generally agreed with GAO's findings-----.

<http://www.gao.gov/assets/660/653752.pdf>

Date: April 2013

Developments at the Committee on New Usages of the USB

1. Soy Products Guide

Download the Latest Soy Products Guide. (2013)

<http://soynewuses.org/soy-products-guide/>

"This online catalog is produced year-to-year to help consumers and businesses identify commercially available industrial soy products and ingredients. The listed products contain soy in some form, though some may also contain petrochemical-based or natural-gas-based ingredients. This online directory also provides an opportunity to list additional products or companies. For requests to be added to this guide or to order a hard copy, contact Deborah Dugan at Deborah.Dugan@osbornbarr.com.

(Indemnification:

"This guide is provided for informational purposes only. The United Soybean Board does not endorse any of the products shown or the companies that produce them. The United Soybean Board does not make any representations regarding product safety or performance or the accuracy of any of the information in this guide. All information in the guide has been provided by soy product manufacturers and has not been verified".)

Die produkte in die aanlynkatalogus is ingedeel in die drie groepe soos hieronder, waaronder by elk die spesifieke produkte met inligting oor die onderskeie handelsmerke en die verskaffers daarvan met hul kontakbesonderhede.

Consumer products	(28 types	(last year 21))
Industrial products	(22 types	(last year 14))
Ingredients and Intermediates	(9 types	(last year 9))

<http://soynewuses.org/soy-products-guide/>

Date: 2013

2. Checkoff Helps Bring 45 New Soy-Based Products to Marketplace

"Soybeans are a very versatile crop that can help meet the world's needs for food, feed, fuel – and 45 new products brought to the marketplace this year with the help of the soy checkoff.

This year's list includes new additions to some popular soy-based product categories, such as foam, candle wax and elevator fluids. But it also includes products in some completely new categories like paintballs, gel mattress filling and nail-polish remover.

Industrial demand, including biodiesel manufacturing, is on a steep upward trend. In the last 10 years, industrial uses for soy have grown almost fivefold.

Manufacturers use soy oil as a replacement for petrochemicals to make their products more renewable and more environmentally friendly while maintaining or, in some cases, exceeding performance. Soy products are often more biodegradable and contain fewer volatile organic compounds (VOC) than traditional products.

The new soy-based products introduced in 2012 as a result of soy checkoff support include the following:

PLASTICS

BetaFoam™ Renue – new cavity-sealing foam made with 25 percent renewable soy oil – Dow Automotive Systems

AGROL® Prime, Star, Platinum and AO+ – four new soy-based polyurethane products from BioBased Technologies®, LLC. – **Prime** is slated for flexible slabstock formulations

Soypex™ 100 – soy-based replacement of paraffin wax for candles – Galata Chemicals, Inc.

Drapex® Alpha – a primary biobased plasticizer as a replacement for phthalate plasticizers in polyvinyl polymers – Galata Chemicals, LLC

reFlex™ 100 – a biobased plasticizer as a replacement for phthalate plasticizers based on Battelle Institute technology and developed with ADM and the PolyOne Corporation, this product has been recognized by the USDA Biopreferred program and given a 94 percent biobased label

Impact Gel™ – use of epoxidized soy oil to produce an impact gel for a variety of bedding applications – Impact Gel® Corporation

VikoFlex™ 7010 – phthalate-free soy-based plasticizer – Arkema, Inc.

InnoGreen™ Polyurethanes – a new family of 30-40 percent soy-based polyurethane cast elastomer systems – Innovative Polymers, Inc.

COATINGS /PRINTING INKS/SOLVENTS

Soy Paint and Soy Stain & Varnish – used for creative art products – formulated by New Century Coatings and sold by Delta Creative, Inc.

Beckosol™ AQ – family of soy-based alkyd latex resins to be used in architectural paints and road markings – Reichhold Chemicals

Ultimate Polyurethane – soy acrylic/polyurethane clear coat for interior wood applications – Rust-Oleum

G.E.T. Biobased Mastic – soy-based zero VOC roof mastic – developed by Niemann & Associates for Green Eagle Technologies, LLC.

RAP 4 Eco Friendly Field Paintballs – soy oil to partially replace polyethylene glycol in paintballs – Real Action Paint Ball, Inc.

Soyanol™ – soy-based plasticizer for waterborne acrylics – Soy Technologies, LLC

Soyanol™ Cuticle Oil – soy-based product that is part of a healthy treatment system for nails – Soy Technologies, LLC

Soyanol™ 1000E – soy-based additive for paints and coatings – Soy Technologies, LLC

Lead Out™ – soy methyl ester-based paint stripper for safe lead paint removal – Franmar Chemical, Inc.

Soyanol™ NPR-6 – soy-methyl-ester-based nail polish remover – Soy Technologies, LLC

Soyanol™ 5000X-TB – soy-methyl-ester-based stain and paint thinner – Soy Technologies, LLC

Timber OXGreen™ – soy-based wood stain – Timber Ox, Inc.

Greenway™ – soy-methyl-ester-based printing ink cleaner for UV and air-dried inks – Franmar Chemical, Inc.

Green Again™ – soy-methyl-ester-based printing screen wash for textile inks – Franmar Chemical, Inc.

Versagen™ 100 – methyl soyate industrial solvent – Griffin Industries, LLC

Versage™ 100-D – distilled low-color methyl soyate industrial solvent – Griffin Industries, LLC.

ADHESIVES

TRANSFORM™ – soy-based wood for fabricating building products such as furniture – e2e Materials®

EMERGING INDUSTRIAL OPPORTUNITIES

Industrial Grade Propylene Glycol – for use in antifreeze and as a chemical intermediate for plastics, coatings, etc. – Evolution Chemicals from ADM

USP Grade Propylene Glycol – for use in food and pharmaceuticals – Evolution Chemicals from ADM

EAS™ – sulfate-enhanced soy-oil-based substrate for groundwater bioremediation – EOS Remediation, LLC

VOST™ – soy-oil-based bioremediation substrate for soils – EOS Remediation, LLC

EOS XR™ – emulsified soy oil extended-release substrate for groundwater bioremediation – EOS Remediation, LLC

BioPCM™ – mats filled with hydrogenated soy oil that store and release energy slowly – Phase Energy Solutions

AgriTech® Soy Based Elevator Fluid ATSO268 – Bunge North America

AgriTech® Soy Based Elevator Fluid ATSO232 – Bunge North America

ZEP® Professional Penetrating Lubricant – ZEP® Superior Solutions

Bio-Blast™ Penetrating Lubricant – Renewable Lubricants, Inc.

Bio-Extreme™ HT – an oven/chain lubricant – Renewable Lubricants, Inc.

Bio-Air Tool™ Lube, ISO 32 – Renewable Lubricants, Inc.

Sprayon® CD™ 406 Eco-Grade™ Soy Degreaser – Sprayon®

Tri-Flow® Superior Soy™ Lubricant – a bicycle lubricant – Tri-Flow Lubricants

Biokleen™ Soy Lube SL-100 – a household lubricant – Bi-O-Kleen Industries, Inc.

Nutek Green Simply Soy™ Lubricating Cloth Wipes Canister – BET-0020 – Nutek® Green

<http://www.unitedsoybean.org/article/checkoff-helps-bring-45-new-soy-based-products-to-marketplace/>

Date : December 18, 2012

To obtain more information on many of these products go to: <http://www.soynewuses.org/biobased-solutions-newsletter/> and follow the links.

3. Biobased Stakeholders Convene to Discuss Opportunities for Market Growth

"Last month, the United Soybean Board (USB) and Michigan Soybean Promotion Committee hosted a Biobased Products Stakeholders' Workshop at the Ford Research and Innovation Center in Dearborn, Mich. The event gathered leaders in business, government and academia to discuss future opportunities for growing the biobased products market in the American economy.

----- said U.S. Secretary of Agriculture Tom Vilsack. "Through a strong biobased economy, America can out-build and out-innovate the world, and we'll create more jobs across our nation that can't be shipped overseas. We know that committed support for the growing biobased economy is key to strengthening economic growth and opportunity."

"For information about new uses for soy in the development of biobased products, including a catalog of soy products and target markets, visit USB's website www.SoyNewUses.org."

<http://soynewuses.org/biobased-solutions-newsletter/biobased-stakeholders-convene-to-discuss-opportunities-for-market-growth/>

Date: September 2012

4. Find Products

"To help you find biobased products, the United Soybean Board is building an online library of

information on soy biobased products. "

Go to: <http://www.soybiobased.org/products/> and follow the leads and select out of the following main types of products:

- Building Operations
- Cleaning Supplies
- Construction & Renovation
- Facility & Grounds Maintenance
- Fleet Maintenance
- Food Service Operations
- Furniture
- Office Supplies

<http://www.soybiobased.org/products/>

Date : 2013

5. New biobased product categories announced for preferred Federal procurement

"Agriculture Secretary Tom Vilsack announced the proposed addition of 12 biobased product categories for Federal procurement preference this summer.

Eligible categories, with soy-based products currently on the market, include:

- asphalt and tar removers
- asphalt restorers
- candles and wax melts
- inks
- pneumatic equipment lubricants
- and wood and concrete stains "

<http://soynewuses.org/biobased-solutions-newsletter/new-biobased-product-categories-announced-for-preferred-federal-procurement/>

Date: 2013

1. Vistive Low Linolenic Soybeans

"Benefits of Vistive low-linolenic soybeans include:

- **For Farmers:** Vistive low-lin soybeans offers farmers the opportunity to help build a premium market, while helping to make food healthier. By supplying food companies with low-linolenic soybean oil, farmers earn premiums of 50 to 60 cents per bushel.
- **For Processors:** Processors who store, refine and sell Vistive low-lin soybean oil have the opportunity to supply a growing list of major food companies, such as KFC®, Kellogg's® and Ventura Foods®, with the ingredients to help produce healthier food in response to consumer demand.
- **For Food Companies:** The U.S. Food and Drug Administration has mandated *trans* fat content of food must be labeled. By using oil from Vistive low-linolenic soybeans, food companies can reduce or eliminate *trans* fat from their products—and show zero or lower *trans* fat on food labels.
- **For Consumers:** With farmers growing Vistive products, consumers benefit from a consistent, reliable supply of better-for-you-oils that can be used in the foods they already enjoy every day.

To learn more about Vistive low linolenic soybeans, visit www.Vistive.com

2. Vistive Gold Soybeans

Currently in Phase IV of Monsanto's R&D Pipeline

"With dietary recommendations calling for consumers to reduce their saturated fat intake and minimize *trans* fat intake, many consumers have abandoned fried or baked foods altogether. Because of its composition, Vistive Gold soybean oil does not need to be hydrogenated, the process that creates *trans* fats. This ability to bypass hydrogenation means oil from Vistive Gold soybeans eliminates or reduces *trans* fats and saturated fat content of fried and baked foods, allowing consumers to enjoy more of the foods they love.

Frying tests done with chicken and French fries have shown no change in taste or texture while delivering all the benefits of an improved cooking oil, including reduced saturated fat and zero *trans* fat.

See what nutritionists, farmers and dieticians have to say about the benefits of Vistive Gold soybeans. (*Look at video at address below*)

"Industrial Uses

The oil produced from Vistive Gold soybeans also has potential for industrial uses, such as a biosynthetic oil that could be used in the automotive and industrial lubricant industries.

Monsanto recently announced license and supply agreements with Biosynthetic Technologies, LLC that expand the market opportunity for Vistive® Gold soybean growers. Biosynthetic Technologies developed a new class of biosynthetic oils that match or exceed the performance characteristics of the highest quality petroleum-based oils currently used in the automotive and industrial lubricant sectors. Biosynthetic Technologies developed these oils in collaboration with U.S. Department of Agriculture scientists."

<http://www.monsanto.com/products/Pages/vistive-gold-soybeans.aspx>

Date: 2013

3. Stearidonic Acid (SDA) Omega-3 Soybeans

Currently in Phase IV of Monsanto's R&D Pipeline

"Science has shown consuming more long-chain fatty acids, such as omega-3s, can help support a

healthy heart. But American's only consume about 25% of recommended levels of omega-3s. SDA omega-3 soybeans will answer the call. These soybeans have been enriched with stearidonic acid (SDA), which the body converts to heart-healthy eicosapentaenoic acid (EPA), one of three omega-3 fatty acids used by the body. "

Learn More about SDA Omega-3 Soybeans

How Omega-3 Works in the Body

Consumers have been challenged to eat more fish and other foods with high levels of heart-healthy omega-3s. Now, soybeans may become a valuable source of omega-3. Soy oil is renewable, stable and easy to consume.

Omega-3 fatty acids are considered essential fatty acids, which means they are essential to human health but cannot be manufactured by the body. For this reason, omega-3 fatty acids must be obtained from food. The challenge is omega-3 is not present in most of the foods we eat on a daily basis, and the food processing industry has had difficulty finding omega-3 supplements that don't interfere with taste while still meeting industry standards for shelf life.

Three major omega-3 fatty acids are ingested through foods and used by the body:

- alpha-linolenic acid (ALA)
- eicosapentaenoic acid (EPA)
- docosahexaenoic acid (DHA)

Once eaten, the body converts ALA to heart-healthy omega-3s, including EPA, and to a smaller extent DHA. These are the two types of omega-3 fatty acids most readily used by the body.

However, the conversion of ALA to EPA (and then to DHA) is very inefficient, and only a small percentage of ALA consumed is made into the beneficial omega-3s.

Currently, omega-3 fatty acids can be found in fish and certain plant oils. ALA is found in plant sources including flax, walnuts and canola oil. EPA and DHA are found in fatty fish, like salmon, sardines and tuna.

Monsanto has developed soybeans that provide oil enriched in the omega-3 fatty acid called stearidonic acid (SDA).

SDA is more efficiently converted by your body to EPA than current plant sources (ALA) because it bypasses a step in the conversion process. SDA can also be easier to work with than fish oil (EPA and DHA).

Omega-3 fatty acids have shown to be beneficial at various life stages and with several health conditions. The FDA has recognized the importance of omega-3 fatty acids, stating that while they're not essential to the diet, scientific evidence indicates they may be beneficial in reducing coronary heart disease.

In addition, for a healthy person the American Heart Association recommends two servings of fatty fish a week, which provides approximately 500 mg of EPA and DHA a day. For a person with coronary heart disease one gram a day is recommended.

The supply of wild fish is decreasing, and the world population increasing. People are already not getting enough omega-3s, so the gap is growing even greater.

The current source of omega-3, fish oil, doesn't always lend itself well to food processing and can be expensive to add to food.

SDA soybeans will result in a wider range of foods enriched in omega-3s than what is currently on the market, while providing improved flavor stability, which is key to shelf-life.

Monsanto has incorporated SDA soybean oil into several different food products, including salad dressing, beverages and snack bars, creating prototypes using the SDA soybeans.

<http://www.monsanto.com/products/Pages/how-omega-3-works.aspx>

Date: 2013

**Clinical Study: SDA-Enriched Soybean Oil –
An Effective Means of Enriching the Body with Heart-Healthy Omega-3 Fatty Acids**
(Some extracts from the report on research done at the University of South Dakota)

"The omega-3 index

The omega-3 index is a marker for omega-3 tissue content in red blood cells. A person's omega-3 index is the sum of EPA and DHA fatty acids as a percentage of the total fatty acids in the red blood cells

2. The omega-3 index has been shown to reflect EPA and DHA levels in the human heart, where they may be effective in preventing ventricular arrhythmia

3,4,5. The omega-3 index can be as high as 20% in some populations, but the usual range is from 3% to 10%. Higher omega-3 indexes have been associated with a reduction in risk for sudden cardiac death

6,7. and evidence suggests even a modest change from 4% to 5% could have a significant impact on saving a person's life

8. Because of this, the omega-3 index has been proposed as a novel and independent risk factor for sudden cardiac death."

The article concluded: "It is reasonable to conclude, therefore, that raising tissue levels of EPA can reduce risk for coronary heart disease.

Therefore, SDA soybeans may provide food formulators a nutritious, sustainable supply of omega-3-containing oil with the stability properties of soybean oil. The introduction of SDA-enriched soybean oil may provide a dietary source of heart healthy omega-3 fatty acids without the taste and supply limitations currently encountered with fish oil."

<http://www.monsanto.com/SiteCollectionDocuments/sda-omega3-index-study.pdf>

Date: After 2002

Aktiwiteite van Saadmaatsappy

1. Monsanto

1.1 Soybean Seed

"Monsanto's soybean portfolio includes the following products:

1.1.1 Genuity® Roundup Ready 2 Yield® Soybeans

Monsanto's second-generation soybean technology that is the platform for future traits. Genuity Roundup Ready 2 Yield soybeans allow for increased yield potential and the continued weed control -----."

Monsanto's second-generation trait technology for soybeans has been planted on more than 50 million acres in its first four years on the market. In 2013, Monsanto expects 39 to 41 million soybean acres to be planted with the Genuity Roundup Ready 2 Yield trait.

In its fourth year of deployment in 2012, Genuity® Roundup Ready 2 Yield® products extended their yield advantage versus competitive first-generation Roundup Ready® soybeans, achieving a more than 4.5-bushels-per-acre national yield advantage

Genuity Roundup Ready 2 Yield soybeans provide farmers the same proven benefits of Roundup Ready® soybeans – combined with the only soybean trait that has the primary benefit of additional yield opportunity.

Genuity® Roundup Ready 2 Yield® trait technology is the base for future Monsanto biotech traits, including Intacta RR2 PRO™ to be launched in South America and Roundup Ready 2 Xtend™ soybeans, and breeding traits like Phytophthora Root Rot resistance.

Intacta RR2 PRO soybeans and Roundup Ready 2 Xtend soybeans are pending regulatory approvals.

Genuity Roundup Ready 2 Yield soybeans are available to farmers in the United States and Canada."

<http://www.monsanto.com/products/Pages/genuity-roundup-ready-2-yield-soybeans.aspx>

1.1.2 Vistive® Soybeans

"Responding to the growing demand for healthier diets, Monsanto's new Vistive low-linolenic soybeans can reduce or virtually eliminate trans-fatty acids (trans fats) in processed soybean oil. ----- as the Food and Drug Administration's regulation requiring food manufacturers to list *trans* fat on the nutrition facts panel of foods effective Jan. 1, 2008 grew closer, the food industry searched for solutions.

In 2005, responding to the growing demand for healthier diets, Monsanto launched Vistive® low-linolenic soybeans, the first in a pipeline of products intended to bring improved oils to the market. The oil from these beans can reduce or virtually eliminate *trans* fat in processed soybean oil. And soybean oil makes up 68% of the vegetable oils and fats people consume in the U.S.

Vistive low-linolenic soybeans have lower levels of linolenic acid. Because of these lower levels, which were achieved through traditional breeding practices, the oil produced by Vistive low-linolenic seeds does not require hydrogenation, the process that is used to increase shelf life and flavor stability in fried foods, baked goods, snack products and other processed foods.

Unfortunately, hydrogenation creates *trans* fat. Trans fat is linked to heart disease, because it lowers HDL (good) cholesterol while raising LDL (bad) cholesterol.

1.1.3 Vistive® Gold Soybeans

(Currently in Phase IV of Monsanto R&D Pipeline)

"The *Vistive*[®] *Gold* trait, formerly known as *Vistive*[®] *III*, now have the potential to deliver benefits as a food ingredient and as an industrial use. For food companies, Vistive Gold soybeans deliver a trans fat free and reduced saturated fat soybean oil, while also providing increased stability for food manufacturers' frying and baking applications.

As an industrial use, Vistive Gold soybean oil has the potential to be a feedstock for an entirely new class of bio-based synthetic oils that match or exceed the performance characteristics of the highest quality petroleum-based oils currently used in the automotive and industrial lubricant sectors.

Building off the success of Vistive[®] low linolenic soybeans, Vistive Gold soybeans take farmers and the food industry one step further:

- **For Farmers:** Along with SDA Omega-3 soybeans, Vistive Gold soybeans represent one of the first biotech products that enable farmers to help bring nutrition benefits to consumers – while growing a high-yielding soybean.
- **For the Food Industry:** A solution to cost-effectively eliminate *trans* fats and significantly lower saturated fat content in foods without sacrificing flavor quality.

1.1.4 Stearidonic Acid (SDA) Omega-3 Soybeans

SDA Omega-3 soybeans have been enriched with stearidonic acid (SDA), which the body converts to omega-3 fatty acids. This collaboration between Monsanto and DSM Nutritional Products will result in a broader omega-3 portfolio for development of new products that food companies can use to bring omega-3 health benefits to consumers."

<http://www.monsanto.com/products/Pages/soybean-seeds.aspx>

Date: 2013

1.2 DSM and Monsanto to commercialize soybean oil rich in omega-3 SDA. But will anti-GMO sentiment hinder its progress?

Monsanto has joined forces with DSM to commercialize a genetically engineered soybean oil rich in the omega-3 fatty acid SDA (stearidonic acid) that can offer a more cost-effective means of adding omega-3s to foods without the flavor, stability and shelf-life issues associated with fish oil.

<http://www.foodnavigator-usa.com/Suppliers2/DSM-and-Monsanto-to-commercialize-soybean-oil-rich-in-omega-3-SDA.-But-will-anti-GMO-sentiment-hinder-its-progress>

Date: April8, 2013

1.3 Regulatory Approval For Intacta RR2 PRO[™] Soybeans, Setting Up Commercial Launch in Brazil

With China Approval and Commercial Launch, Intacta RR2 PRO[™] Soybeans Expected to Become Core Growth Driver Within Monsanto's Next-Generation Soybean Platform

Monsanto Company's first technology developed specifically for an international market, Intacta RR2 PRO[™] soybeans, has received official approval from China's Ministry of Agriculture.

With this approval, Monsanto will now begin commercial preparation for the full-scale launch of Intacta RR2 PRO[™] soybeans in Brazil for the upcoming crop season.

Intacta RR2 PRO[™] soybeans are expected to become one of the cornerstone products in Monsanto's next-generation soybean platform. The technology represents one of the most significant growth drivers in its global portfolio, and it is estimated that it could deliver benefits to farmers in more than 100 million acres across South America.

Intacta RR2 PRO[™] soybeans offer three distinct benefits for growers: increased yield potential; protection against major pests that attack soybeans – velvetbean caterpillar, soybean looper, bean

shoot borer, bollworm, corn stalk borer and Helicoverpa; and tolerance to glyphosate herbicide. "
<http://monsanto.mediaroom.com/2013-06-17-Monsanto-Company-Receives-Final-Key-Regulatory-Approval-For-Intacta-RR2-PRO-Soybeans-Setting-Up-Commercial-Launch-In-Brazil>
Date June 17, 2013

1.4 Supreme Court Supports Monsanto in Seed-Replication Case

"The Supreme Court ruled unanimously on Monday that farmers could not use Monsanto's patented genetically altered soybeans to create new seeds without paying the company a fee. The ruling has implications for many aspects of modern agriculture and for businesses based on vaccines, cell lines and software. But Justice Elena Kagan, writing for the court, emphasized that the decision was narrow. "

<http://www.nytimes.com/2013/05/14/business/monsanto-victorious-in-genetic-seed-case.html>
Date: May 13. 2013

1.5 How Does Weed Resistance Develop?

"Herbicides used in modern agricultural systems enable farmers to manage most weeds across vast acreages.

However, changes can occur in response to herbicide use and other management decisions. Changes in weed populations begin when a small number of plants within a species, called a "biotype," have a distinct genetic makeup that allows them to tolerate a particular herbicide application. Multiple weed biotypes can exist in a single field.

As a grower continues to use a particular herbicide without any other herbicide modes of action, or doesn't use any other cultural practices, the resistant biotype continues to survive and produce seed. Subsequent populations of the resistant biotype will continue to increase until they are the dominant weed in the field.

Weed scientists cannot predict exactly which weed species will have biotypes resistant to certain herbicides. Prediction can be difficult due to complex biology and environmental interactions. Scientists have found that there are particular weed characteristics that can facilitate development of herbicide resistance. These include:

- large amount of seeds produced per plant
- high levels of germination of those seeds
- several weed flushes per season, and
- high frequency of resistant genes

Monsanto and university weed scientists have also identified specific common factors that are often present in areas where glyphosate resistance has developed. These factors are:

- Limited or no crop rotation
- Limited or no tillage practices
- A high dependency on glyphosate alone or a limited use of other herbicides, and
- Reduced rates of glyphosate

Visit www.weedscience.org to learn more about specific resistant weeds.

<http://www.monsanto.com/weedmanagement/Pages/how-does-resistance-develop.aspx>
Date: 2013

1.6 European Supermarkets Shock Monsanto with Non-GMO Soy Declaration

"Supermarkets from across Europe have signed the Brussels Soy Declaration to state that they want EU consumers and farmers to have a choice to eat and use non-gmo soy, this comes soon after the announcement by some UK supermarkets that they would be using GM Soy in animal feed for the first time. "

<http://sustainablepulse.com/2013/05/08/european-supermarkets-shock-monsanto-with-non-gmo->

soy-declaration/#.UhHg9KwrSCK

Date: May 8, 2013

1.7 More RR2 Soybeans on Deck with Latest DuPont Pioneer & Monsanto Agreement

"DuPont and Monsanto have announced the companies have reached a technology licensing agreement that will see DuPont Pioneer offer Roundup Ready 2 and Xtend soybean varieties in the future. The agreements include a multi-year, royalty-bearing license for Monsanto's next-generation soybean technologies in the United States and Canada. DuPont and Monsanto also announced that they'd dismiss their respective antitrust and first-generation Roundup Ready soybean patent lawsuits pending in U.S. federal court in St. Louis."

<http://www.realagriculture.com/2013/03/more-rr2-soybeans-on-deck-with-latest-dupont-pioneer-monsanto-agreement/>

Date: April 19, 2013

1.8 Monsanto's dicamba-tolerant soybeans approved

"Monsanto Company's dicamba-tolerant soybean product has received full food, feed and environmental release approval from Health Canada (HC) and the Canadian Food Inspection Agency (CFIA).

The approval brings Monsanto Canada one step closer to introducing dicamba tolerance stacked with Monsanto's existing Genuity(R) Roundup Ready 2 Yield(R) trait technology in soybeans. Plans are to commercially brand this biotech stacked soybean product as Genuity(R) Roundup Ready(R) 2 Xtend.

Dicamba herbicide provides effective control of over 95 annual and biennial weed species and suppression of over 100 perennial broadleaf and woody species. The Roundup Ready(R) Xtend Crop System is expected to be available in time for the 2014 growing season."

<http://www.manitobacooperator.ca/2012/11/15/monsantos-dicamba-tolerant-soybeans-approved%E2%80%A9/>

Date: November 15, 2012

2. BayerCropScience

2.1 Bayer CropScience and Syngenta submit herbicide-tolerance soybean trait for approval in various countries

"Bayer CropScience and Syngenta have submitted applications for the approval of a new herbicide-tolerance soybean trait in various countries. It is now under review by regulatory authorities in the United States and Canada as well as key soybean-importing countries, including the European Union. The launch is expected between 2015 and 2020.

The new trait confers tolerance to three herbicide active ingredients: Mesotrione, Glufosinate-ammonium and Isoxaflutole (MGI). This MGI herbicide tolerance trait offers an important new tool for soybean growers faced with challenging weeds such as waterhemp, Palmer pigweed and lambsquarters.

The new trait will broaden the herbicide options available to soybean growers by offering tolerance to Callisto® and Balance® herbicides, the leading HPPD inhibitor products. Further assisting growers in weed resistance management, the new soybean product will also be tolerant to Liberty® herbicide, while maintaining soybean yield and agronomic performance.

The MGI herbicide tolerance trait will be available in NK® brand soybean varieties offered by Syngenta and also in Bayer branded varieties as well as out-licensed to other seed brands once all the necessary regulatory approvals have been obtained. Additionally, each company is developing its own soybean herbicide products and programs that will be utilized with the new soybean

varieties.

<http://www.cropscience.bayer.com/en/Media/Press-Releases/2013/Bayer-CropScience-Syngenta-submit-herbicide-tolerance-soybean-trait-approval-various-countries.aspx>

Date; March 1, 2013

2.2 " Bayer CropScience and MS Technologies' Balance GT Soybean to Usher in Next Era of Performance and Weed Control

Bayer CropScience and MS Technologies LLC develop a new mode of action in soybeans.

Bayer CropScience and MS Technologies LLC today announced plans to market a new soybean trait called Balance™ GT* (Event FG72) – a dual herbicide tolerant trait stack featuring tolerance to both glyphosate and isoxaflutole. Bayer CropScience and MS Technologies intend to broadly license Balance GT soybeans. Balance GT soybeans will be available in high-yielding genetics in many maturity groups in the US in 2015, pending regulatory approvals.

“When used in combination with Balance® Bean* herbicide, Balance GT will offer growers an effective weed control system. Balance GT will be offered in elite soybean genetics, thus enabling growers the opportunity to achieve excellent weed control with strong yields.”

When growing Balance GT soybeans, growers will have the flexibility to use both glyphosate and isoxaflutole during burndown, pre- or post-emergence to achieve broad spectrum weed control of both grasses and broadleaf weeds."

<http://www.prweb.com/releases/2013/2/prweb10467163.htm>

Date: February 26, 2013

2.3 Bayer CropScience Provides a Glimpse of SeedGrowth Innovation

Soybean growers in the Midwest continue to struggle with sudden death syndrome (SDS), which was discovered in 1971. According to the Plant Health Initiative, SDS is now considered one of the top four yield-robbing diseases in soybean and appears to be spreading. The disease is capable of devastating soybean fields, affecting some growers' entire soybean crops and significantly reducing their yield even up to 90 percent in some years.

This new product is a seed treatment that is applied directly to soybean seed and helps to control the Fusarium fungus that causes SDS.

Sudden death syndrome often doesn't show symptoms in the soybeans until it is too late for the grower to help their crop, ----- .

The fungal pathogen that causes SDS favors cool, moist growing conditions for infection. During soybeans' early development stages, the infection invades the root system, but there are no visible symptoms until after flowering, at which time there are no known treatment options. The fungal infection suddenly becomes obvious as leaves display interveinal yellowing and necrosis, resulting in leaf drop during the critical stage of pod filling and effecting yield potential.

----- Bayer CropScience anticipates that the new SDS product may be available for purchase for the 2015 growing season.

In addition, Bayer CropScience acquired AgraQuest, Inc., a global supplier of innovative biological pest management solutions, in August 2012. This acquisition expands the existing biological pest control portfolio of Bayer CropScience centered on its successful VOTiVO biological seed treatment that protects against pathogenic nematodes. It also allows the company to further leverage the biotechnology platform acquired through Athenix Corporation."

<http://cornandsoybeandigest.com/bayer-cropscience-provides-glimpse-seedgrowth-innovation>

Date: December5, 2012



2.4 "Bayer CropScience turns attention to soybean research

Bayer CropScience has announced an expansion of its cooperation with Ithaca, N.Y.-based Nature Source Genetics into soybeans.

The five-year collaboration deal involves pre-breeding and enhancing soybean germplasm, -----

Bayer CropScience will provide the expertise of its soybean breeders and geneticists. Nature Source Genetics will provide its technical know-how and bioanalytical platform to identify and utilize the full range of promising germplasm."

<http://www.bizjournals.com/triangle/blog/2013/03/bayer-cropscience-turns-attention-to.html>

Date" March 15, 2013

2.5 Bayer CropScience and Monsanto Enter Into Cross-Licensing Agreements for Next-Generation and Enabling Technologies

"Bayer CropScience and Monsanto Company have entered into a series of licensing agreements for next-generation and enabling technologies in the field of plant biotechnology that will provide new options and choices for farmers.

Monsanto will provide Bayer CropScience with a royalty-bearing license to Genuity[®] Roundup Ready 2 Yield[®] and Genuity[®] Roundup Ready 2 Xtend[™] technology in soybeans in the United States and Canada. Bayer CropScience also will receive a royalty-bearing license to Intacta RR2 PRO[™] in soybeans in Brazil with an option to a royalty-bearing license in other Latin-American countries in the future. Bayer CropScience has also been granted stacking-rights under certain conditions.

"This agreement further supports the value of our Genuity[®] Roundup Ready 2 Yield[®] platform as we prepare to enter the next phase of innovation in soybeans with the addition of Intacta RR2 PRO[™] and Genuity[®] Roundup Ready 2 Xtend[™]."

Genuity[®] Roundup Ready 2 Yield[®] is Monsanto's second-generation trait technology platform for soybeans. Genuity[®] Roundup Ready 2 Xtend[™] soybeans contains the Genuity[®] Roundup Ready 2 Yield[®] trait technology stacked with a trait that provides tolerance to dicamba.

Intacta RR2 PRO[™] soybeans are the first ever insect-protected trait in soybeans, providing control of lepidopteran pests."

<http://www.plantmanagementnetwork.org/pub/cm/news/2013/EnablingTechnologies/>

Date: April 29, 2013

2.6 Plant Impact strikes soybean marketing deal with Bayer in Brazil

Crop nutrition specialist Plant Impact (LON:PIM) has signed a deal with the Brazilian arm of Bayer CropScience to market Veritas, its new product for soybeans, in the South American country.

The company said there will be a pilot phase in 2013/14 in key soybean-producing regions----- .

This agreement to commercialise Veritas follows multiple years of research and intensive field development work by Plant Impact,------. The product is said to improve the soybean's capacity to fix damaged pods and fill grains at critical growth stages.

"Our technologies help crops improve their capacity under a variety of growing conditions, and we are very pleased that Veritas will complement Bayer's fungicide offering at the crucial R1 flowering stage."

<http://www.proactiveinvestors.co.uk/companies/news/59129/plant-impact-strikes-soybean->

marketing-deal-with-bayer-in-brazil-59129.html

Date; July 18, 2013

2.7 Soy yield increase of 3 bags/ha for Plant Impact's Veritas™

Veritas™, a new Plant Impact product which aids in soya pod setting and grain filling, has been demonstrated to lift yields of Brazilian soya by three 60kg bags per hectare, equivalent to an extra 5-6% on average market yields.

Veritas is the result of our commitment to good science, and these data give us a strong platform to launch the product during the 2013/14 season."

<http://www.plantimpact.com/news/soy-yield-increase-of-3-bagsha-for-plant-impacts-veritas/>

Date: June 14, 2013

2.8 2013 Innovation Plus

LibertyLink Cotton/Soybean/Canola

Link-Up Grower Offer

PROGRAM OBJECTIVE

Because of the LinkUp Program, the use of Liberty herbicide will be supported for LibertyLink cotton and/or LibertyLink soybeans and/or InVigor canola

Under this 2013 program the producer which has a " duly executed Bayer Grower Trait Licencing Agreement" and licence number and purchase a minimum off 150 acre (150 bags) of LibertyLink soybean seed, will receive a cash equivalent rebate from BayerCropScience of \$5/unit (1 soy unit= 1 acre = 140 000 seeds).(Further conditions apply).

<http://holzwarthflying.com/wp-content/uploads/2013-Bayer-Innovation-Plus-Grower-Linkup-Program.pdf>

Date; 2013

3. DuPontPioneer

3.1 DuPont to Advance Agricultural Research and Technological Innovation in Africa

DuPont Pioneer and Pannar Seed Commence Partnership

"DuPont and Pannar Seed (Pty) Limited today closed on a transaction in which DuPont Pioneer acquired majority ownership in Pannar, a South Africa-based seed company with operations throughout Africa and in other parts of the world. This is a significant milestone in DuPont's commitment to bring technological innovation to agriculture in Africa.

The partnership between Pioneer and Pannar is beneficial on many levels. It represents growth opportunities for both businesses, for employees, and for the productivity of small-scale and commercial farmers who form the backbone of Africa's economy and who will feed the continent's rapidly growing middle class and increasing population."

"One of the key outcomes of the partnership will be the establishment of a world-class technology hub for Africa through which South Africa will become a center of innovation in seed breeding," said Schickler. (DuPont President)

Technology hub in South Africa to serve the region, similar to the research hubs that Pioneer has established in Brazil, India and China. The Africa technology hub will comprise a network of research facilities and testing locations in South Africa and around the continent in which Delmas, South Africa, will serve as a technology center of the network. The network will be infused with leading R&D technologies which shorten breeding cycles and improve accuracy toward breeding

targets, such as doubled haploids, ear photometry and the proprietary Pioneer Accelerated Yield "Technology or AYT™ System, as well as genetic breeding technologies like marker-assisted selection.

The technology hub will incorporate key Pioneer and Pannar research and testing locations, combined germplasm - or plant genetic resource collections - talent and experience to improve cultivar breeding and development for Africa. Data sharing and analysis will be elevated to a new level as the Africa technology hub is connected to the Pioneer global R&D network. Research efforts will support all crops for which Pioneer and Pannar currently maintain breeding programs, including maize, sunflower, grain sorghum, forage sorghum, wheat, dry beans and soybeans"

[http://www.pioneer.com/home/site/about/news-media/news-](http://www.pioneer.com/home/site/about/news-media/news-releases/template.CONTENT/guid.C5022DE8-4437-F5F5-4D80-3DB9CA803B03)

[releases/template.CONTENT/guid.C5022DE8-4437-F5F5-4D80-3DB9CA803B03](http://www.pioneer.com/home/site/about/news-media/news-releases/template.CONTENT/guid.C5022DE8-4437-F5F5-4D80-3DB9CA803B03)

Date: July 31, 2013

3.2 DuPont Pioneer Launches Next Generation T Series Soybeans

Largest number of soybean advancements in a single year by Pioneer

A new series of Pioneer® brand soybean products, developed through the innovative DuPont Pioneer Accelerated Yield Technology (AYT™) process, will bring soybean growers across North America a broad range of high yielding varieties. The new line of soybean products - named the T Series - includes 39 new products and will be introduced in 2013.

Available in seven maturity groups, T Series products represent the largest number of soybean varieties advanced in a single year by Pioneer. The new T Series varieties succeed the popular Pioneer Y Series soybeans introduced several years ago.

Among the new class of T Series soybeans, 34 varieties will carry the Roundup Ready® gene. There are two new Plenish® high oleic varieties, five new products with the LibertyLink® gene and two new varieties with the Roundup Ready/STS™ stack. Also, 32 products are soybean cyst nematode (SCN) resistant and 29 carry a major Phytophthora-resistant gene. All T Series products will be available with proven, performance-boosting Pioneer Premium Seed Treatment products. To distinguish the new T Series varieties, Pioneer initiated a new soybean product numbering system -----. The new system will use key identifiers, enabling growers to easily determine maturity and technologies. T Series soybean varieties will be denoted with the letter T in the middle of the product number.

For more information about T Series soybean products from Pioneer, see your sales professional or go to www.pioneer.com.

[http://www.pioneer.com/home/site/about/news-media/news-](http://www.pioneer.com/home/site/about/news-media/news-releases/template.CONTENT/guid.4FA89B8D-3AAE-5488-AEC5-A26EB600F625)

[releases/template.CONTENT/guid.4FA89B8D-3AAE-5488-AEC5-A26EB600F625](http://www.pioneer.com/home/site/about/news-media/news-releases/template.CONTENT/guid.4FA89B8D-3AAE-5488-AEC5-A26EB600F625)

Date : January 23, 2013

3.3 DuPont Pioneer, Perdue AgriBusiness Announce 2013 Plenish® High Oleic Soy IP Contract Program

Next-Generation Soybean Oil Trait Provides Improved Nutritional Profile

"DuPont Pioneer and Perdue AgriBusiness announced today they will work with farmers near Perdue's soybean crush facility in Salisbury, Md., to grow Pioneer® brand Plenish® high oleic soybeans in 2013.

In addition to helping to launch an important new technology that will expand the market for soybean oil, growers will be eligible for a Perdue-paid incentive for producing and delivering Plenish® high oleic soybeans.

Plenish® high oleic soybeans are approaching completion of global regulatory approvals with over 96 percent of U.S. soybean export markets now approved including China, Japan and many other countries.

The U.S. Food and Drug Administration (FDA) completed its review of Plenish® high oleic soybeans in 2009 and the U.S. Department of Agriculture deregulation in June 2010 allows Plenish® high oleic soybeans to be grown under contract for ongoing field testing in the United States and additional oil testing by major oil processors and food companies."

<http://www.pioneer.com/home/site/about/news-media/news-releases/template.CONTENT/guid.8FAE776D-8709-3BC0-A3B8-047127092A35>

Date: December 6, 2012

3.4 DuPont Pioneer, Cargill Announce 2013 Plenish® High Oleic Soy IP Contract Program

"DuPont Pioneer and Cargill announced today they will work with farmers near Cargill's facility in Sidney, Ohio, to grow Plenish® high oleic soybeans in 2013.

For the 2013 growing season, Cargill will contract with soybean farmers in the Sidney, Ohio, area to grow Plenish® high oleic soybeans that will be delivered to Cargill's soybean facility for processing (on-farm storage with buyer's call). Growers will be eligible for a processor-paid incentive for producing and delivering high oleic soybeans.

<http://www.pioneer.com/home/site/about/news-media/news-releases/template.CONTENT/guid.418BC7F8-64FA-B9F5-55B8-9B6547BDB82A>

Date: November 19, 2012

3.5 DuPont Pioneer, Bunge Announce 2013 Plenish® High Oleic Soy IP Contract Program

"DuPont Pioneer and Bunge North America announced today they will work with farmers near Bunge's facility in Delphos, Ohio, to grow Plenish® high oleic soybeans in 2013.

For the 2013 growing season, Pioneer will contract with soybean farmers in the Delphos, Ohio, area to grow Plenish® high oleic soybeans that will be delivered to Bunge's facility for processing or to a participating elevator. Growers will be eligible for a processor-paid incentive for producing and delivering high oleic soybeans."

<http://www.pioneer.com/home/site/about/news-media/news-releases/template.CONTENT/guid.130F6C74-7048-71ED-9765-D06497909690>

Date: October 22, 2012

3.6 Soybean Growers Benefit from DuPont Pioneer High-Tech Team-Up

"The science behind the Accelerated Yield Technology (AYT™) system from DuPont Pioneer allows researchers to focus on the soybean traits that benefit growers the most. Yet, with all the available technology, Pioneer soybean breeders also rely on intellect and collaboration to develop new products with improved pest resistance and yield potential.

"Growers are bombarded with diseases and insects, many of which are extremely regionalized," says Don Schafer, DuPont Pioneer senior marketing manager. "Every area of the country has an issue that negatively affects soybean production, which is a challenge seized by DuPont Pioneer soybean breeders."

The "brain stage" of soybean breeding includes consulting with other Pioneer soybean researchers. A soybean breeder in north central Iowa, for instance, might be looking to develop a soybean variety with standability, soybean cyst nematode (SCN) resistance and good iron chlorosis tolerance.

"A soybean breeder focusing in northern Illinois might see a need for similar traits as north central Iowa, plus brown stem rot tolerance," Schafer says. "There are geographies that don't need resistance to brown stem rot, but in northern Illinois it is a mandatory trait."

The Pioneer product development strategy relies on understanding our customers, anticipating their

needs and leveraging the know-how to develop the right product for the right acre," Schafer says. "Plant breeding helps us produce the right product for our customers, wherever they farm."
<http://www.pioneer.com/home/site/about/news-media/news-releases/template.CONTENT/guid.58718C8C-44AB-4BFC-9DDA-30AF7BCE94BB>
Date: November 14, 2012

3.7 Farmers Report High Yields with Pioneer® Brand Soybeans

"Pioneer® brand soybeans are demonstrating record-breaking high yields in grower trials across Nebraska this year due to smart management practices and powerful genetics. Our Nebraska agronomist team collected 89 high-yield soybean checks throughout the state and we were very pleased to see the average was 83.4 bushels per acre. This is compared to a 71.4 bushel per acre average when compiling all 2,204 DuPont Pioneer irrigated soybean trials ----- . The high yield checks were taken to measure specific agronomic practices intended to increase yield. In these checks, producers implemented items above and beyond their normal management practice such as planting the newest Pioneer ® Brand Y-Series soybeans, increasing plant populations, using fungicide and insecticide seed treatments and increasing soil fertility

When it comes to high yields, the real differentiator begins at the farm level, ----- . ----- we like to find those operators that are willing to explore the possibilities that exist and those that have a passion around profitability. It's somewhat like a jigsaw puzzle. It's never one thing that directly drives these high yields. It's a combination of numerous factors such as cultural practices, growing conditions, seed treatments, herbicide and insecticide applications and genetics."
<http://www.pioneer.com/home/site/about/news-media/news-releases/template.CONTENT/guid.78310E72-39C8-F525-223E-37F734AE2A5D>
Date: November 13, 2012

3.8 Growers Encouraged to Watch for Mobile Soybean Pests

"Kudzu bugs and brown marmorated stink bugs have been rapidly spreading to new geographies. Brown marmorated stink bugs (BMSB) have already been detected in a number of states, up to 38 in total, including every state east of the Mississippi. Kudzu bugs have rapidly spread across eight southeastern states since the first detection three years ago. Both bugs cause feeding damage, reducing soybean yields. To reduce risk from future kudzu bug and BMSB infestations, growers must keep tabs on threat levels for the coming season, closely monitor fields and follow insect reports. For pest management, close scouting and insecticides are the best solutions."
<http://www.pioneer.com/home/site/about/news-media/news-releases/template.CONTENT/guid.7FD896EE-D093-334B-5757-EF927CCA2DAF>
Date: October 16, 2012

3.9 DuPont Pioneer Advances 34 New Soybean Varieties for 2013 Planting

"New soybean varieties from DuPont Pioneer face the toughest challenge in the final year of research testing. During this research stage, soybean varieties are placed in IMPACT™ (Intensively Managed Product Advancement Characterization and Training) trials on growers' farms to ensure product performance is up to the high standards set by Pioneer. Recently, 34 Pioneer® brand soybean varieties passed final scrutiny from the Pioneer research and development, field sales and agronomy technology service teams and will be commercially available to producers for planting in 2013.

Below are descriptions of notable Pioneer soybean varieties in the new 2013 lineup.

- 90Y51 (RR) - An excellent choice in mid-Group 0 for the northern U.S. and Ontario soybean markets, this variety provides Rps1K phytophthora resistance, above average iron

chlorosis tolerance, competitive white mold tolerance and outstanding yield potential. This variety will likely become a leader in northern growing areas.

- 91Y01(RR) - A new early Group I leader variety for Minnesota, North Dakota, South Dakota and Ontario, this variety brings Rps1C phytophthora resistance, above average phytophthora tolerance and iron chlorosis tolerance along with top yield potential.
- 92Y22 (RR) and 92Y32 (RR) - These two new mid/early Group II varieties offer winning yield potential and a disease-tolerance package, featuring phytophthora root rot resistance and soybean cyst nematode (SCN) resistance.
- 93Y25 (RR) - This early/mid-Group III variety includes the Peking source of SCN resistance, making it a unique product for Illinois and Indiana. With the Rps1K source of phytophthora resistance, along with above average brown stem rot and SDS tolerance, 93Y25 is a welcome addition for growers with challenging cyst soils.
- 93Y84 (RR) - Rps1K phytophthora resistance, SCN resistance, above average sudden death syndrome (SDS) tolerance and outstanding yield potential will help establish 93Y84 as a new late Group III go-to variety across a broad geography.
- 94Y23 (RR) - This new early Group IV banner product, with SCN resistance and very competitive SDS tolerance, is well adapted across a wide range of soil types and is sure to become a preferred choice of many growers.
- 95Y60 (RR) - A unique mid-Group V product with the PI437654 source of SCN resistance, this variety offers very competitive phytophthora tolerance and excellent yield potential.

Research tools like AYT have prompted Pioneer to register more than 225 soybean patents. Patent protection includes genetics (varieties), transgenic traits, native traits and breeding technologies."

<http://www.pioneer.com/home/site/about/news-media/news-releases/template.CONTENT/guid.D1048404-7B57-C57B-2E6A-768D983A7E01>

Date: September 25, 2012

4. Cargill

4.1 Responsible soy production

Ensuring responsible soy production in the Amazon

"Cargill is committed to ensuring soy is produced responsibly and sustainably in the Amazon. On July 24, 2006 we and others in the Brazilian soy industry agreed the Soy Moratorium committing us not to purchase soy from lands that have been deforested in the Amazon biome from this date. The Soy Working Group has announced an extension of the Soy Moratorium until 31 January 2014 as part of the ongoing commitment to help reduce deforestation and to ensure sustainable soy production in the Amazon Biome.

Soybean growing represents less than 0.3 percent of land use in the Amazon biome.

Good progress has been made under the Soy Moratorium. It has been an important contributor to reducing Amazon deforestation; showing soy is no longer a key factor.

The Soy Working Group has established an effective mapping and monitoring system, which is conducted by Globalsat, an independent specialist."

<http://www.cargill.com/corporate-responsibility/pov/soy-production/responsible-soy-production-amazon/index.jsp>

Date: 2013

4.2 Innovations promoting environmental sustainability

"We have developed an array of bio-based oils, lubricants, plastics and other products suitable for industrial applications. One of our innovations is our **BiOH® polyols**, a soy-based ingredient used in making flexible foam for upholstered furniture and bedding, carpet backing, and automotive cushioning. Such foam cushioning is traditionally made from petroleum. Switching to BiOH polyols reduces petroleum consumption, leaves a smaller environmental footprint and supports farmers. Every one million pounds of BiOH polyols used instead of petroleum-based materials saves 2,000 barrels of crude oil .

This innovation received the Presidential Green Chemistry Challenge Award from the U.S. Environmental Protection Agency. "

<http://www.cargill.com/corporate-responsibility/environmental-sustainability/innovations-case-studies/index.jsp>

Date: 2013

4.3 Cargill Envirotemp™ FR3™ Dielectric Fluid complies with New IEEE High Temperature Insulation Standard

"Cargill announced that its Envirotemp™ FR3™ renewable (natural ester) dielectric fluid complies with a new, third-party standard around its insulation capabilities for electrical transformers.

Envirotemp™ FR3™, which is made from vegetable oil----- sets the upper operating temperature limit of transformers designed with natural esters and high-temperature insulation at 130-degrees Celsius without adversely impacting transformer life. Industry-standard hottest spot temperature limits for electrical transformers are traditionally capped at 110-degrees Celsius.

Use of Envirotemp FR3 fluid in high-temperature insulation systems, operating at elevated temperatures for new and existing transformers, may enable improvements in transformer size, safety, and cost. Compared to mineral oil, Envirotemp FR3 fluid may enable transformers to last longer, better manage temperature during peak energy demand periods, and be built in a more compact design ."

<http://www.cargill.com/news/releases/2013/NA3075886.jsp>

Date: January 29, 2013

4.4 Cargill tempts Aussie farmers to tap soybean rally

"For any sceptics of the power of high prices to stimulate crop production, Australia is providing another example, with record soybean values sparking an attempt to turn the country into a force in the oilseed.

Cargill, the US-based agribusiness, has opened a drive to encourage Australian farmers to improve on the less than 40,000 hectares of the oilseed they currently grow, leaving the nation reliant largely on imports, which reached 560,000 tonnes last year, for soymeal supplies.

The group's Melbourne-based AWB business is offering growers a support package including a Aus\$10-per-hectare rebate on – non-genetically modified- seed and some production insurance in a drive to gain domestic supplies to feed its three mills, one of which has a vegetable oils refining plant attached.

<http://www.agrimoney.com/news/cargill-tempts-aussie-farmers-to-tap-soybean-rally--4929.html>

Date: August 30, 2012

5. Dow Agro Sciences

5.1 Enlist E3™ Soybeans Approved in Canada.

First-Ever Three-Gene Herbicide Tolerant Soybean to Provide Exceptional Weed Control, Yield.

"Farmers in Canada will have access to the latest innovation in soybean technology as Dow AgroSciences LLC, a wholly owned subsidiary of The Dow Chemical Company (NYSE: DOW), and MS Technologies LLC have received approval for Enlist E3™ soybeans.

Canadian regulatory authorities have approved Enlist E3 soybeans, which are part of the Enlist™ Weed Control System and the third Enlist trait product approved in Canada.

The companies anticipate launching Enlist E3 soybeans in 2015, contingent on approvals in key export geographies. Enlist E3 soybean cultivation registrations are also being sought in the United States, Brazil, and other South American countries.

The Enlist E3 trait stack confers tolerance to 2,4-D, glyphosate, and glufosinate. It is an innovative molecular stack that brings all three herbicide tolerances via a single transgenic event, presenting a unique advantage for customers of Dow AgroSciences, MS Technologies, and future licensees.

Because the Enlist E3 trait is a single genetic event, breeding efforts can quickly advance superior performing soybean seeds for farmers.

<http://newsroom.dowagro.com/press-release/enlist-e3-soybeans-approved-canada>

Date: June 19, 2013

6. Syngenta

6.1 Syngenta secures EU approval for next generation fungicide

- Isopyrazam sets new standard in disease control
- Consistent crop yield enhancement
- Product registrations across multiple crops planned

Syngenta today announced that it has received European Union (EU) approval for isopyrazam, the first active ingredient from its strong pipeline of next generation fungicides. Approval represents a major step forward in the control of a wide spectrum of damaging fungal diseases, including best-in-class performance against Yellow Rust."

<http://www.syngenta.com/global/corporate/en/news-center/news-releases/Pages/121113-2.aspx>

Date: November 13, 2012

6.2 Syngenta and DuPont agree on technology exchange to launch new fungicide solutions

"Syngenta has obtained a global license from DuPont to develop products containing DuPont's fungicide oxathiapiprolin. The development of this new piperidinyl thiazole isoxazoline class of fungicides represents a significant improvement for growers in the control of diseases in potatoes, grapes, vegetables and other specialty crops.

The agreement gives DuPont exclusive access to Syngenta's Solatenol™ for mixture with DuPont's picoxystrobin fungicide on soybean and other crops in Brazil. Solatenol™ is a new benz-pyrazole SDHI fungicide which brings a new mode of action with no cross-resistance to existing fungicides. It offers outstanding and long-lasting control of Asian rust in soybean.

<http://www.syngenta.com/global/corporate/en/news-center/news-releases/Pages/130514.aspx>

Date: May 14, 2013

6.3 Soybean

"Syngenta provides powerful integrated solutions for soybean growers. These solutions are based on our exceptional germplasm quality, trait development expertise, and leading crop protection and seed treatment portfolio.

By developing a cross-regional platform and introducing molecular assisted breeding, we have reduced the development time for new varieties by two years. We have also introduced the AMS APHID MANAGEMENT SYSTEM™, a fully integrated offer that combines genetics containing

an aphid-resistant native trait with CRUISER MAXX[®] seed treatment, followed by a crop protection protocol.

Over 80% of our soybean varieties have been bred to incorporate genetic resistance to cyst nematodes, a highly destructive pest. We are studying new modes of action for nematode control that can be added to this platform and, in September 2012, announced the acquisition of Pasteuria Bioscience Inc. to develop innovative bio-nematicidal products. In addition, AVICTA[®] COMPLETE seed treatment combines four different active ingredients for unprecedented disease, insect, and nematode control.

As weed resistance to glyphosate is an increasing problem, we moved early to address this issue and offer growers six pre- and post-emergence options in ready-to-use formulations.

In Latin America, we are developing integrated solutions such as PLENUS[™] in Argentina. This offer combines quality germplasm with professionally applied seed treatment and a long-life inoculant to boost plant health, providing crop enhancement in addition to convenience and complete pest control.

Resolving the rust crisis

Latin American growers ----- continue to face the challenge of soybean rust, an endemic and devastating disease that can wipe out entire crops when it takes hold. As global market leaders in the control of soybean rust, we play a crucial role in helping growers to keep the upper hand. One example is our leading fungicide mixture PRIORI XTRA[®], which is very effective in early preventative applications.

Moving forward, our focus is on the development of new varieties of soybean with an inbuilt genetic defense against rust, combined with new generations of seed care and foliar fungicides.

In addition, our teams assess chemicals, genetic tolerance and traits – native or genetically modified – to address cyst nematodes, caterpillars, weed control, and abiotic stress. Our aim is to create offers that not only address the grower's pain points, but also promote yield increases.

<http://www.syngenta.com/GLOBAL/CORPORATE/EN/PRODUCTS-AND-INNOVATION/KEY-CROPS/Pages/soybean.aspx>

Date: 2013

6.4 " Start next season strong with 20 new NK[®] brand soybean varieties

- Syngenta offers 20 new soybean varieties for 2014
- Provide **start strong** approach to maximize yield potential
- Feature built-in resistance to yield-robbing diseases and pests "

" To assist U.S. soybean farmers, Syngenta is releasing 20 new NK[®] brand soybean varieties for the 2014 season that offer superior performance across various environments.

NK soybeans combine ground-breaking technologies with elite genetics and industry-leading traits that offer early-season insect and disease protection to optimize overall performance and maximize yield potential.

Spanning maturity groups 0 through V, the new varieties feature built-in resistance to disease pressures such as *Phytophthora* root rot and sudden death syndrome, and yield- robbing pests like soybean cyst nematode (SCN)."

http://www.syngentacropprotection.com/news_releases/news.aspx?id=175102

Date : June 16, 2013

6.5 Fungicides and diligence—a pathway to higher soybean yields

"In order for soybeans to **yield strong**, important steps need to be taken from the reproductive stage through harvest. This includes the following recommendations:

- Scout and control mid- to late-season insects.
- Apply a foliar fungicide at the R3 growth stage.
- Manage water to maximize pod fill.
- Incorporate a harvest aid. "

http://www.syngentacropprotection.com/News_releases/news.aspx?id=176923

Date: August 28, 2013

6.6 Syngenta adds soybean fungicide options to provide growers stress management and higher yields

"----- Quilt Xcel® and Quadris Top® SB fungicides to utilize in the Midwest and South, respectively. Each product offers tailored chemistries to equip soybeans to withstand environmental stress and to target each region's top yield-robbing pathogens.

“Quilt Xcel and Quadris Top SB offer benefits that are proven to boost yield by an average of 4 to 8 bu/A----- .

http://www.syngentacropprotection.com/News_releases/news.aspx?id=1738

Date: May8, 2013

6.7 Syngenta insecticide offers dual-action insect control for soybeans, among other crops

"Besiege® insecticide recently received registration approval from the U.S. Environmental Protection Agency (EPA) for use on soybeans, sunflowers and canola. With dual-action chemistries, the industry-leading technology of Besiege controls an even broader spectrum of insect pests, including some of the most destructive lepidopteran insects such as soybean looper.

The two active ingredients of Besiege provide protection against key lepidopteran insect pests, including soybean looper, cutworm, corn earworm and armyworms, as well as secondary pests such as stinkbugs, beetles and other damaging "

http://www.syngentacropprotection.com/News_releases/news.aspx?id=173289

Date: April 22, 2013

6.8 Row spacing recommendations from Syngenta help produce record-breaking soybean yields

"In replicated field studies designed to identify best management strategies, Syngenta researchers discovered yield advantages when planting 15-inch rows versus 30-inch rows. Studies at Iowa State University confirm this advantage with 15-inch row spacing demonstrating an average 4.5 bushels per acre advantage over 30-inch row spacing.

Iowa State University research shows that canopy closure of 15-inch rows typically occurs 15 days earlier than 30-inch rows. Pod fill depends on canopy closure, so this 15-day window is critical to achieving larger beans and fuller pods.

http://www.syngentacropprotection.com/News_releases/news.aspx?id=172740

Date: April 1, 2013

6.9 Despite drought, NK brand soybeans out yield competitors

" ----- which soybean seed brand could still perform at a superior level despite adverse conditions. After gathering data from different geographies across the country, NK® brand soybeans proved to be a top contender in maximizing yield. To showcase the consistent performance, Syngenta has released the national yield results of NK soybean varieties from the 2012 growing season.

Positive yield results across the country show the effectiveness and reliability of NK soybeans, which are designed to perform in a wide range of growing conditions.

National yield results* include:

- S39-U2 brand beat DuPont Pioneer** 72 percent of the time, by an average of 4.3 bushels per acre yield advantage.
- S34-N3 brand won 75 percent of the time versus DuPont Pioneer** with an average advantage of 3.6 bushels per acre.
- S29-V2 brand provided a 3.9 bushel per acre yield advantage versus DuPont Pioneer** and a 78 percent win rate.
- S39-U2 brand had a winning margin of 2.8 bushels per acre versus Asgrow®** and won 70 percent of its comparisons.
- S49-F8 brand beat Asgrow** 61 percent of the time by 2.7 bushels per acre.

Local data for NK soybeans and Syngenta ----- are now available at www.SyngentaSeeds.com. "

http://www.syngentacropprotection.com/News_releases/news.aspx?id=171065

Date: January 7, 2013

6.10 Getting to the root of soybean stress

"According to the United Soybean Board, the soybean root system is often overlooked when evaluating the health of a plant under stress and can be blamed for 70 to 80 percent of plant disorders. However, with more and more research pointing to root health as the key for improving soybean yield, Syngenta has turned its attention below the soil surface.

In addition to the environmental stressors that impact root systems, early-season insects and diseases can inflict damage on soybean roots as well. Weakened root systems impact a plant's ability to efficiently absorb water and nutrients. These damaging factors leave stressed soybeans at an even greater disadvantage.

CruiserMaxx® Beans insecticide/fungicide, a combination of separately registered products, applied with new Vibrance™ fungicide seed treatment helps soybeans withstand environmental stress through unmatched disease and insect protection and RootingPower capabilities."

http://www.syngentacropprotection.com/News_releases/news.aspx?id=169567

Date: October 3, 2012

6.11 Rising above *Rhizoctonia* in soybeans next season

Rhizoctonia solani is a common soilborne disease that is likely to cause pre-emergence or post-emergence loss of seedlings, also known as damping-off. The disease is usually restricted to early in the season, and most often occurs when conditions are wet or when germination is slow. However, it has been known to appear in a range of soil moistures and temperatures.

Signs of *Rhizoctonia* include root rot, seed rot and reddish-brown, sunken lesions on germinating seedlings. Because many seedling pathogens exhibit similar symptoms, *Rhizoctonia* is often confused with *Pythium* or *Phytophthora*.

Yield losses of up to 48 percent from *Rhizoctonia* have been reported in the U.S., -----.

"Soybean fields are at risk for *Rhizoctonia* at the beginning of every season because it can appear in a variety of conditions," ----- .

"Using seed treatments such as CruiserMaxx[®] Beans insecticide/fungicide, a combination of separately registered products, applied with Vibrance[™] fungicide seed treatment will give you multiple layers of protection against *Rhizoctonia*."

http://www.syngentacropprotection.com/News_releases/news.aspx?id=169366
Date September 20, 2012

6.12 Stinkbugs continue to plague soybeans across the U.S.

"Various stinkbug species are spreading quickly throughout the United States.

----- the most common and damaging species include the green, the southern green, and the red-banded species, all of which continue to be found across the U.S.

In addition to the traditional species, a new stinkbug known as the brown marmorated stinkbug is being reported in various states across the country, and is already a serious pest in vegetables and farm crops in the Mid-Atlantic region.

Stinkbugs can certainly ruin soybean harvests by causing major yield losses -----

Syngenta agronomists and university entomologists are striving to lessen the blow these pests may have on soybean yields through the Syngenta Pest Patrol program.

Pest Patrol offers season-long pest alerts and treatment recommendations, including information on stinkbug patterns, ----- and (consult) website." (www.SyngentaPestPatrol.com). "

http://www.syngentacropprotection.com/News_releases/news.aspx?id=168300
Date: August 1, 2012

Ander maatskappye/organisasies wat betekenisvolle bydraes maak tot sojaboonontwikkeling

1.Soybean Genomic Research Strategic Plan, 2012-2016

Executive Summary

This strategic plan builds on the soybean communities' previous efforts (October, 1999; July, 2001; May, 2003; July, 2005; and May, 2007) to review progress on the development and deployment of soybean genomic resources. The results are impressive (see *Soybean Genomics Research Program Accomplishments Report, 2010*, posted on SoyBase). For example, in the last five years the soybean research community has produced a genetic linkage map with over 5,500 mapped markers spanning the entire 2,296 cM soybean genome. A set of 1,536 SNP markers that are evenly distributed across the 20 linkage groups was developed for whole genome analysis of polymorphisms in both elite North American cultivars and breeding lines. In addition, an expanded array of 50,000 SNPs is under development which will be used to create haplotype maps of over 18,000 accessions of the USDA soybean germplasm collection. This research is scheduled for completion in late 2010 and the SNP haplotype map of each accession will be placed on the HapMap Browser on SoyBase.

Large-scale shotgun sequencing of the soybean cultivar Williams 82 was completed late in 2008 by the U.S. Department of Energy- Joint Genome Institute (DOE-JGI) and recently reported in the scientific journal *Nature* (Schmutz et al., 2010. *Nature* 463:178-183). The present soybean assembly (Glyma.1.01) captured approximately 975 Mbp of its 1,100 Mbp genome. The gene set integrates ~1.6 million ESTs with homology and predicts 66,153 protein-coding loci available at www.phytozome.net/soybean.

Soybean researchers have developed several microarray technologies for gene expression studies. The GeneChip Soybean Genome Array is commercially available for studying gene expression (http://www.affymetrix.com/products_services/arrays/specific/soybean.affx#1_1). This GeneChip contains 37,500 *Glycine max* transcripts, 15,800 *Phytophthora sojae* transcripts, and 7,500 *Heterodera glycines* transcripts.

The achievement of milestones in previous strategic plans for soybean genomic research have advanced soybean to its current status as a crop model for translational genomics. Simply stated, soybean genomic resources in hand will accelerate the ability of plant breeders to enhance soybean productivity, pest resistance, and nutritional quality. However, many secrets of the soybean genome have yet to be revealed. In order to continue to make informed decisions it was critical to capture the consensus wisdom of leading soybean researchers on the next logical steps in the development and utilization of soybean's genomic resources.

On 27-28 July 2010 Roger Boerma chaired a workshop sponsored by the United Soybean Board in St. Louis MO that brought together 44 eminent soybean researchers in the areas of genomic sequencing, gene function, transformation/transgenics, and translational genomics. The purpose of the Workshop was to develop a strategy for achieving the critical soybean genomic resources and information required to accelerate the rate of yield gain and addition of value to U.S. soybean cultivars. A consensus was reached on a number of high priority performance measures or research objectives. In addition the anticipated outcomes of successfully achieving these performance measures are included in the final plan.

In summary, two issues emerged as being critically important or overarching issues: i) Provide additional support staff for continued development and population of SoyBase, and ii) Development of a genetic repository/ distribution center for soybean mutants/transgenic lines. The enhancement of SoyBase was deemed important for all four Strategic Goals. The

genetic repository/distribution center was broadly supported by Workshop participants. Listed below is an outline of the four Strategic Goals and their respective Performance Measures. Within each Goal, the Performance Measures are listed in order of importance.

Goal 1 - Genome Sequence: Improve the quality and utility of the soybean genome sequence

Performance Measure:

- 1.1: Ensure the accuracy of reference sequence assembly.
- 1.2: Capturing and leveraging existing genetic diversity in soybean germplasm.

- 1.3: Improving bioinformatic resources for genomic analysis and practical applications.
- 1.4: Reveal function of targeted genome sequences to facilitate gene discovery and application.
- 1.5: Leveraging genomic information from Phaseoloids and other species.
- 1.6: Determine the role of epigenetics in soybean improvement.

Goal 2 - Gene Function: Develop functional genomic technologies to optimize utility of genome sequence information in germplasm enhancement

Performance Measure:

- 2.1: Develop comprehensive gene expression data for soybean.
- 2.2: Develop near isogenic lines (NIL) to help reveal genetic mechanisms that mediate useful traits.
- 2.3: Develop an improved infrastructure to facilitate genome annotation.
- 2.4: Achieve high-definition genomic characterization of biological mechanisms and regulatory systems in soybean.
- 2.5: Use functional genomic methods to characterize transcription regulated pathways.
- 2.6: Advance gene modification technologies to help associate candidate genes with a discrete phenotype.
- 2.7: Create a saturated transposon insertion population with defined flanking sequences that can be used to identify mutants by BLAST sequence comparison.
- 2.8: Implement outreach opportunities for education and use of genomic databases.
- 2.9: Develop an ORFeome library from agronomically important genes and gene families.

Goal 3 - Transformation/Transgenics: Optimize and expand transgenic methods and improve understanding of natural genes for modification of trait expression

Performance Measure:

- 3.1: Establish of a soybean genetic repository and distribution center.
- 3.2: Develop next-generation transformation and targeting technologies and utilize these transgenic approaches to help elucidate gene function and deploy genes of interest.

Goal 4 - Translational Genomics: Optimize breeding efficiency with robust sequence-based resources

Performance Measure:

- 4.1: Develop analytical approaches to characterize soybean germplasm diversity based on the SoyHapMap 1.0 data to identify parental lines for breeding purposes.
- 4.2: Discover gene/QTL for qualitative traits and develop tightly linked DNA markers.
- 4.3: Discover gene/QTL for quantitative traits and develop tightly linked DNA markers.
- 4.4: Develop and populate a user-friendly database of validated QTL for use in marker assisted breeding applications.
- 4.5: Define the molecular genetic signatures of selection in 70+ years of U.S. soybean breeding by use of the 50,000 SNP Illumina Infinium Assay
- 4.6: Define optimum breeding models for different breeding situations using *in silico* analysis.

This workshop was partially funded by the United Soybean Board.

<http://soybase.org/SoyGenStrat2010/SoyGenStratPlan%202012-2016.pdf>

Date: October 2010

Ander belangrike ontwikkelings

1. Cargill invests in the next generation of farmers in Mozambique

"Cargill has announced a U.S. \$1.35 million, three-year partnership with the Aga Khan Foundation (AKF) to provide support for the Bilibiza Agriculture Institute (IABil) in order to enhance and expand educational possibilities for farmers in northern Mozambique.

The partnership which has been supported by Cargill's businesses in Switzerland and Africa, will enable IABil, the only full secondary vocational school for agriculture in Cabo Delgado Province of Mozambique, to improve its teaching capabilities and to reach more student farmers in the northern region. The IABil will train up to 400 students a year with relevant technical and entrepreneurial skills, as well as sharing knowledge that will help them to participate in the sustainable development of the agricultural sector in Mozambique.

As part of Cargill's commitment to support initiatives such as the G8's New Alliance for Food and Nutrition Security and the Grow Africa partnership, the company recently announced it is exploring a public/private partnership to support smallholder farmers and improve domestic grain production in Mozambique."

<http://www.cargill.com/news/releases/2012/NA3068442.jsp>

Date: November 5, 2012

2. Plant Biotechnology Companies Begin New Conversation about GMOs and How our Food is Grown

"The agricultural biotechnology companies that develop genetically modified seeds — or GMOs — are coming together to launch a broad, new initiative to provide accurate information and answer the toughest questions about GMOs and how our food is grown.

GMO Answers (www.GMOAnswers.com) is a new conversation, public Q&A, and central online resource for information on GMOs, their background, use in agriculture, and research and data in one easy-to-access public."

For more information see : <http://newsroom.dowagro.com/press-release/plant-biotechnology-companies-begin-new-conversation-about-gmos-and-how-our-food-grown>

http://newsroom.dowagro.com/news_releases

Date: July 29, 2013

3. China's Rising Soybean Consumption Reshaping Western Agriculture

"Global demand for soybeans has soared in recent decades, with China leading the race. Nearly 60 percent of all soybeans entering international trade today go to China, making it far and away the world's largest importer.

This rise in the demand for soybeans reflected the discovery by animal nutritionists that combining one part soybean meal with four parts grain, usually corn, in feed rations would sharply boost the

efficiency with which livestock and poultry converted grain into animal protein. Four numbers tell the story of the explosive growth of soybean consumption in China. In 1995, China was producing 14 million tonnes of soybeans and it was consuming 14 million tonnes. In 2011, it was still producing 14 million tonnes of soybeans, but it was consuming 70 million tonnes, meaning that 56 million tonnes had to be imported.

China's neglect of soybean production reflects a political decision made in Beijing in 1995 to focus on being self-sufficient in grain.

Four numbers tell the story of the explosive growth of soybean consumption in China. In 1995, China was producing 14 million tonnes of soybeans and it was consuming 14 million tonnes. In 2011, it was still producing 14 million tonnes of soybeans, but it was consuming 70 million tonnes, meaning that 56 million tonnes had to be imported.

Hypothetically, if China had chosen to produce all of the 70 million tonnes of soybeans it consumed in 2011, it would have had to shift one-third of its grainland to soybeans, forcing it to import 160 million tonnes of grain – more than a third of its total grain consumption. As more and more of China's 1.35 billion people move up the food chain, its soybean imports will almost certainly continue to climb.

The principal effect of skyrocketing world soybean consumption has been a restructuring of agriculture in the western hemisphere. In the United States there is now more land in soybeans than in wheat. In Brazil, the area in soybeans exceeds that of all grains combined. Argentina's soybean area is now close to double that of all grains combined, putting the country dangerously close to becoming a soybean monoculture.

Although most of the growth in the world grain harvest since the mid-twentieth century is from the tripling of grain yield per acre, the 16-fold increase in the global soybean harvest has come overwhelmingly from expanding the cultivated area. While the area expanded nearly sevenfold, the yield scarcely doubled. The world gets more soybeans primarily by planting more soybeans. Therein lies the problem.

The question then becomes: Where will the soybeans be planted? The United States is now using all of its available cropland and has no additional land that can be planted to soybeans. The only way to expand soybean acreage is by shifting land from other crops, such as corn or wheat. In Brazil, new land for soybean production comes from the Amazon Basin or the cerrado, the savannah-like region to the south.

Put simply, saving the Amazon rainforest now depends on curbing the growth in demand for soybeans by stabilizing population worldwide as soon as possible. And for the world's more affluent people, it means eating less meat and thus slowing the growth in demand for soybeans. Against this backdrop, the recent downturn in U.S. meat consumption is welcome news.

*Lester Brown is the president of Earth Policy Institute. For further reading on the global food situation, see *Full Planet, Empty Plates: The New Geopolitics of Food Scarcity*, by Lester R. Brown (W.W. Norton: October 2012).

<http://www.ipsnews.net/2013/01/chinas-rising-soybean-consumption-reshaping-western-agriculture/>
Date: January 8, 2013

4. China's insatiable appetite for Brazil's soybeans is making the latter country rich--and nervous

"-----reports in the *New York Times* that Brazil's '\$7 billion agreement signed last month—to produce six million tons of soybeans a year—is one of several struck in recent weeks as China hurries to shore up its food security and offset its growing reliance on crops from the United States

by pursuing vast tracts of Latin America's agricultural heartland.

'Even as Brazil, Argentina and other nations move to impose limits on farmland purchases by foreigners, the Chinese are seeking to more directly control production themselves, taking their nation's fervor for agricultural self-sufficiency overseas. . . .

'While many welcome the investments, the aggressive push comes as Brazilian officials have begun questioning the "strategic partnership" with China encouraged by former President Luiz Inácio Lula da Silva. The Chinese have become so important to Brazil's economy that it cannot do without them—and that is precisely what is making Brazil increasingly uneasy. .

Argentina's president, Cristina Fernández de Kirchner, followed suit last month, sending a law to Congress limiting the size and concentration of rural land foreigners could own.

Last month, Chongqing Grains signed a \$2.5 billion agreement to produce soybeans in the Brazilian state of Bahia. Last October, a Chinese group agreed to develop about 500,000 acres of farmland in Río Negro Province in Argentina.

'In both cases, Chinese officials proposed buying large tracts of land before local officials steered them toward production agreements. . . .

'In Goiás State, nearly 70 percent of the soy grown went to the Chinese last year, and the Chinese are seeking to use about 20 million acres of pastureland that has not been cultivated for decades. . . .

'Farmers here say they share Chinese officials' goal of breaking the stranglehold of international trading companies like Cargill and Archer Daniels Midland. . . .'"

<http://www.ilri.org/node/2377>

Date: July, 2013

jdp/aug/2013