

# Are the Elephants Dancing?

Partnerships on Technology

**I**N THE PAST 10 YEARS, THE SEED world has consolidated significantly. It's been a game of Pac-Man for large companies as they acquired smaller ones for desired technology or market share. These big players have recently settled a lot of litigation and begun partnering with each other and companies of all sizes. So are the "elephants" dancing and what will happen to the smaller guys?

In the case of the big six plant-science companies – BASF, Bayer CropScience, Dow AgroSciences, Monsanto Company, Pioneer Hi-Bred International and Syngenta – they seem to be moving away from exclusivity with new traits or products and instead, partnering with companies that have complementary expertise to obtain desired traits or distribution channels faster.

"We undertake these actions for three reasons – greater value, faster speed and expanded choices for customers," says Jerry Harrington, Sales and Marketing Public Relations Manager, Pioneer Hi-Bred.

"There are more partnerships now than ever before because everyone is trying to develop products more efficiently, especially in crop protection," notes Valdemar Fischer, Syngenta NAFTA President. "Collaboration has always been a part of Syngenta's strategy, but there is more of a spirit of cooperation today."

Sharing the cost of research and development is also driving partnerships. For smaller companies, gaining access to global markets through multinational firms can be attractive. And all partnerships reap the benefits of greater innovation and offerings to farmers.

## Elephants Dance Together

Most striking, perhaps, is that the giants of the seed industry are now partnering with each other. For example, Pioneer and Syngenta joined forces on insect control technology in corn (Syngenta granted Pioneer a non-exclusive, global license with stacking rights to MIR162) and on Touchdown, Quilt and Quadris promotions to offer their customers greater options faster.

"Accessing a trait like MIR162 from Syngenta provides expanded insect control for Pioneer customers," Harrington says.

Pioneer also opted to make Syngenta's Touchdown Total and Touchdown HiTech non-selective herbicides as well as Quilt fungicide for corn and Quadris fungicide for soybeans eligible as a rebate offer.

"Used together with Pioneer products, these crop protection products from Syngenta can help further increase yield potential," Harrington says. "These offers provide expanded choices for our customers along with an excellent program to support them."

Other "elephants dancing together" include BASF and Bayer CropScience separately with Monsanto on fungicide seed treatments and Dow AgroSciences and Monsanto on SmartStax technology in corn.

"SmartStax is a product that no one company could bring to the market alone," says Dan Kittle, Dow AgroSciences Global Leader, Research and Development, and Vice-President, Core Biotechnology. "Together, Dow AgroSciences and Monsanto will be able to deliver multiple modes of action via SmartStax, with potential for less refuge acre requirements."

Not only are the elephants dancing with each other today, they are engaging “mighty mice” in the seed jungle with the shared goal of augmenting the food supply.

“Partnerships are based on individual business cases,” Fischer adds. “Aside from cost reductions, partnerships can combine technologies to bring farmers something unique that would not be unique on their own.”

Another great example of cooperation was Syngenta and Monsanto settling litigation and cross-licensing corn and soybean technologies. “It’s a clear win for our customers and industry,” says Jeff Cox, President of Syngenta Seeds U.S. “There will be growth in two areas: more innovation in the marketplace and more choice for customers.”

### Settling for More

According to Bob Jondle of Jondle and Associates, a law firm specializing in intellectual property, there are a lot of reasons to settle litigation and often it makes good business sense to do so. Litigation is expensive and time-consuming – it takes a lot of management’s and scientists’ time – and is also very unpredictable.

“The general rule is, even if you have all the facts on your

side when you file the litigation, you have probably a sixty percent chance of actually winning,” Jondle notes. “[And] during discovery, you uncover all kinds of new information and legal issues that later may hurt you winning. It’s hard to predict what a judge and jury are going to do.”

There were countless examples of lawsuits in the past decade among plant patent owners. Syngenta alone had up to twenty litigations in which it was involved, according to Cox.

“It’s good to take competition into the field rather than court,” he says. “It’s less about our relationship with [another company] and more about the relationship with the customer. We’re now able to provide more choice to our customers and growers.”

### Elephants Dance With Mice

Not only are the elephants dancing with each other today, they are engaging “mighty mice” in the seed jungle with the shared goal of augmenting the food supply.

Pioneer has partnered with such companies as Arcadia



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BioScience and Hexima to bring valuable traits to its customers quickly, Harrington says.

“These world-class experts can help Pioneer speed traits to market for a competitive edge,” he says. “The collaboration with Arcadia Bioscience gives a significant boost to the progress Pioneer has already made in developing corn hybrids that use nitrogen more efficiently. Pioneer and Hexima will combine certain intellectual property and anti-fungal protein assets to accelerate the development and commercialization of transgenic fungal disease resistance technology in corn, soybeans and other crops.”

Dow AgroSciences has made some selective investments in technology and germplasm, such as with Sangamo Biosciences and Dairyland Seed, respectively, according to Ben Kaehler, Dow AgroSciences Traits and Germplasm Licensing Leader. This allows Dow AgroSciences to more efficiently insert

genes into plants to reduce the cost and time involved in creating a new trait and getting it to the marketplace, and expand its germplasm pool, he says.

“Partnerships provide ready access to a wide spectrum of external talent in an environment where there is increased pressure for faster, more cost-effective R&D,” Kittle adds. “With the scope and scale of biotechnology research growing exponentially across the globe, it can be substantially more efficient and effective to strategically identify partners with which to innovate. At Dow AgroSciences, outside talent, technology and capacity help us to maximize our internal resources and expertise to provide innovative solutions to today’s agriculture and energy challenges.”

For smaller companies, partnerships may offer expansion of market coverage. Multinational companies can offer partners access to global markets. An example is Syngenta’s partnership with Rohm and Haas to develop and commercialize

Invisa technology to help field crops cope with heat stress.

“It will definitely help produce more food – our ultimate end goal,” says Fischer. “Even though we are a science-and-technology-based company, there are some areas where other companies have technology that will be important to combine with ours. We want to help farmers produce more with less.”

## Licenses and Acquisition

With the seed industry having consolidated so much, one wonders if there are any potential licensees left for technology owners.

“The corn industry especially has consolidated considerably over the last five years, but there are still very strong independent seed companies that look for unique genetics and trait packages,” notes Kaehler. “So while there is consolidation going on, there is still opportunity for licensing both traits and germplasm in the marketplace.”

“The seed business has been changing a lot, especially in corn and soybeans with new trait introductions,” adds Fischer. “Traits are becoming more and more important. Acceptance of biotech traits is becoming increasingly widespread around the world, too. Farmers are more willing to use seeds with technology incorporated.”

To this end, intellectual property remains the cornerstone of success in the seed business.

According to Cox, it is the currency of today. And while acquisitions have slowed, they will continue to happen as it makes sense for companies to do so.

Patents and acquisitions will never go away, but partnerships will allow for greater genetics and technology in seed-related products and for broader access to them. The question is: who’s going to be dancing next? *Angela Dansby*


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# Big 6 Partnerships 2007-2008

COMPANY	COLLABORATION
<b>BASF</b>	<p><b>Academia Sinica (Taiwan)</b> – yield increase and stress tolerance in corn, rice, etc.  <b>Monsanto</b> – fungicide seed treatment in soybeans</p>
<b>Bayer CropScience</b>	<p><b>ADM/Daimler</b> – Jatropha biodiesel  <b>Cargill</b> – InVigor Health hybrid canola  <b>Euralis Semences</b> – winter oilseed rape for European market  <b>Evogene</b> – crop yield improvement  <b>Mertec, M.S. Technologies</b> – soybean traits  <b>Monsanto</b> – fungicide seed treatment in corn; herbicide tolerance in corn and soybeans  <b>Myconate</b> – corn and soybean development  <b>Plant Health Care, Inc.</b> – new seed treatments  <b>Senesco Technologies, Inc.</b> – rice gene technology  <b>Unilever</b> – new tomato varieties</p>
<b>Dow AgroSciences</b>	<p><b>Agrisoma Biosciences</b> – plant-based animal health products  <b>Biodesign Institute of Arizona State University</b> – plant made vaccines  <b>Chlorogen</b> – expressing foreign genes in plants  <b>Dairyland Seed</b> – corn genetics  <b>Exelixis Plant Sciences</b> – gene discovery and validation of novel crop traits  <b>Fraunhofer Institute</b> – plant cell produced biologics  <b>GVK</b> – fungicide and insecticide research  <b>Hexima Limited</b> – cottonseed  <b>Martek Biosciences</b> – developing canola seed that produces DHA omega-3  <b>Mertec, M.S. Technologies</b> – new soybean technologies, herbicide tolerance  <b>Monsanto</b> – SmartStax 8-stack corn cross-licensing agreement  <b>National Research Council of Canada Plant Biotechnology Institute (NRC-PBI)</b> – canola traits  <b>Sangamo BioSciences</b> – zinc finger protein all plants  <b>Triumph Seed</b> – corn and sorghum genetics</p>
<b>Monsanto Company</b>	<p><b>BASF</b> – fungicide seed treatment in soybeans  <b>Bayer CropScience</b> – fungicide seed treatment in corn; herbicide tolerance in corn and soybeans  <b>Dow AgroSciences</b> – SmartStax 8-stack corn cross-licensing agreement  <b>Evogene</b> – research into plant genes related to yield, environmental stress and fertilizer utilization  <b>Mendel Biotechnology</b> – perennial grass seed varieties for use in biofuels  <b>Syngenta</b> – corn and soybean technologies; Roundup Ready 2 Yield soybean licensing</p>
<b>Pioneer Hi-Bred</b>	<p><b>Arcadia Biosciences</b> – nitrogen use efficiency in corn  <b>Asoyia</b> – ultra low-linolenic soybean varieties and identity preservation  <b>Beijing Weiming Kaituo Agriculture Biotechnology Co., Ltd.</b> – stress tolerance and efficient nutrient utilization in several crops  <b>Bunge</b> – low-linolenic soybean contracting/marketing  <b>Evogene</b> – drought tolerance in soybeans and corn  <b>Hexima</b> – fungal disease resistance in corn, soybeans and other crops  <b>Perdue Agribusiness</b> – low-linolenic soybean contracting  <b>Precision BioSciences</b> – genome engineering in corn, soybeans, etc.  <b>Syngenta</b> – insect control in corn and Touchdown, Quilt and Quadris promotion</p>
<b>Syngenta</b>	<p><b>Athenix</b> – corn, insect and soybean nematode control traits  <b>Diversa</b> – enzymes for biofuel production from cellulosic biomass  <b>Farmacule</b> – conversion of sugarcane to biofuels  <b>Institute of Genetics and Developmental Biology (China)</b> – drought tolerance and other traits for corn, soybeans, wheat, etc.  <b>Monsanto</b> – corn and soybean technologies; Roundup Ready 2 Yield soybean licensing  <b>DuPont</b> – crop protection technology; insect control in corn  <b>Rohm and Haas</b> – Invinsa crop stress protection</p>