



# MONSANTO - DOW AGROSCIENCES COLLABORATIVE AGREEMENT:

**SmartStax**: NEW INDUSTRY-STANDARD STACKED-TRAIT PLATFORM

Sept. 14, 2007

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#### **OVERVIEW**

## Agreement Redefines Competitive Landscape; Opportunity to Pursue Step-Change in Performance for Farmers

This collaborative agreement redefines the seeds-and-traits opportunity in corn by:

- Bringing together the technologies of the two companies that have developed and commercialized the biotech traits widely in use today
- Working together to create new value for farmers otherwise impossible for either company to achieve independently
- Leapfrogging potential generic trait offerings to create the first eight-gene stack that defines the standard of performance, branded as *SmartStax*

### Value created by the *SmartStax* should:

- Provide farmers in the U.S. and globally with access to the industry's best-performing package of traits offered on the backbone of the highest-yielding germplasm so farmers don't have to make trade-offs on performance and protection
- Accelerate each company's ability to penetrate its available trait acreage targets
- **3** Allow each company the opportunity to increase sales of its owned brands

## First-Ever Eight-Gene Stack Leapfrogs Competitive Products, Boosting Performance, Creating New Value for Farmers

#### **SmartStax** Anatomy of first-ever eight-way gene platform **TRAIT GENES FUNCTION STATUS** • YieldGard VT Triple PRO **Pending Regulatory Review COMPONENTS** ▼ **Below-Ground Insect Control** YieldGard VT Rootworm/RR2 Commercial 2<sup>ND</sup>-GENERATION ROOTWORM CONTROL PRIMARY: ROOTWORM Roundup Ready 2 Technology **Weed Control** VIA YIELDGARD VT ROOTWORM/RR2 Commercial MODE: GLYPHOSATE YieldGard VT PRO 2<sup>ND</sup>-GENERATION YIELDGARD CORN **Above-Ground Insect Control PHASE IV** 2 **Pending Regulatory Review PRIMARY: CORN BORER** Herculex XTRA **COMPONENTS** ▼ **Above-Ground Insect** Herculex I Commercial Control **PRIMARY: CORN BORER Below-Ground Insect** 2 **Herculex RW** Control Commercial PRIMARY: ROOTWORM Weed Control **Liberty Link** Commercial **MODE: GLUFOSINATE** Application for EPA Multiple modes of **SmartStax** registration to be submitted action for above- and **Industry-Standard Trait** · On track for end-of-decade below-ground insect commercialization in U.S., Platform<sup>1</sup> and weed control with global roll-out following

SmartStax is in proof-of-concept testing, establishing:

- Feasibility of full trait integration
- Viability of enhanced performance for insect and weed control



SMARTSTAX CORN PLANTED
IN WESTERN IOWA, SHOWING
FULL, HEALTHY EARS AND
STRONG, HEALTHY ROOTS



1. This product has not been registered by the U.S. Environmental Protection Agency. It is a violation of federal law to promote or sell an unregistered pesticide.

## SmartStax Creates Platform that Revolutionizes Traits Game With Superior Performance in One Package

### **SmartStax**

Anatomy of first-ever eight-way gene stack

**ABOVE-GROUND INSECT PROTECTION ▼** 





BELOW-GROUND INSECT PROTECTION V





WEED CONTROL SYSTEM ▼





### **New value and opportunity for farmers:**

<u>Durability</u>. Combining multiple genes in a single package helps ensure sustainable insect protection and weed control year after year:

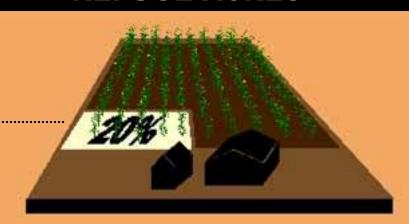
- Combined modes of action for insect protection guard against the development of insect resistance
- Combined herbicide tolerant traits that offer multiple modes of action for weed control

<u>Performance</u>. The complementary nature of the trait platforms converge to offer superior, season-long performance to farmers, notably:

- Enhanced control of a broader spectrum of above- and below-ground insects
- Most comprehensive protection against established and emerging secondary pests
- The industry's best weed control system.

## SmartStax Can Raise the Yield Potential and Grain Quality of the Whole Farm

### New value and opportunity for farmers: **REFUGE ACRES**



For insect resistance management (IRM), the U.S. EPA requires a set-aside refuge for all current single-mode-of-action insect-protected traits in corn.

Configurations can vary, but when planting an insect-protected trait, farmers in the Corn Belt are required to plant a dedicated 20% of acres to corn without that particular insect-protected trait.

Set aside refuge helps create a population of "susceptible" insects that can breed with any insects that may develop resistance to the traits, thus helping maintain the durability and usefulness of the traits.

### **SmartStax**

**Dual Effective Dose Provides Enhanced Durability** 

Combination of multiple modes of action for insect control in the *SmartStax* creates the potential to reduce refuge acres

- Multiple modes of action for insect control reduce likelihood of resistance developing in insects
- U.S. EPA granted refuge reduction based on dual effective dose in Bollgard II cotton

Farmers report significant grain quality and improved yield opportunity in acres protected by traits versus those in a set-aside refuge

 Side-by-side comparisons in Illinois indicate farmers experience an average 20 bu/acre yield difference between the performance of YieldGard VT Triple and on-farm refuge acres

## SmartStax Represents Broadest Control of Primary and Secondary Pests Available to Farmers



### PRODUCT OPPORTUNITY

### Market Research Confirms in Performance-Driven Market, SmartStax Creates Value Recognized by Farmers

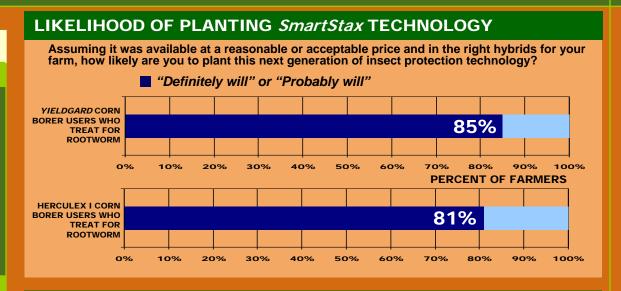
### MARKET RESEARCH<sup>1</sup>

### **KEY CONCLUSIONS**▼

- Farmers recognize premium value for performance of SmartStax
- Farmers are likely to switch brands to get the premium value of SmartStax
- Farmers are likely to increase base treated acres because of SmartStax

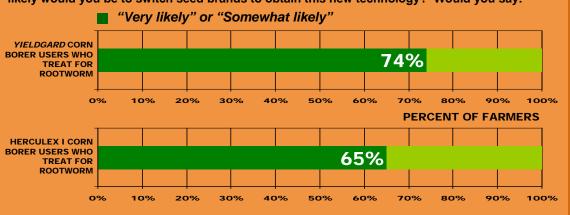
#### **BUSINESS OPPORTUNITIES**▼

- Monsanto and Dow seed brands have the opportunity to use *SmartStax* to compete for share gains
- 2 SmartStax should help drive penetration faster and gain a larger share of acres where the technology is a fit





If your current seed brand did not offer this new Monsanto Insect Protection Technology, how likely would you be to switch seed brands to obtain this new technology? Would you say:



<sup>1.</sup> Based on a sample of 245 corn growers

## Ground-Breaking Deal Creates New Opportunities for Both Monsanto and Dow AgroSciences Globally

### **AGREEMENT OVERVIEW**

Cross licensing agreement enables development of first-ever eight-way gene stack – the *SmartStax* – that provides multiple sources of insect control and herbicide tolerance to improve performance for farmers

	DOW ACROSCIENCES	BAORIC A NITO
	DOW AGROSCIENCES	MONSANTO
TECHNOLOGY CONTRIBUTIONS	<ul><li>Herculex I</li><li>Herculex RW</li><li>Liberty Link</li></ul>	YieldGard VT Triple PRO  2ND GEN ROOTWORM CONTROL 2ND GEN YIELDGARD CORN BORER ROUNDUP READY 2 TECHNOLOGY
	Dow has ability to sell     SmartStax in any Dow-owned brand	<ul> <li>Monsanto has ability to sell SmartStax in any Monsanto-owned brands, including DEKALB and ASI brands</li> <li>Monsanto is the representative for joint third-party licensing through Holden's/Corn States</li> </ul>
MARKET APPROACH		

<sup>\*</sup> Dow AgroSciences includes Dow AgroSciences and relevant affiliates, including Mycogen Plant Sciences, Inc., as appropriate