



# Monsanto Biennial Investor Event

MONSANTO



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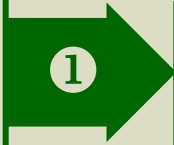
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# Growth in Seeds and Traits Triggers Next Phase in Evolution: Monsanto Becomes a “Yield” Company



MONSANTO IS A “YIELD” COMPANY



YIELD

Building from early advantage on traits, Monsanto shifts from components of yield to total yield to create enduring yield advantage



EXPANSION

Global demand requires productivity to expand, creating catalyst for an expanded scale geographically and across crop platforms

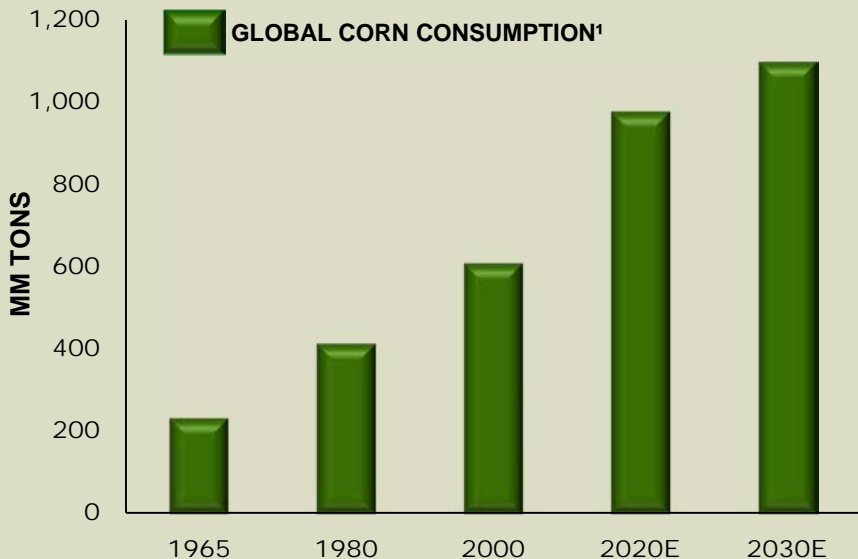


R&D CONVERGENCE

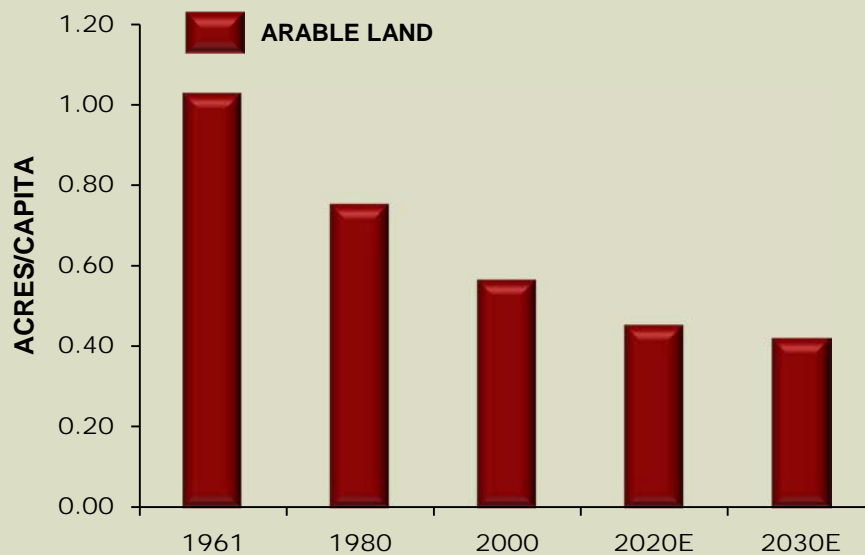
R&D’s next wave comes as breeding and biotechnology reach synergy; Monsanto uniquely able to leverage convergence to deliver total yield

# Global Demand Pull on Grain Becoming Even More Pronounced; Sustainably Increasing Productivity Per Acre Vitally Important

**STRETCHING SUPPLY**  
**GLOBAL CORN DEMAND<sup>1</sup>**



**ARABLE LAND PER CAPITA**  
**WORLDWIDE<sup>1</sup>**

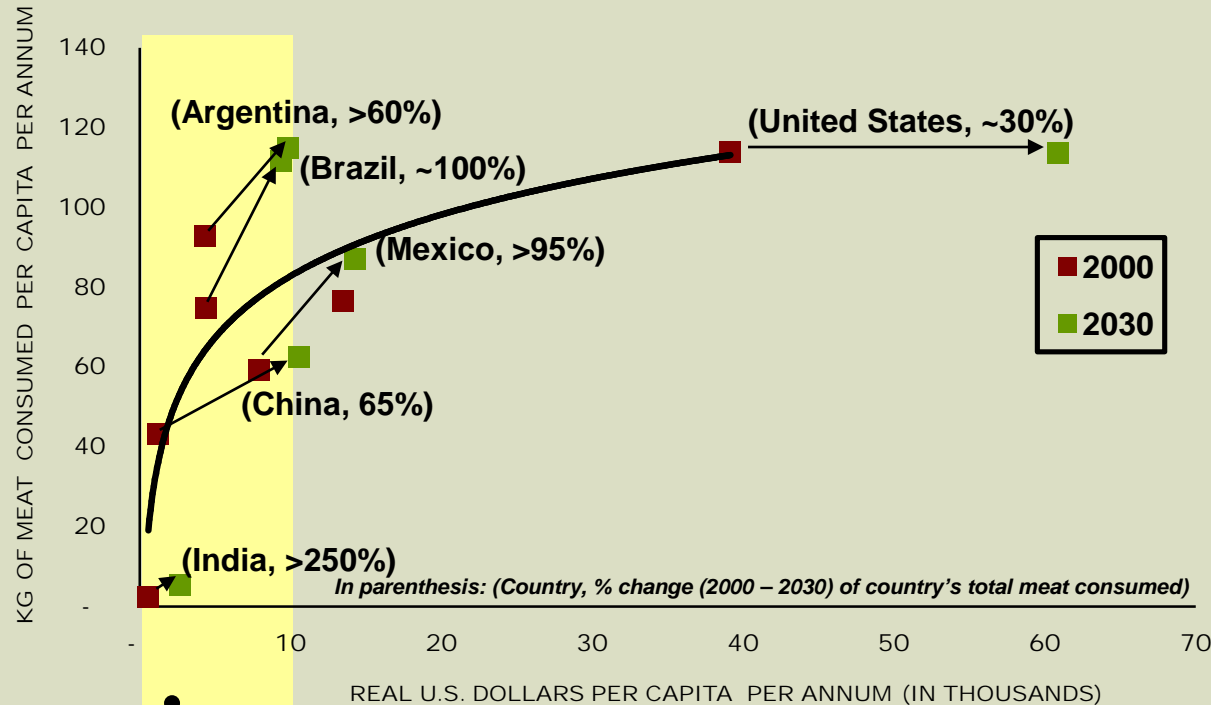


**STATE OF AGRICULTURAL FACTORS: INCREASING GRAIN DEMAND FOR FEED**

- ① GDP and population growth are driving protein demand
- ② Arable land per capita decreasing; yields must grow steadily each year to meet demand

# Underlying Increasing Grain Demand Curves Is Structural Need For More Protein As Global Income Rises

## INCREASING PROTEIN DEMAND: RELATIONSHIP BETWEEN GDP AND MEAT CONSUMPTION<sup>1</sup>



**As countries increase wealth, meat consumption rises – driving grain demand**

## GLOBAL GRAIN SNAPSHOT INCREASING GRAIN DEMAND FOR FEED

**FACTORS:**

- ① GDP and population growth are driving protein demand
- ② World demand for protein growing at 1.4% annually

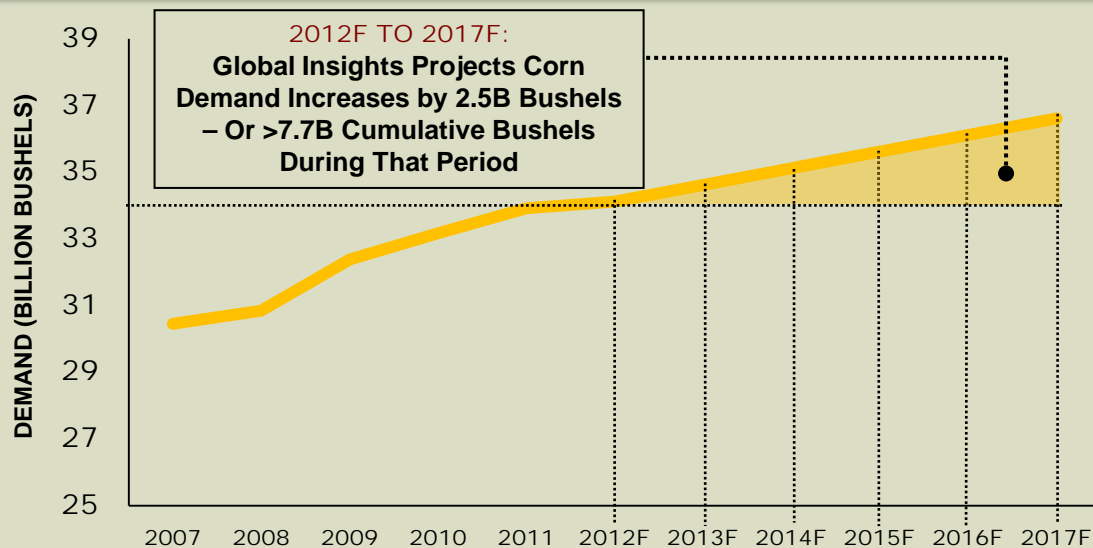
**Demand for Protein Requires More Grain**

	YEARLY INCREMENTAL DEMAND	ANNUAL GROWTH RATE
CORN	~500M BU	1.3% to 1.5%
SOYBEANS	~200M BU	2.2% to 2.4%

# Given Demand Projections, Incremental Grain Demand Over Next Five Years Reflects \$80 Billion of Cumulative Market Value

## VALUE OF DEMAND PULL:

### GLOBAL INSIGHTS PROJECTED CORN DEMAND 2012F-2017F<sup>1</sup>



## MARKET VALUE: CUMULATIVE VALUE 2012F-2017F

*At projected demand and commodity-price levels, the incremental demand created in the next five years has a market value of ~\$80B cumulatively – creating significant pool of value within agricultural sector*

### CUMULATIVE VALUE

	5-YEAR CUMULATIVE INCREASE <sup>1</sup>	COMMODITY PRICE <sup>2</sup>	MARKET VALUE
CORN	7.7B	\$4.20/bu	\$32B
SOYBEANS	3.5B	\$10.30/bu	\$36B
COTTON	16.7B	\$0.72/lb	\$12B

**TOTAL ~\$80B**

CORN	CUMULATIVE INCREASE IN DEMAND BY YEAR (IN BUSHELLS)	0.5B	1B	1.5B	2B	2.5B
	5-YEAR CUMULATIVE DEMAND INCREASE (IN BUSHELLS)	7.7B				

SOYBEANS	CUMULATIVE INCREASE IN DEMAND BY YEAR (IN BUSHELLS)	0.2B	0.4B	0.6B	0.8B	1B
	5-YEAR CUMULATIVE DEMAND INCREASE (IN BUSHELLS)	3.5B				

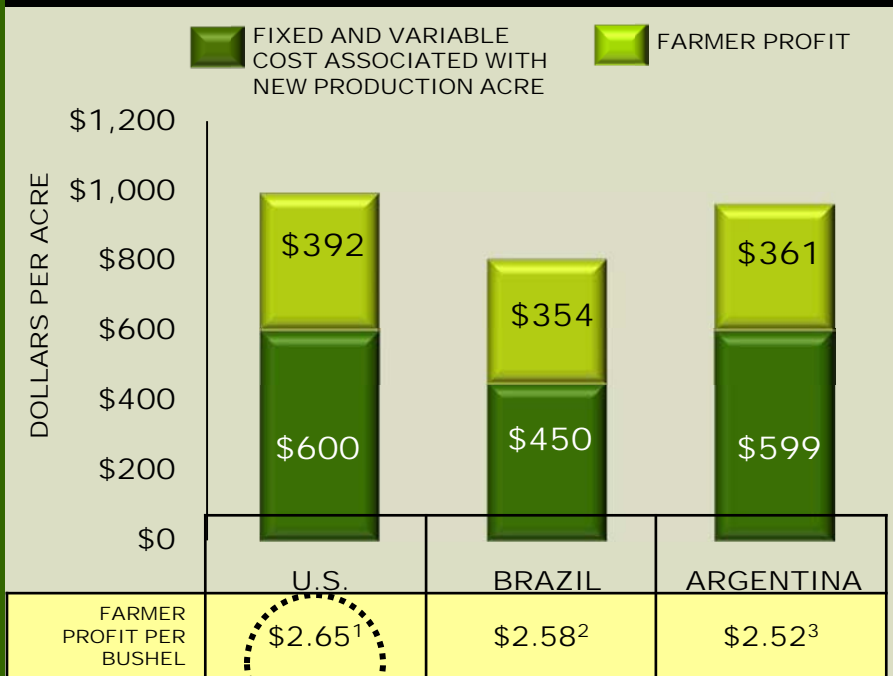
COTTON	CUMULATIVE INCREASE IN DEMAND BY YEAR (IN LBS)	1B	2B	3B	4B	5B
	5-YEAR CUMULATIVE DEMAND INCREASE (IN LBS)	16.7B				

1. Global Insights  
2. February 2011 USDA ten-year production forecast

# Increased Production Expected to Come From Productivity of Existing Acres, Not Acre Expansion – Raising Focus on Yield

## FACTOR: ACRE EXPANSION

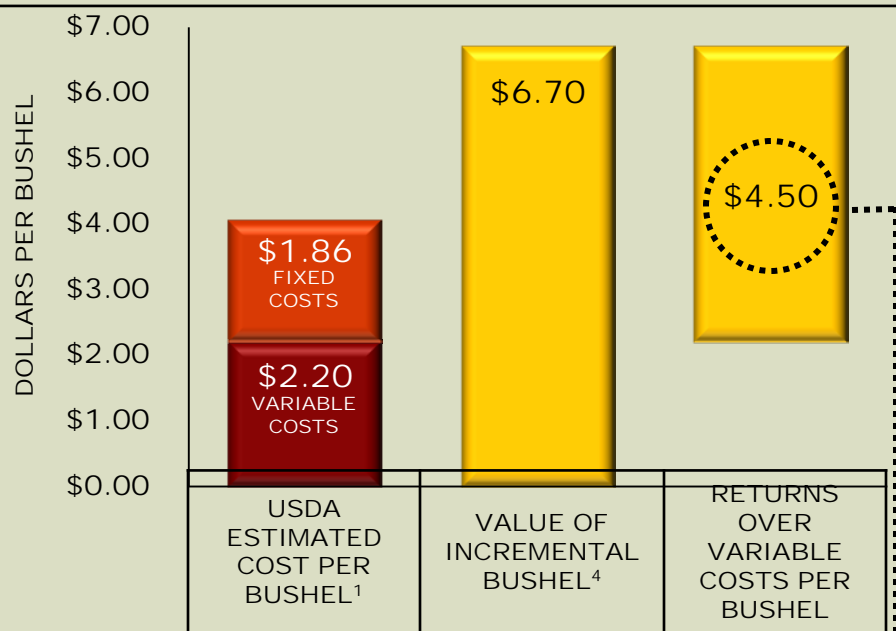
### COST ANALYSIS OF ADDING INCREMENTAL CORN ACRES BY GEOGRAPHY



## FACTOR: INCREASED YIELD ON EXISTING ACRES

### USDA PER-BUSHEL RETURNS: 2011 CROP BUDGETS FOR CORN<sup>1</sup>

Data analysis of USDA 2011 Cost of Production Forecast<sup>1</sup>, calculated on per-bushel basis at USDA-projected yield forecast of 150 bu/ac<sup>4</sup>



### FARMER-RETURN RATIO FAVORS NEW YIELD OVER NEW ACRES

>1.5X

Significant fixed costs make the economics for cultivating new acres less financially attractive relative to leveraging fixed costs to generate more bushels on existing acres

1. USDA Economic Research Service, Commodity Costs and Returns: 2011F (<http://www.ers.usda.gov/data/costsandreturns/>)

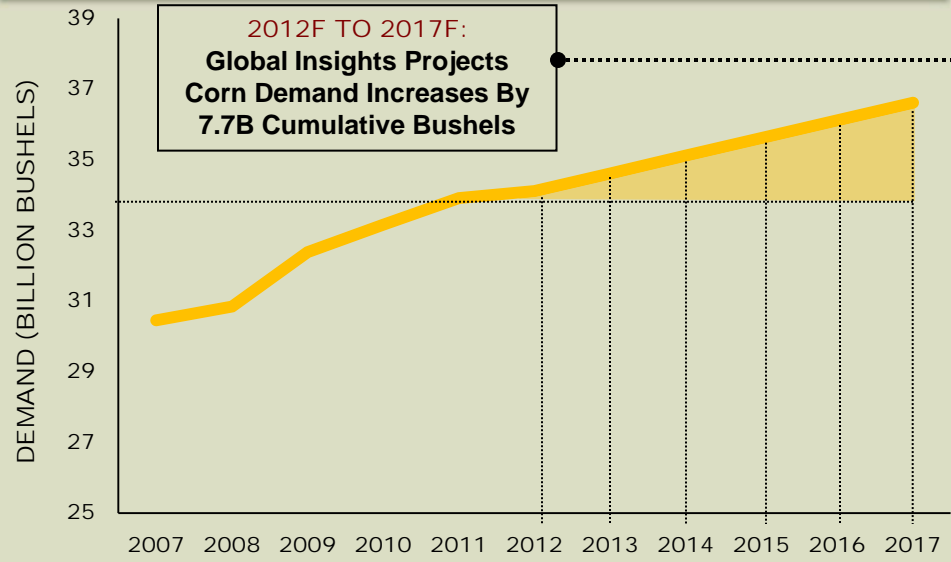
2. Agroconsult, 2011 Summer Season - Parana

3. Margenes Agropecuarios - Nº 308 - Feb'2011

4. USDA World Agricultural Supply and Demand Estimates, 10/12/11 – Commodity mid-point of projected \$6.20-\$7.20 bu price band

# Within Corn, Greatest Productivity Opportunity Lies in Geographies Where Monsanto's Yield Technology Is Established

## VALUE OF DEMAND PULL: GLOBAL INSIGHTS PROJECTED CORN DEMAND 2012F-2017F<sup>1</sup>



		12/13	13/14	14/15	15/16	16/17
CORN	CUMULATIVE INCREASE IN DEMAND BY YEAR (IN BUSHELBS)	0.5B	1B	1.5B	2B	2.5B
	5-YEAR CUMULATIVE DEMAND INCREASE (IN BUSHELBS)					7.7B

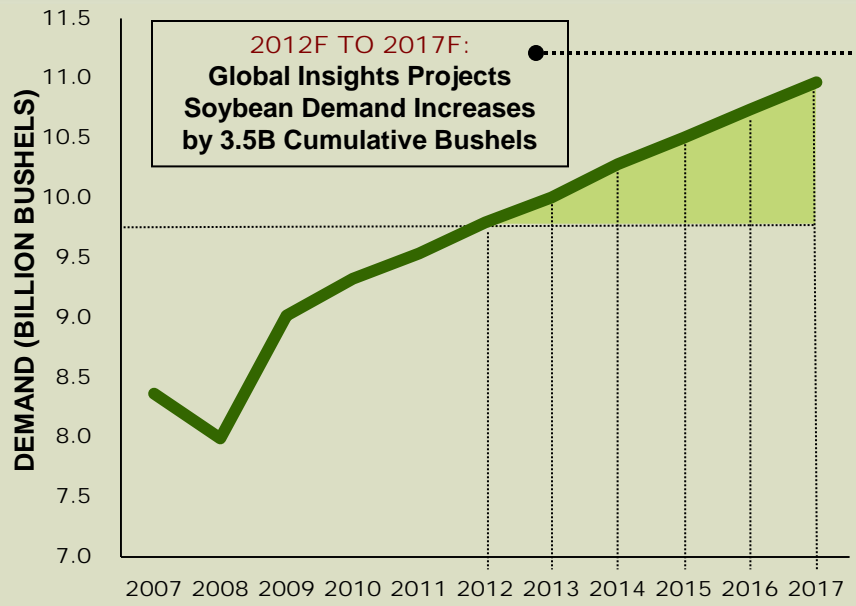
## SOURCES OF INCREMENTAL CORN PRODUCTION<sup>1</sup>



U.S.	Yield gains driven by new seed introductions and upgrades to successive generations of technology
BRAZIL/ ARGENTINA	Monsanto's leading footprint drives trait penetration and upgrade to stacked traits on latest germplasm
EMERGING MARKETS	Acreage expansion, hybrid conversion and germplasm upgrades drive production gains in emerging markets such as China, Eastern Europe and Mexico

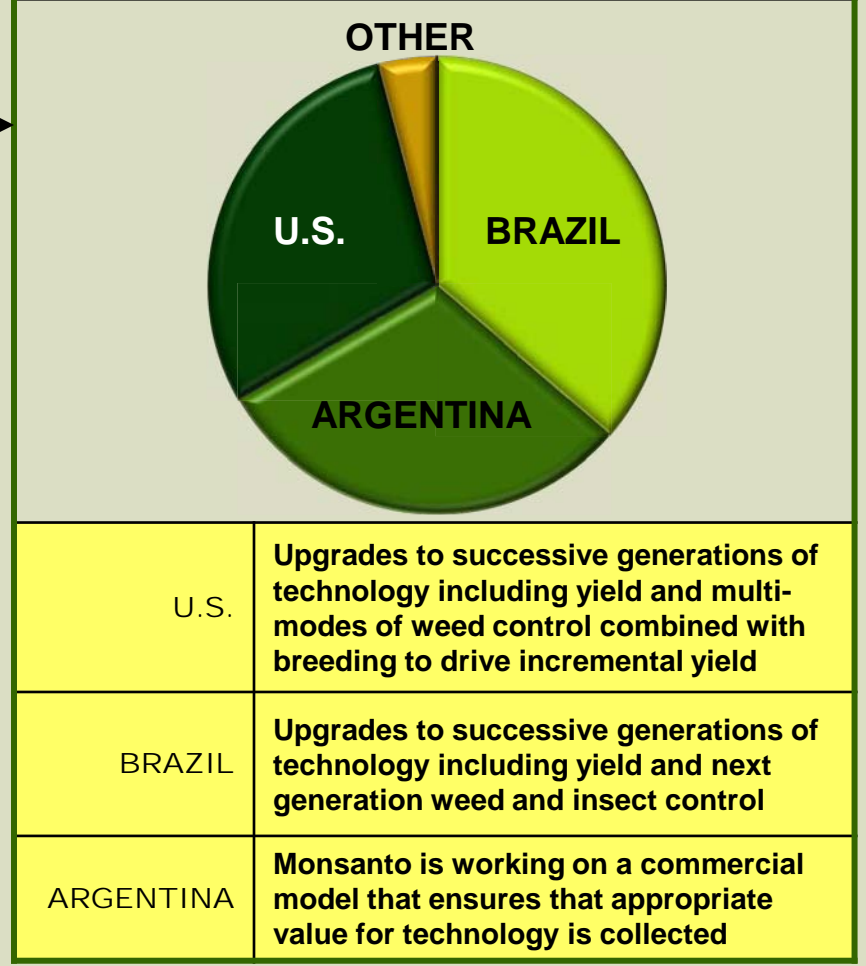
# Within Soybeans, Upgrade to Monsanto's Second-Generation Technology Helps Drive Productivity in Key Geographies

## VALUE OF DEMAND PULL: GLOBAL INSIGHTS PROJECTED SOYBEAN DEMAND 2012F-2017F<sup>1</sup>



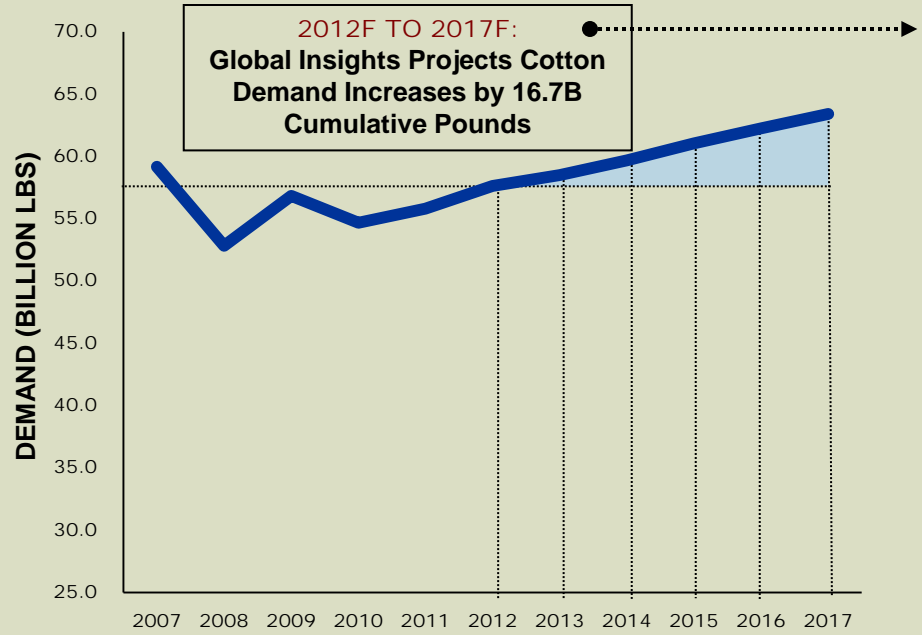
		12/13	13/14	14/15	15/16	16/17
SOYBEANS	CUMULATIVE INCREASE IN DEMAND BY YEAR (IN BUSHELBS)	0.2B	0.4B	0.6B	0.8B	1B
	5-YEAR CUMULATIVE DEMAND INCREASE (IN BUSHELBS)					3.5B

## SOURCES OF INCREMENTAL SOYBEAN PRODUCTION<sup>1</sup>



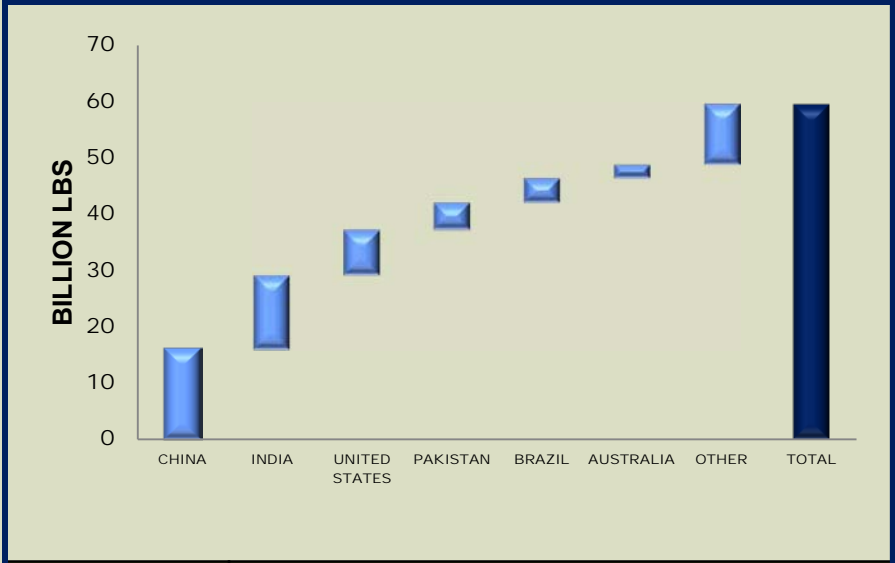
# Within Cotton, Greatest Productive Capability Geographies With Strongest Adoption of New Technology to Drive Yield

## VALUE OF DEMAND PULL: GLOBAL INSIGHTS PROJECTED COTTON DEMAND 2012F-2017F<sup>1</sup>



		12/13	13/14	14/15	15/16	16/17
COTTON	CUMULATIVE INCREASE IN DEMAND BY YEAR (IN LBS)	1B	2B	3B	4B	5B
	5-YEAR CUMULATIVE DEMAND INCREASE (IN LBS)					

## 2011 COTTON PRODUCTION<sup>2</sup>

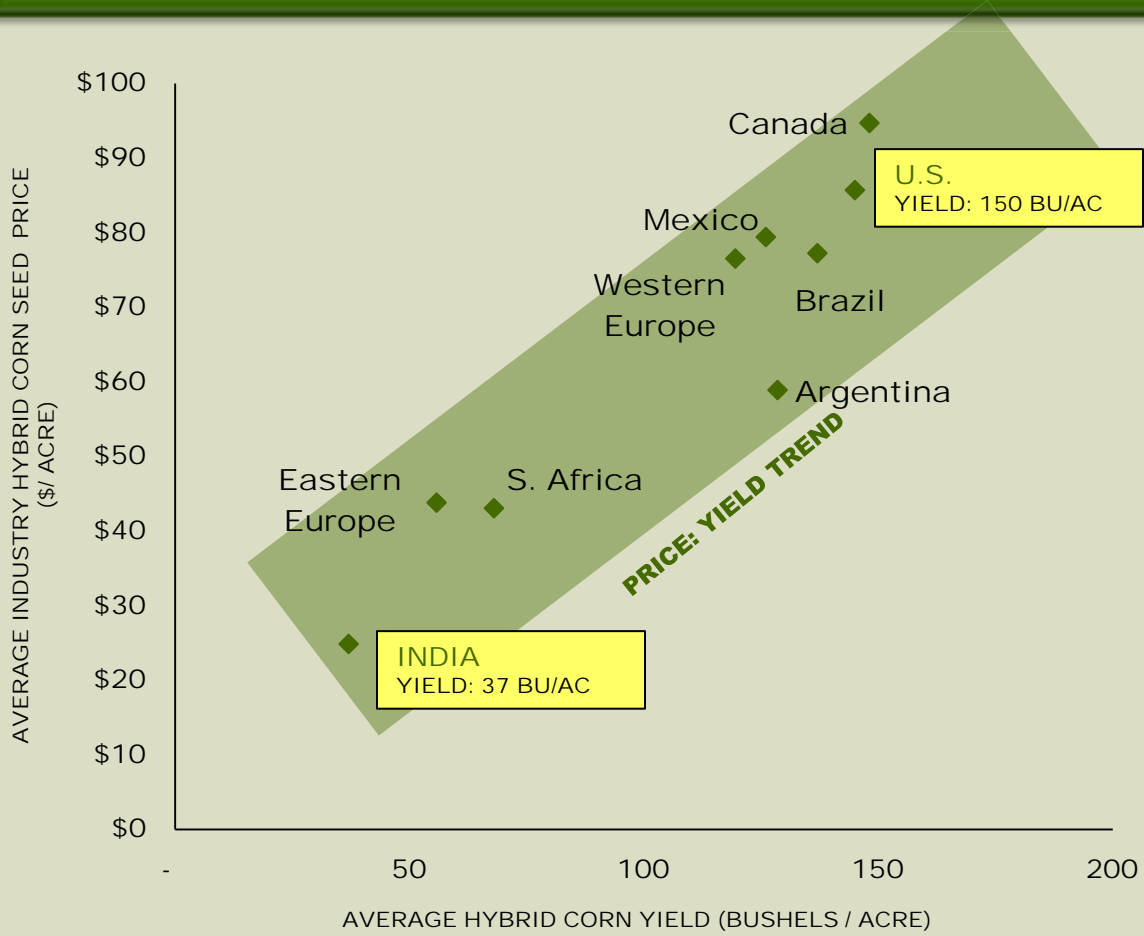


U.S.	<b>Germplasm improvements and turnover to new genetics driving production gains</b>
INDIA	<b>Germplasm improvements and adoption of second generation traits driving production gains</b>
AUSTRALIA	<b>Germplasm improvements driving production gains</b>
EMERGING MARKETS	<b>Acreage expansion and yield gains drive production gains in emerging markets such as China and Pakistan</b>

1. Global Insights, 2011  
2. USDA PSD on-line query, Oct 2011/12

# The Value of Yield Is Consistent and Demonstrated; As Yield Increases, Seed Value Reflects Incremental Gains

## YIELD VALUE: HYBRID CORN PRICE RATIO TO REALIZED YIELD BY GEOGRAPHY<sup>1, 2, 3, 4</sup>



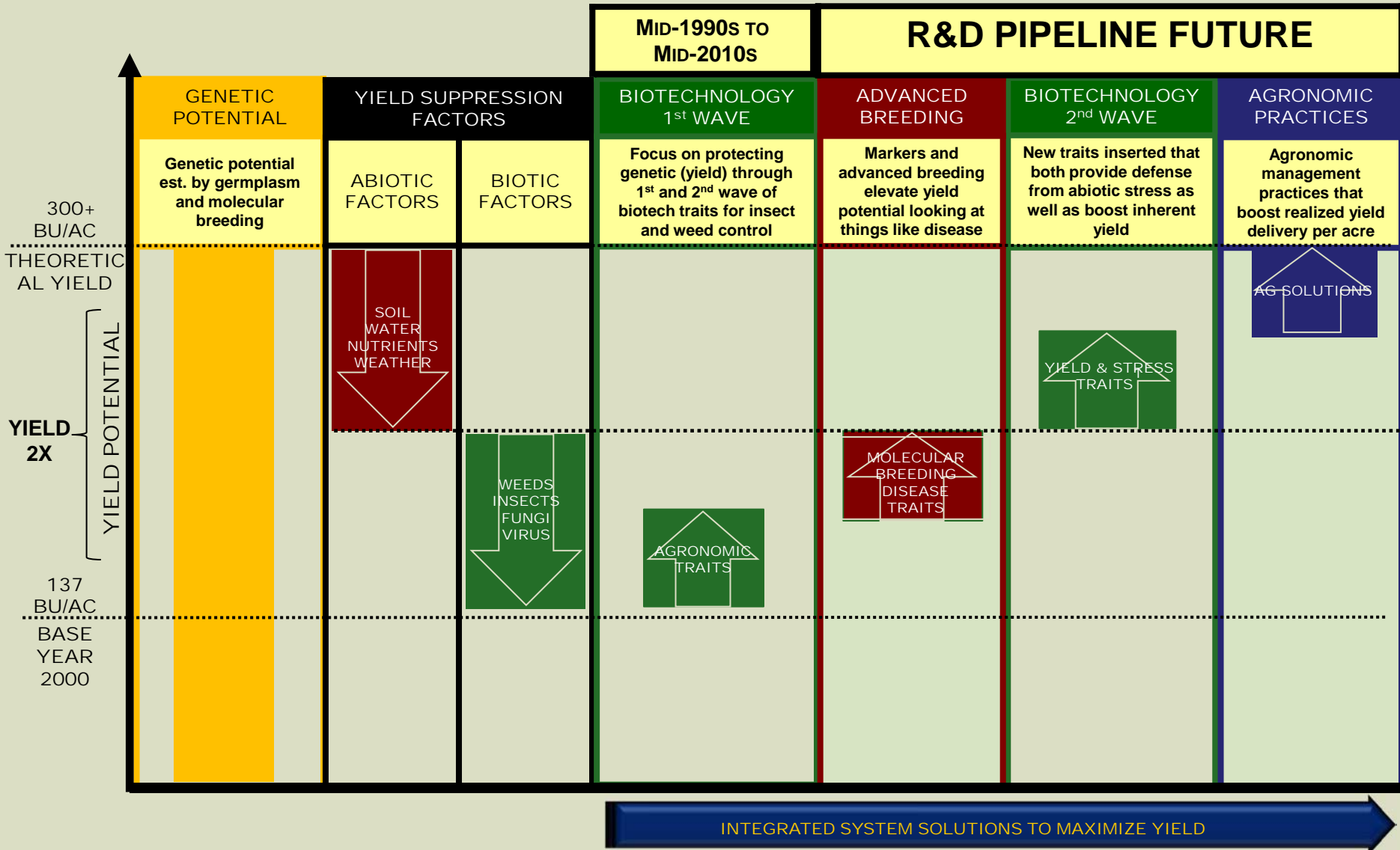
## PRICE: YIELD TREND

Even in geographies with different yields, the effective price per bushel of seed is in the same range, demonstrating two key opportunities:

- ① YIELD IS VALUED IN EVERY KEY GEOGRAPHY  
Regardless of absolute yield, the relative ratio of yield-to-seed price holds in every critical growth geography, establishing baseline value of yield
- ② IF YIELD INCREASES, THE INCREMENTAL VALUE FOLLOWS  
Because ability to capture value is demonstrated, as yield in geographies like Brazil and Eastern Europe increase, the realized seed value is expected to increase proportionally

1. USDA Economic Research Service, Commodity Costs and Returns: 2011F (<http://www.ers.usda.gov/data/costsandreturns/>)  
 2. Agroconsult, 2011 Summer Season - Parana  
 3. Margenes Agropecuarios - Nº 308 - Feb/2011  
 4. Monsanto Internal Estimates

# Delivering Yield Requires Innovation and Multiple Avenues; Monsanto Is Well Positioned to Deliver Yield



# Monsanto's Capabilities Lie In All Areas that Drive Yield, Creating Compelling Strategic Opportunity

## YIELD PROTECTION

### INSECT CONTROL

MONSANTO FOCUS:

- **Insect-control traits, including multi-mode successive generation**

### WEED CONTROL

MONSANTO FOCUS:

- **Roundup Ready Plus weed-management system**
- **Second-generation weed-control traits**

### DISEASE & FUNGAL CONTROL

MONSANTO FOCUS:

- **Acceleron seed treatments**

## YIELD ENHANCEMENT

### BREEDING BETTER YIELD POTENTIAL

MONSANTO FOCUS:

- **World's largest and leading breeding program**

### YIELD-ENHANCING TRAITS

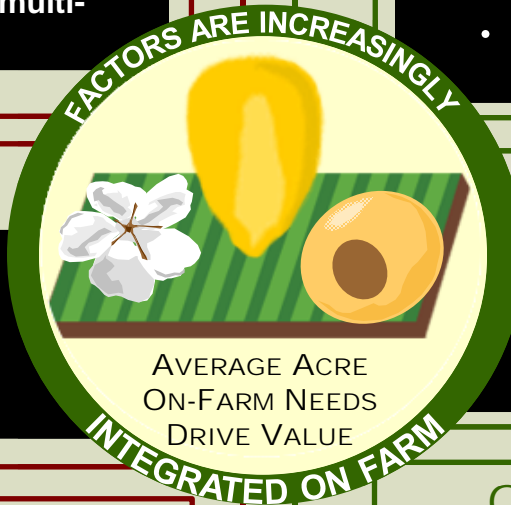
MONSANTO FOCUS:

- **Expansive biotech R&D pipeline, including Yield & Stress**

### ON-FARM AGRONOMIC PRACTICES

MONSANTO FOCUS:

- **Extensive data generated on seed products that could be used to maximize yield in precision agriculture**



INTERSECTION OF SEED & TRAIT STRATEGY

NEW OPPORTUNITY

# Increasing Demand for Grain Creates an Opportunity: Monsanto will Capitalize by Increasing Farmer's Productivity

## YIELD

DEMAND AND STRATEGY  
FOCUS

Building from early advantage on traits, Monsanto shifts from components of yield to total yield to create enduring yield advantage

- ➔ **Growing Populations And Protein Demand Will Drive Demand For Coarse Grains, Oilseeds And Cotton**
- ➔ **Supply Will Come More From Yield Rather Than New Acres**
- ➔ **Yield Is Valuable – Growers Pay For Yield**
- ➔ **Monsanto Has A Competitive Advantage In The Development Of Yield**