

LEGEND

Pest Management	Increased Yield	Stress Tolerance	Crop Composition
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EARLY DEVELOPMENT		ADVANCED DEVELOPMENT (NEXT 5-7 YEARS)	
Insect Resistance	4 th -Generation Below-Ground Insect Protection (Monsanto)	Herbicide Tolerance	3 rd -Generation Herbicide Tolerance (Monsanto)
Insect Resistance	4 th -Generation Above-Ground Insect Protection (Monsanto)	Herbicide Tolerance	4 th -Generation Herbicide Tolerance (Monsanto)
Insect Resistance	New Modes of Action Coleopteran III (DuPont Pioneer)	Herbicide Tolerance	Enlist™: 2,4-D & FOP (Dow AgroSciences)
Insect Resistance	New Modes of Action Lepidopteran III (DuPont Pioneer)	Herbicide Tolerance	(Syngenta)
Insect Resistance	Next-Generation Above-Ground Insect Control Traits (Syngenta)	Insect Resistance	Trecepta™ Above-Ground Insect Protection (Monsanto)
Pest Management	Biotech Disease Control (Monsanto)	Insect Resistance	SmartStax® PRO (Monsanto, Dow AgroSciences)
Increased Yield	Yield & Yield Stability (Dupont Pioneer)	Insect Resistance	Qrome™ (DuPont Pioneer)
Increased Yield	2 nd -Generation Higher-Yielding (Monsanto, BASF)	Insect Resistance	Next-Generation CRW (Syngenta)
Increased Yield	Higher-Yielding (Monsanto, BASF)	<p>PEST MANAGEMENT TRAITS</p> <p>CRW = Corn Rootworm</p> <p>Enlist™ = Dow AgroSciences herbicide trait providing tolerance to 2,4-D and “FOP” herbicides</p> <p>“Early Development” may include products in their research, discovery and proof of concept phases, as well as early product development.</p> <p>“Advanced Development” products are in late stages of development and have an expected launch date within the next five to seven years, subject to regulatory approvals. Contact individual trait developers for timelines and estimated launch dates.</p>	
Stress Tolerance	Drought Tolerance II (DuPont Pioneer)		
Stress Tolerance	Genuity® DroughtGard® Platform Expansion (Monsanto, BASF)		
Stress Tolerance	Novel Yield & Stress Traits (Syngenta)		



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Herbicide Tolerance	4 th -Generation Herbicide Tolerance (Monsanto)	Herbicide Tolerance	Roundup Ready 2 Xtend™ (Monsanto)
Insect Resistance	3 rd -Generation Insect Protection (Monsanto)	Herbicide Tolerance	3 rd -Generation Herbicide Tolerance: Roundup Ready Xtend™ Crop System + 3 rd Mode of Action (Monsanto)
Insect Resistance	Hemipteran (DuPont Pioneer)	Herbicide Tolerance	Multiple Mode (DuPont Pioneer)
Insect Resistance	Lepidopteran (DuPont Pioneer)	Herbicide Tolerance	HPPDi + Glufosinate (Syngenta, Bayer)
Nematode Resistance	SCN (Syngenta)	Herbicide Tolerance	Enlist™: 2,4-D + Glufosinate (Dow AgroSciences)
Nematode Resistance	SCN (Bayer)	Herbicide Tolerance	Enlist E3™: 2,4-D + Glyphosate + Glufosinate (Dow AgroSciences, M.S. Technologies)
Disease Resistance	ASR (DuPont Pioneer)	Herbicide Tolerance	Balance™ GT/LL: Glyphosate + HPPDi + Glufosinate (Bayer, M.S. Technologies)
Disease Resistance	(Syngenta)	Herbicide Tolerance	Balance™ GT: Glyphosate + HPPDi (Bayer, M.S. Technologies)
Fungal Resistance	(BASF)	Herbicide Tolerance/ Insect Resistance	Enlist E3™ + Conkesta™: 2,4-D + Glyphosate + Glufosinate + 2 Bt Traits (Dow AgroSciences)
Increased Yield	Next-Generation Higher-Yielding (Monsanto, BASF)	Insect Resistance	2 nd -Generation Insect Protection (Monsanto)
Increased Oil & Improved Meal Value	(DuPont Pioneer)	SDA-Enhanced (stearidonic acid)	(Monsanto)
		Vistive® Gold	Improved Oil Profile (Monsanto)

PEST MANAGEMENT TRAITS

SCN = Soybean Cyst Nematode

Bt = *Bacillus thuringiensis*

ASR = Asian Soybean Rust

RR = Roundup Ready®

LL = Liberty Link™, tolerant to glufosinate herbicides

HPPDi = Hydroxyphenylpyruvate deoxygenase inhibitor, family of herbicides

Enlist™ = Dow AgroSciences herbicide trait providing tolerance to glyphosate, 2,4-D, glufosinate

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Herbicide Tolerance	Next-Generation Herbicide Tolerance (Bayer)	Herbicide Tolerance	Enlist™ (Dow AgroSciences)
Herbicide Tolerance	4 th -Generation Herbicide Tolerance (Monsanto)	Herbicide Tolerance	Bollgard II® XtendFlex® (Monsanto)
Insect Resistance	4 th -Generation Bollgard® (Monsanto)	Herbicide Tolerance/ Insect Resistance	GlyTol™ TwinLink™ Plus: Glufosinate + Glyphosate + Expanded Insect Resistance (Bayer)
		Insect Resistance	Bollgard® 3 (Monsanto)
		Insect Resistance	Lygus Control (Monsanto)

PEST MANAGEMENT TRAITS

Enlist™ = Dow AgroSciences herbicide trait providing tolerance to 2,4-D and glufosinate

GlyTol™ = Glyphosate Tolerant, tolerant to glyphosate herbicides

TwinLink™ = Bayer dual insect resistance trait plus tolerant to glufosinate herbicides

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Insect Resistance	Dual Mode of Action Lepidopteran Protection (DuPont Pioneer)		

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Herbicide Tolerance	Dicamba Tolerance (Monsanto)	Herbicide Tolerance	TruFlex™ Roundup Ready® (Monsanto)
Oil Quality	(Bayer)	Herbicide Tolerance	Optimum® GLY (DuPont Pioneer)
<p>PEST MANAGEMENT TRAITS RR = Roundup Ready® LL = Liberty Link™, tolerant to glufosinate herbicides</p> <p>“Early Development” may include products in their research, discovery and proof of concept phases, as well as early product development.</p> <p>“Advanced Development” products are in late stages of development and have an expected launch date within the next five to seven years, subject to regulatory approvals. Contact individual trait developers for timelines and estimated launch dates.</p>		Herbicide Tolerance	LL (DuPont Pioneer)
		Herbicide Tolerance	Optimum® GLY + LL (DuPont Pioneer)
		Herbicide Tolerance	LL (Monsanto, Bayer)
		Herbicide Tolerance	RR + LL (Bayer)
		Herbicide Tolerance	TruFlex™ RR + LL (Bayer, Monsanto)
		Healthy Fatty Acids	(BASF, Cargill)



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Alfalfa			
Herbicide Tolerance	Next-Generation Herbicide Tolerance (Monsanto, Forage Genetics International)	Reduced Lignin	HarvXtra™ Reduced-Lignin (Monsanto, Forage Genetics International)
Bean			
		Virus Resistance	Geminivirus (Embrapa/Brazil)
Eggplant			
		Insect Resistance	Bt Brinjal (Maharashtra Hybrid Seeds Company)
Potatoes			
		Virus Resistance	Potato Virus Y (Tecnoplant/Argentina)
Sugarbeet			
Higher Yielding	(BASF, KWS)		
Wheat			
Herbicide Tolerance	Herbicide Tolerance I (Monsanto)		
Herbicide Tolerance	Herbicide Tolerance II (Monsanto)		
Increased Yield	Hybrid Wheat Technology (DuPont Pioneer)		

PEST MANAGEMENT TRAITS

Bt = *Bacillus thuringiensis*

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