

PIONEER® Seed Technology Pipeline

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Soybean Technology



Accelerated Yield Technology (AYT)

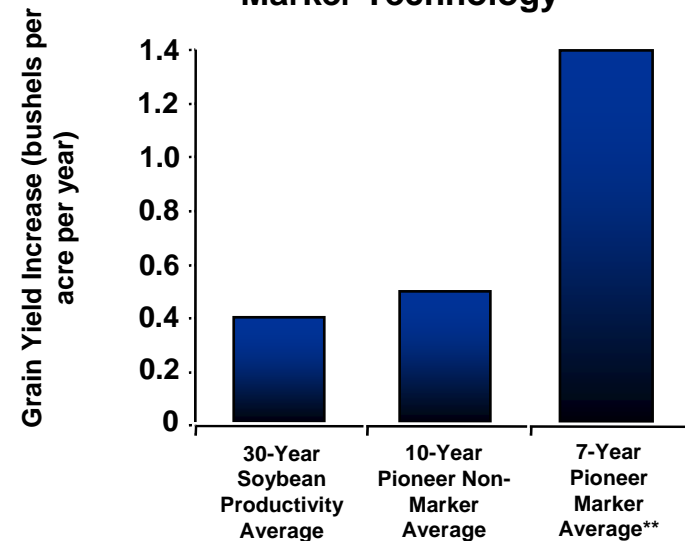
§ Proprietary Innovation Developed by DuPont/Pioneer Scientists

- New varieties available in 2008
- Full line-up penetration by 2012

Increases Soybean Yields up to 12%

- Doubles the rate of yield gain vs. traditional methods

Soybean Yield Increase through Marker Technology



Yield Acceleration via Marker Assisted Selection (MAS)

- § Until now, MAS techniques have only produced single-gene defensive traits in commercial varieties.
- § Yield is controlled by multiple genes in complex networks
- § AYT allows researchers to simultaneously select multiple genes to significantly boost yields.
- § AYT is not transgenic so soybeans developed from this process are not subject to additional regulatory approvals.



Technology for Soybeans & Corn





The Optimum™ GAT™ trait offers a new and better choice in glyphosate tolerance for corn and soybean seed that:

- Maximizes yield and productivity
- Improves crop safety
- Expands weed control options

This trait enables multiple modes of action to provide growers with longer lasting, broader spectrum weed control under more conditions.

Soybeans 2009

Corn 2010

Pending regulatory approval

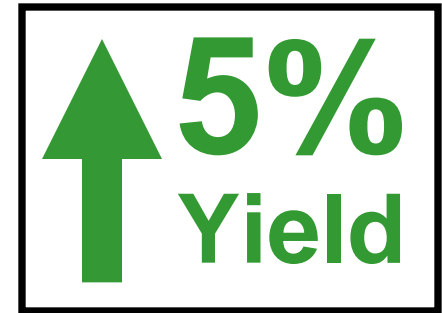


Maximizing Yield & Productivity

Soybeans

Three years of studies show no yield difference between soybeans with the Optimum™ GAT™ trait and the same isolines that were not transformed

Optimum GAT soybeans will result in a 2-3 bushel (5%) yield advantage



Corn Technology



Anthracnose Resistance

§ Stalk rot yield loss is estimated at >\$1 billion in North & South America

§ Available in limited release in 2008

**With
Anthracnose
resistance trait**



**Without
Anthracnose
resistance trait**



Drought Tolerance: Product Goal

- § Globally drought causes losses in excess of \$8 billion annually.
- § Pioneer is developing hybrids & varieties that use water more efficiently.
- § Evaluate tolerance at Managed Stress Environments
- § Three pronged approach:
 - Conventional breeding program
 - Molecular breeding program
 - Transgenes



Drought Testing: Managed Stress Environments



North America
Woodland, CA

South America
Viluco, Chile



Genetic Contrasts under MSE

Tolerant hybrid
Ear phenotype



Susceptible hybrid
Ear phenotype



Increased Ethanol Production

§ High Total Fermentable (HTF) hybrids produce 2-4% more ethanol

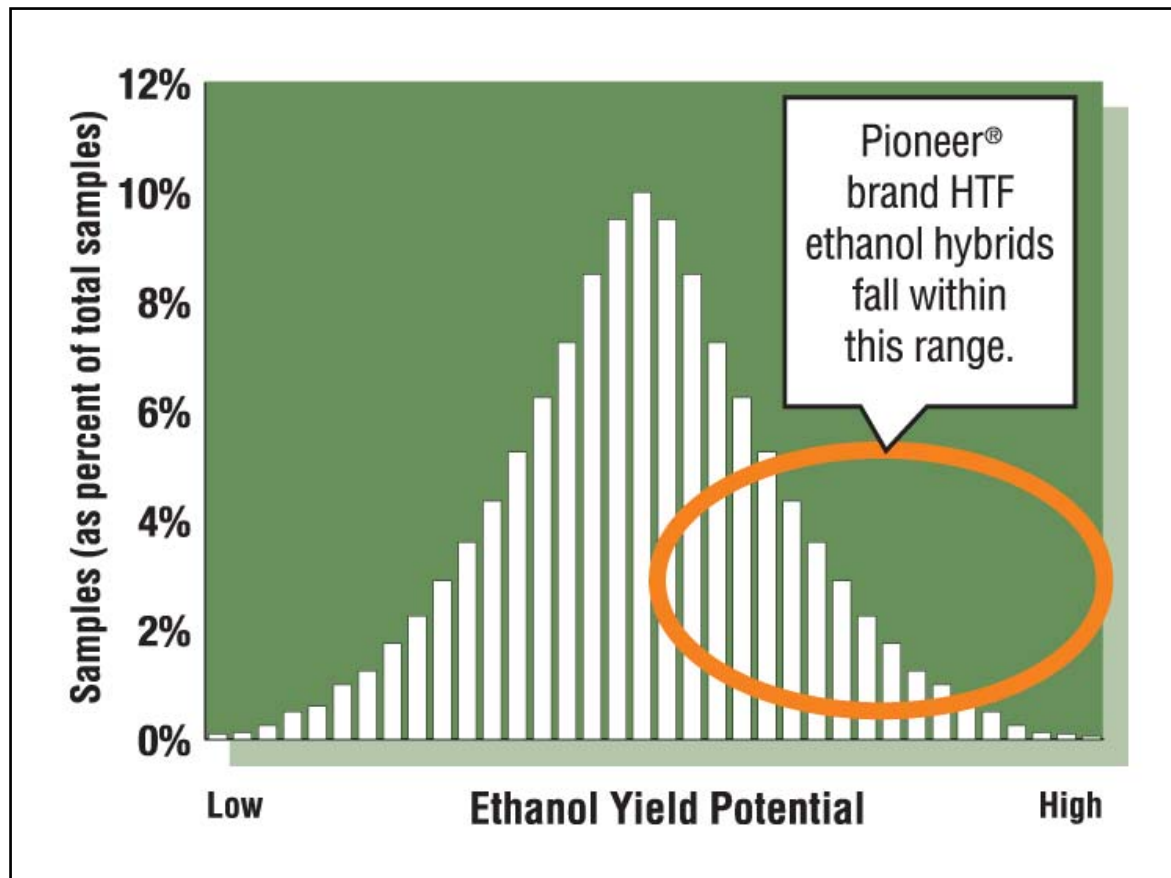
§ At 2009 usage levels, traits under development could add \$400-\$800 million per year to the value of corn purchased by dry grind ethanol processors.

§ Commercialization is expected in the next 3-5 years.



Increased Ethanol Production

**Each 1% Increase in Ethanol Yield
Is Worth About \$.05/Bushel**



Nitrogen Utilization Efficiency



To better test our hybrids with improved nitrogen traits, we purposefully create nitrogen-deficient environments like the one shown above



Nitrogen Utilization Efficiency

§ We are using transgenic and traditional research methods to improve NUE

§ Hybrids require reduced quantities of N while maintaining overall yield or increasing yield at existing levels of N usage.

§ Commercially available in 10 years

