Public-Private Cooperation in Agricultural Research

Mat Müller
Director, Business Development – Open Innovation Lead
DuPont Pioneer
Focusing on Seeds and Crop Protection

The Agriculture Division will offer a complete portfolio of products and technologies, and a robust pipeline of germplasm, traits and crop protection. The combined heritage and complementary capabilities of DuPont Crop Protection, Pioneer and Dow AgroSciences will make the future, intended Agriculture Company stronger, more competitive, and better equipped to deliver growth and value.

Our agricultural innovations will help shape the industry as we respond to important global challenges. Upon completion of the intended separations, the intended Agriculture Company, the intended Agriculture Company will remain committed to sustainable production agriculture, and intends to bring a broader suite of products, technologies and services to the market, faster. In this way, we can serve our customers better - meeting and exceeding their expectations for innovation and helping them to increase productivity and profitability.

ENRICHING THE LIVES OF THOSE WHO PRODUCE AND THOSE WHO CONSUME, ENSURING PROGRESS FOR GENERATIONS TO COME
From 1980 to 2014:
- 17% increase in global planted area
- 82% increase in productivity

_DuPont Pioneer Marketing Department; from selected world sources: USDA, FAO, Global Insight_
DUPONT PIONEER CORN BREEDING

Industry-leading germplasm, advanced technologies, local solutions

PRODUCTIVITY


COPPER CROSS HYBRID

PIONEER® HYBRIDS: 312A 321

PIONEER® HYBRID 307

PIONEER® HYBRID 3780

PIONEER® HYBRIDS: 3162 3394

PIONEER® BRAND FAMILY: P1151 P2088

PIONEER® BRAND FAMILY: P1197 P0157

Optimum® AcreMax® Products
Optimum® AQUAmax® Products
Ultra Early Corn

EXTENSIVE GERmplasm LIBRARY + SUPERIOR NATIVE TRAITS + ADVANCED ENABLING TECHNOLOGIES & METHODS = RIGHT PRODUCT, RIGHT ACRE
THE NEED FOR CROP PRODUCTIVITY TO MEET CONSUMER DEMAND

Food demand grows at a dramatic pace. There is immense pressure to do more with less, and be sustainable.

Must greatly increase production

Grain yield must increase to meet demand

Farming pressures - climate, pests, pricing

Must increase output off arable land

Must sustainably manage all resources

Increased fuel and emissions standards

**WORLD POPULATION**

*In Billions, Estimated*

<table>
<thead>
<tr>
<th>Year</th>
<th>2014</th>
<th>2033</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.2</td>
<td>8.5</td>
</tr>
</tbody>
</table>

**GLOBAL ARABLE LAND**

*Acres per person*

<table>
<thead>
<tr>
<th>Year</th>
<th>2014</th>
<th>2033</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.5</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Data Source: Census Bureau for population figures and FAO for arable land figure.

*Uses 2014 arable land figures for 2033 acres per person calculation*
PRODUCTIVITY INCREASES AND CONSUMER DESIRES REQUIRE INNOVATION IN THE AG INDUSTRY

HEALTH & SAFETY

KNOWING THE “FOOD’S STORY”

“FREE FROM” FOOD SOURCES

ENVIRONMENTAL STEWARDSHIP

LESS FOOD WASTE
### INNOVATION

We believe that through **OPEN INNOVATION** we can innovate at a greater rate and efficiency than we could alone, while demonstrating our commitment to enabling others with access to technology.

---

**Our Commitment**

Pioneer is committed to transparent communication about its use of technology, and to making such technology available to others through an **OPEN INNOVATION FRAMEWORK** that invites innovators all over the world to contribute to the development of new agricultural solutions.
“DuPont Pioneer is building on its long history of collaboration to advance science-based customer solutions by enhancing its open innovation strategy”

Neal Gutterson
OPEN INNOVATION

Our interests are broad…

…we share our expertise and assets
OPEN INNOVATION – WITH WHOM?

- Academic scientists and academic centers
- Not for profit organizations engaged in food security
- Consumer-oriented startup companies
- Innovation hubs – Incubators and accelerators
- Crowd sourcing organizations
- Industry partners
- Technology startups
- Companies with common interest in technology
- Innovators, globally
OPEN INNOVATION

• We’re calling on academia and public research institutes, as well as small and large companies to come together to drive the kind of innovation that will enable us to solve the most pressing challenges in agriculture

• We form alliances between our scientists and innovators to identify, develop and implement solutions that address the challenges growers face, and respond to consumer desires

• Key to our open innovation strategy:
  o Intensify collaborations with thought leaders and innovators globally, while making available germplasm, technologies and knowhow to selected collaborators
  o Five areas of focus for open innovation: traits, plant breeding, enabling technologies, biologicals and digital solutions

• Terms for open innovation projects are tailored on a case-by-case basis

Please join DuPont Pioneer and its open innovation strategy https://openinnovation.pioneer.com