The Role of Contracts in the Exercise of Plant Breeders’ Rights

Presented at the UPOV Symposium on Contracts in relation to Plant Breeders’ Rights

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PARTIES
• Public
• Private
• Banks
• NGOs
• Farmers

SUBJECT
• Product or Experimental; GMO or Non-GMO
• Hybrid, Inbred, Variety
• Trait, Construct, Promoter
• Process, Know-how, Confidential Information
### GOAL
- In-license
- Out-license
- Various Research and/or Commercial Purposes

### IPP
- Patent
- PVP
- Trade Secret
- IT PGRFA
- CBD

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The area planted with transgenic crops rose by 12% in 2007, with estimated crop value climbing by $700 million.
Rapid growth in adoption of GMO crops in the U.S.

Adoption of hybrid corn
Percent of total corn acreage

Source: Agricultural Statistics, NASS, USDA, various years.
### Traits are Broadly Licensed and Widely Available

<table>
<thead>
<tr>
<th>TRAIT</th>
<th># COMPANIES</th>
<th># BRANDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CORN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BT11</td>
<td>32</td>
<td>45</td>
</tr>
<tr>
<td>DAS-59122</td>
<td>46</td>
<td>79</td>
</tr>
<tr>
<td>GA21</td>
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<td>39</td>
</tr>
<tr>
<td>MIR604</td>
<td>16</td>
<td>23</td>
</tr>
<tr>
<td>MON810</td>
<td>91</td>
<td>147</td>
</tr>
<tr>
<td>MON863</td>
<td>80</td>
<td>130</td>
</tr>
<tr>
<td>NK603</td>
<td>93</td>
<td>150</td>
</tr>
<tr>
<td>T25</td>
<td>67</td>
<td>110</td>
</tr>
<tr>
<td>TC1507</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>SOYBEANS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-3-2</td>
<td>74</td>
<td>144</td>
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</tbody>
</table>

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### The U.S. Farmer-Customer:

- Increasingly Chooses to Plant GMOs
- At the Prices Offered
- Under the Conditions of Sale
- In Spite of Product Alternatives
Terms unrelated to IPP per se

- Warranty Language
- Limitation of Liability
- Reference to Applicable Documents
Terms related to IPP

- Stewardship Provisions
- Grant of License
- Limitations of Use

Stewardship

- Refuge Requirements
- Marketing Restrictions
- Geographic Restrictions

Stewardship Preserves Value for the Developer AND Farmer-Customer
Ethical Principles

- Respect and apply biotechnology for the benefit of humankind
- Listen and respond to concerns
- Priority is health, safety and environmental protection
- Enhance world food supply, sustainable agriculture, environmental benefits
- Conservation of biological diversity

Limited License

USE RESTRICTIONS AND LIMITED LICENSES: THE ONLY PERMISSIBLE USE OF THE SEED CONTAINED IN THIS BAG IS FOR THE PRODUCTION OF FORAGE OR GRAIN FOR FEEDING OR PROCESSING. PURCHASER AGREES THAT IT IS GRANTED SOLELY A LIMITED LICENSE TO USE THIS PRODUCT TO PRODUCE GRAIN AND/OR FORAGE. ABSOLUTELY NO RESEARCH OR BREEDING MAY BE DONE WITH THE SEED CONTAINED IN THIS BAG.
Limited License Restrictions (U.S.)

- Breeding, Research
- Seed Production
- Marker Profiling

Require permission of and benefit sharing by the owner

Additional Restrictions

- Inbreds in Commercial Bags
- Re-plant
- Export
- Third Party Transfer
- Terms to Encourage Compliance
Intellectual Property Protection

Better?

You. Bet.

PUBLIC VS PRIVATE RESEARCH SPENDING

Percent of ag. GDP

<table>
<thead>
<tr>
<th>Year</th>
<th>All agricultural research</th>
<th>Public agricultural research</th>
<th>Private agricultural research</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971</td>
<td>2.5</td>
<td>1.5</td>
<td>0.5</td>
</tr>
<tr>
<td>1976</td>
<td>3.5</td>
<td>2</td>
<td>1.5</td>
</tr>
<tr>
<td>1981</td>
<td>4.5</td>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td>1986</td>
<td>5.5</td>
<td>4</td>
<td>3.5</td>
</tr>
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<td>1991</td>
<td>6.5</td>
<td>5</td>
<td>4.5</td>
</tr>
<tr>
<td>1996</td>
<td>7.5</td>
<td>6</td>
<td>5.5</td>
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<tr>
<td>2001</td>
<td>8.5</td>
<td>7</td>
<td>6.5</td>
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</table>

Source: USDA, ERS (public and private agricultural research expenditures) and Economic Report of the President (agricultural GDP - calculated as a 3-year moving average).
Private expenditures on crop variety R&D have exceeded those of the public sector since the late 1980s.

![Graph showing private and public expenditures on crop variety R&D from 1960 to 1996.]

Source: Public expenditures are from the Current Research Information System, Cooperative State Research, Education, and Extension Service, USDA. Private expenditures are ERS estimates developed from various sources.

### U.S. Soybean Area Market Shares

<table>
<thead>
<tr>
<th>Year</th>
<th>Unknown Sector</th>
<th>Public Sector</th>
<th>Private Sector</th>
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</thead>
<tbody>
<tr>
<td>1980</td>
<td>22</td>
<td>70</td>
<td>15</td>
</tr>
<tr>
<td>1997 est</td>
<td>n.a.</td>
<td>10-30</td>
<td>70-90</td>
</tr>
</tbody>
</table>

Economic Research Service/USDA, Economic Issues in Agricultural Biotechnology/AIB-762
Effective IPP is elusive

- U.S. Hard Red Wheat
- Soybeans in Argentina
- India?
- China?

Social Benefits of Effective IPP

- New Traits
- Improved Germplasm
- Inventions Placed in the Public Domain (upon patent expiration)
- Increased Farmer Return
- Decreased Food Cost