



Plant variety intellectual property rights in a changing and challenging environment

Paul Brennan MAgrSC, PhD

Consultant in Plant Breeding,
Application of Biotechnology to Plant Breeding and
Plant Intellectual Property Management

CropGen International

www.CropGenInternational.com





Government's Anticipated Outcomes

- Stimulate Australian plant breeding
- Access to overseas varieties
- Protect food supply
- Research/breeders exemption
- Farmer's privilege
- Public breeding in major crops



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Future Operating Environment for Plant Variety Dependent Industries

- International competitiveness for variety dependent industries
- Biotechnology
- Public sector investment
- International treaties
- Global warming
- Plant breeding professionals



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International Competitiveness

–Customer preference

- Price
- Quality

–Wheat

- Understand customer wants
- Ensure that breeding programs deliver
- Design of value chain



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- Well understood by many primary industries
 - Canadian wheat
 - Kiwifruit
 - Monsanto
- Still emphasise sensory quality
- Identify and deliver on other competitive features

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 - Low or nil chemical residues
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 - Health maintenance and/or enhancement
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- Business opportunity
 - Patent genes
 - Realigning company business
 - Acquisitions and mergers
- Four companies now control >30% world seed trade
- Lessons to be learned from overseas



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– Measures of investment of transgenic crop varieties:

- Applications for PVPC/PBR
- Providers

– Species: no transgenic varieties

- Wheat – major
- Ornamentals – non agricultural

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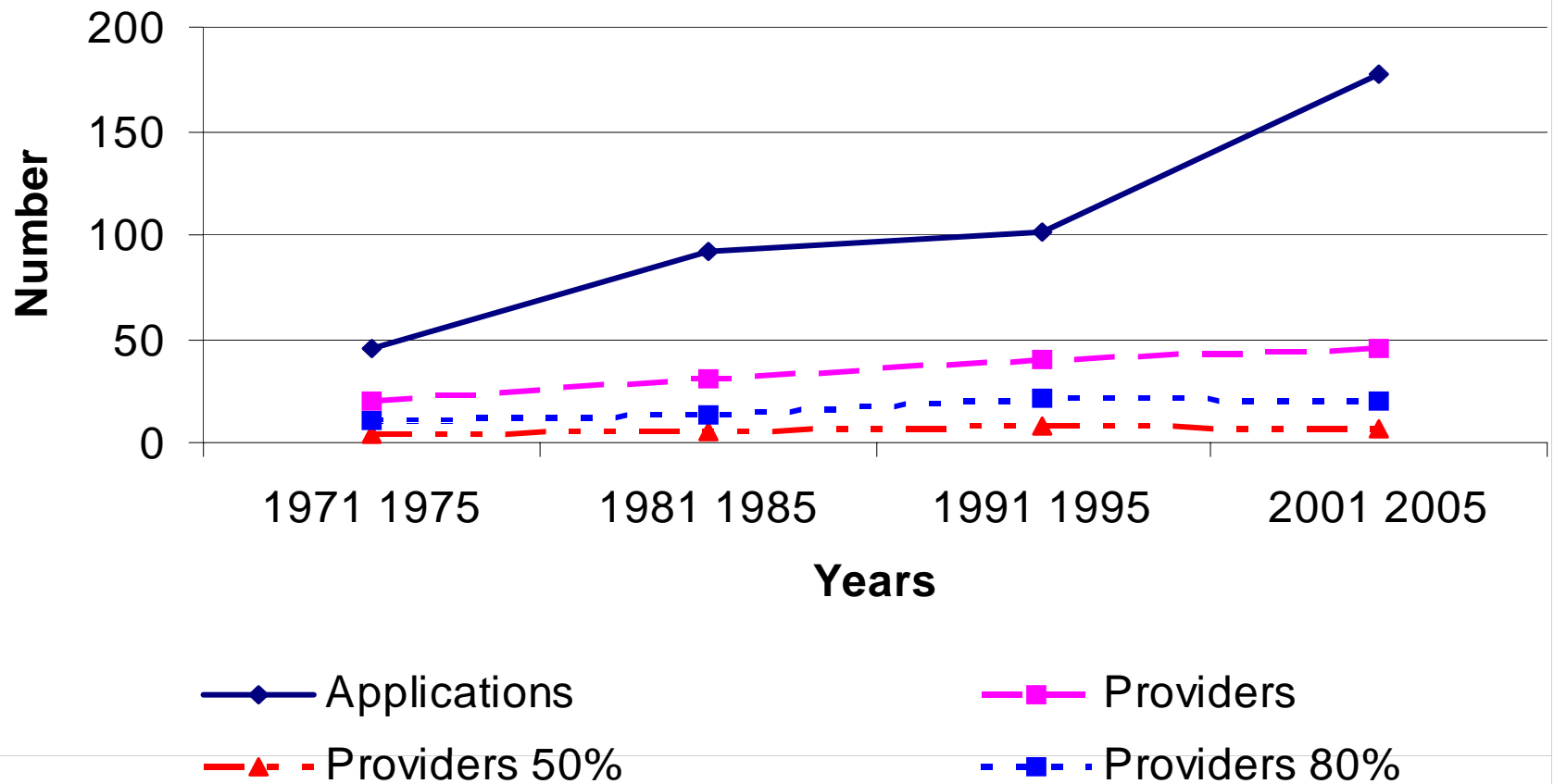


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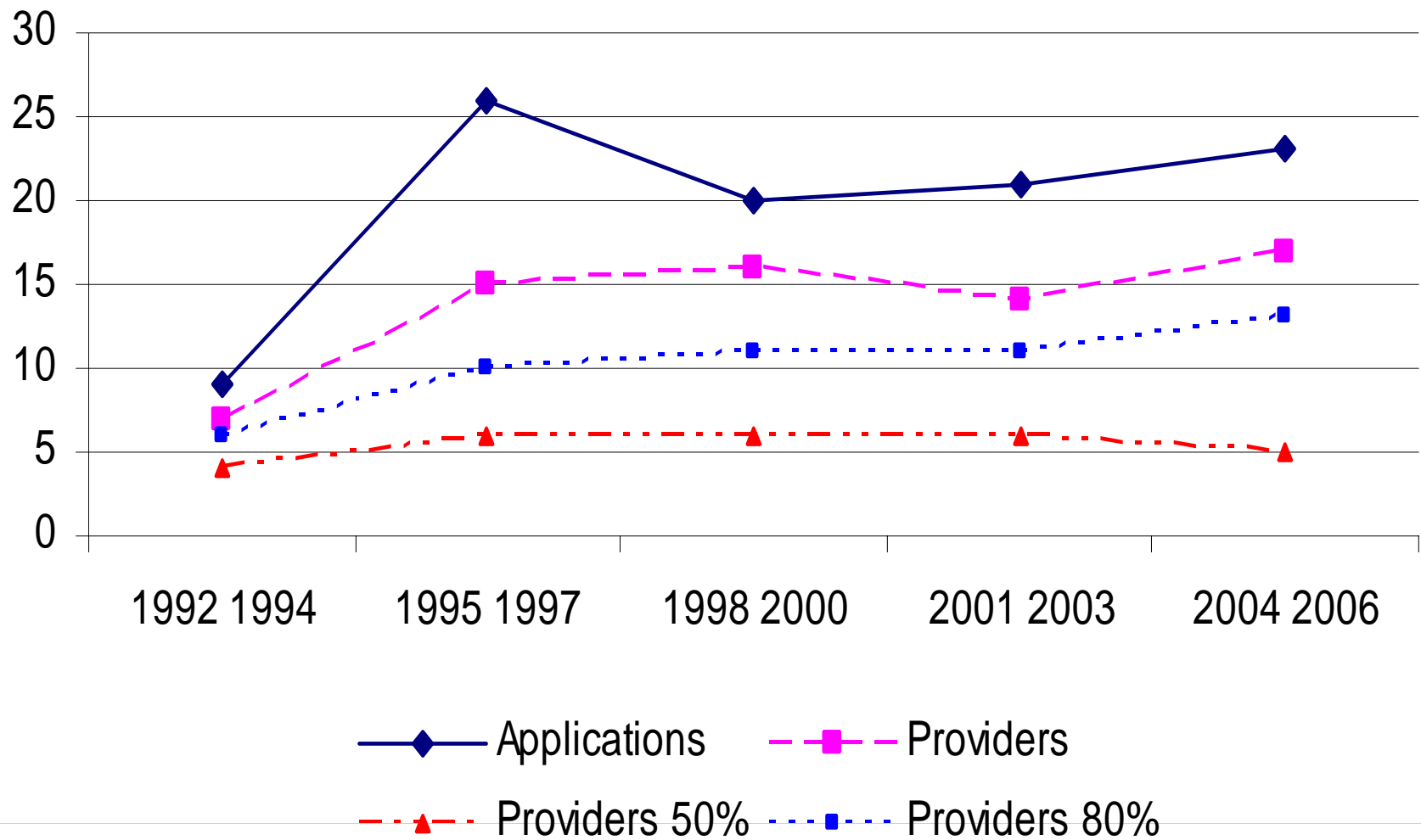
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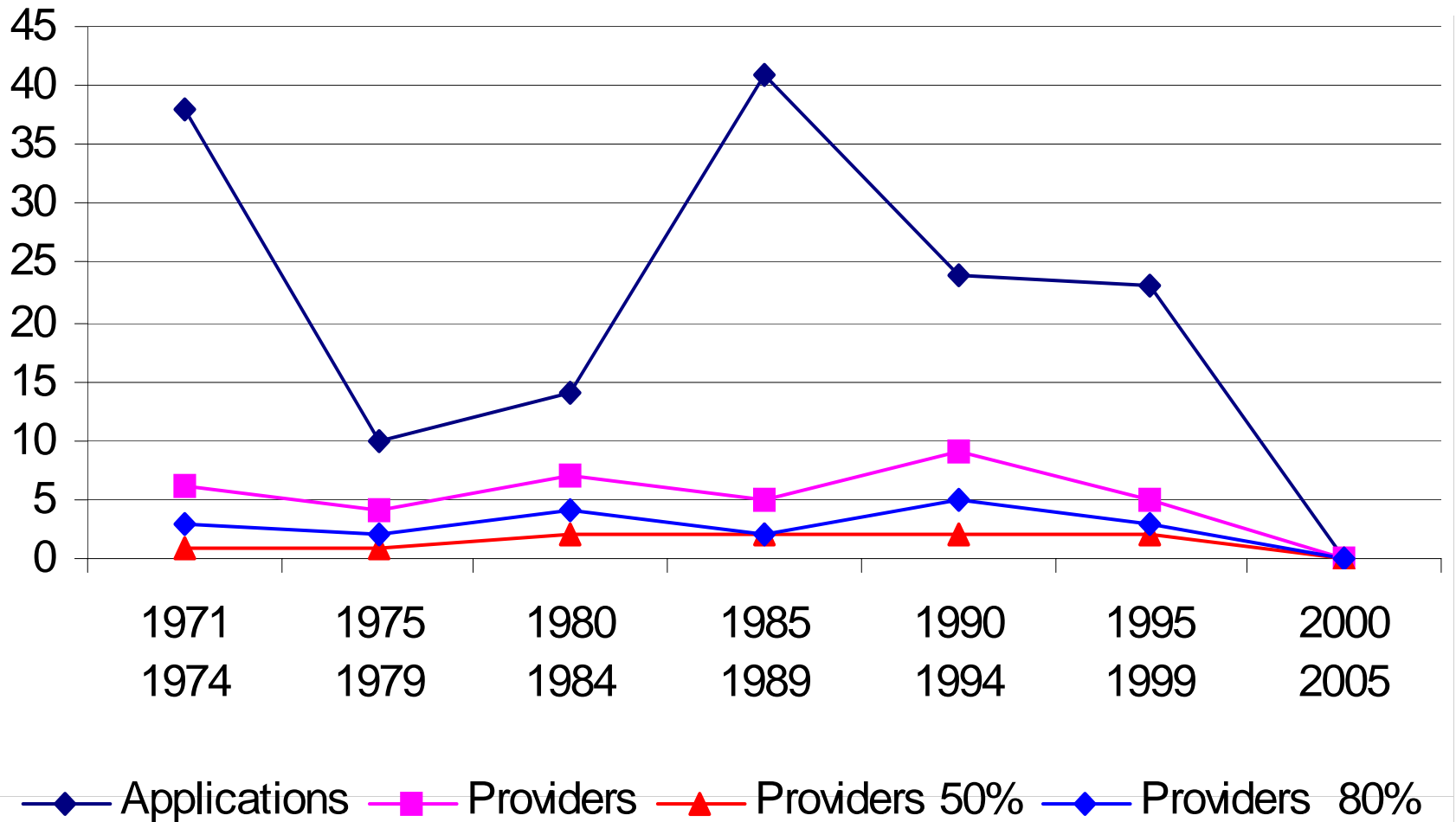
USA Wheat PVPC Applications



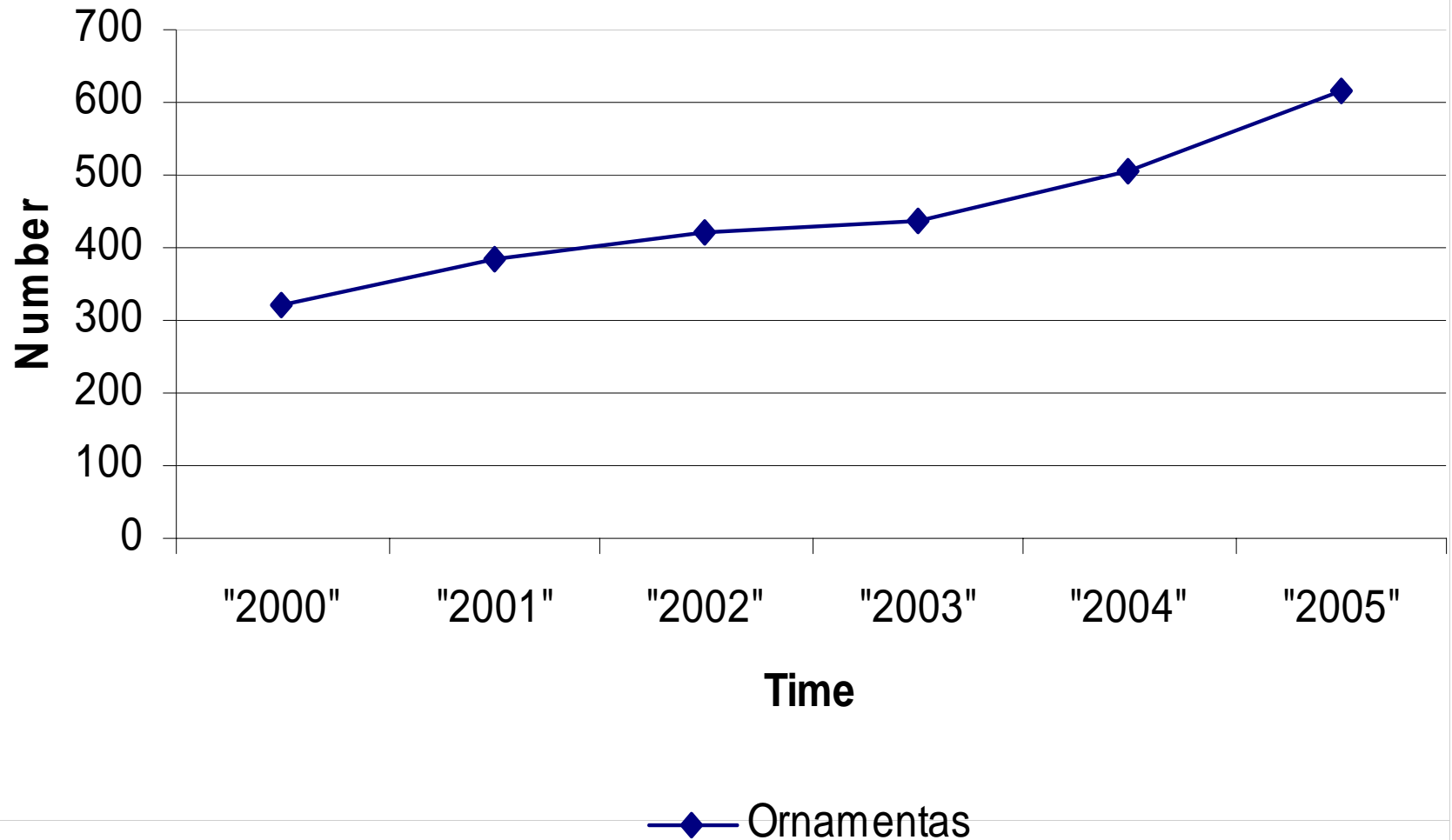
Wheat: Canadian PBR Applications



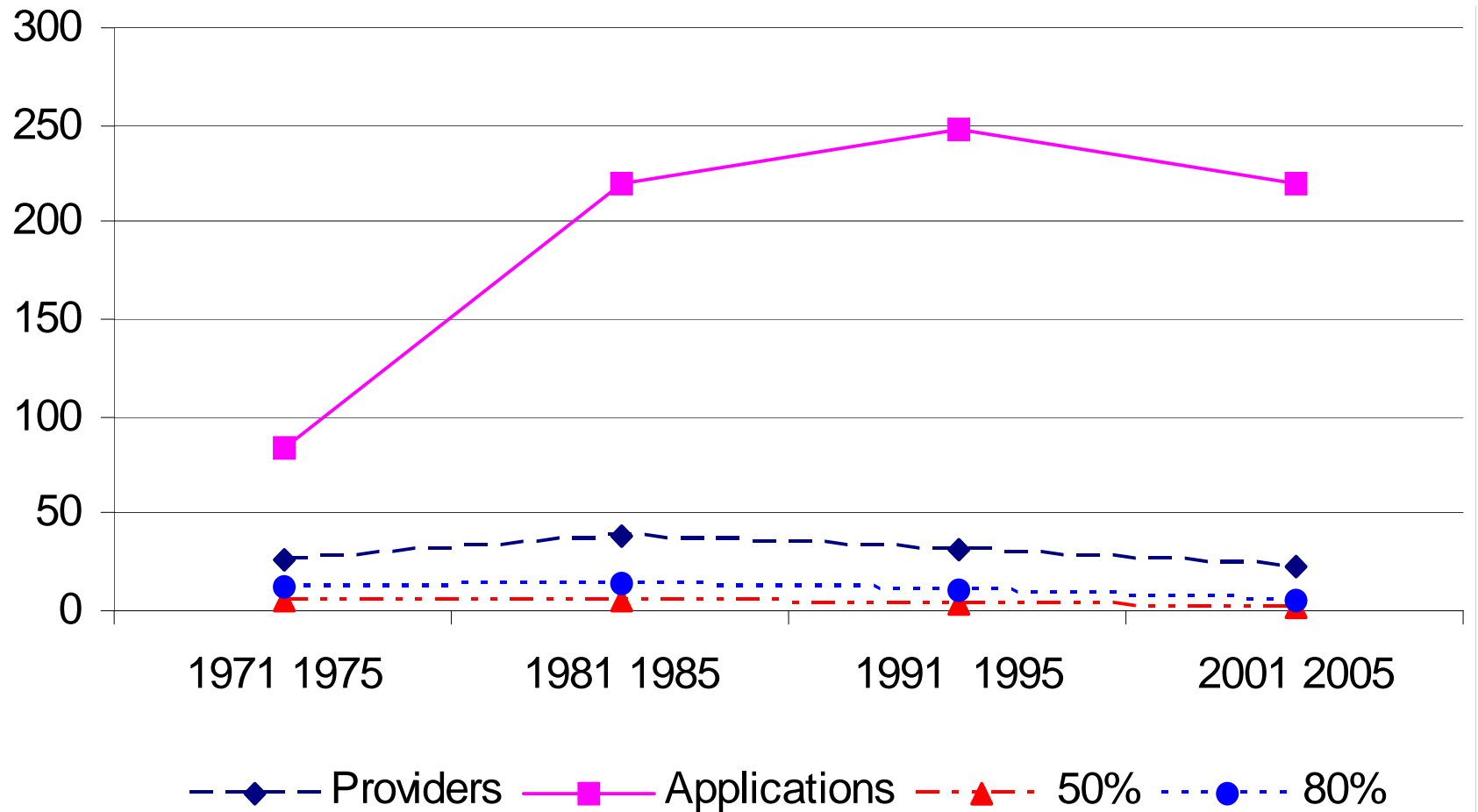
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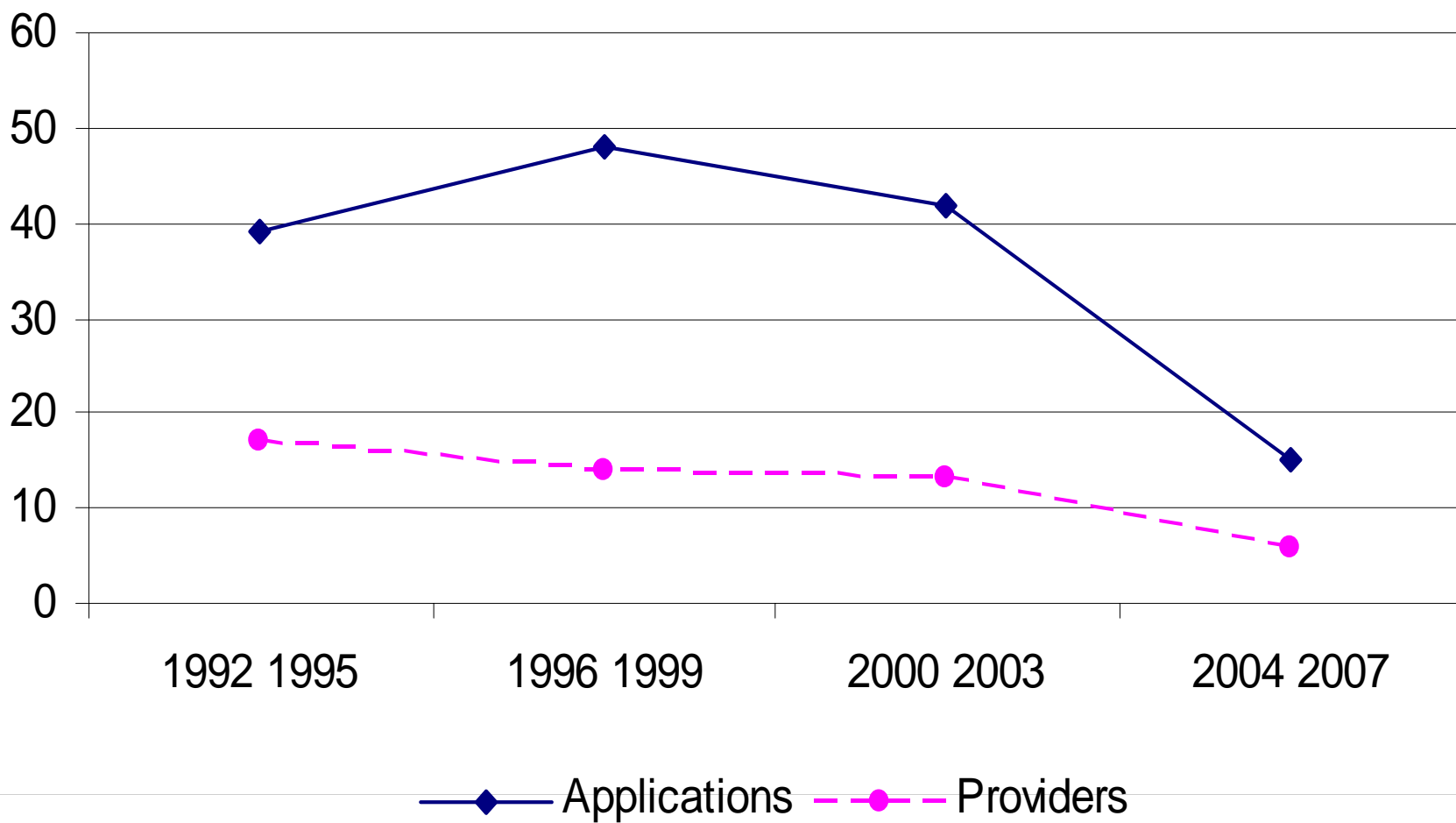
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Soybeans: USA PVPC Applications



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Soybeans: Varieties Available in 2006

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Providers of seed	21	28





Glyphosate Tolerant Soybean Breeding in North America

- **Transgenic technology for glyphosate tolerance is owned by Monsanto,**
- **Monsanto makes this available to all/some breeders,**
- **Users of all glyphosate tolerance varieties must sign a technology use agreement (TUA) with Monsanto,**
- **Requirements of TUA:**
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- Breeder exemption cannot be guaranteed
- Farm saved exemption is not available
- Large investment in breeding soybeans



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- USA:
 - Patents
 - Plant Variety Patents: 1930
 - Utility patent: 1980
 - UPOV harmonized system: 1970
- Canada does not have a plant variety patent system
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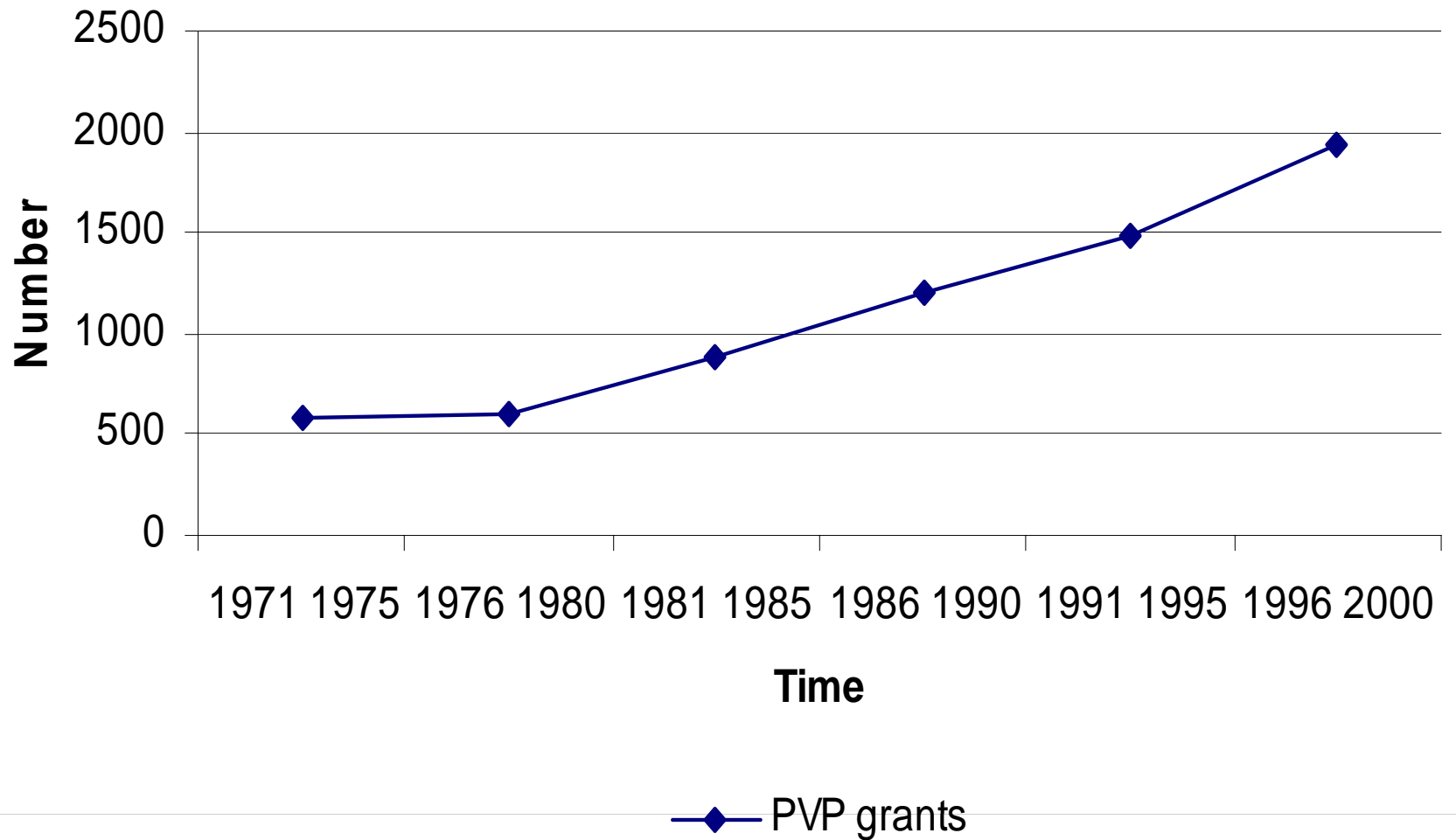
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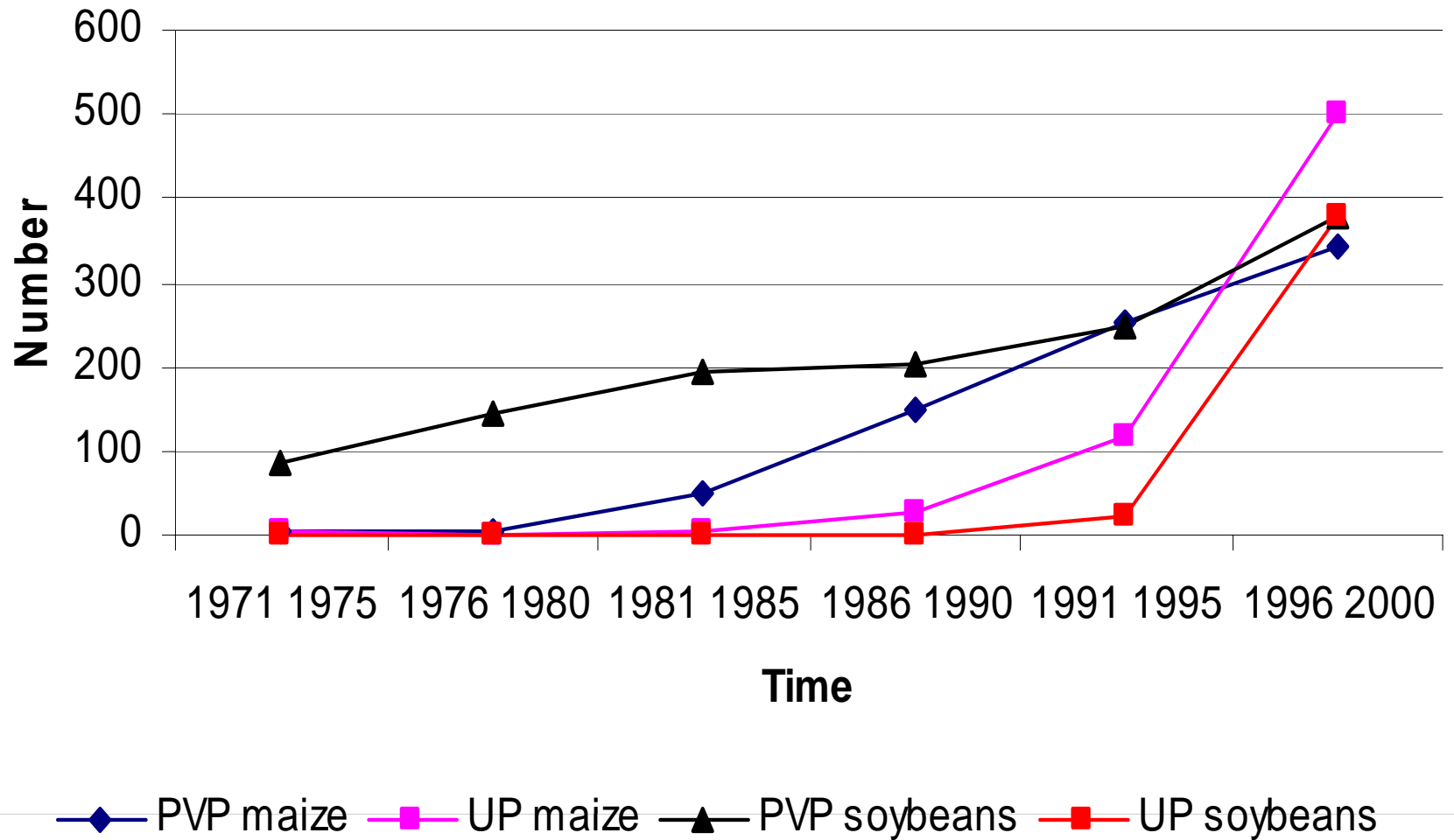
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USA Plant Variety Patents Grants



USA Plant Variety and Utility Patents Grants



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- TRIPS
- Quarantine: apples and bananas

– Convention of Biodiversity

- Germplasm access:
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- Disclosure of source of germplasm in PBR application



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 - Biotic stresses
 - Abiotic stresses (water, growing environment)
- Carbon trading:
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- Wealth generating prospects disparity among professions
- Plant breeding has relied on public sector investment
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Concerns about PBR Act

Intent of the Act

- Public investment in plant breeding (market failure)
- Inequitable benefit sharing: constraint to investment
- Use of contracts to circumvent breeder and farm saved seed exemptions



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- Increased private sector investment
- Change the balance of the Act in favor of private interest
- Enforcement review
- Intent of Act:
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- Is this sufficient to generate private investment?
- Must understand overseas developments:
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