Life Form Patenting and Family-Scale Agriculture: Implications and Recommendations

There is evidence of a decline in public investment in public research while private investment has grown significantly (Frey, 1996; Heisey et al., 2001). According to a survey by the Association of University Technology Managers (AUTM, 1997), U.S. research universities earned over $446 million in royalties from inventions in fiscal year 1997, an increase of 33 percent from 1996.

Since 1980, over 2,000 new companies were launched based on new innovations first licensed through an academic institution (Council on Governmental Regulations, 1999). In addition, private industry now accounts for roughly two-thirds of national research and development investment in the U.S (Mowrey 2001).

During this time, patent and ownership laws have changed to encourage greater diffusion of knowledge and enhance public/private partnerships in research. The issues surrounding research and ownership of plant and animal germplasm and the differences in public and private research motivations have significant policy implications for farmers and ranchers, issues that are growing in number and intensity.

Allowing patents on bacteria and seeds and the possibility of patenting of other life forms raises ethical and moral questions. It also raises questions related to increasing consolidation in agriculture. How family farmers and ranchers are treated in such a legal and regulatory regime will go a long way in determining their future.

The U.S. Supreme Court and Life Form Patenting
On December 10, 2001, the U.S. Supreme Court issued its opinion in J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred International, Inc., 534 US 124 (2001), a case that dealt with questions concerning the patenting of plants and seed. The Supreme Court held for the general assertion that all life forms are patentable under current U.S. law, which has far-reaching implications for family farmers and ranchers and public plant and animal breeders.

A logical extension of the Supreme Court decision on patenting life forms, absent development of a stronger statute by Congress, is that all livestock with various genetic markers would be patentable. If livestock patents become the norm, producers might be forced to pay a fee for every offspring produced with the patented genes or pay for the ability to have patented livestock produce offspring.

Under such a scenario, a farmer could own a cow that could not be bred without paying such fees. If the fees were not paid, the farmer would risk being sued for patent infringement. In such a scenario, the economic ramifications for independent livestock production, and ownership and control over on-farm breeding improvements conducted by farmers and ranchers are enormous.

The Supreme Court held that any life form can be patented, including bacteria and seeds and plants (both conventional

and genetically modified). At this time there is no law that bars livestock germplasm from being patented, and in fact there are several patents now on animals (mice and pigs) and livestock. Congress has considered but not enacted legislation to place a moratorium on allowing the Patent and Trademark Office (PTO) to issue patents on living organisms (Hatfield, 1995).

Consequences of J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred International, Inc.

Some of the implications of the Supreme Court decision as suggested by attorneys and agricultural economists Roger McEowen and Neil Harl follow (McEowen and Harl, 2002); here it is important to think not only plants but animal germplasm as well:

- Accelerates the amount of germplasm that is held privately rather than in the public domain as companies devote additional resources to cost-effective patents
- Public plant breeders will lose access to germplasm
- Public research being directed to a greater extent toward satisfying the desires of the firms that purchase the rights to the patents and to a lesser extent toward the desires of farmers, ranchers and consumers
- Potentially more concentration with more germplasm in private hands
- Reduced competition and innovation in plant breeding
- More concentration as small seed companies cannot find new breeding material
- Greater control by firms holding patents over crops grown from patented seed.

Connection with the Bayh-Dole Act

The holding of the Supreme Court must be viewed in connection with the Bayh-Dole Act. Adopted in 1980, the Bayh-Dole Act has made it possible for publicly funded research to be patented and sold for commercial use. The acceleration of the commercialization and privatizing of plant and animal germplasm is a significant concern of how Bayh-Dole will interact with the Supreme Court decision allowing the patenting of all life forms. The ultimate result may be less public access to seeds, sperm, and other genetic material for family farmers and ranchers and public researchers.

There is the potential that the Bayh-Dole Act, if not reformed, will become the ?back door? by which a few industrial agri-business firms lock up key animal and plant genetic resources. In confronting the public/private research issue, we must open the discussion on what needs to be done to ensure that producers and public researchers maintain reasonable control and access to animal and plant germplasm.

Recommended Policy Avenues

USDA and Congressional Budgets

- Design and implement a federal advisory board for public plant and animal breeding research to make recommendations to USDA and Congress
- Redirect and prioritize resources within USDA programs to include public plant and animal breeding research for small- and mid-size family farmers and ranchers
- Congressional hearings on reinvigorating the public plant and animal breeding system and appropriating necessary funding to put a strong system in place
- Increase federal formula funds and competitive grant funds expressly for the purpose of educating and training public plant and animal breeders, including incentives for publicly funded and trained plant breeders to remain in the public sector through reduction of school loan debt
- Increase funding for the National Plant Germplasm System and non-profit germplasm preservation and development through the USDA budget
- Increase funding for research into the implications of patenting on public sector plant and animal breeding

Patent and Ownership Law Reform

- Enact statutory and regulatory reforms to current patent law to ensure the right of farmers and ranchers to

own their livestock and its offspring

- Enact statutory and regulatory reforms to safeguard access to plant and animal germplasm for public breeding and research purposes
- Reform the Bayh-Dole Act to increase the ability of small and medium private firms to compete in contracts and partnerships with public research universities and other public research institutions, and to decentralize the patenting of plant and animal germplasm to avoid further consolidation
- Funding a cost-benefit analysis of the Bayh-Dole Act and current patent laws for impacts on public plant and animal breeding research and access to germplasm

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