Intellectual property and U.S. public investments in research on biofuel technologies

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Increased interest in the replacement of fossil fuels with biofuels to combat global warming and increase national security has resulted in a surge in biofuel research whose outcomes are adding to an already complex intellectual property (IP) landscape. An understanding of the biofuel IP landscape can be used to better inform policy makers, sponsors, institutions and researchers to promote and conduct commercially viable research which will support the maximization of returns on research investments. To increase this understanding we, at the Public Intellectual Property Resource for Agriculture (PIPRA) group, are mapping the IP landscape of biofuel technologies focusing on bioethanol production from cellulosic biomass. This landscape will be used to analyze global patenting activity including identifying the predominant patent applicants, technology advances and geographical patenting trends.

The IP landscape has been divided into sections encompassing the bioethanol production stages from the farm (including seeds/germplasm, farming techniques, storage and transport of biomass) to the ethanol plant (comprising the conversion of biomass to fermentation feedstock, fermentation and ethanol recovery). Current efforts are directed to determining the landscape associated with the enzymes involved in the release of fermentable sugars from the cellulosic biomass; a key step where production costs could be substantially reduced thereby increasing the overall energy return on investment. Preliminary analysis has revealed more than 90% of patents and patent applications have been awarded to private companies, reflecting the pattern of private relative to public funding for research in this area until recently. Furthermore, associated with changes in public policy and the increase in biofuel research, patenting activity has increased noticeably since 2002. This information can be used to form an understanding of the overall IP landscape and the need for licensing agreements for enabling technologies as well as assisting in the design of research projects with maximum freedom-to-operate.

PIPRA is a not-for-profit organization whose objective is to support innovation in public sector agriculture research institutes for commercial and humanitarian uses, by providing a wide range of technical services for improved IP management. These services include the provision of enabling technologies, generation and analysis of IP landscapes, educational services and the facilitation of licensing and material transfer agreements with member institutions. PIPRA comprises 45 institutional members in 14 countries.