## A shrinking of the public domain in agriculture: A cartography of contemporary developments in intellectual property rights in plant material

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Intellectual property rights have expanded in coverage to include resources that were previously deemed to be part of the public domain. In addition, the rights themselves have been greatly strengthened and the regimes of intellectual property rights have been geographically harmonised through the TRIPs Agreement. Recent theorising in the law-economics literature, where the notion of anticommons – a property rights regime where multiple agents possess effective 'rights of exclusion' – has been developed. Models predict a scenario of underutilisation of economic resources within settings of anticommons property regimes. Thus, rather paradoxically the promotion of intellectual property rights, aimed at solving the incentive problem, might actually hinder innovation.

This paper engages with this literature by adopting an evolutionary economist's approach to the study of technologies. Here, two principles are important. First, the going beyond the knowledge/information dichotomy, evolutionary economists recognise that knowledge is a quasi public good; thus, better characterised as a club good. Second, questions concerning changes in the regimes of intellectual property rights are substantially dependent the nature of technical advance in the sector. Using these precepts, the paper explores the question of anticommons in the context of plant breeding. The main section of the paper begins by identifying four key trends that constitute the 'shrinking of the public domain in plant breeding': patenting of genes and biological material, patenting of plant varieties, granting of broad scope patents, and patenting by the public sector. The paper addresses the question of anticommons property regime resulting in a tragic outcome from two specific angles: transaction costs and accumulating knowledge capabilities: Will the transaction costs and the complex negotiations required to access the resources and research tools to produce new varieties be too difficult, burdensome and time consuming? Will the public sector (particularly in the global south) lose out in accumulating the knowledge capabilities to assimilate, understand and exploit novel breeding material and techniques? Will we witness a scientific *apartheid*?

Recognising the quasi (and local) public good properties of knowledge and learning processes, it is suggested that transaction costs and delayed and limited access to contemporary research tools might, in a dynamic sense, lead to the lose of absorptive capacity within the public sector. These 'results' are discussed within the context of recent surveys on the use of proprietary biotechnology inputs in (national and international) public agricultural research centres (e.g. the surveys conducted by the International Service for National Agricultural Research).

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