

## **Does the River Flow Upstream? A Meta-Analysis of Benefit Distributions of Biotechnology Crops**

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Agriculture biotechnology may provide many benefits such as increased crop yield and improved farmer incomes. Biotechnology research, and the distribution of knowledge and technology to farmers, is critical to leveraging global agriculture productivity. However, ownership of biotechnology knowledge and research capacity is often concentrated in the hands of private (and profit driven) companies, posing a threat to the global commons in agricultural biotechnology. Benefits of such biotechnological developments are often realized by powerful upstream companies and not shared with downstream farmers. This project investigates the distribution of the economic benefits of genetically modified (GM) crop adoption between downstream and upstream participants. Understanding the factors that impact this distribution of benefits is important as there are far reaching implications for future policy design in Canada and other adopting countries. We employed a meta-analysis approach combining the findings of previous benefit-sharing studies in the literature to explain the distribution of benefits of GM crop adoption in the economy. Preliminary analysis shows the average distribution of benefits to be two-thirds for farmers and one-third for upstream companies and owners of biotechnology property rights. The results of this study will provide a broader perspective on the distribution of the economic benefits from private biotechnological advances that play major roles in the continued agricultural productivity growth in Canada and around the world. This benefit-sharing analysis will provide greater insight for international agriculture institutions and governments into future policies regulating agriculture biotechnology and its role in future global food security.