Effects of Genetically Modified Crops on the Actuarial Risk Classification of Canola

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Abstract

From an actuarial perspective, one of the foundations of a sustainable insurance program is a proper system for risk classification that effectively uses all relevant information to help provide the most accurate loss forecasts. Since the mid 1990's adoption rates for various genetically modified (GM) crops have steadily increased, as many within the agricultural community claim that they provide increased yields with less risk to the producer. If there is merit to these claims, then it is important to understand if GM seeds should be an important consideration when determining a producer's risk classification, and whether the corresponding crop insurance premiums should be adjusted to reflect this information. The objective of this paper is to analyze the performance of both genetically modified and traditional varieties of canola in Manitoba in order to establish whether GM seeds should be considered as a factor during the risk classification process. By comparing each farmer's Individual Productivity Index (IPI) rating given by Manitoba Agricultural Services Corporation (MASC), as well as producer level yield and indemnities, this paper will determine whether the use of GM seeds changes the farmer's risk profile and what effects this may have on risk classification. It is expected that the results will show that GM seeds produce higher yields, while also causing increased variability, thus making GM crops riskier and more expensive to insure.

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