



Implications of a Total Emissions Reduction Target on Fertilizer

Analysis of Potential Direct Financial Impacts on Canadian Farmers' Fertilizer Use - Macro Analysis

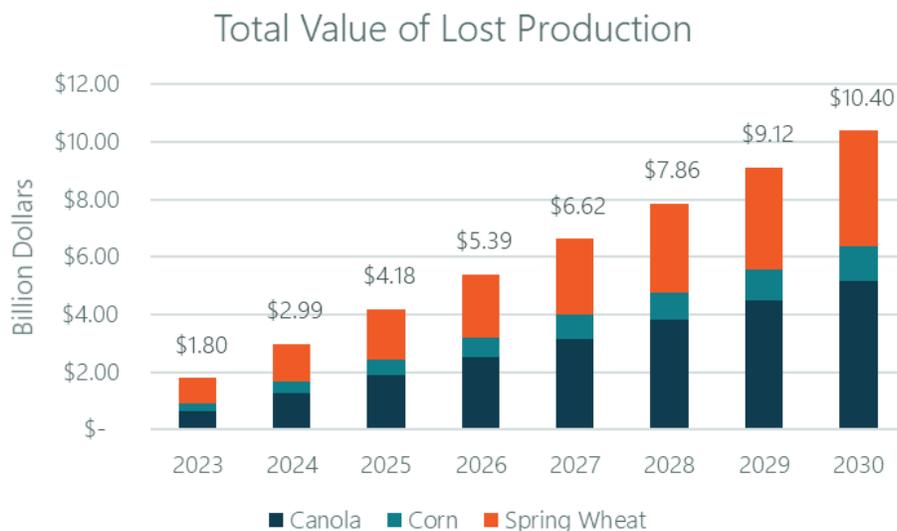
Prepared for **Fertilizer Canada**

Executive Summary

Under Canada’s Strengthened Climate Plan, the government of Canada is envisioning a 30% reduction in absolute emissions by the year 2030. That would include chemical fertilizer reductions used in crop production by Canadian farmers to achieve their part of those targets. In order to achieve that, one existing measure of the magnitude of actual reduction in agricultural fertilizer use would be the model proposed under the EU Green Deal which cites an actual reduction of 20% in fertilizer use compared to 2020 levels. MNP LLP was engaged by Fertilizer Canada to analyze the direct macro financial impact of lost production and has modeled a 20% rate reduction starting in 2023 and the effect on farmer output until 2030.

To meet these reductions, there may be adjustments forced on farmers’ practices that will have varying degrees of net impact on farmers. This report is however based on the assumptions of continued farming practices (including crop rotation) as they are today to reflect the possibility of farmers accepting the lower production that lost nutrients would have on the production levels of their crops. The assumptions of this report summarize that effect by simply reducing the crop output and thereby presuming there is a direct correlation between available nutrients and loss in fertilizer use and impact on crop production. The analysis is focused on the effects for corn, canola, and spring wheat in Canada (three major crops that make up a major share of Canadian small grain/oilseed production), and is based on a similar number of acres for the three crops using the 5-year average, a straight-line reduction of fertilizer use starting in the year 2023 along with a straight-line reduction in yield based on industry yield response estimates for each crop, no inflation effects, and no effects of reduced crop supplies on crop prices until 2030.

A straight-line reduction in fertilizer usage results in increased differences of actual yields versus potential yields if the status quo had been continued. By 2030, yield gaps for the three crops are estimated at 23.6 bushels per acre per year for canola, 67.9 bushels per acre per year for corn, and 36.1 per acre per year bushels per acre for spring wheat. Given constant prices, the total value of lost production grows to 10.4 billion per year by 2030 and across the years 2023 to 2030 is shown for each crop as follows:



The estimated lost production has significant effects on Canada's ability to fill domestic processing capacity (e.g., canola crushing facilities) as well as export capacity. Assuming that domestic capacity will be filled first, it is estimated that by 2030 most Canadian exports of canola will not exist (only 750,000 metric tonnes of canola will be theoretically available for export compared to more than 10 million metric tonnes today). The reduction in annual spring wheat exports is estimated to be 4.2 million metric tonnes by 2030. The analysis for the three crops, as well as any potential impacts for other crops, will significantly impact Canada's ability to reach its targets for domestic sales and exports of agri-food products and thereby have a major detriment to the Canadian agri-food economy. Finally, reducing Canada's contribution to the global food supply by more than 14 million metric tonnes collectively of wheat and canola per year by 2030 would have a major impact on the global supply of food in the future. There are lots of ways farmers can react to potential economic impacts of reduced fertilizer use, including acceptance of lower productivity. This would be devastating, such that any plan to reduce carbon emissions would need to be done in a way that the future productivity of major crops is maintained.



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