AGGP-Agroforestry

ECONOMICS OF ADOPTION OF FIELD SHELTERBELTS ON A SASKATCHEWAN FARM

No. SASK-23

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INTRODUCTION

Shelterbelts provide several benefits to producers and to the society. Producers seem to understand benefits/gains from shelterbelts that accrue to them but not those that are received by the society at large. Besides, many producers see them as hindrance in their farming operations. They see the loss of land under the shelterbelts as lost opportunity cost for farming. Main research question that is posed in this study is whether shelterbelts are in the best interest of the producers as well as the society if a longer term perspective is taken.

OBJECTIVES OF THE STUDY AND BRIEF METHODOLOGY

The objective of this research was to estimate the benefits that producers and society may derive from having field shelterbelts on a crop or a mixed (livestock) farm in a typical Saskatchewan setting. Three soil zones (Brown, dark Brown and Black) were selected for this analysis to test if location of the farm is a factor in determining the economics of maintaining vs. removal of the shelterbelts.

A typical crop farm had 1699 acres (688 ha) of land. Typical crops grown included: spring wheat, barley, oats, canola and flax. Cost of production data were obtained from secondary source (Saskatchewan government websites), whereas the crop yields were estimated using yields curves provided by Agriculture and Agri-Food Canada.

Typical shelterbelts and field operations on a prairie farm

The study farm was simulated over a 50-year period. The livestock farm was also of the same size. It had a 354 unit cow-calf herd. Of the total area of the farm, a large part was devoted to native pastures. Source of revenue of the farm was through sales calves, heifers, and steers. Major land use for the farm included native pasture, tame pasture, and feed grain crops.

Since costs and revenues are generated at different time period, the net benefit of shelterbelt was converted into present value using a discount rate of 5%.

RESULTS OF THE STUDY

This research identified:

- Maintaining field shelterbelts in the economic interest of the producer as well the society at large, on the crop farms in the Brown and Dark Brown soil zone;
- In fact the net benefit of maintaining shelterbelts in the Black soil zone is negative. This is partly caused by low yield response in this region to shelterbelt;
- On the livestock farm, planting shelterbelts around livestock holding areas and on crop fields and pastures is an economical measure; On all three soil zones net present value of net returns are positive.

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- Details on economic net returns for crop and livestock farms are shown in Tables 1 and 2 for the three soil zones in Saskatchewan. Producers in the dark brown soil zone have the highest level of benefits from planting or maintaining shelterbelts.
- For livestock producers, the highest return was estimated for the brown soil zone.

Table 1: Net Present Value per acre per annum for Producers and Society, Crop Farm by Soil Zones

Soil Zone	Gain or loss in $
Producer's Accounting Stance	
Brown	$61.91
Dark Brown	$95.27
Black	-$115.11
Society Accounting Stance	
Brown	$150.04
Dark Brown	$195.38
Black	$4.55

Table 2: Net Present Value per Cow per annum for Producers and Society, Livestock Farm by Soil Zones

Soil Zone	Gain or loss in $
Producer's Accounting Stance	
Brown	$131.67
Dark Brown	$139.04
Black	$29.15
Society Accounting Stance	
Brown	$433.23
Dark Brown	$554.74
Black	$484.84

FURTHER READING

Feng, Nanyan, 2016. **Economics of shelterbelts on Saskatchewan farms.** Masters of Science thesis, Department of Agricultural and Resource Economics, University of Saskatchewan.

AGGP Fact Sheet(s): **SASK-22**, **SASK-24, SASK-25**

CONTACT FOR MORE INFORMATION

For further information contact Professor Ken van Rees at the www.saskagroforestry.ca

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