



## The Sweet Smell of Subsidies Revisited

By Doug Young, Elwin Smith, and Anne Smith

For a given region, annual and perennial cropping decisions often depend on relative prices and commodity support policies. Given that the United States and Canada are major traders in agricultural products, relative prices in the two countries should be similar and track over time. Differences in cropping practices along the border might then be attributed to different agricultural policies. A stark difference in land management along a small segment of the border has been used in the popular press as proof that U.S. wheat subsidies have encouraged the conversion of rangeland into annual cropping of wheat to collect government payments (see quote in side box). *Harper's Magazine*, where the quote appeared, with a circulation of over 200,000, is the oldest continuously published monthly magazine in the United States and addresses current political and cultural issues for a sophisticated readership. A satellite photo in the *Harper's* article captured a small section of the border area with parts of Hill County, Montana to the south and southeast Alberta to the north (Figure 1). The Milk River (enhanced in turquoise) snakes across the border (solid white horizontal line) toward the southeast. The false color composite Landsat 7 satellite image shows a solid mosaic of wheat fields south of the border and mostly unbroken grassland to the north. The solid blue-grey areas represent rangeland and other uncultivated land. The rectangular strips are fields in annual cropping. The red strips are green vegetation, primarily spring grains. The yellow and brown rectangles are mature cereals; some have been harvested. The blue-green rectangles are fallow. The cross-hatching overlay on the photo indicates areas where soil or other site factors limit cropping as discussed later. This short segment of the border seemed to provide irrefutable evidence that wheat subsidies in the United States have encouraged more intensive wheat production on marginal lands south of the 49<sup>th</sup> parallel.

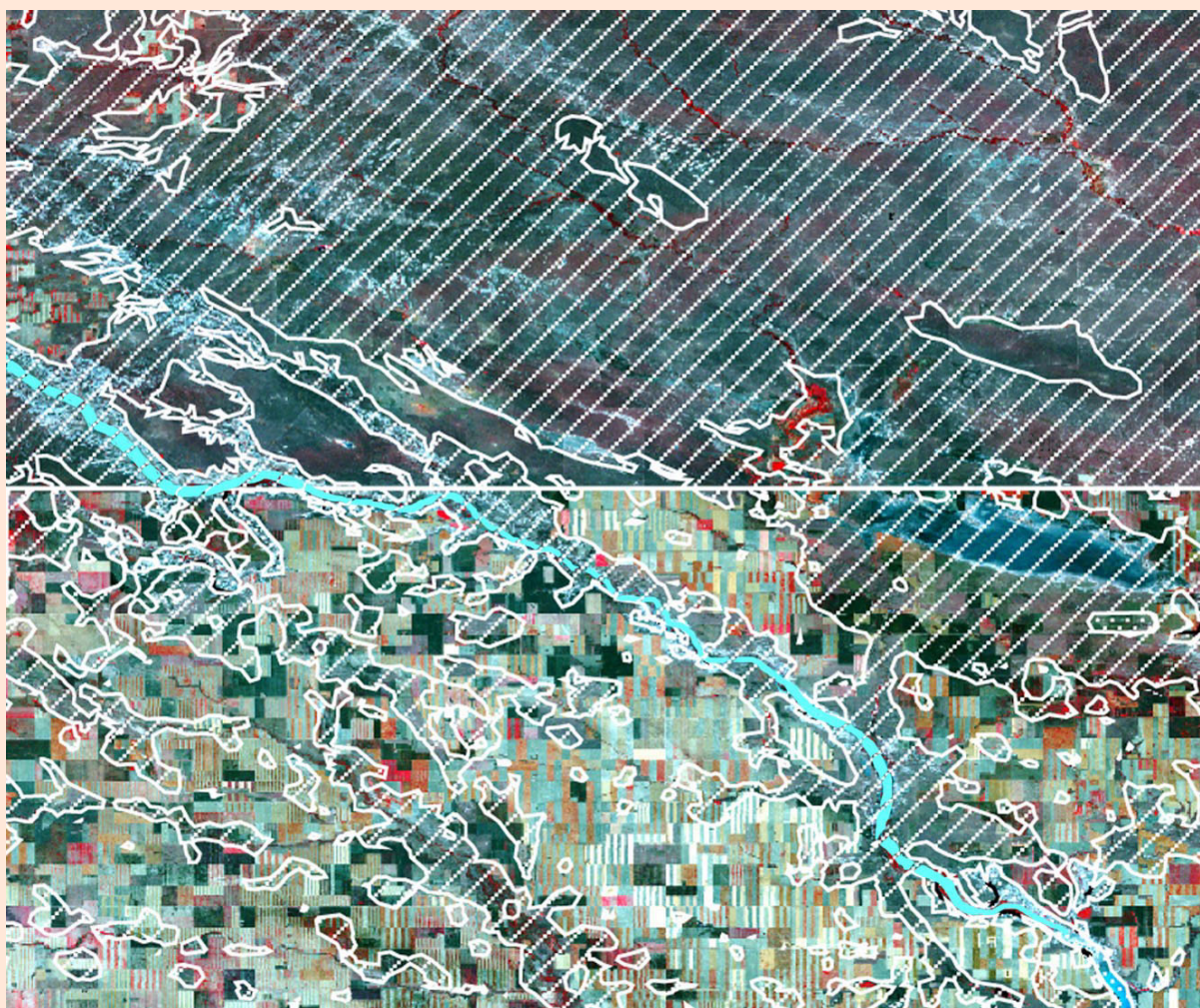
Why does the Landsat image of a small border region in Figure 1 depict such contrasting land use? Are there other factors beyond imputed policy differences which

"...[the boundary] remained invisible until the 1930's, when [U.S.] federally subsidized wheat made it real. ...Politics created the border; subsequent differences in agricultural policy created the two landscapes...Albertans leave unproductive land in prairie for grazing. But for decades Hill County [Montana] farmers have grown the only major subsidized crop viable here--wheat--on every inch of available land, and here's why: When world market prices fell below a certain mark, the U.S. made up the difference based on historic yield rates of the acreage each farmer enrolled in the subsidy program. Farmers, therefore, had no incentive to diversify or rotate crops..." (Manning, 1996, *Harper's Magazine*).

contribute to the dramatic difference in land use along this small segment of the Canada-U.S. border? Detailed investigation of the small area captured in the image considers two additional aspects, land quality and land ownership.

Land capability class information was superimposed on the Landsat image (Government of Canada, 1968; USDA-NRCS, 2004; USDA-NRCS, 1997). Land capability classes defined as having "severe limitations to cropping" by both countries are crosshatched in a northeast-southwest direction. The limitation along the Milk River is steep slopes and surface rocks. The major limitation to cropping in the remainder of this post-glacial landscape is soil-related. These can include undesirable structure, salinity due to wetness, low moisture holding capacity, restricted rooting, and low permeability. The areas without crosshatching are classified as cultivable provided appropriate conservation practices are imposed.

The cross-hatched area in Figure 1 shows that land with severe limitations to cropping dominates the Canadian side of the border (Government of Canada, 1968). There are small pockets of cultivable land near the border in Alberta, but most of this land is used as rangeland. The isolation of these cultivable pockets might discourage cropping if all surrounding land is managed for livestock grazing. On the U.S. side of the border, most land is suitable to annual cropping and is indeed cultivated. As



**Figure 1.** Landsat 7 ETM+ false color composite satellite image of west-central Hill County, Montana and southeastern Alberta. Image acquired July 22, 2000. Red indicates growing vegetation, brown-yellow is mature or harvested cereals, blue-green rectangles are fallow, and large blue-grey areas are rangeland. Land with severe limitations to cropping has white cross-hatching and land without severe limitations is not cross-hatched.

observed in Figure 1, pockets of land with severe limitations to cultivation in Montana occur along the Milk River Canyon, in some strips running from the northwest to the southeast, and in a larger area around Wild Horse Lake, the large lake in the northeast corner of the Montana section adjacent to the border (USDA-NRCS, 2004). While some of the severely restricted land in Montana, especially that along the Milk River Canyon, is not cultivated; Figure 1 shows several pockets of cross-hatched poorer quality land

adjacent to cultivable lands that are in crop production. Most of the poor quality land near Wild Horse Lake is also cultivated.

Land quality differences north and south of the border explain some of the general differences in land use observed in this small border region, but land quality is not the defining reason. The razor's edge contrast requires further explanation. There is a key coincidental difference in land ownership along the border in this region caused by differing land ownership and land use policies. North of

the 49'th parallel, the province of Alberta owns the majority of the land in this image and these public lands are managed only for leasing to livestock grazers (AAFRD-PLD). Some of the area was cropped in the 1920s, but cultivation was abandoned and families relocated during the 1930s Dust Bowl era. The land eventually reverted to the province and was converted to public grasslands. Gray (1967) provides a vivid description of erosion, land abandonment, and severe social stress in Canada's southern prairies during this era, and of

the government's vigorous responses, including conversion of abandoned cropland to community grazing lands.

Hill County, Montana, in contrast, has more land suitable for cultivation and private farmers have owned and farmed most areas since it was settled in the early 20<sup>th</sup> century. Most of this land was settled under the Homestead Acts which granted farmers title to public land if they satisfied specified development conditions (Malone, Roeder, & Lang, 1996). As on the Canadian side of the border, settlers in Hill County and other areas of Montana suffered intense economic hardship due to declining prices which followed World War I and, especially, the recurring severe droughts of the 1930s. In many cases, land vacated by financially stressed farmers was held by counties for a period due to tax delinquency, or by banks due to foreclosure. However, on the Montana side of the border most land vacated by farmers due to natural and economic forces returned to the marketplace; however, some land was placed in the National Grasslands Program during the 1930s. Most of the National Grasslands were eventually sold to farmers (Knight, 1991). The resale policies of counties, banks, and the National Grasslands Program, and the generally better quality land on the U.S. side, contributed to its return to private ownership. Consequently, the razor's edge difference in land use along the international border emphasized by Manning (1996) is primarily due to national differences in land ownership and land use policies, rather than wheat support policies. Continuing land

ownership and land use policies maintain the status quo.

National farm commodity support programs are important, but they are not the sole determinants of land use. Land quality differences and historical policies influencing land ownership and use can play a dominant role. Certainly, some marginal areas have likely converted to and remained in grain production--rather than grazing--in the North American plains due to commodity subsidies, subsidized crop insurance, and transportation subsidies. However, generalizations about policy-induced cropping diversity cannot be inferred from a snapshot of one small segment of the landscape. Coincidental differences in natural fertility, topography, and institutional policies influencing ownership and use can sometimes explain visually dramatic differences in land use.

### For More Information

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