Value of Irrigation Water for Drought Proofing in the South Saskatchewan River Basins (Alberta)

Antony Samarawickreme and Suren Kulshreshta

This article was a study of how irrigation can mitigate drought, followed by a mathematical framework and model of how irrigation can improve farm business during a drought period. This article appears to be too specific for our purposes.

Agricultural drought: “below mean monthly (or crop season) precipitation leading to lack of moisture available for crops. Under these conditions, crop growth suffers and creates many adverse impacts on the producers, and through that many downstream impacts on the economy” (247).

During a drought, the farm may be affected in 2 ways:
1. lower crop yield or total crop loss resulting in loss of revenue.
2. If there is a shortage of forage, livestock may be affected or additional financial costs may be endured for livestock maintenance the report does not elaborate on this scenario).

Private Irrigators in Southern Alberta: a survey of their adoption of improved irrigation technologies and management practices

Lorraine Nicol, Henning Bjornlund, and K. K. Klein

As the title suggests, this is a survey of 11.5% of the 1,367 private irrigators that irrigate an area of 125,000 hectares. The survey was completed in relation to Alberta’s water plan entitles “Water For Life” (I have found the plan and a series of documents about this plan and will summarize later tonight). The Water for Life plan proposes a strategy for conserving water through 30% increase in efficiency. The study found that most of the farmers are “grounded in family farm traditions, have been slow to adopt improved irrigation technologies and management practices in the past, and have even less intention of doing so in the future” (339).

Irrigation of farm crops accounts for 75% of consumptive use of surface water in the southern part of the South Saskatchewan River Basin. Irrigation produced a high-value crop and forages to support a secondary procession industry and high density feed lots.

“Private irrigators are responsible for the installation and maintenance of the infrastructure needed to convey water from the river to the land as well as the irrigation equipment used on the land itself. . . The majority (about 82%) of the irrigated area that is under private licenses lies along ten individual rivers within
the SSRB . . . aside from basic water license data held by Alberta Environment, little is known of the production, water use practices and investment decision of irrigators who have private licenses” (340).

The survey sought to obtain data on:

1. Personal characteristic of the irrigator
2. property and production characteristics of the irrigator
3. what actions irrigators have taken historically, recently and plan to do in the future to improve their water use efficiency
4. factors influencing their irrigation technology choices
5. potential investment decisions based on hypothetical scenarios

RESULTS
“data suggests that most private irrigators are old, have been involved in farming for a long time, and have a family history of farming” (341). There are a lot of categories of type of farm, financial situation, etc.

There is an in-depth explanation of each type of irrigation method and who uses what, but the summary is that the majority of the farmers are not using the most efficient irrigation technology.

When asked the reason for not implementing new technologies, about 70% responded that it was financially feasible or that they believed they were already using all the water saving practices that are practical (346).

In conclusions, education and substantial financial incentives would be necessary to achieve the “Water for Less” goals for Alberta.
Alberta Irrigation Information: Facts and figures for the year 2010.
June 2011
Article available at
http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/irr7401

There are 13 irrigation districts in southern Alberta providing water to 1,364,965 assessed acres of farmland. The infrastructure within these irrigation districts is comprised of approximately 7,940 kilometers of conveyance system, of which 339 kilometers are owned and operated by Alberta Environment.

Figure 18. Alberta’s Irrigation Districts

Medicine Hat’s closest irrigation district is 9-St. Mary River Irrigation District. All the tables are organized into these 13 districts. As you can see the district is not
specific to Medicine Hat and covers a broad area and it is hard to find more specific information about irrigation in the area surrounding Medicine Hat. The districts are monitored but there are 1,367 (Nicol 2009) private water licenses that are not as closely assessed that are not part of these districts. These private licenses account for about ¼ of total irrigated land in southern Alberta (Nicol, 340). I have found hugely conflicting numbers of licenses outstanding. The private license and districts can be seen in the map below.

I have included the following as an example of the type of information that can be found in this report. It all seems too specific or not comprehensive enough for us to use at this time.

Summary of total crops grown in District 9 in 2010:
Cereals 34.6%
Forages 27.3%
Oil seeds 16.6%
Specialty crops (did not clarify) 19.9%
Other 1.6%
Table found on page 2.

Summary of total crops grown in all 13 districts in 2010:
Cereals 31.3%
Forages 37.5%
Oil seeds 13.5%
Specialty crops 13.5%
Other 4.2%
Table found on page 5

Other tables include such topics as:
Alberta Potato Acreage (pg. 4)
Irrigation Districts Annual Water Rates (pg. 10)
Irrigation District Infrastructure by Length and Replacement Cost in 2010 (pg. 15)

Because of the high number of private irrigators around the Medicine Hat region, anything in this report would appear to be skewed.
above map available at
http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/irr9958