Introduction

The irrigation districts in southern Alberta, with their extensive networks of canals, pipelines, drains and reservoirs, have a profound impact on the entire region – an impact that extends well beyond the farm gate. Secure supplies of good-quality water have always been a concern to farmers and ranchers in southern Alberta. Urban communities face similar concerns. Local surface water supplies are usually unreliable; groundwater supplies, where adequate quantity can be found, are often of poor quality.

Irrigation has a profound effect on Southern Alberta.

Although the initial development of water diversions and irrigation infrastructure was predicated upon increasing and stabilizing crop production, the irrigation distribution works soon became a supplemental source, and often the sole source, of good-quality water for domestic, stock watering, municipal and industrial uses in southern Alberta. Dependencies on the irrigation infrastructure for non-irrigation uses of water became entrenched.

There would be few water bodies in southern Alberta if it weren't for irrigation.

Without irrigation reservoirs or supplements to natural water bodies by irrigation diversions, there would be very few permanent water bodies in southern Alberta. Municipalities and the province have developed parks and recreation areas on these water bodies to provide water-based recreational opportunities, which otherwise would not have been possible. These recreation areas have become very popular over the years.

Irrigation diversions also are used to create habitat for wildlife. Prior to the 1970s, these projects were often in association with uncontrolled seepage from irrigation canals. However, as irrigation districts have improved irrigation efficiency over the years through rehabilitating canals or replacing them with pipelines, seepage has essentially been eliminated. Most of the wildlife habitat projects are now supported by controlled releases from the irrigation distribution system. New wildlife projects have

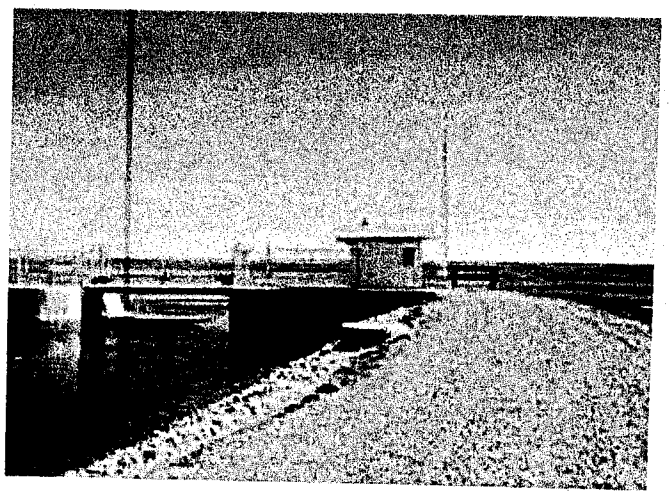
been developed as districts make conscious efforts to address quality of life and environmental sustainability issues.

Irrigation is now an integral component of the economic, environmental and social fabric of southern Alberta.

Irrigation is now an integral component of the economic, environmental and social fabric of southern Alberta. There are many direct and indirect benefits of the irrigation infrastructure, and promising prospects for the future with intensification of irrigation, increases in agri-food processing, and expansion of the irrigated area.

Benefits of Irrigation

Primary Agricultural Production



The approximately 1.3 million acres of irrigation is 5.4 percent of the cultivated land in Alberta, and is farmed by about 8.3 percent of Alberta's farmers. Irrigation benefits farm production in four important ways:

1. Increased yields – Yields of conventional crops (crops that are grown on both dryland and irrigated land) are commonly increased two to three-fold, and even more in arid regions of southeastern Alberta.
2. New crops – Irrigation makes possible the production of "new crops" (crops that are generally not viable under dryland agriculture), such as corn, beans, peas, sugar beets and potatoes. These are typically higher value crops than conventional crops.
3. Stability – Irrigated crop yields are more stable and reliable, resulting

'he irrigated outhern part of Alberta is ttractive for agri-processing industries.

Impacts of Intensification and Expansion of Irrigation

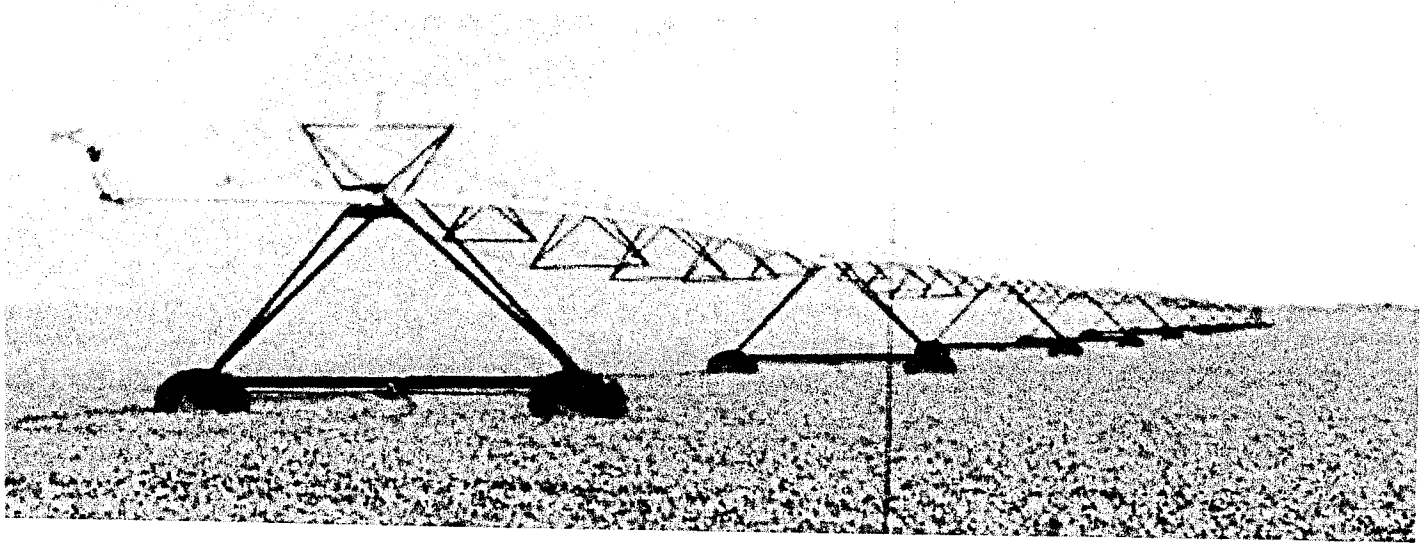
By 2010, crop intensification will increase value-added impact by 27% over current level.

The impacts of intensification and two levels of expansion, 10 and 20 percent, are summarized in Tables 5 and 6.

The 2005 and 2010 intensification scenarios track the economic impacts of a change in cropping patterns – a change particularly in two areas: a shift from cereals to forage to support the livestock industry, and to specialty crops to support the agri-processing industry. By 2010 the total provincial value-added impact (direct and indirect) would be about $248 million, an increase of 27 percent over the current value-added contribution of irrigation. Employment would increase by almost 2,400 jobs, an increase of 21 percent over current irrigation-related employment.

By 2010, irrigation expansion will double the impact of crop production shifts, adding an additional $483 million to Alberta's agri-food GDP.

Irrigation expansion by 10 or 20 percent would additionally stimulate the Alberta economy. A 20 percent expansion by 2010 would approximately double the impact of the demand-driven crop shifts, increasing it from 27 percent to 52 percent over current levels. The value would reach $483 million — equal to an approximate 10 percent increase in Alberta's total agri-food GDP. Total direct and indirect employment would increase by more than 5,000 person-years. The total indirect impacts (backward and forward linkages) would increase more than those linked to primary production impacts of irrigation.



ble 5: Projected Impacts of Irrigation Intensification

Impact	Base Case 1999 – 1.3 million acres			Intensification Only (no expansion) 2005 – 1.3 million acres			Intensification Only (no expansion) 2010 – 1.3 million acres		
	Gross Sales ($million)	Value-Added ($million)	Employ-ment (FTE)	Gross Sales ($million)	Value-Added ($million)	Employ-ment (FTE)	Gross Sales ($million)	Value-Added ($million)	Employ-ment (FTE)
Direct (crops and live-stock)	723	211	3,618	811	230	3,853	881	244	4,067
Backward linkages (suppliers)	723	181	1,807	811	203	2,026	881	220	2,203
Forward linkages processors)	2,122	536	5,663	2,534	644	6,528	2787	711	7,191
Total (direct and indi-ect)	3,568	927	11,088	4,155	1,078	1,2407	4,550	1,175	13,461
ncrease from 1999 base ase	--	--	--	587 (16%)	150 (16%)	1,319 (12%)	982 (28%)	248 (27%)	2,374 (21%)

Table 6: Projected Impacts of Irrigation Intensification and Expansion

Impact	Base Case 1999 – 1.3 million acres			Intensification + 10% Expansion 2005 – 1.3 million acres			Intensification + 20% Expansion 2010 – 1.3 million acres		
	Gross Sales	Value-Added	Employ-ment	Gross Sales	Value-Added	Employ-ment	Gross Sales	Value-Added	Employ-ment
irect (crops and	723	211	3,618	892	253	4,239	1,058	293	4,881
ackward linkages	723	181	1,807	892	223	2,229	1,058	264	2,644
orward linkages	2,122	536	5,663	2,788	709	7,181	3,345	853	8,629
otal (direct and	3,568	927	11,088	4,571	1,185	13,649	5,460	1,411	16,154
crease from 1999 base	--	--	--	1,003	258	1,319	1,892	483	5,067
crease due to 10 %				416	108	1,243			
crease due to 20 % pansion only							910 (25%)	235 (25%)	2,693 (24%)

All figures in Tables 5 and 6 represent incremental values over dryland agriculture on the same areas.

Value-added estimate (direct and indirect) is approximately equal to the contribution to the Agri-Food GDP.

Employment based on 1.0 person-year per $100,000 in direct sales and assumes a 1.0 FTE equivalent equals 1880 person-hours.

Expansion-only benefits are the difference between the expansion-plus-intensification scenario and the intensification-only scenario.