Saskatchewan Irrigation Information 2024

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Saskatchewan

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The province of Saskatchewan is committed to growing its irrigation sector. The Saskatchewan Plan for Growth has a development target of 85,000 acres of new irrigation by the year 2030 and is on track to meet this target. In the five-year period from 2020 through 2024, the province experienced growth of 81,398 acres of new irrigation.

The purpose of this annual publication is to provide an overview of Saskatchewan's growing irrigation industry by detailing statistical information and data.

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Irrigation development in Saskatchewan has been a tool for rural development, diversification and crop production stabilization for over 100 years. As of 2024, approximately 454,592 acres have been developed for irrigation.

Table 1. Acres Developed for Irrigation in Saskatchewan

Irrigation in Districts	125,162 ac
Intensive: Private irrigation	234,163 ac
Non-Intensive: Backflood irrigation	95,267 ac
Total	**454,592 ac**

Intensive and Non-Intensive Irrigation
Irrigation can be classified as intensive or non-intensive. As defined in The Irrigation Act, 2019, an intensive irrigator owns or controls land that receives a prescribed allocation of water (typically 12 inches per acre) from the Crown for irrigation purposes; is not restricted as to when the prescribed allocation of water may be applied; and does not have an existing water service agreement with an irrigation district.

As defined in *The Irrigation Act, 2019* a district consumer is a person who has an existing water service agreement with an irrigation district to receive irrigation services from the irrigation district. This is also considered intensive irrigation as per the Act.

Non-intensive or back flood irrigation is the controlled application and release of water, at spring flood stage only, that increases soil moisture for crop use later in the year.

Irrigation Districts
An irrigation district consists of a group of irrigators who share common water supply infrastructure. Irrigation districts in Saskatchewan are required to follow the legislation that is defined in *The Irrigation Act, 2019*. There are currently 22 irrigation districts in Saskatchewan representing approximately 125,162 acres of irrigation.

Irrigation Method Acres 1950-2024
The most common methods of irrigation in Saskatchewan include pivots, wheel moves, flood, and backflood irrigation. There has been increasing interest in trickle and sub-surface irrigation, but these methods still account for a small percentage of irrigation across the province.

Figure 1. Irrigation Method in Acres from 1950-2024

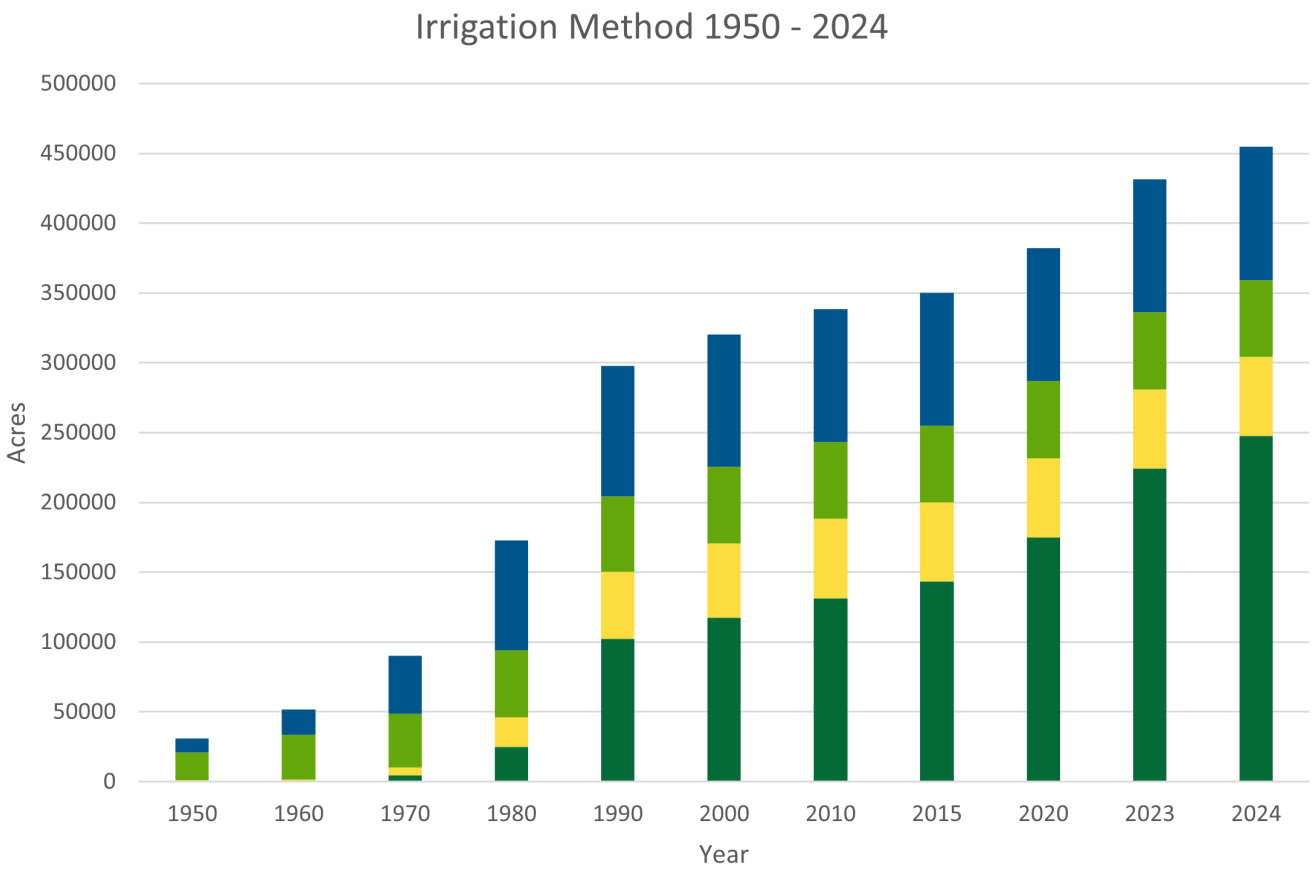


Figure 2. Acres per Irrigation Method

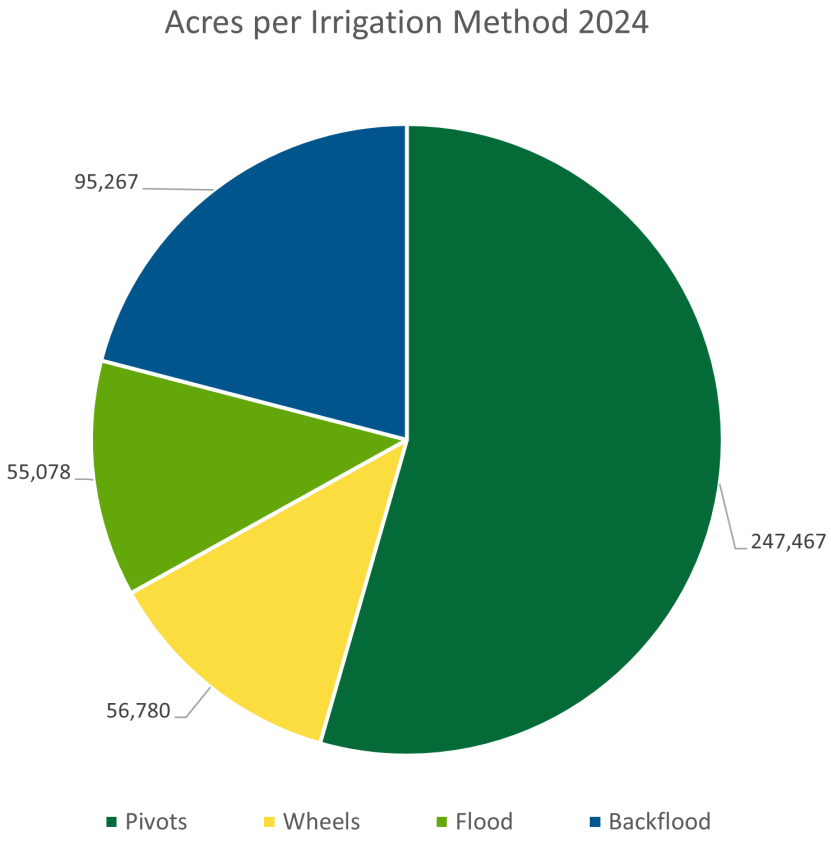


Table 2. Saskatchewan Irrigation Districts and Acres in 2024

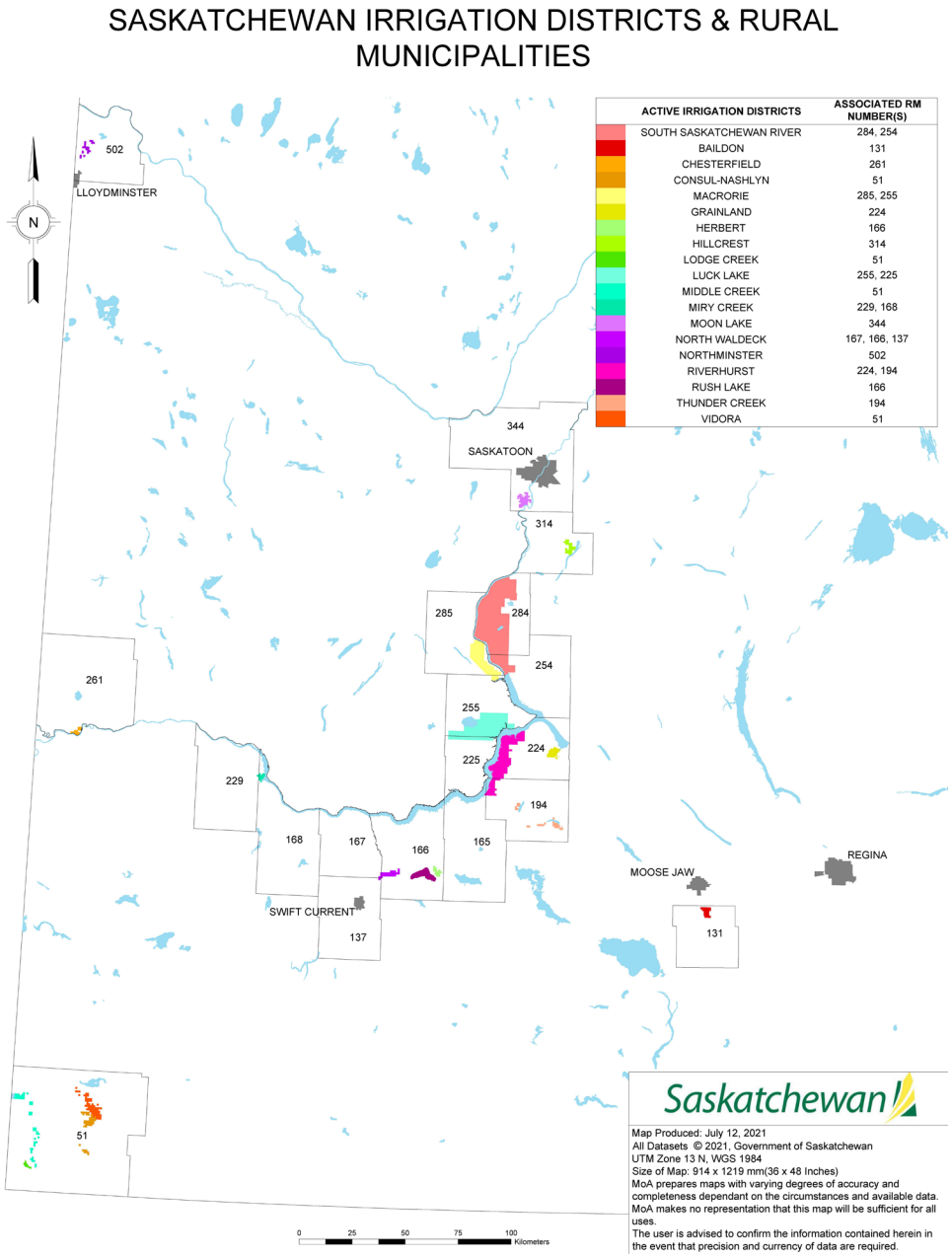
Irrigation District	Acres
South Sask River	49,662
Riverhurst	19,999
Luck Lake	18,076
Rush Lake	5,322
Hillcrest	3,866
Consul-Nashlyn	3,464
Baildon	3,260
Macrorie	3,174
Moon Lake	2,891
Grainland	2,359
Vidora	2,413
Herbert	1,771
Miry Creek	1,685
North Waldeck	1,710
Thunder Creek	1,426
Lodge Creek	970
Middle Creek	913
Chesterfield	629
Northminster	1,572
Ponteix *	0
Vanguard **	0
Qu'Appelle South***	0

*Has been decommissioned due to deteriorating water quality. The irrigators in the area currently have individual projects from Notukeu creek.

**In process of being wound up.

***Established as an irrigation district but have no developed irrigated acres.

Figure 3. Lake Diefenbaker Development Area



Crops Surveyed in the Irrigated Crop Mix Survey

The Ministry of Agriculture conducts an annual Irrigated Crop Mix Survey in the following areas: the South Saskatchewan River Irrigation District (SSRID), Riverhurst Irrigation District (RID), Luck Lake Irrigation District (LLID), Grainland Irrigation District (GID), Macrorie Irrigation District (MID), Moon Lake Irrigation District (MLID), and Saskatoon South East Water Supply (SSEWS). The Grainland Irrigation District, Macrorie Irrigation District, and Saskatoon South East Water Supply canal irrigation projects were added to the survey over the last three years. The inclusion of the additional three Districts is in part responsible for the increased acreage of cereals and oilseeds from 2020 to 2024.

There are five different classes of crops that are surveyed: cereals, oilseeds, pulses, forage and specialty crops. Cereals include wheat/durum, barley/oats and grain/silage corn. Oilseeds include canola, mustard and flax. Specialty crops include potato, turf, fruit, vegetables and seed canola. Pulse crops surveyed are dry beans, field peas, lentil and faba beans. Lastly, forage crops surveyed include alfalfa and grass.

Figure 4. Irrigated Crop Types surveyed in Irrigated Crop Mix Survey 2013-2024

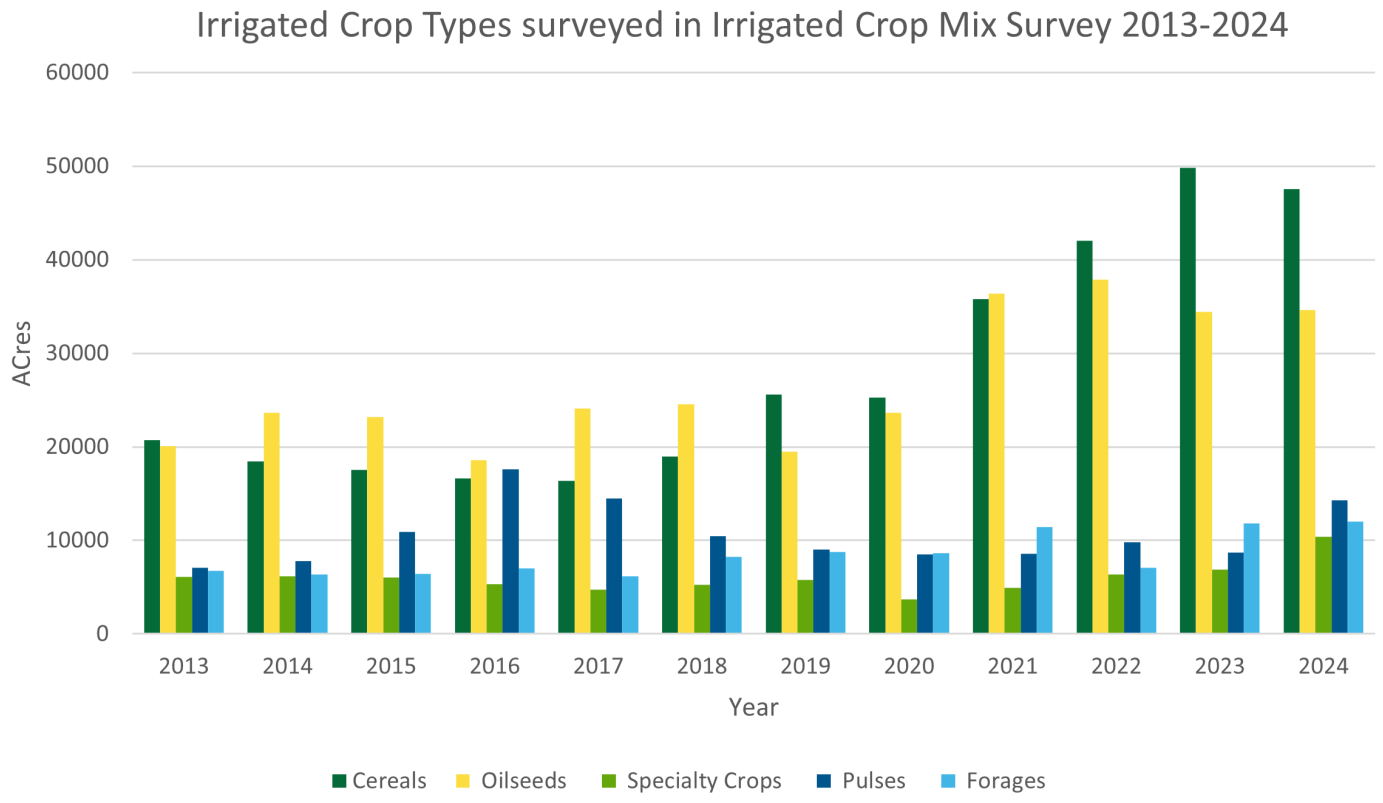


Figure 5. Irrigated Crop Types surveyed in Irrigated Crop Mix Survey in 2024

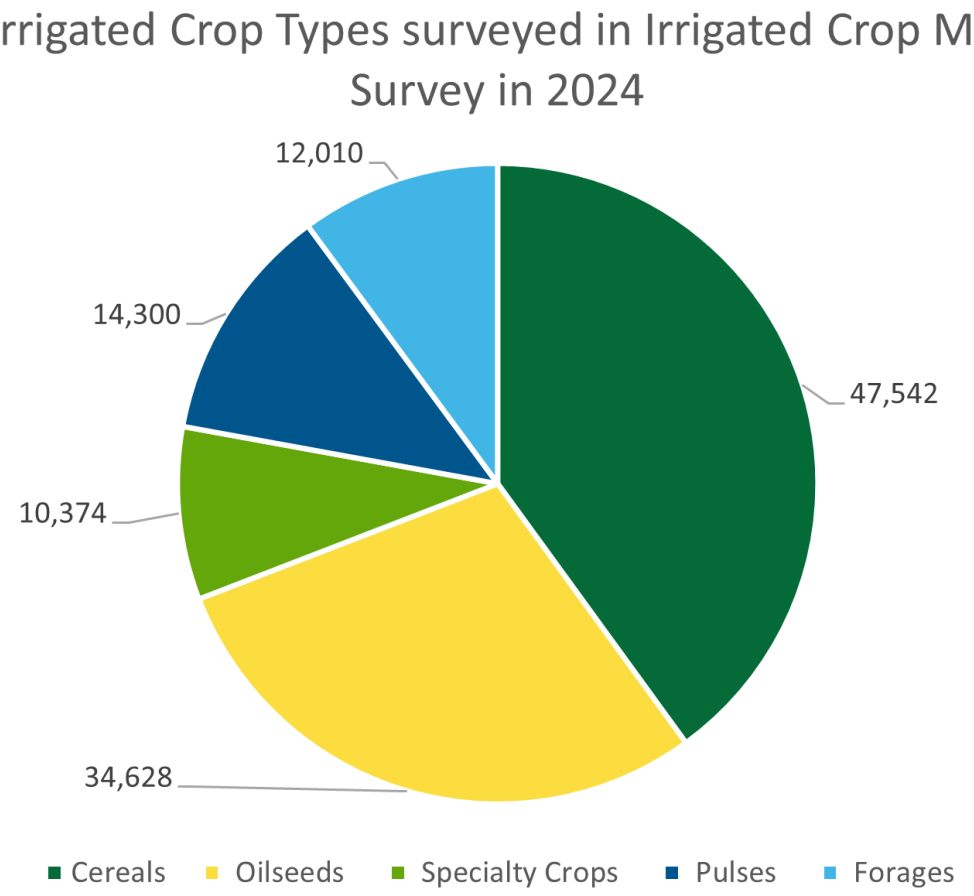


Table 2. 2024 Irrigated Crop Acres from Irrigated Crop Mix Survey

	RID	LLID	SSRID	GID	MID	SSEWS	MLD	TOTAL	CROP %	CLASS%
Cereals:										
Wheat/Durum	3,413	5,605	15,805	412	1,213	5,882	591	32,921	27.7%	**40.0%**
Barley/Oats	3,924	1,792	4,648	0	384	2,061	0	12,809	10.8%	
Grain/Silage Corn	323	265	993	0	0	231	0	1,812	1.5%	
Oil Seeds:										
Canola	8,601	2,335	10,110	723	968	9,729	329	32,795	27.6%	**29.1%**
Mustard	0	0	191	0	0	570	0	760	0.6%	
Flax	396	275	249	0	0	154	0	1,073	0.9%	
Pulses:										
Dry Bean	2,610	1,512	216	42	0	102	0	4,482	3.8%	**12.0%**
Field Peas	680	3,474	3,087	0	188	983	0	8,412	7.1%	
Lentil	129	0	251	0	0	627	0	1,008	0.8%	
Faba Bean	0	399	0	0	0	0	0	399	0.3%	
Forage:										
Alfalfa/Grass	0	1,110	4,748	945	307	4,799	101	12,010	10.1%	**10.1%**
Specialty Crops:										
Potato	650	671	4,730	348	262	0	0	6,662	5.6%	**8.7%**
Turf	0	0	0	0	0	0	211	211	0.2%	
CSIDC/Research	0	0	357	0	0	114	0	471	0.4%	
Fruit	0	0	0	0	0	0	65	65	0.1%	
Vegetables	0	0	792	0	0	0	150	942	0.8%	
Seed Canola	0	765	901	0	0	357	0	2,024	1.7%	
Total Acres	**20,726**	**18,203**	**47,076**	**2,470**	**3,322**	**25,609**	**1,447**	**118,854**		

Riverhurst Irrigation District (RID), Luck Lake Irrigation District (LLID), South Saskatchewan River Irrigation District (SSRID), Grainland Irrigation District (GID), Macrorie Irrigation District (MID), Saskatoon Southeast Water Supply (SSEWS) and Moon Lake Irrigation District (MLID).

Table 3. Percent of Irrigated Crop Acres from Irrigated Crop Mix Survey from 2015 - 2024

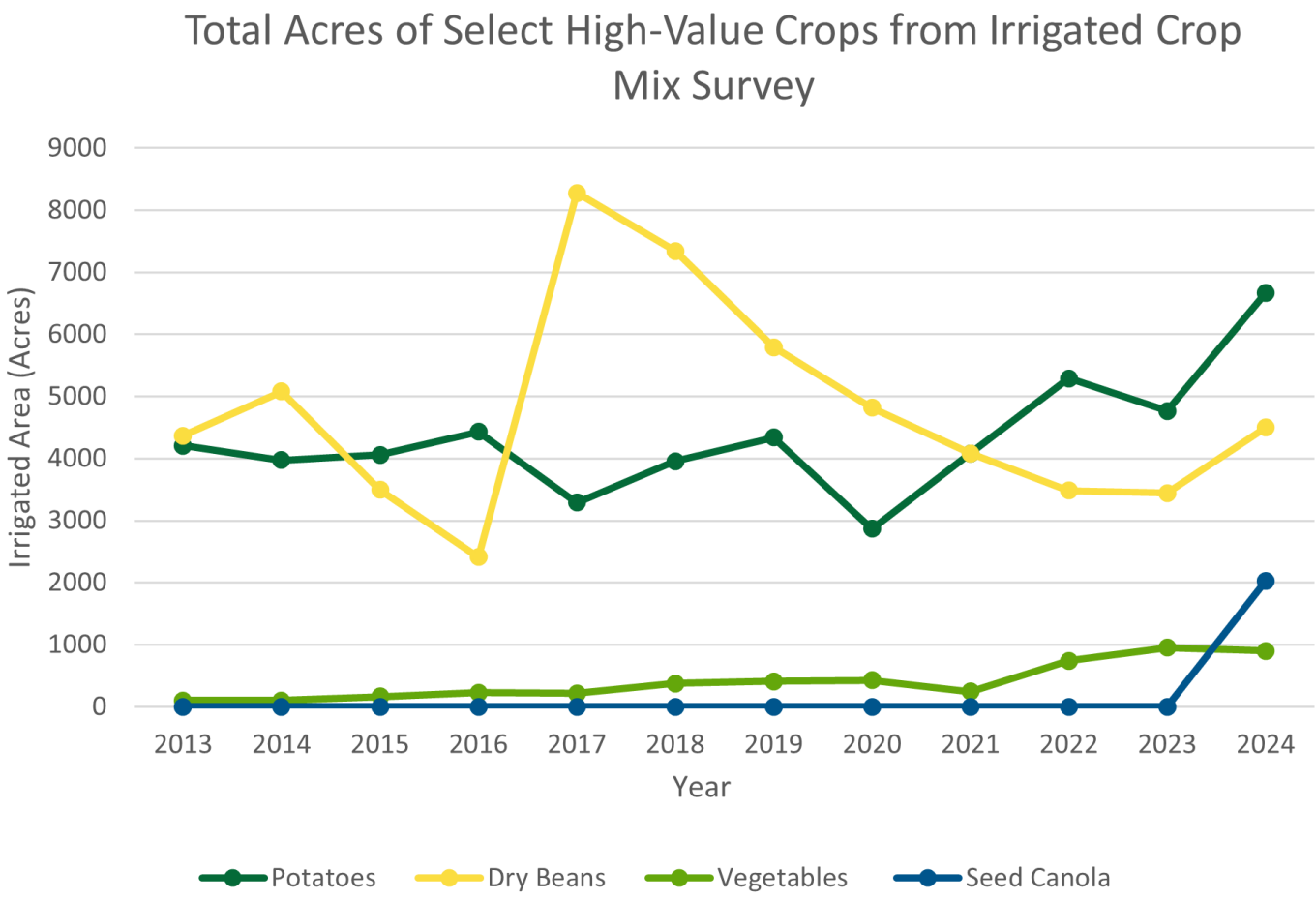
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Cereal	28	25	25	28	37	36	37	41	45	40
Oilseed	36	29	37	36	28	34	38	37	31	29
Pulse	17	27	22	16	13	12	9	10	10	12
Forage	10	11	9	12	13	12	12	7	11	10
Specialty Crop	9	8	7	8	8	5	5	6	6	9
Total Acres	**63973**	**65050**	**65,853**	**67,480**	**68,647**	**69,794**	**97,151**	**103,136**	**111,607**	**118,854**

*values noted in above table are in %

Total Acres of Select High-Value Crops from Irrigated Crop Mix Survey

Figure 6 illustrates select high-value crops identified through the Irrigated Crop Mix Survey from 2013-2024. These crops include potatoes, dry beans, vegetables and seed canola. Dry bean acres have been shown to fluctuate over the years and are generally correlated with price fluctuations. Seed canola began to appear under irrigation in Saskatchewan in 2023 and production increased significantly in 2024.

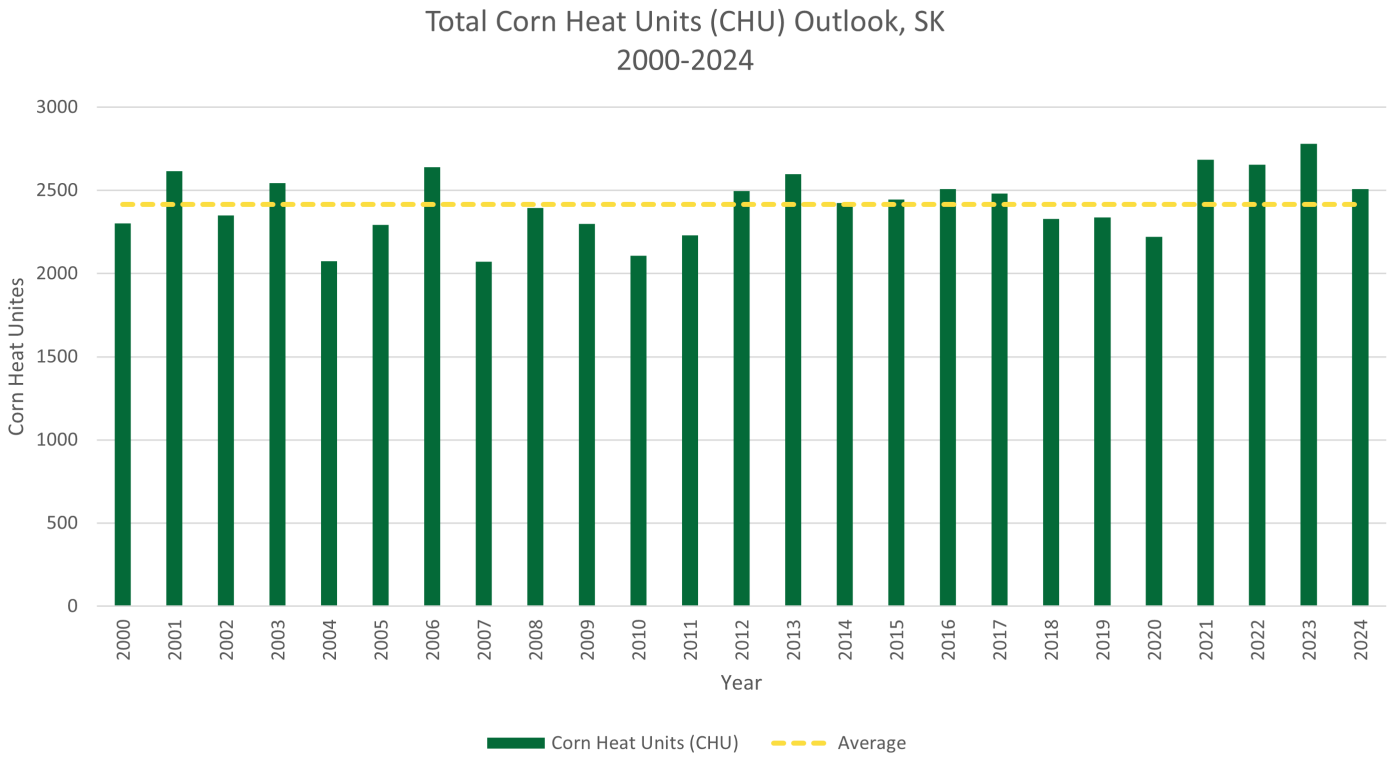
Figure 6. Total Acres of Select High-Value Crops from Irrigated Crop Mix Survey



Growing Season

The Outlook region has a relatively long and warm growing season compared to other regions in Saskatchewan with an average growing season of 115 frost free days. Corn heat units (CHU) is a standard North American formula used to measure the heat needed by crops during the growing season; the Outlook area has one of the highest average corn heat units (average total just over 2,400) relative to other parts of the province. Nine years out of 10, the Outlook region will hit 2,100 corn heat units before the first killing frost. In combination with the heat units and frost-free days, this area has ideal conditions for growing longer season crops such as high value vegetable crops.

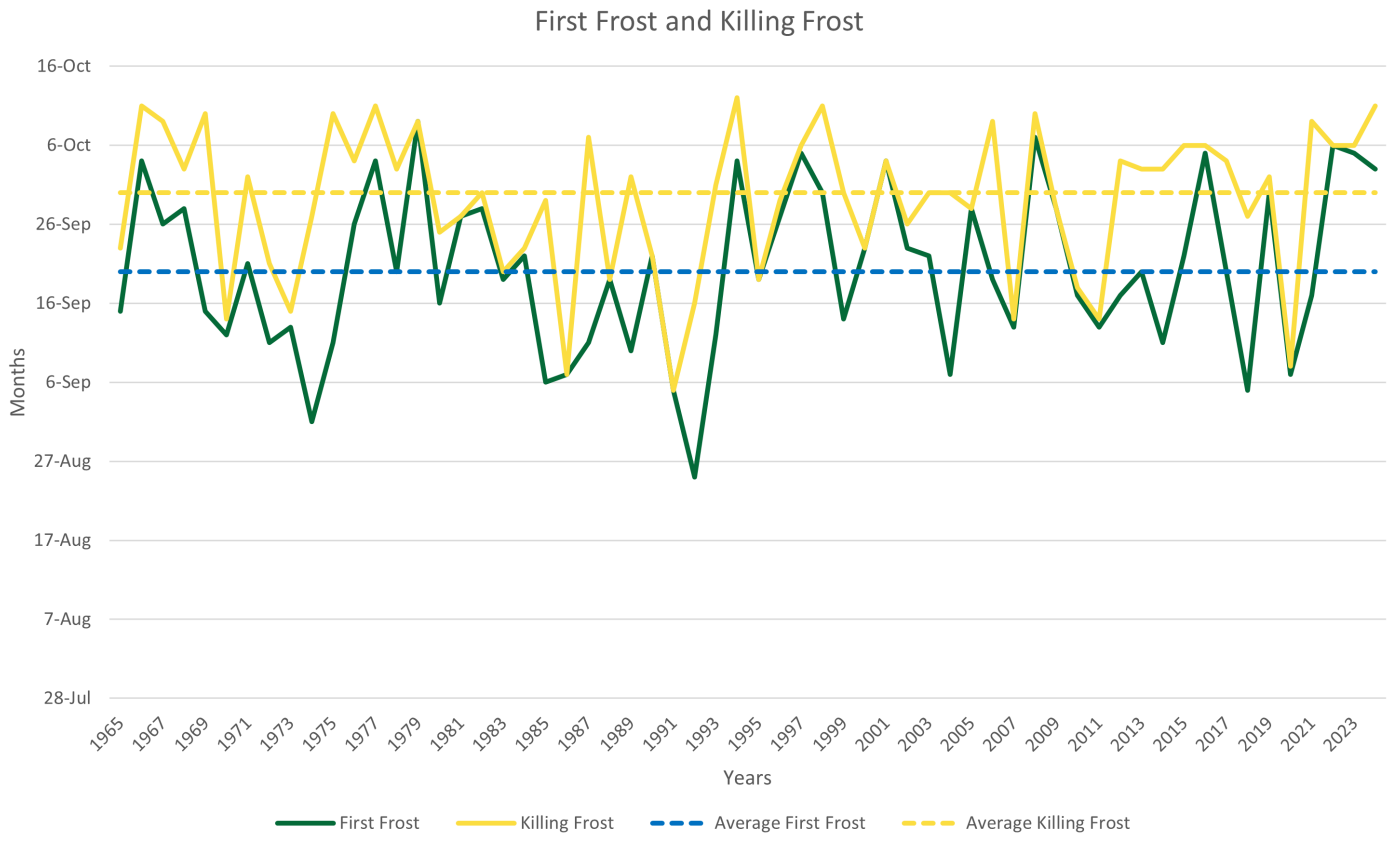
Figure 7. Corn heat units in the Outlook region from 2000-2024 (CHU calculated from May 15 and accumulating until first killing frost)



First Frost and Killing Frost in the Outlook Region from 1965-2024

The average first frost date over the last 59 years is September 20. Nine out of 10 years the first frost occurs after September 7. Killing frost is defined as a frost that is -2.5 C or lower. The average first killing frost date is September 29. Nine out of 10 years the first killing frost occurs after September 14.

Figure 8. First Frost and Killing Frost in the Outlook Region from 1965-2024

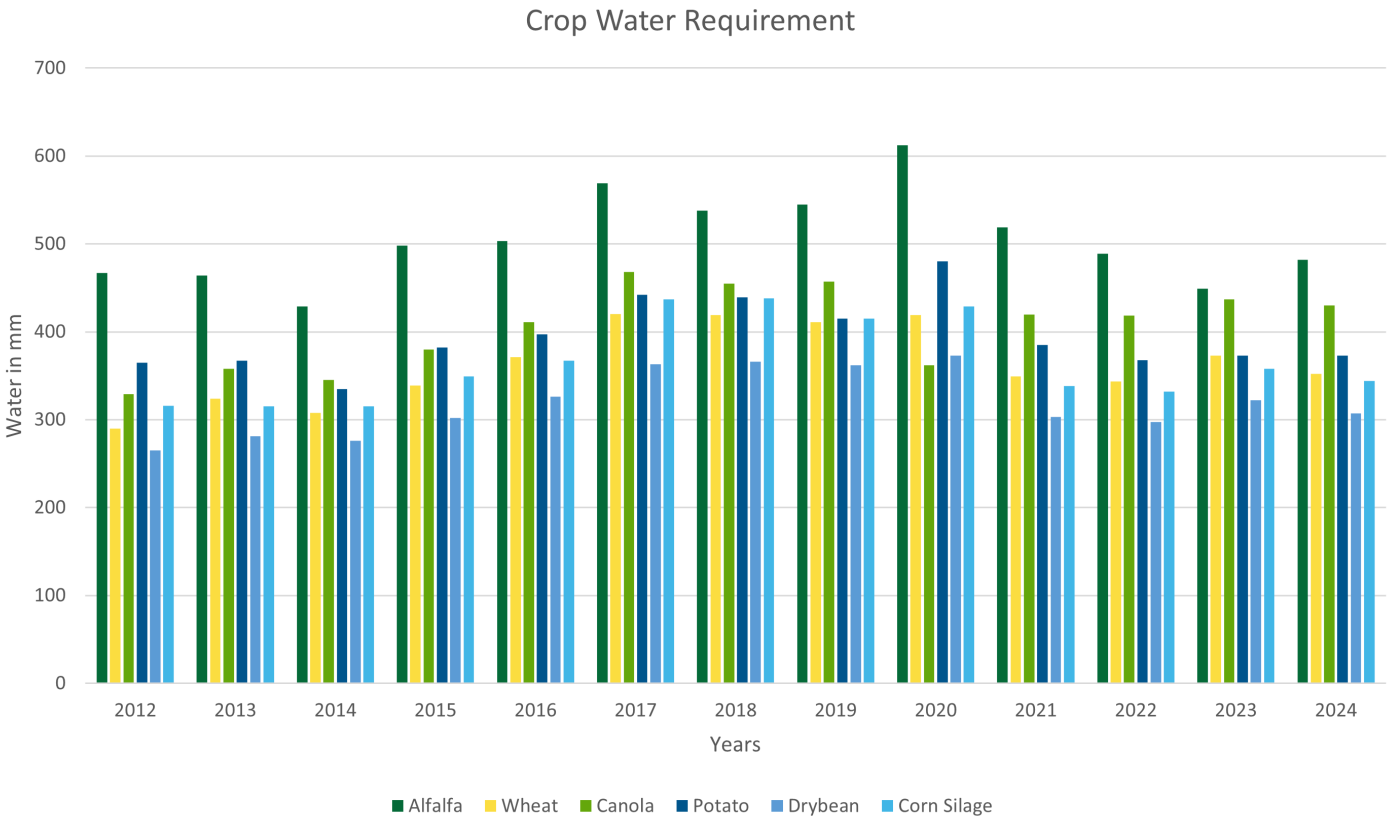


Crop Water Requirements

Evapotranspiration (ET) or crop water use for select crops is estimated based on meteorological data from the Environment Canada weather station in Outlook. Estimated ET is calculated for a reference crop (alfalfa) using the modified Penman-Montieth equation. Specific crop coefficients are then utilized for calculating ET estimates for other commonly grown crops.

Figure 9 shows the range of total water (precipitation plus irrigation) required for each crop over the last 12 years. Alfalfa ranges between 429-612 mm, wheat between 290-420 mm, canola between 329-468 mm, potatoes between 335-480 mm, dry beans between 265–373 mm and corn silage between 315-438 mm.

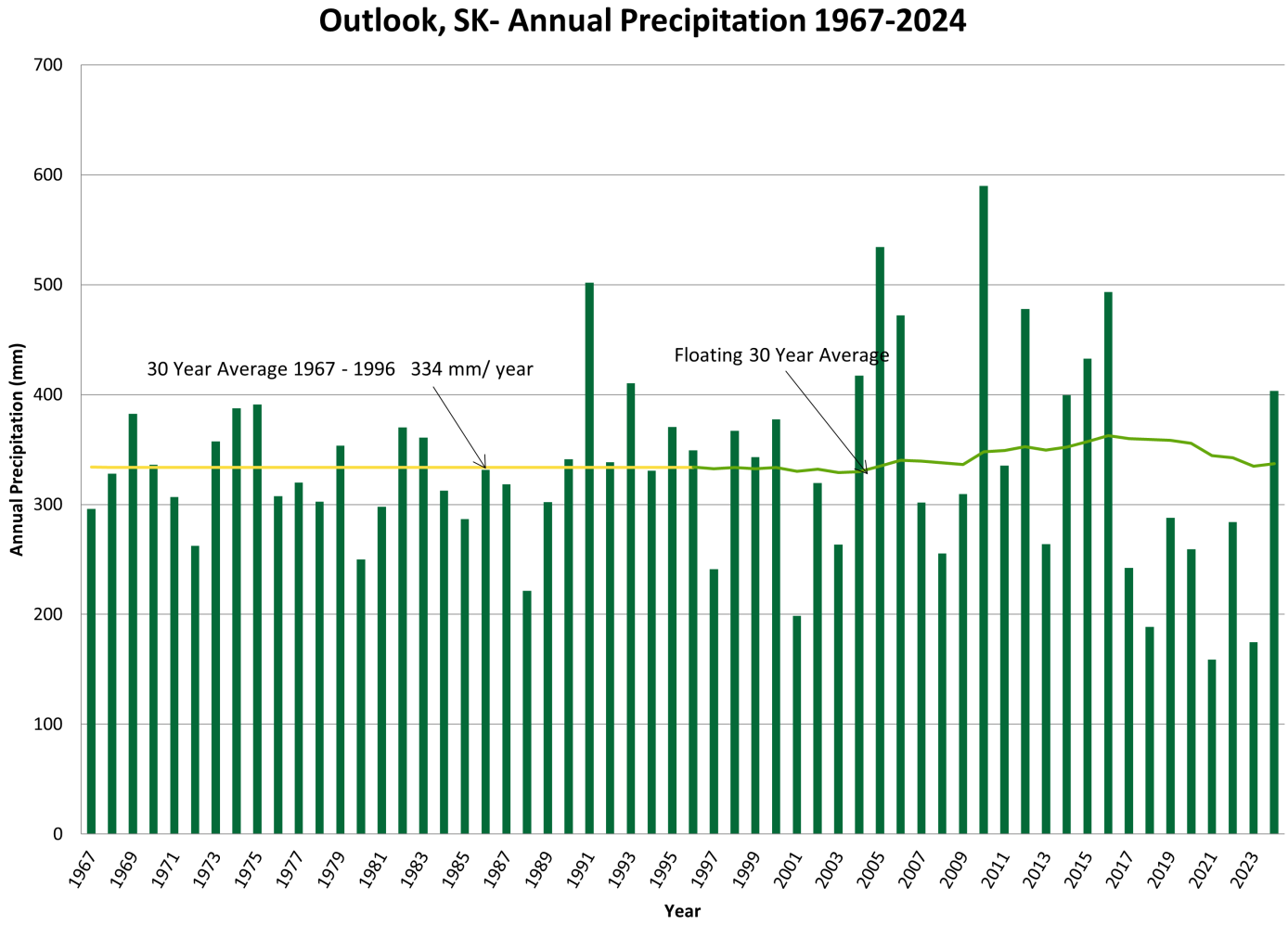
Figure 9. Crop Water Use for Alfalfa, Wheat, Canola, Potato, Drybean and Corn Silage



Annual Precipitation in the Outlook Region from 1967-2024

Outlook is situated in a semi-arid climatic zone. The average annual precipitation measured at Outlook is 336 mm. Annual precipitation can vary greatly in this region. Over the last 56-year period the high for precipitation was 590 mm in 2010 and the low was 159 mm in 2021. The average growing season precipitation (May to September) for Outlook is 229 mm. Growing season precipitation ranged from 105 mm (2021) to 450 mm (2010) over the same period.

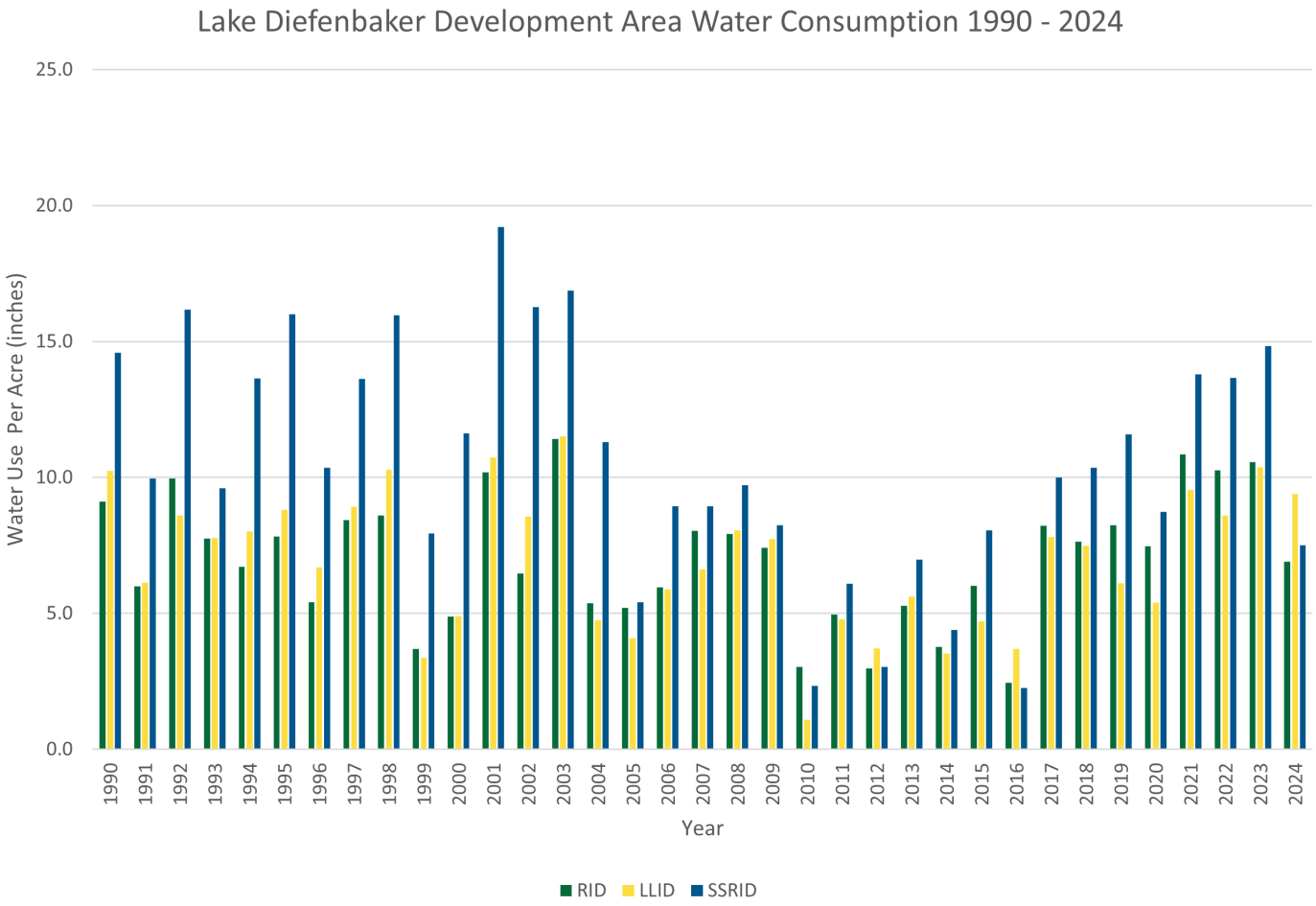
Figure 10. Annual Precipitation in the Outlook Region from 1967- 2024



District Water Consumption for SSRID, LLID, and RID 1990-2024

The province's three largest irrigation districts are supplied with water from Lake Diefenbaker and have historically reported water usage to the Ministry of Agriculture on an annual basis. The figure below depicts water consumed on a per acre basis for SSRID, LLID and RID.

Figure 11. District Water Consumption for SSRID, LLID and RID 1990-2024



Water is delivered to irrigation producers in the SSRID through a network of open canals. Irrigation producers in LLID and RID are supplied directly from the lake via pressurized pipeline systems. The pressurized pipeline systems are not subject to the same evaporative losses, seepage losses, and return flows associated with canal supplied irrigation projects.

Expectedly, annual water consumption within the districts is inversely correlated with annual precipitation. Over the last 35-year period the highest water use reported in the SSRID was in 2001 when an average of 19.2 inches per acre was consumed. The low mark for SSRID was in 2010 when an average of 2.3 inches per acre was consumed. The greatest water consumption for both LLID and RID came in 2003 when both districts applied an average of 11.5 inches per acre. The lowest usage for LLID was in 2010 when an average of 1.1 inches per acre was applied and the low for RID occurred in 2016 when an average of 2.4 inches per acre was applied.

Public Trust

The Government of Saskatchewan is committed to developing irrigation in a sustainable manner. There are several different Acts and Regulations that oversee irrigation development in the province. *The Irrigation Act, 2019*, stipulates that all new irrigation projects must obtain an Irrigation Certificate prior to development. The Irrigation Certificate ensures that only appropriate lands are developed, and suitable water supplies are used for irrigation. This helps to maximize the public benefit of water allocated for irrigation use while also helping to protect our land and water resources.

The Irrigation Act, 2019 and *The Irrigation Regulations, 2020* are tools that irrigation districts use to maintain compliance and operate in an efficient manner. There are several requirements and obligations within this legislation that provincial irrigation districts must comply with. Provincial irrigation districts must hold at least one general meeting of its members in each fiscal year and submit the meeting minutes to the ministry. The districts must prepare a budget of total costs for the fiscal year, which includes administrative costs, operation and maintenance of infrastructure, and irrigation replacement funds. The districts are required to submit annual reports to the ministry each fiscal year which includes a report from the annual general meeting, audited/reviewed financial reports, status of the irrigation replacement fund, an Irrigation Works Management Plan and a copy of the district bylaws. More information regarding the regulatory requirements can be found here ***https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/crops-and-irrigation/irrigation/irrigation-regulatory-requirements***

The Irrigation Legislation Guide for Producers has been developed to support producers in navigating the regulatory requirements associated with irrigation development process and to outline the responsibilities of the various agencies involved. This guide can be found online at ***https://publications.saskatchewan.ca/api/v1/products/124801/formats/145652/download***

Lake Diefenbaker

Lake Diefenbaker is the largest body of water in southern Saskatchewan, stretching 225 km in length and spanning 2 to 3 km in width. At its Full Supply Level (FSL) of 556.9 meters in elevation, the lake has a mean depth of 22 meters and a maximum depth of 58 meters. Its surface area at FSL is 119,747 acres, with a total storage capacity of 7.6 million acre-feet. The usage on Lake Diefenbaker includes 2.7 per cent for irrigation, while evaporation accounts for 3.3 per cent, with annual average evaporative losses estimated at 219,000 acre-feet. Originally, the vision for the reservoir was to support 500,000 acres of flood irrigation at a 24-inch duty. At present, however, only 189,000 acres have been developed out of Lake Diefenbaker. The majority of this irrigation is center pivot, which is typically allocated half of what is allocated to flood irrigation due to higher water use efficiency.

The lake has the capacity to support further irrigation expansion while preserving vital habitats. It is home to 26 native and stocked fish species and hosts the largest single-site breeding population of Piping Plover which is a protected species under the federal *Endangered Species Act*.

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