

Attachment 2: Potential for Agricultural Crops in Strathcona County

Strathcona County occupies a strip of land on the west flank of a glacial upland known as the Cooking Lake Moraine. It is bounded on the east by Elk Island National Park and on the west by the City of Edmonton and the North Saskatchewan River (see map).

Three distinct ecological regions can be recognized (Table 1, Map 1). The largest region is composed of the hummocky or slightly hilly upland landscapes in the east and south of the County. It has Mixedwood Forests at the higher elevations (Area 1) grading to Parkland vegetation in the southwest (Area 2). The second region is composed of the undulating landscapes between the upland and the river in the north-central part of the County. It contains fine-loamy glacial deposits (Area 3) and silty and clayey lake deposits (Area 4) which were originally under Parkland vegetation. The third region contains the undulating sandy fluvial deposits in the northern tip of the County (Area 5).

The slightly higher elevations of Region 1 have a shorter and cooler growing season than the rest of the County. Area 1, with a Frost Free Period of often less than 90 days, is restricted to forages and coarse grains. Also, the hilly topography in this area, with many wet depressions, is not easy to manage for annual cropping. It does, however, support a cattle and dairy industry. Area 2, with slightly better climate and topography, is better suited for arable agriculture but still has some limitations.

Region 2 (Areas 3 and 4) has excellent agricultural soils with high levels of organic matter and good moisture retention and are mostly under cultivation. This region receives moderate amounts of heat and moisture but the climate is relatively consistent from year to year with less extremes than most areas. Areas 3 and 4 contain some of the best agricultural soil-landscapes in Alberta, some ranking in the top 5% in the province.

The sandy soils of Regions 3 (Area 5) were mainly developed under grassy parkland vegetation and, if not too sandy, are quite good soils for common grain crops. They are particularly well suited to the growing of potatoes and other hardy horticultural root crops, though supplemental irrigation is sometimes required. However, some of the soils in this area, often with a duned surface expression, are very sandy, droughty and subject to wind erosion if exposed.

A useful concept when considering land use planning is that of “prime” farmland. This was introduced in the USA about 15 years ago as part of the Land Evaluation and Site Assessment System (LESA) for ranking lands where “Prime” and “Unique” farmlands were identified as potential candidates for protected status (see <http://www.info.usda.gov/nrcs/fpcp/faq.htm>).

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, fibre forage, oilseed and other agricultural crops with minimum inputs of fuel fertilizer, pesticides and labour. Unique farmlands are those apart from prime farmlands that can be used for the production of specific high-value food and fibre crops.

The assessment of climate and consideration of “Prime” depends on the context. If we consider Canada as a whole, then the climate of the Edmonton area must be considered a slight limitation. We cannot, for example, mature the high heat requiring crops such as soybeans or corn, or

specialty crops such as tobacco or peanuts or safflower. In this context, the County of Strathcona might contain about 5 000 ha of “Prime” and “Unique” soil-landscapes.

However, if we consider the Alberta context, then the local climate is among the best in the province. The soils can produce all the locally important crops (wheat, barley, oats, canola, peas) with minimum inputs. Prime in this context, can be based on the 1967 CLI ratings (Tables 2, 3) which indicate that some 28 000 ha (Class 1), in areas 2.3 and 2.4 could be considered Prime agricultural lands. Another 15 00 ha (Class 2 in the same areas) would be borderline Prime. They include all the medium to moderately-fine textured Black soils on gently sloping topography. There are about 2 500 ha of “unique” sandy soils that are particularly well suited for the production of vegetables or other specialty crops. In total, there are about 30 500 / 126 000 or nearly 25% of the County would fit the categories of “Prime” and “Unique”. All such lands are found in the northern third of the county at elevations below about 675 m where heat units are above about 1300 GDD.

There are a number of other crops that could be successfully grown on the better soils if warranted by market conditions. These include canary seed, buckwheat, flax, sunflower, lentil, all forage grasses and legumes, and most herbs

References

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Table 1. The environmental landbase of Strathcona County

Region	Area	Elevation (m)	Ecological Region ²	Topography ¹	Materials ¹	Climatic heat units (Degree Days) ³
1	1	730-770	Mixedwood Forest	Hummocky	Loamy glacial material	1100
	2	710-750	Forest-Parkland transition	Somewhat hummocky	Loamy glacial material	1200
2	3	650-730	Parkland	Undulating	Loamy glacial material	1200-1300
	4	650-710	Parkland	Gently undulating	Clayey and silty lake deposits	1200-1300
3	5	620-650	Mostly Parkland	Undulating	Sandy fluvial deposits	1300

¹ Adapted from AGRASID (Agricultural Regions of Alberta Soil Inventory Database, 1998)

² From Natural Regions and Subregions of Alberta (Alberta Environmental Protection, 1994)

³ Degree Days above 5⁰C for the growing season (from Land suitability Rating System, AIWG, 1995)

Table 2. The agricultural crop (grains) landbase of Strathcona County¹

Area	Climatic limitations	Soil limitations	Topography limitations	Dominant capability class(es)
1	Moderate heat slight moisture	Moderate (organic matter and structure)	Moderate (slopes and wetlands)	4 and 5 (3)
2	Slight to mod. heat slight moisture	Slight (organic matter and structure)	Slight to mod. (slopes and wetlands)	3 and 4
3	Slight heat and moisture	None to slight	Slight (some wetlands)	1
4	Slight heat and moisture	None to slight	Very slight (some wetlands)	2
5	Slight heat and moisture	moderate to severe (moisture)	Slight (wetlands)	4 to 6

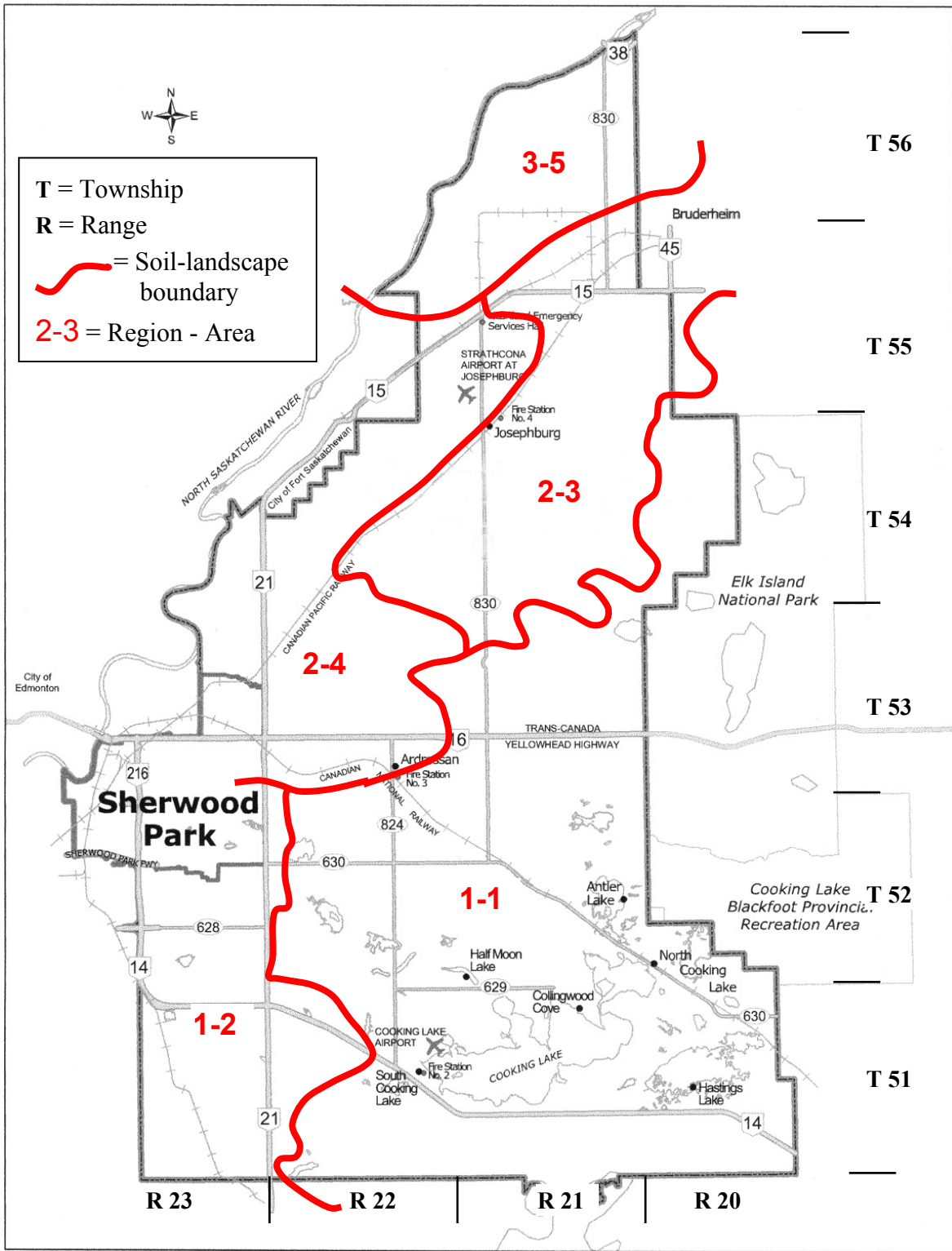
¹ Based on the Canada Land Inventory (Kjearsgaard 1967).

Table 3. Hectares of CLI Classes (1967) by ecological area

Area	CLI Class (thousands of ha)							total (ha)
	1	2	3	4	5	6	water	
1.1	-	2	10	15	16	5	7	55 000
1.2	-	2	8	6				16 000
2.3	20	1	1	-	-	-	-	22 000
2.4	8	14	-	2	-	-	-	24 000
3.5	-	-	-	2	3	4	-	9 000
total (ha)	28 000	19 000	19 000	25 000	19 000	9 000	7 000	126 000

Table 4. Unique agricultural potentials

Area	Comments
1	Short frost free season restricts this areas to forages and coarse grains.
2	Most crops can be grown but is marginal for wheat, good forage country.
3	Good to excellent land for common grains and oilseeds.
4	Good to excellent land for common grains and oilseeds.
5	Can be droughty but is uniquely suited for horticultural crops.



Map 1. County of Strathcona showing Agricultural Regions and Areas.