

Climate Smart Agriculture in Alberta

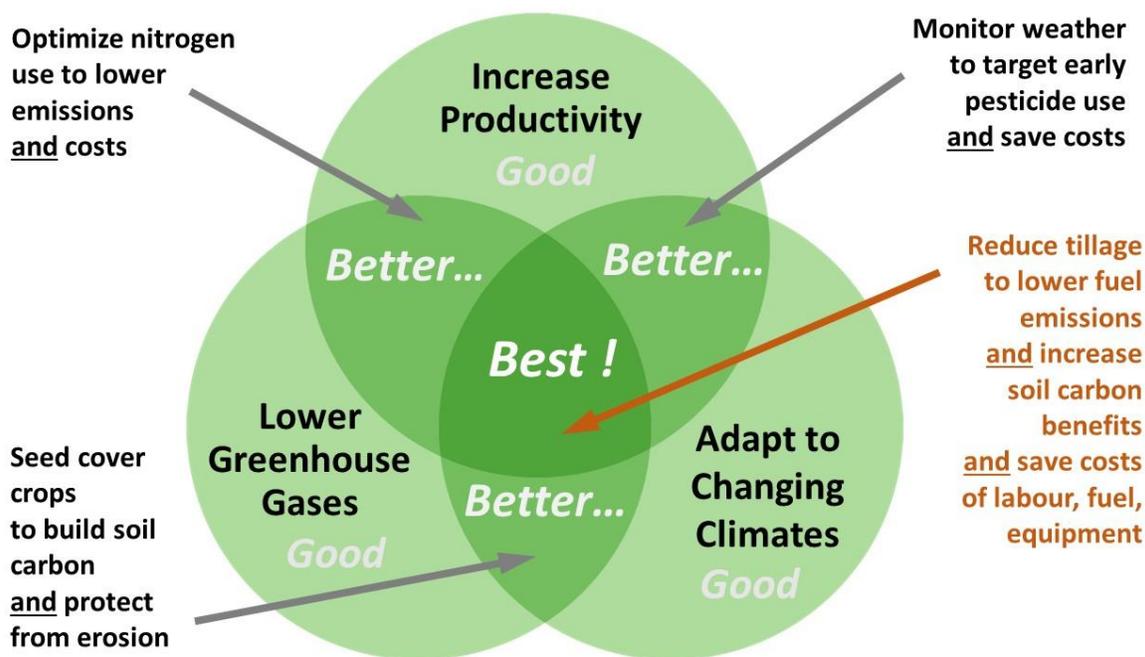


You may already be making some management decisions to support the triple-win of “Climate Smart Agriculture” by:

- *increasing production efficiencies, and*
- *lowering greenhouse gas emissions, and*
- *improving adaptation to changing climates.*

Consumers and large multi-national companies support these principles of Climate Smart Agriculture and expect their suppliers to demonstrate progress towards meeting these goals.

Using advanced agricultural practices, farmers and ranchers in Alberta have already gained many benefits from practices that meet all three Climate Smart Agriculture goals, as shown below. Continued leadership and demonstrations of progress in these areas are resulting in new environmental market opportunities. A number of programs are available to help with further improvements. Are there new ways that you can gain these benefits on your operations?



For more information, see:
www.agriculture.alberta.ca/climatesmart



Examples of actions to gain the multiple benefits of Climate Smart Agriculture.

Results	Increase Productivity	Lower Greenhouse Gas (GHG)	Adapt to Changing Climates
<i>Cropping</i>			
Tillage is Reduced	Fewer field passes saves costs by increasing fuel efficiency and equipment lifespan.	Lower fuel use and less tillage lowers GHG emissions while increasing soil carbon.	Improved infiltration of spring melt and rainfall, nutrient cycling and erosion protection.
Nutrient Use Efficiency is Optimized	Nutrient rates matched with crop needs ¹ increases input value. Soil ² and manure ³ test results identify crop nutrients required.	Higher yields increase soil carbon levels. Appropriate products placed close to seed, timed close to crop uptake lowers GHG.	Climate information ⁴ improves crop input decisions, e.g. frost-free days, soil moisture, chances of rain.
Pests are Managed Early	Early monitoring lowers amounts of product needed and costs.	Early and targeted applications lowers fuel use and carbon dioxide emissions.	Climate information ⁴ improves crop input decisions, e.g. temperature conditions.
<i>Integrated Cropping Livestock Systems</i>			
Areas of Perennial Crops are Increased	Lower fuel, nutrients and labour requirements save costs.	Less fuel use lowers GHG like carbon dioxide. Lower nutrient needs means lower GHG like nitrous oxides. Soil carbon storage increases.	Improved options to deal with weeds and diseases in break from continuous annual cropping. Deeper roots access moisture and improve infiltration.
Marginal Cropland is Restored	Reducing inputs in areas where productivity can't be improved saves costs.	Carbon removals increase with perennial crops, woody plants and storage in soils.	Riparian areas are protected from erosion. Moisture infiltration and wildlife habitat increase.
Manure Resources are Optimized	Incorporate quickly to increase available nutrients. Test soil ² and manure ³ to match rates with crop needs ¹ .	Nutrients applied close to crop needs lowers nitrous oxides and increases biomass inputs to soil carbon stocks.	Soil carbon levels increase to improve nutrient cycling and infiltration.
<i>Livestock</i>			
Grazing is Extended into Winter	Less fuel and labour needed to transport feed and yardage, saves costs and time.	Lower fuel use from less transportation of feed and yardage lowers carbon dioxide emissions.	Cropping wastage is reduced when used for livestock feed.
Genetics are Selected for Feed Efficiency ⁵	Weight gain with less feed saves costs.	Weight gain with less feed lowers GHGs from animal digestion and crop nutrient inputs.	Lower feed requirements decrease land base needed for production.
Cattle are Fed Higher Energy Diets	Weight gains occur over shorter times.	Faster weight gain lowers methane emissions by reducing days on feed.	Makes use of grains that don't meet grade requirements.

¹ Soil Sampling and Testing at: [http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/aqdex1341](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/aqdex1341).

² Alberta Farm Fertilizer Information and Recommendation Manager (AFFIRM) at: [https://www1.agric.gov.ab.ca/\\$department/softdown.nsf/main?openform&type=AFFIRM&page=information](https://www1.agric.gov.ab.ca/$department/softdown.nsf/main?openform&type=AFFIRM&page=information).

³ Alberta Manure Management Planner (MMP) at: [https://www1.agric.gov.ab.ca/\\$department/softdown.nsf/main?openform&type=MMP&page=information](https://www1.agric.gov.ab.ca/$department/softdown.nsf/main?openform&type=MMP&page=information).

⁴ Alberta Climate Information Service, at: <http://www.agric.gov.ab.ca/acis/>.

⁵ Net Feed Efficiency in Beef Cattle, [http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/aqdex10861/\\$file/420_11-1.pdf?OpenElement](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/aqdex10861/$file/420_11-1.pdf?OpenElement)