McCain™

McCAIN'S Regenerative Agriculture Framework.

Updated January 2024 in line with external global standard

Potato growers face increasing challenges from climate change and variable weather, rising input costs, and regulatory uncertainty.

To face these existential threats to our industry, and secure supply for the future, McCain is partnering with our growers to re-imagine the way we grow potatoes with a commitment to implement regenerative agricultural practices across 100 percent of our potato acreage worldwide by the end of 2030.

WHAT IS REGENERATIVE AGRICULTURE.

McCain defines Regenerative agriculture as an ecosystem-based approach to farming that aims to improve farm resilience, crop yield and quality by improving soil health and water quality, optimizing water use, enhancing biodiversity, and reducing the impact of synthetic inputs.

McCain, in partnership with key stakeholders, has developed six key principles of Regenerative agriculture that can be applied to the farming of potatoes:

- Ensure farm resilience
- Armour soils, preferably with living plants
- Enhance crop and ecosystem diversity
- Minimize soil disturbance
- Reduce agro-chemical impact & optimize water use
- Integrate organic and livestock elements

The aim of our regenerative agriculture program is to enhance the resilience of farms by improving **soil** health, **water** use efficiency, and **biodiversity** while reducing our **climate** impact (greenhouse gas emissions). These four key impact areas are aligned with our Smart & Sustainable Farming commitments.

OUR COMMITMENTS.

1. *Onboarding* level of regenerative agricultural practices reached across 100 percent of McCain potato acres by 2030
2. *Engaged* level of regenerative agricultural practices reached across 50 percent of McCain potato acres by 2030.
3. Developing research partnerships and leveraging collective action to advance Regenerative agriculture.
4. Operating three Farms of the Future by 2025, dedicated to developing regenerative agriculture practices and transferring this knowledge to growers.

SUPPORTING TARGETS

25%

reduction in CO_2 emissions per tonne from potato farming, storage, and freight by 2030 (Scope 3).

15%

improvement in water-use efficiency in water-stressed regions by 2025.

20%

of all potato crops grown for McCain to use water stress-tolerant varieties by 2025.

THE FRAMEWORK.

The McCain Regenerative Agriculture Framework is a farmer-centred framework developed in consultation with growers and other agricultural experts. It is a pathway to progress and guide for our farmers to support their progression toward a more regenerative model.

The Framework aims to set a credible, applicable standard for the potato industry, while allowing for regional flexibility to focus on indicators growers want to prioritize. Regenerative practices vary depending on the crop, geography, climate, and other factors – it is not "one-size-fits-all". It is critically important to allow tailoring for the significant differences across farms and potato growing regions around the world.

The Framework provides the measurement criteria for the achievement of our goals across different levels: *Onboarding, Engaged, Advanced and Leading*. As farmers expand the regenerative practices they put into action on their farm, or adopt new ones, they move up the continuum.

The Framework measures progress based on seven indicators with the aim of delivering outcomes in alignment with our key areas of impact:

1. **Armoured soils, preferably with living plants** – decrease soil erosion, increase soil organic carbon.
2. **Enhanced crop diversity** – enhancement of crop and soil biodiversity.
3. **Minimized soil disturbance** – decrease in soil erosion and compaction, maintain soil carbon and structure.
4. **Reduced toxicity of pesticides** – reduce risks of crop protection products and promote soil biodiversity which enables the natural function of soil, such as the ability to fight pests and diseases (suppressive soils).
5. **Enhanced farm and ecosystem diversity** – protection or restoration of natural habitats, protection of waterways, promotion of beneficial organisms.
6. **Reduced agro-chemical impact and optimized water use** – improve nutrient use efficiency and reduce GHG emissions; decrease surface/ groundwater pollution and improve biodiversity.
7. **Increased soil organic carbon (matter)** – increase soil fertility and resilience, increased soil infiltration and water holding capacity; enhancement of soil biodiversity.

We have created two versions for the Northern and Southern hemispheres to reflect the differences in climate and soil types.

CONTEXT ANALYSIS

While it is a global framework, we are working closely with our farmers to discover what works best on their farms in the way that makes economic and agronomic sense in each region, for example, how can the practices help solve local challenges like soil erosion due to storm or wind events. To do this, local McCain teams are undertaking baseline assessments with growers to inform regional goals and action plans, along with regional and sub regional assessments on priority practices.

We also encourage growers to conduct a context analysis, as an important first step to understand what impact areas and practices should be prioritized to provide the greatest productivity enhancement, economic and environmental benefit. This analysis should answer the following types of questions:

Soil health

- Is the farm/field at risk of soil erosion, compaction, salinity or loss of structure and fertility?
- Is the level of organic matter or soil carbon too low? How can it be improved in the long term?

Water

- Is the availability of water for irrigation at risk? Are current practices leading to lower surface and groundwater quality?

Biodiversity

- Has any land use change has contributed to deforestation, or the loss of habitat or biodiversity?
- Has crop protection product impacted the soil biodiversity and/or overall biodiversity?
- Is crop/plant diversity used to prevent to soil erosion and nutrient leaching?

Climate

- Has the farm reduced its fossil fuel consumption?
- Is there an opportunity to introduce renewable energy or decrease energy consumption?

Onboarding

At this level, farmers must have (1) participated in a McCain Regenerative agriculture training, (2) met requirements for at least one engaged indicator of the farmers choice and (3) completed a soil health assessment which is crucial for setting a baseline for measuring improvement in soil health. By 2030, we will support all McCain potato farmers to reach at least this Onboarding stage.

Engaged

Farmers need to have undertaken a baseline soil health assessment and implemented at least five of the seven indicators, including certain required elements (e.g. armouring soils and crop diversity). This sets a minimum standard while allowing for regional flexibility on which indicators farmers want to prioritize. Our aim is for 50 percent of our potato acreage to be at the Engaged level by 2030. We know in many regions champion growers are leading the way and are already at this level.

Advanced

Farmers have advanced their progress in each of the indicators, including increasing the number of species grown and reaching 5 percent of non-cultivated land dedicated to natural habitat.

Leading

The leading level includes increased soil protection, minimized tillage, increase in soil organic matter and 30 percent of the potato crop nutrient requirements provided from organic sources (plants/manure). At this level, growers should be able to reduce GHG emissions by at least 25%.

HOW WE DEVELOPED THE FRAMEWORK.

We developed the Framework in consultation with a range of stakeholders including academia, scientific organizations, farmer representatives, public institutions, customers, and NGOs. We have also aligned our framework with the work of coalitions focused on these topics, including the Sustainable Agriculture Initiative (SAI) platform and One Planet for Business Biodiversity (OP2B). We welcome further feedback and engagement to improve and see wider adoption across the potato industry. We recognize research into soil science and measurement is continuing to develop and will update our guidance and standards as necessary. Note, this Framework was updated in January 2024 to align with SAI Platform's Regenerating Together Programme.

SUPPORTING FARMERS.

We have worked side-by-side with our farmers for generations, and we will continue to partner with them on this journey. We will meet each of our farmers where they are and make it as easy as possible to participate.

- **Status mapping and regional action plans:** We are surveying our farmers to understand their level of adoption of Regenerative agriculture. This will help to inform McCain agronomists and field representatives to prioritize opportunities and set regional goals and action plans.
- **Training:** In collaboration with training experts, we have developed new programs to increase farmers' understanding of the benefits and opportunities of Regenerative agriculture in potato cropping systems and equip them with the knowledge to address any challenges.
- **Research & development:** We are committed to research and development on key issues, such as reduced tillage, fumigation alternatives, and biological control products. We are also leveraging our learnings from our Farms of the Future program, as well as undertaking university trials, developing unique partnerships and creating Innovation Hub models with farmers.
- **Data collection and measurement:** We are deploying digital agriculture technologies to ensure farmers have access to better quality data and insights. We continue to work collectively with other stakeholders to harmonize and align measurement tools and verification practices.
- **Financial partnerships:** We have conducted preliminary analyses of local costs and economic benefits of the journey to Regenerative agriculture at the farm level. We are identifying the best local financing approaches, including partnerships with banks, helping farmers access government funds, and other solutions. We believe regenerative practices have a business case, and proving the environmental and economic cases on a regional basis with volunteer growers is critical.

What Defines a Regenerative Potato Grower in the Northern Hemisphere.

INDICATOR	ONBOARDING	ENGAGED	ADVANCED	LEADING
Armoured soils preferably with living plants: Over the prior 4 years, including current season, fields on the farm are covered by living plants with an average NDVI value >0.25 for all fields during the season and at least 30% of soil surface is covered by living crops or residue year-round.	1 Engaged indicator of choice + Regenerative agriculture training + soil health assessment to define baseline	90 days / year	180 days / year	270 days / year
Enhanced crop diversity: Over the prior 4 years, including the current season (or throughout the length of the rotation cycle if longer), crops of different species are grown providing a range of growth cycle (annual, bi-annual and perennial) as well as growth characteristics (plant architecture and root types).		**4** Crop species are grown, including a grass. Legumes should be considered[1]	**6** Crop species are grown, from 3 different plant families, including a grass and legume[1], a perennial species should be considered	**8** Crop species are grown, from 4 different plant families, including a grass, legume[1] and 2 perennial crops
Minimized soil disturbance: Intensive tillage is kept to a minimum across the rotation cycle. Tillage associated with cover crops/residue incorporation, planting and potato harvest excluded form potato tillage measurements. *Measured by Soil Tillage Intensity Rating (STIR-USDA).		Reduce tillage by 1 event on potato crop & adopt conservation tillage in rotation crops or decrease tillage intensity across rotation by 10% *	Reduce tillage by 2 events on potato crop & adopt conservation tillage in rotation crops or decrease tillage intensity across rotation by 25% *	Reduce tillage by 3 events on potato crop & adopt conservation tillage in rotation crops or decrease tillage intensity across rotation by 50% *
Reduced toxicity of pesticides: Crop protection products are selected to reduce environmental, human and consumer impact. Growers exceeding 2,500 EIQ values for potato crop cannot be considered as Engaged or higher. Onboarded growers have 2 years to lower their EIQ values below this threshold..		**800 EIQ** per hectare	**500 EIQ** per hectare	**200 EIQ** per hectare
Enhanced farm and ecosystem biodiversity: Small natural habitats and natural landscape elements are promoted. Small natural habitats are present within 250 m from the edge of the field; riparian buffer zones are present around water bodies.		**1%** of non-cultivated land is dedicated to natural habitat	**5%** of non-cultivated land is dedicated to natural habitat	**8%** of non-cultivated land is dedicated to natural habitat
Reduced agro-chemical impact and optimize water use: Use of inputs is justified and managed to reduce risks. Decision support systems (IPM, 4R's, irrigation scheduling) and technology are used to precisely apply inputs.		All inputs are applied based on DSS or expert advise from recognized crop advisor. GPS is used	Meet engaged level and 15% of crop nutrient needs to be provided from organic sources (plant/manure)	Meet engaged level and 30% of crop nutrient needs provided from organic sources (plant/ manure)
Increased soil organic matter: Every 5 years, soil health is assessed for organic matter, as well as biological, physical and chemical properties[2].	Soil health assessment every 5 years (minimum of 1 fields for each soil type / cropping system)	**OM% increase** target TBD based on local expertise	**% OM increase** TBD Over 5 years	**% OM increase** TBD Over 5 years

Red indicators are required. The grower must meet 5/7 indicators to achieve the Engaged level.

[1] Unless prohibited by regulation

[2] Must have elements: % soil organic carbon (preferably) or soil organic matter, % clay, presence of earthworms/other biological assessment, soil water holding capacity and pH. Suggested additional measurements:, Inorganic Carbon (Carbonates) on soils with pH>6.5, % sand and % silt, bulk density and Soil N levels (prior to planting potatoes), water infiltration, soil aggregate stability and soil mineralization potential.

What Defines a Regenerative Potato Grower in the Southern Hemisphere.

INDICATOR	ONBOARDING	ENGAGED	ADVANCED	LEADING
Armoured soils preferably with living plants: Over the prior 4 years, including the current season, fields on the farm are covered by living plants with an average NDVI value >0.25 for all fields during the season and at least 30% of soil surface is covered by living crops or residue year-round.	1 Engaged indicator of choice + Regenerative agriculture training + soil health assessment to define baseline	**230** Days / year	**280** Days / year	**320** Days / year
Enhanced crop diversity: Over the prior 4 years, including the current season, (or throughout the length of the rotation cycle if longer), crops of different species are grown providing a range of growth cycle (annual, bi-annual and perennial) as well as growth characteristics (plant architecture and root types).		**6** Crop species are grown, including a grass. Legume should be considered[3]	**8** Crop species are grown, from 3 different plant families, including a grass and a legume[3], a perennial species should be considered	**10** Crop species are grown, from 4 different plant families, including a grass, legumes[3] and 2 perennial crops
Minimized soil disturbance: Intensive tillage is kept to a minimum across the rotation cycle. Tillage associated with cover crops/residue incorporation, planting and potato harvest excluded form potato tillage measurements. *Measured by Soil Tillage Intensity Rating (STIR-USDA).		Reduce tillage by 1 event on potato crop & adopt conservation tillage in rotation crops or decrease tillage intensity across rotation by 10% *	Reduce tillage by 2 events on potato crop & adopt conservation tillage in rotation crops or decrease tillage intensity across rotation by 25% *	Reduce tillage by 3 events on potato crop & adopt conservation tillage in rotation crops or decrease tillage intensity across rotation by 50% *
Reduced toxicity of pesticides: Crop protection products are selected to reduce environmental, human and consumer impact. Growers exceeding 2,500 EIQ values for potato crop cannot be considered as Engaged or higher. Onboarded growers have 2 years to lower their EIQ values below this threshold.		**800** EIQ per hectare	**500** EIQ per hectare	**200** EIQ per hectare
Enhanced farm and ecosystem biodiversity: Small natural habitats and natural landscape elements are promoted. Small natural habitats are present within 250 m from the edge of the field; riparian buffer zones are present around water bodies.		**1%** of non-cultivated land is dedicated to natural habitat	**5%** of non-cultivated land is dedicated to natural habitat	**8%** of non-cultivated land is dedicated to natural habitat
Reduced agro-chemical impact and optimize water use: Use of inputs is justified and managed to reduce risks. Decision support systems (IPM, 4R's, irrigation scheduling) and technology are used to precisely apply inputs.		All inputs are applied based on DSS or expert advice from recognized crop advisor. GPS is used	Meet engaged level and 15% of crop nutrient needs to be provided from organic sources (plant/manure)	Meet engaged level and 30% of crop nutrient needs provided from organic sources (plant/ manure)
Increased soil organic matter: Every 5 years, soil health is assessed for organic matter, as well as biological, physical and chemical properties[4].	Soil health assessment every 5 years (minimum of 1 fields for each soil type / cropping system)	**OM% increase** target TBD based on local expertise	**% OM increase** TBD Over 5 years	**% OM increase** TBD Over 5 years

Red indicators are required. The grower must meet 5/7 indicators to achieve the Engaged level.

[3] Unless prohibited by regulation

[4] Must have elements: % Soil organic carbon (preferably) or soil organic matter, % clay, presence of earthworms/other biological assessment, soil water holding capacity and pH. Suggested additional measurements:, Inorganic Carbon (Carbonates) on soils with pH>6.5, % sand and % silt, bulk density and Soil N levels (prior to planting potatoes), water infiltration, soil aggregate stability and soil mineralization potential.