



GIFS Corporate Strategic Plan





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MESSAGE FROM THE CEO

I am pleased to present this strategic plan for the Global Institute for Food Security (GIFS).

GIFS was established in 2012 by three visionary Founding Partners - Nutrien, the Government of Saskatchewan and the University of Saskatchewan (USask). We are starting our second phase by building from a solid foundation of our past, but we recognize we need to change to ensure we deliver outcomes to our various stakeholders and we are poised to grow rapidly throughout this next phase and over the next few years.

Today, the institute is even more relevant than when it was first established, as recent events at home in Canada and around the world have illustrated. Food systems have been disrupted by the COVID-19 pandemic, and we need a flexible and responsive strategy to help build an economically resilient, transparent and environmentally sustainable food production system. We know we must continue to invest in this system, and by working together with our diverse partners and pooling our strengths, we can collectively impact food security and production agriculture positively for Saskatchewan, Canada and the rest of the world.

Our **VISION** is simple. And bold. And provides us direction:

A world where everyone has access to safe and nutritious food.

Our new strategy will help chart our future course, as we strive towards our vision. We will evolve to an institute with strengths and partnerships across the whole food-value-chain, from breakthrough concepts right through to the development and delivery of sustainable and innovative agriculture solutions.

Our strategy is aligned with the mandate entrusted to GIFS by our Founders: to "build on the existing strengths of Saskatchewan, and lead in the discovery, development and commercialization of new and innovative knowledge and technologies to sustainably meet escalating global demand for food."



Our **MISSION** creates the focus that we need to accomplish this mandate:

We work with partners to discover, develop and deliver innovative solutions for the production of globally sustainable food.

We have no illusions about the significant role collaboration and partnership will play in achieving this bold vision and mandate. Solutions for sustainable food security remain diverse and complex, and they will take the contributions of diverse players - governments, industry, producers, researchers and more. Knowing this, we fully embrace our

role as a **connector**, successfully bringing partners together to accelerate important agriculture solutions. We also recognize our position of **catalyst**, complementing and not competing with the great work that's already being done to enhance production agriculture and value-added processing and, by extension, advance food security—here in Saskatchewan and beyond.

We developed our strategy through an inclusive process. We sought contributions and feedback from our staff and students, our Board of Directors and International Scientific

Advisory Panel, our affiliates, our research partners and other stakeholders across and beyond the University of Saskatchewan community. We believe this feedback is important. Through this inclusive process, we have designed a thoughtful plan that is responsive and anticipatory, one that builds on our capacities, competencies and capabilities and that effectively engages our stakeholders.

My sincere appreciation to everyone who has invested their time and energy in designing our strategy. Our staff in particular were vital to its creation and I am excited about what the future holds for GIFS and every one of us. I hope that you can clearly see your role in developing the plan, with a clear understanding that executing the strategy will lead to our individual and collective success at GIFS and also translates into success for our stakeholders.

Steven R. Webb (PhD)
Chief Executive Officer

ABOUT GIFS

FINDING SOLUTIONS TO THE CHALLENGES FACING THE GLOBAL FOOD SYSTEM REQUIRES AN INNOVATIVE AND COLLABORATIVE APPROACH THAT MOVES AT THE SPEED OF BUSINESS

Founded in 2012 in a partnership between Nutrien, the Government of Saskatchewan and the University of Saskatchewan (USask), the Global Institute for Food Security (GIFS) works with a diverse range of partners to discover, develop and deliver innovative solutions for the production of globally sustainable food.

At GIFS, we invest in relevant technology platforms that provide scale and transform our scientific competencies and capabilities into capacities for stakeholders, making us a catalyst for partnerships and innovation world-wide.

We have a track-record for managing and delivering on large-scale, multi-disciplinary programs, including the \$37-million Plant Phenotyping and Imaging Research Centre (P2IRC) funded by a Canada First Research Excellence Fund (CFREF) grant to USask.

Located within one of the world's strongest agri-science ecosystems, we are helping to build a food-secure world from Saskatchewan-out, working with academics, industry, producers, consumers and governments both at home and abroad to decrease the time between the discovery of innovative science and its delivery to market at home and around the globe.



VISION, MISSION, VALUES AND STRATEGIC INTENT

VISION

Our vision provides direction

A world where everyone has access to safe and nutritious food – that's our vision.

MISSION

Our mission creates focus

We work with partners to discover, develop, and deliver innovative solutions for the production of globally sustainable food.

VALUES

Our values help support our vision and guide our behaviors, shaping our culture and identity

Innovation. Excellence. Collaboration. Integrity. Equity, Diversity and Inclusion.

STRATEGIC INTENT

GIFS is creating value to advance food security through impact, scale, synergy and sustainability.

STRATEGIC DRIVERS

IMPACT

Aligning impact with mission helps us understand and meet customers need and inform future investment decisions.



SUSTAINABILITY

Integrated sustainability (environmental, economic and social) creates long-term value.



SCALE

Building scale supports strategic growth within a sustainable framework.



SYNERGY

Synergy helps create a value culture that is complementary, helps drive teamwork, open communications and results.



GIFS STRATEGY MAP



Our VISION provides direction

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SCALE:

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Synergy helps create a value culture that is complementary, helps drive teamwork, open communication, and results

GIFS GOALS

FINANCIAL

- Grow Revenue/Resources
- Diversify Revenue/Resource Sources
- Practice Excellent Financial Stewardship

EXTERNAL STAKEHOLDER

- Collaboratively Advancing Food Security Through the Discovery, Development and Delivery of Innovative Solutions
- Enhance Profile, Reputation, and Awareness of GIFS
- Globally Recognized Preferred Research Partner

INTERNAL

- Expand Research Capabilities & Capacity
- Increase Institutional Effectiveness
- Enhance Internal Synergy

LEARNING & GROWTH

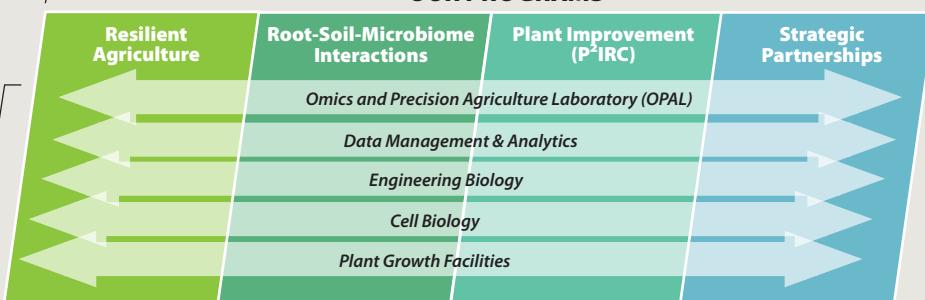
- Multidisciplinary, Solution-oriented, Entrepreneurial Approach to Research
- Attract, Retain and Develop Talent
- Continuous Learning Culture

SCIENCE MATRIX

OUR TECHNOLOGY PLATFORMS

- Adding scale
- Increasing our impact
- Enhancing synergy in our ecosystem

OUR PROGRAMS



GOALS AND OBJECTIVES

FINANCIAL		
Grow Revenue/Resources	Diversify Revenue/Resource Sources	Practice Excellent Financial Stewardship
GIFS will increase its income annually and progressively <ul style="list-style-type: none"> Secure renewal of Memorandum of Agreement (MOA) Expand partners Increase revenue from current (CFREF, CERC) and new sources 	GIFS will increase its mix of revenue sources by expanding its research capacity and working collaboratively with diverse partners <ul style="list-style-type: none"> Operationalize OPAL Secure non-government sponsored research projects (min.2) 	We are fiscally responsible and accountable, managing all resources in a manner that maximizes revenue and minimizes risk and loss to GIFS and our partners <ul style="list-style-type: none"> Maintain efficient use of financial resources Establish and maintain contingency fund
EXTERNAL STAKEHOLDERS		
Collaboratively Advancing Food Security Through the Discovery, Development and Delivery of Innovative Solutions <p>GIFS delivers and develops scientific and technical outcomes and expertise that strategically advance local, national and international economic and social outcomes.</p> <ul style="list-style-type: none"> Operationalize OPAL as a vehicle to enable our external stakeholders/partners ecosystem and deliver new tools and technology. Establish new collaborations across the innovation pipeline with new and existing partners. Map all GIFS internal and partnership research programs and projects to the GIFS Innovation Pipeline 	Enhance Profile, Reputation, and Awareness of GIFS <p>Through effective brand and relationship management, we will increase, maintain and sustain a positive reputation for GIFS</p> <ul style="list-style-type: none"> Develop and execute communications strategy and training to support overall institute and strategy Increase the number and quality of publications, invited presentations, patents, inventions, publications. GIFS scientists/staff in national/international regulatory body Promote technology platforms and programs (P2IRC, DivSeek, OPAL) to industry, as well as to regional, national and international stakeholders and audiences 	Globally Recognized Preferred Research Partner <p>By working collaboratively with various stakeholders and seeking to understand and meet their needs, GIFS will become a globally recognized preferred research partner</p> <ul style="list-style-type: none"> Increase the number of quality, mutually-beneficial active partnerships to improve leverage and impact (locally, regionally, internationally; with academics, industry, governments and NGOs) Improve stakeholder satisfaction
INTERNAL		
Expand Research Capabilities & Capacity <p>We will grow and develop GIFS' research ability, productivity and scope, in diverse areas of food security</p> <ul style="list-style-type: none"> Develop scale and service model for technology platforms Identify and pursue partnerships that will optimize our operational excellence 	Increase Institutional Effectiveness <p>We work with established internal processes that enhance our effectiveness and advance our organization, making us easy to work with</p> <ul style="list-style-type: none"> Invest and enable our business development and program management office (JARVIS) Improve and maintain workplace safety 	Enhance Internal Synergy <p>Working together as one team, we exploit our multidisciplinary strengths to take advantage of opportunities to achieve success for GIFS and our partners</p> <ul style="list-style-type: none"> Develop and implement an institutional data management strategy Enable and invest in matrix model (technology X research themes) and identify opportunities to streamline operations
LEARNING & GROWTH		
Multidisciplinary, Solution-oriented Entrepreneurial Approach to Research <p>We work with diverse disciplines to solve problems through creativity, collaboration and partnership</p> <ul style="list-style-type: none"> Increase productivity/new opportunities with cross-functional teams Invest in tools to make our staff and organization more productive Create and implement a relevant integrated training program 	Attract, Retain and Develop Talent <p>We attract, retain and develop talent, providing professional development and growth opportunities that contribute to career-advancement</p> <ul style="list-style-type: none"> Develop and support leadership abilities and potential of our talent Modify performance review and reward system Improve employee satisfaction (Employee Engagement) 	Continuous Learning Culture <p>We encourage and support continuous learning, including the sharing of problems and solutions</p> <ul style="list-style-type: none"> Improve internal communications Develop and maintain high-performance teams Build a performance-focused culture that's aligned across the institute

HOW WAS GIFS' STRATEGY DEVELOPED?

This strategy was developed through a collaborative process, involving the Board of Directors and Founding Partners, all GIFS staff, the International Science Advisory Panel (ISAP) and external stakeholders.

The Board of Directors and Founding Partners provided the institute mandate which served as a compass. In addition to the mandate, GIFS' International Science Advisory Panel provided advice.

GIFS set up an Extended Strategy Working Group made up of a cross-section of leaders and colleagues from across the institute, to work together to define the strategy.

All GIFS staff members had opportunity to contribute to the strategy's development through ongoing discussions and an all-day strategy workshop. During this workshop, the entire GIFS team worked together on the various aspects of the strategy and had the opportunity to define the GIFS of the future, weigh in on possible Vision, Mission and Values and identify goals, objectives and initiatives for the institute's next phase.

The Extended Working Group continued to work on the information gathered through staff consultations and discussions, and updates were provided at staff meetings

on the progress. Staff provided further feedback at subsequent meetings, which was valuable for further defining GIFS' future.

Consultation sessions were held with external stakeholders, including the USask Colleges of Agriculture and Bioresources, Arts and Science, Pharmacy and Nutrition, Engineering, USask School of Public Health, Johnson Shoyama Graduate School of Public Policy, the Fedoruk Centre, Canadian Light Source, Global Institute for Water Security, Agriculture and Agri-Food Canada (AAFC), Natural Products Canada and Protein Industries Canada.

The feedback formed part of the strategic planning process for GIFS, and after ongoing consultation within the institute, the strategic plan was approved by the Board of Directors in May 2020.

Several sessions were held at staff meetings over the following months, to drill down into various aspects of the strategy and help build alignment with staff. Building alignment is ongoing. The strategy sets the direction for the institute and provides building blocks for team plans, which should then set the direction for individual plans.





STRATEGIC INITIATIVES

THESE INITIATIVES ARE PRIORITY FOR PHASE I OF GIFS' STRATEGY

Omics and Precision Agriculture Lab (OPAL)

Operationalize the OPAL platform to support the crop sector by providing integrated service platforms in genomics, phenomics and informatics.

Program Management & Business Development Office (JARVIS)

Implement the Program Management Office (PMO) to provide program/project management and business development engagement and support aligned with our strategy.

- Management systems (knowledge & resources) need to be developed

Communication Strategy

Implement our plan of action to communicate successfully and effectively with different audience groups.

Talent Management

Develop and implement a comprehensive talent management strategy and plan, including workforce planning, performance management, retention and succession planning.

- Implement an equity, diversity, and inclusion (EDI) action plan.
- Implement a training and mentorship program.

Data Management and Analytics

Develop and implement a data management strategy for all data that has been and will be generated through GIFS funding and partnerships.

Intellectual Property (IP) Strategy

Create an IP strategy to drive innovation, gain competitive advantage and open new revenue opportunities.

Best Practices & Continuous Improvement

Capture, document, and use best practices (e.g. standards of practice) to help maintain high safety standards, reduce costs, increase efficiency and competitiveness.

Technology Platforms and Programs

Establish technology platforms, programs and our new operating system that is aligned with our strategy and complementary to the agriculture technology ecosystem.

Establish a Grower Advisory Panel

Grower Advisory Panel will provide independent expert advice on expert advice on food producers' current and future science and technology needs and market trends, as well as a direct connection to the customer base.

OUR TECHNOLOGY PLATFORMS AND PROGRAMS

Our Technology Platforms are scientific competencies and capabilities that enable research to be executed at scale (capacity). These platforms integrate horizontally across GIFS and our partners' programs.

Our Programs are our focused set of research projects that are addressing specific customer or market needs.

OMICS AND PRECISION AGRICULTURE LABORATORY (OPAL)			
PLATFORM DESCRIPTION	DESCRIPTION	STRATEGIC INITIATIVES	WHY DO WE MEASURE?
OPAL is a first-of-its-kind lab in Canada that provides stakeholders a one-stop shop for 'omics analyses in the agri-food sector. It addresses a critical need for the Western Canadian and national research communities by providing analytical and computational state-of-the-art integrated service platforms in genomics, phenomics, and bioinformatics.	OPAL: <ul style="list-style-type: none">• Reduces costs and increases the value of 'omics and informatics services received by all stakeholders• Enhances scientific collaboration• Expands capabilities and capacity for the local research community	<ul style="list-style-type: none">• Establish self-sustaining integrated omics service platforms for the deployment of new genetic variation and traits:<ul style="list-style-type: none">- Genomics- Bioinformatics- Phenomics- Pheno-informatics- Proteomics- Metabolomics	<ul style="list-style-type: none">• Accelerated crop breeding leading to earlier release of new better performing crop varieties to producers• Improved animal and human health• Authenticating food• Reduced environmental impact through use of optimized precision agriculture practices• Enhanced awareness of social benefits of the technology through a communications strategy that fully engages with all stakeholders



PLANT GROWTH FACILITIES (PGF)			
PLATFORM DESCRIPTION	ALIGNMENT WITH STRATEGY	STRATEGIC INITIATIVES	MEASURES & OUTCOMES
The Plant Growth Facility Platform facilitates innovative research for our partners by providing plant growth space and seed management. The PGF platform includes greenhouses and growth chambers, seed bank, hydroponics capabilities and 2D/3D imaging systems.	The plant growth facility platform works collaboratively with our stakeholders on multidisciplinary research projects. Together with our research programs and technology platforms, we establish processes to transfer our research on a large scale ensuring the impact of GIFS in the field of agriculture.	We support the creation of innovative research by providing: <ul style="list-style-type: none"> • Greenhouse and plant growth chambers • Plant production supplies • Integrated Pest Management (IPM) solutions • High quality seed for research purposes • Expertise in plant production for our partners • Waste management 	<ul style="list-style-type: none"> • Proven scientific excellence and reputation • Low levels of disease and pest in our plant growth facilities • Multidisciplinary research projects supported • Industry connections established
CELL BIOLOGY			
PLATFORM DESCRIPTION	ALIGNMENT WITH STRATEGY	STRATEGIC INITIATIVES	MEASURES & OUTCOMES
The Cell Biology technology platform is being developed as a core research platform in GIFS to provide technical expertise and scale to support plant biology research. It will also be a practical tool for cultivar improvement for our research programs, our partners and the agbiotech ecosystem - by establishing reliable transformation and regeneration capability pipelines for core crops with a path to commercial impact, as well as model systems.	<ul style="list-style-type: none"> • Develop at scale plant transformation and regeneration capabilities for GIFS core crops with a path to commercial impact and model plants. • Establish a team that focuses on continuous improvement and meeting research project timelines • Establish a team that develops novel breakthrough methods 	<ul style="list-style-type: none"> • Strategic initiatives in the establishment of the cell biology platform include: • Technology landscape assessment (best practices) • Arabidopsis transformation pipeline • Canola transformation pipeline • Wheat transformation pipeline • Pulses transformation pipeline • Transformation pipeline for additional model crops of interest 	<ul style="list-style-type: none"> • Platform is recognized within the local ecosystem as measured by partnerships • Key partnerships established, resulting in knowledge transfer to GIFS • Continuous support of GIFS research and partner cultivar improvement programs. • Optimized protocols and transformation efficiencies in the interest crops

OUR TECHNOLOGY PLATFORMS AND PROGRAMS (CONTINUED)

DATA MANAGEMENT & ANALYTICS			
PLATFORM DESCRIPTION	ALIGNMENT WITH STRATEGY	STRATEGIC INITIATIVES	MEASURES & OUTCOMES
The Data Management and Analytics Platform enables the development and deployment of digital technologies to improve the management and analysis, use by and for impact of all GIFS Programs and Platforms Data. Its implementation in the GIFS management ecosystem includes hardware, software interfaces, data management structures and bioinformatic support to capture, analyze and share data for various research purposes across all Platforms and Programs.	The establishment of our data management and analytics platform aligns with our strategy by helping deliver impact, scale, and synergy and by supporting priority institutional initiatives, including data management strategy, Intellectual property strategy, and best practices and continuous improvement.	<p>The development and implementation of the data management and analytics platform includes the following strategic initiatives:</p> <ul style="list-style-type: none"> • Electronic lab notebook. • Laboratory Information Management System (LIMS). • Data and metadata management and policy. • Data analytics and large-scale data warehousing infrastructure. • Bioinformatic support. 	<p>A <i>centre of expertise</i> (COE) that acts as a partner with researchers to proactively ensure <i>design of experiments</i> (DOE) and a rigorous analysis of data takes place.</p> <p>Automate data acquisition reducing variability, improving quality and efficiency.</p> <p>Benefits capturing and reuse of data from GIFS Platforms and Programs</p> <p>Data Analytics to monitor, control and lead to improvements within GIFS internal workflows and activities.</p> <p>Platform as a key integrator within GIFS and the external community through its core cross-functional team.</p> <p>Clear integrated data policy, data structure and assembly of data to enable new discoveries</p>

ENGINEERING BIOLOGY			
PLATFORM DESCRIPTION	ALIGNMENT WITH STRATEGY	STRATEGIC INITIATIVES	MEASURES & OUTCOMES
The <i>Bio Manufacturing</i> Platform will produce research and development products (DNA and RNA reagents, proteins and peptides) to enable large-scale research. Integration of automation to the design, build, test and learn cycle enables at-scale studies that are beyond the reach of individual scientists. Applications of the bio manufacturing platform include high-throughput (HTP) vector construction; HTP cell engineering; HTP Protein/Peptide design. These capabilities, coupled with the ability to learn from large data sets that are collected within the platform will enable researchers to exploit information through the exploration of “design space” as well as the potential applications horizontally across many business verticals.	The establishment of the <i>bio manufacturing platform</i> aligns with our strategy in helping deliver scale, impact and synergy within GIFS and the ecosystem. The development of this technology platform also supports several institutional initiatives including GIFS' data management strategy, intellectual property strategy, best practices and continuous improvement. Amplifying our strategic drivers, the bio manufacturing platform will play an integral role in the greater technology pipeline through its interactions with our three additional platforms: data management and analytics, OPAL and cell biology.	<p>The platform's strategic initiatives include:</p> <ul style="list-style-type: none"> • Establishment of core team • Technical design and tools • Scalable production of HTP construction of DNA, RNA and protein research tools for applications in agriculture and food 	<p>Design the factory with ABC tools to enable the HTP construction of DNA, RNA and protein research tools for applications in agriculture and food.</p> <p>Develop HTP screening platforms concomitant with automated data acquisition and deep learning to inform screening strategies</p> <p>HTP manufacturing of vector construction; cell engineering; Protein/Peptide design</p> <p>Generation and use of large data sets that are collected within the platform for optimization</p> <p>Integration horizontally across many business verticals including agriculture/food; animal health; human health; material science; environmental sciences</p>

OUR PROGRAMS

ROOTS-SOIL-MICROBIAL INTERACTIONS (RSMI)

PROGRAM DESCRIPTION	ALIGNMENT WITH STRATEGY	STRATEGIC INITIATIVES	MEASURES & OUTCOMES
<ul style="list-style-type: none"> Many important agronomic traits are conferred by genes that control root architecture and transport processes. Difficulties in studying root development and function in the field means breeding for improved root traits is not yet the focus of plant breeders. Hence, this program's primary goal is to translate gene discovery underlying root/microbiome nutrient and water acquisition into genetic resources that plant breeders will use to generate more climate resilient and nutrient efficient crops. This should enhance crop yields using less water/fertilizer inputs, reducing fertilizer contamination of surface waters and increasing soil carbon sequestration, thus improving agricultural sustainability. 	<ul style="list-style-type: none"> This program is aligned with GIFS' strategic goals of enhancing long-term value for crop production and improving agricultural sustainability and resilience. The integration of research approaches and technologies that span the biological and physical sciences is also closely aligned with GIFS' focus on solving complex agricultural problems through multidisciplinary systems-based research. Farmers will benefit from discoveries that lead to improved crop varieties that do more with less, with higher yields despite using less water and fertilizer. Crops with larger root systems and more efficient microbiomes that increase crop yields will reduce agricultural CO2 emissions by sequestering carbon in their increased root and shoot biomass. This is a win-win approach that will increase yields and environmental sustainability at the same time. 	<p>Strategic initiates for the program include:</p> <ul style="list-style-type: none"> Identify and employ genes that result in root architectures better suited for nutrient acquisition, in order to develop crop varieties that are more water and fertilizer (N-P-K) efficient. Continue our successful long-running program using crop aluminum tolerance genes we have identified to generate crops with improved yields on acid soils in developing countries. Better understand how root microbiomes are assembled and function, to improve root health, nutrient acquisition, and reduce soil greenhouse gas emission. Identify genes and associated markers that control seed germination & root tolerance to cold soils, to lengthen the growing season for important Canadian crops in the prairies, such as canola and soybean. 	<ul style="list-style-type: none"> The release of nutrient efficient and stress resilient pre-breeding germplasm for integration into regional, national and private breeding programs. Release of improved crop varieties which have been bred for more vigorous root growth and more efficient fertilizer and water acquisition. Improving crop yields and farmer's yield security with these improved varieties, while reducing agriculture's environmental impact and carbon footprint while increasing carbon sequestration in the soil. Improving food security in the developing world, by release of high yielding, acid soil tolerant cereals (sorghum and maize). Publication of papers in very high impact journals that will enhance GIFS' & the university's stature.

RESILIENT AGRICULTURE

PROGRAM DESCRIPTION	ALIGNMENT WITH STRATEGY	STRATEGIC INITIATIVES	MEASURES & OUTCOMES
<p>Tackling climate change and sustainability challenges are critical for achieving improved crop productivity and food security goals. By advancing new knowledge and understanding of the key genes and mechanisms underpinning agronomically important crop traits, the ensuing innovations will create a crop gene discovery pipeline. Targeted investigations of plant TOR* signaling are proposed to address these challenges and opportunities - to deliver innovative new genetic tools and technologies. Revealing functional insights into TOR signaling involved in plant performance will create strategic opportunities for developing resilient and sustainable crops</p> <p>*TOR: Target Of Rapamycin</p>	<p>The <i>resilient agriculture</i> program aligns with our strategy by driving value creation through impact, scale, and sustainability.</p> <ul style="list-style-type: none"> Improving drought tolerance and WUE will result in more climate-resilient crops, mitigating frequent drought-related episodes that reduce crop yields in Canada and globally. Improving NUE traits will significantly reduce fertilizer input costs and negative environmental impacts, offering economic benefits to the grower along with environmental stewardship. Improving photosynthetic efficiency in canola and wheat will impact via increased yields and yield stability resulting in economic and societal benefits along with agriculture sustainability. 	<p>Strategic initiatives of the <i>Resilient Agriculture program</i> include:</p> <ul style="list-style-type: none"> Establishment of foundational resources for screening TOR gene variants in <i>Arabidopsis</i>, wheat and canola. Discovery, identification and characterization of TOR variants linked to crop performance traits. Development of TOR signaling-based discovery pipeline for new and innovative genetic tools and technologies. Development of pre-breeding wheat and canola lines with improved yield potential. 	<ul style="list-style-type: none"> Improved drought tolerance and WUE will result in more climate-resilient crops, mitigating frequent drought-related episodes that reduce crop yields in Canada and globally. Improved NUE traits will significantly reduce fertilizer input costs and negative environmental impacts, offering economic benefits to the grower along with environmental stewardship. Improved photosynthetic efficiency in canola and wheat will impact via increased yields and yield stability resulting in economic and societal benefits along with agriculture sustainability. Advanced critical knowledge and insights into the biology underpinning TOR functions in water utilization efficiency (WUE), nitrogen utilization efficiency (NUE), photosynthetic efficiency and seed/grain yields Create impact and influence with publications and by securing key intellectual property for TOR project discoveries

OUR PROGRAMS (CONTINUED)

PLANT IMPROVEMENT			
PROGRAM DESCRIPTION	ALIGNMENT WITH STRATEGY	STRATEGIC INITIATIVES	MEASURES & OUTCOMES
<p>Global food security is one of the 21st century's biggest challenges as the world population grows. There is the need to increase annual food production by 70% by 2050. To address this:</p> <p>The Plant Phenotyping and Imaging Research Centre (P²IRC) develops innovative tools to accelerate and transform crop breeding and food production.</p> <p>Developed technologies and expertise will elevate Canada's position as a global powerhouse in agricultural research.</p> <p>P²IRC advances in field and aerial sensors, satellite imaging, robotics and big data analytics will be leveraged for commercial opportunities.</p>	<p>The P²IRC program drives value creation through impact, scale, sustainability and synergy, resulting in:</p> <p>Improved global food security through the development application of advanced technologies.</p> <p>Bolster the agricultural sector through innovative crop development techniques.</p> <p>Ability to grow crops that are more resilient to climate change.</p> <p>Interdisciplinary team creating solutions in the digital agriculture space to catalyze technological adoption.</p>	<p>P²IRC program has delivered on several strategic goals:</p> <p>Foundational genome resources for canola, lentil, bread and durum wheat</p> <p>Digital phenotyping platforms and new imaging technology</p> <p>Impact of root and soil microbiome interactions on crop performance</p> <p>Crop imaging technology (e.g. GrowPro, ProTractor) and software for genomics / phenomics (e.g. PlotVision, SynVisio)</p> <p>Machine / deep learning applications</p> <p>How policy and regulatory factors drive development and commercialization of innovative agricultural technologies.</p>	<p>Performance metrics achieved during P²IRC to date:</p> <p>High impact publications and invited presentations at international conferences</p> <p>New USASK faculty hired and multiple training programs established.</p> <p>Large number of HQP trained and employed through program.</p> <p>Many national and international partnerships and collaborations established.</p> <p>Multiple equity, diversity and inclusivity goals achieved.</p> <p>Innovation and infrastructure platforms established</p> <p>New USASK interdisciplinary collaborations established.</p>

STRATEGIC PARTNERSHIPS			
PROGRAM DESCRIPTION	ALIGNMENT WITH STRATEGY	STRATEGIC INITIATIVES	MEASURES & OUTCOMES
<ul style="list-style-type: none"> To address the GIFS global remit by building strategically selected multidisciplinary research partnerships which utilize GIFS' program and platform capabilities to leverage local, national and international partner strengths. To target and drive synergistic solutions for both Canada and the developing world. To focus on efficient use of resources to drive resilient food systems and address shared global challenges in climate, nutrition, water and biodiversity, which focus on research impacts for the developing world (e.g. UN SDGs, resilient, safe & nutritious food systems, climate change and population growth). To support Canadian/SK international goals, and technology transfer and capacity building for developing countries. 	<ul style="list-style-type: none"> The program will deliver economic, environmental and social benefits across national and international domains. Canada/SK/GIFS will benefit from strengthening capability, sharing costs and results. New trade opportunities for SK, enhancing synergy in the ecosystem and creating long-term sustainable value Working with partners to drive synergy and increase competitiveness Access diverse international talent pool through collaborations 	<p>Strategic initiatives of the <i>Strategic Partnerships Program</i> include:</p> <ul style="list-style-type: none"> Development of strategic partnerships, networks and programs (e.g. CGIAR centres, Bangladesh, world class institutions, DivSeek International) to support development and delivery of measurable outcomes Attracting quality international talent through partnerships – PhDs, Post Docs, Fellows Provide leadership to access and catalyze multi-disciplinary capabilities - USask campus & beyond Access and strengthen international resources and capabilities and develop funder connections and opportunities with public, private and charitable entities Enhance international awareness of GIFS role and strengths 	<ul style="list-style-type: none"> Development of one major program with Bangladesh Evidence of industry contributions, SDG impacts & economic benefit to SK and Canada New strategic partnerships with developed country institutions Increase in GIFS Canadian and overseas international funding. Number of internationally co-authored papers Evidence of benefit to SK, USask and other local partners Attract international talent through partnerships Development of DivSeek network and a DivSeek Canada Hub Specific outcomes linked to GIFS research and capacity building investments (case studies).





Strategic Plan

Thank you to our Founding Partners for their commitment to helping us achieve our vision of a world where everyone has access to safe and nutritious food.



Nutrien - a Founding Partner