

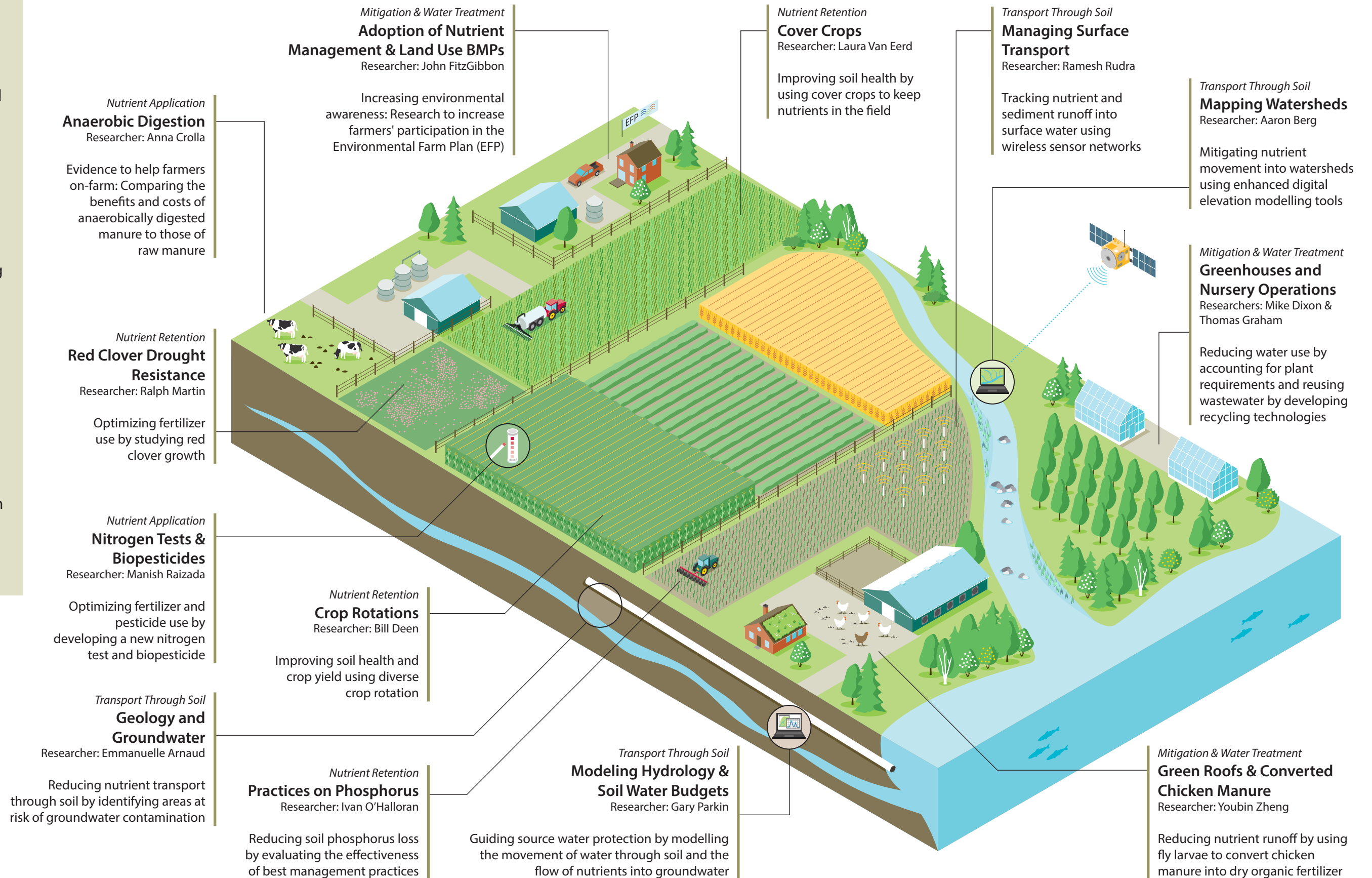
Keeping Nutrients On-farm

A farm-scale view of research supported through the OMAFRA-U of G Agreement, Environmental Sustainability research theme

Nutrients such as phosphorus and nitrogen are key to crop health and productivity. But if allowed to move, nutrients can travel off-farm, reduce water quality and increase costs for farmers.

The OMAFRA-U of G Agreement helps keep nutrients on-farm by supporting research that advances our understanding of the nutrient transport system – from application and retention to transportation and mitigation – and to develop evidence-informed best management practices, tools, and technologies.

Taken together these projects create a toolkit for producers to reduce on-farm nutrient loss, enhance productivity and contribute to a healthier environment.



Climate Change - Mitigating Greenhouse Gas Emissions

A farm-scale view of research supported through the OMAFRA-U of G Agreement, Environmental Sustainability research theme

Greenhouse gases (GHGs) – such as carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and indirect GHGs like ammonia (NH₃) – contribute to climate change and are produced as byproducts of agricultural practices. While agriculture can be a source of GHG, it can also provide solutions through adopting existing best practices and green energy production.

Finding ways to reduce the GHG foot print of farming is vital to long-term food sustainability. Farmers also need the best available research to adapt their practices to a changing climate.

The OMAFRA-U of G Agreement funds research projects that reduce GHG emissions and conserve energy through evidence informed policies, tools, and Best Management Practices.

Reducing Greenhouse Gas Emissions on Dairy Farms

Researcher: Claudia Wagner-Riddle

Developing Best Management Practices for dairy production around diet, manure storage, and feed cropping systems

Exciting New Infrastructure

Researcher: Claudia Wagner-Riddle

Installed lysimeters to measure soil health, drainage, and GHG production under different cropping systems

Reducing Greenhouse Gas Emissions During Crop Production

Researcher: Jon Warland

Investigating how combinations of tillage and residue removal practices impact GHG emissions and soil hydrology

Evaluating the Economics of Environmental Policies

Researcher: Alfons Weersink

Examined the environmental, land use, and economic effects of biofuels and anaerobic digestion in the transition to a green economy

Developing Strategies for Greenhouse Gas and Ammonia Mitigation on Poultry Farms

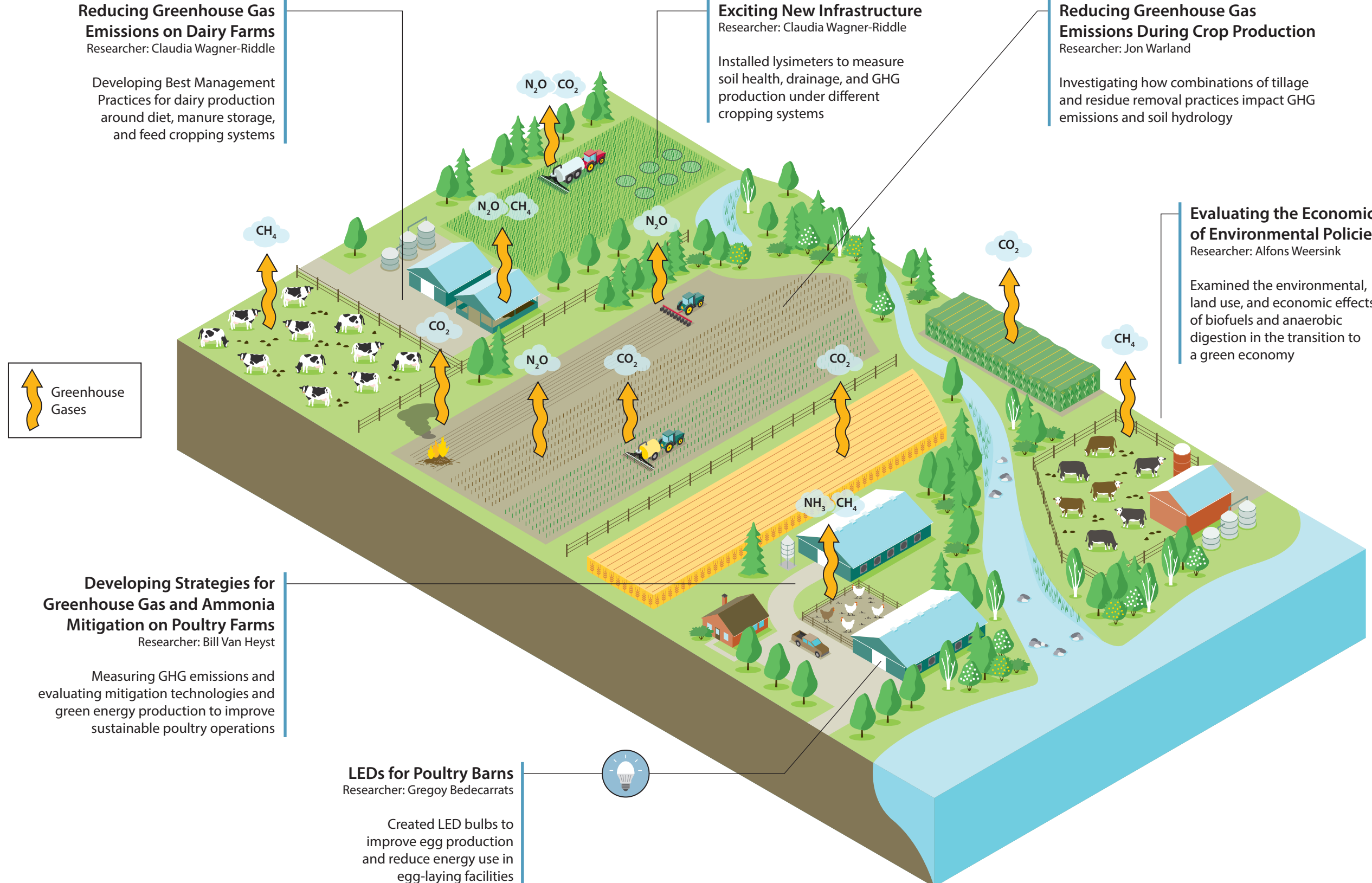
Researcher: Bill Van Heyst

Measuring GHG emissions and evaluating mitigation technologies and green energy production to improve sustainable poultry operations

LEDs for Poultry Barns

Researcher: Gregoy Bedecarrats

Created LED bulbs to improve egg production and reduce energy use in egg-laying facilities



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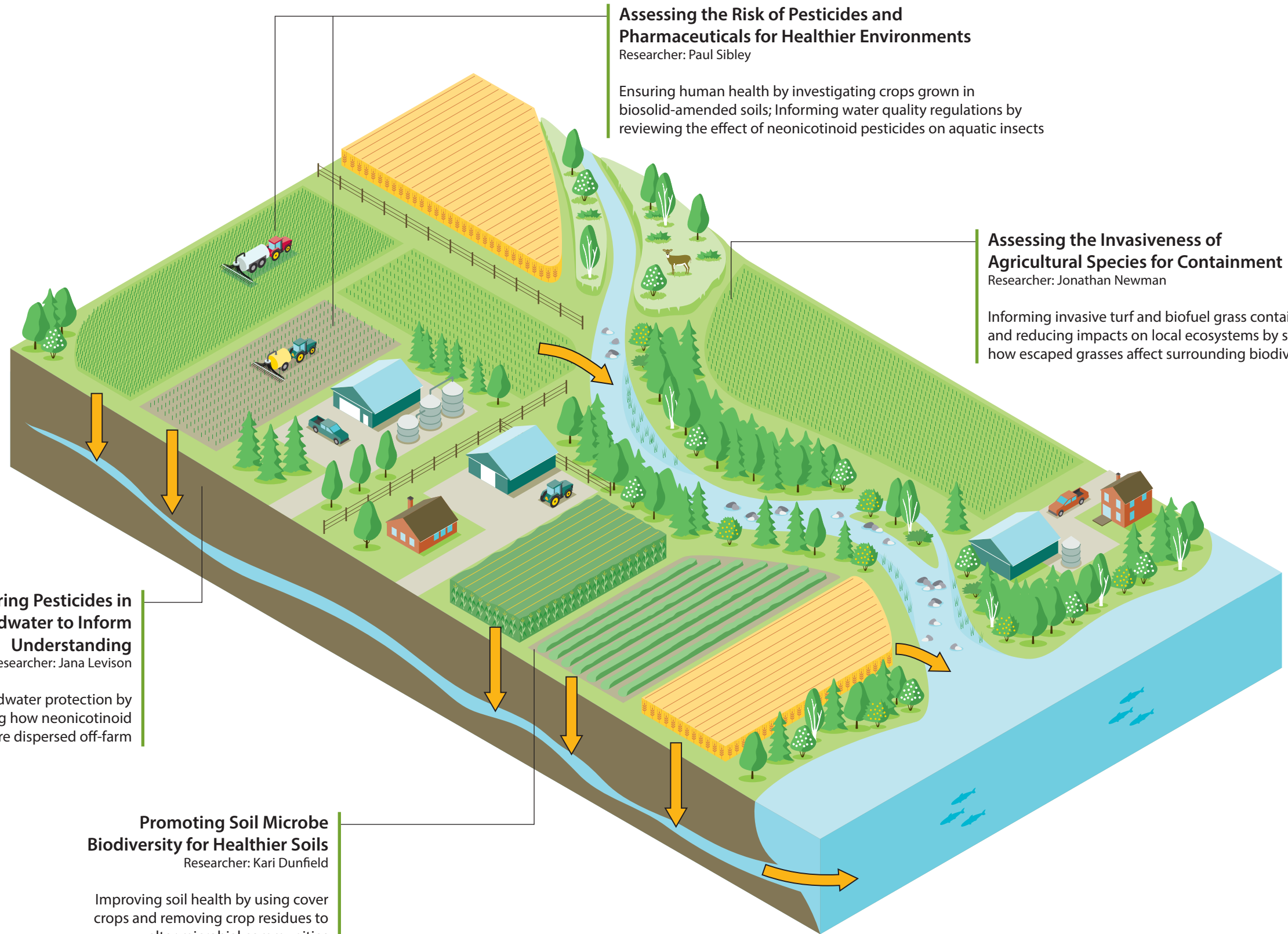
Promoting On-farm Biodiversity

A farm-scale view of research supported through the OMAFRA-U of G Agreement, Environmental Sustainability research theme

Biodiversity is a measure of the variety of life in an ecosystem. It includes both the life forms we can see, as well as microscopic plants and animals. Given the amount of land farming uses, agriculture has an important role in protecting water quality, supporting soil health, and promoting biodiversity. On-farm biodiversity can help to cycle nutrients, reduce runoff, increase crop yields and support the ecosystems in the surrounding environment.

The OMAFRA-U of G Agreement supports research that helps limit the environmental impacts of agricultural operations, develop evidence-informed Best Management Practices and work with industry partners to protect Ontario's biodiversity both on and off-farm.

Taken together these projects create a toolkit for producers to protect local biodiversity, enhance productivity and contribute to a healthier environment.



Assessing the Risk of Pesticides and Pharmaceuticals for Healthier Environments

Researcher: Paul Sibley

Ensuring human health by investigating crops grown in biosolid-amended soils; Informing water quality regulations by reviewing the effect of neonicotinoid pesticides on aquatic insects

Assessing the Invasiveness of Agricultural Species for Containment

Researcher: Jonathan Newman

Informing invasive turf and biofuel grass containment and reducing impacts on local ecosystems by studying how escaped grasses affect surrounding biodiversity

Monitoring Pesticides in Groundwater to Inform Understanding

Researcher: Jana Levison

Guiding groundwater protection by identifying how neonicotinoid pesticides are dispersed off-farm

Promoting Soil Microbe Biodiversity for Healthier Soils

Researcher: Kari Dunfield

Improving soil health by using cover crops and removing crop residues to alter microbial communities



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