GLOBAL FOOD SECURITY

UNLOCKING MORE VALUE IN CANOLA

Canada's canola industry generates $43.7 billion in economic activity annually. University of Saskatchewan researchers developed a new method for processing canola seeds that could help generate even more value from this crop. They discovered that heating and cooling the seeds then adding moisture created a small gap between the kernel and hull. Being able to remove the hull without damaging the kernel would enable processors to make regular canola oil and also use the protein-rich kernel to produce foods for people and animals. This research has the potential to make better use of all parts of canola seeds.

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ADDRESSING HIDDEN HUNGER IN DEVELOPING COUNTRIES

Millet, the grain, packs a bigger nutritional punch than grains like rice, wheat, and corn, it's easier to grow, and it's more tolerant of increasingly common drought conditions. Using the CLS, researchers from Agriculture and Agri-Food Canada – with partners in India – explored why millet is so efficient at taking up micronutrients from the soil. They looked at what millet's genes are doing at different stages – from when it first sprouts to when it makes seeds, then compared this data with genetic information from other grains. What they learned could help develop forms of other crops such as barley and wheat.

DOI: 10.1111/tpg.16749

FASTER-COOKING PULSE CROPS

According to Pulse Canada, Canada is one of the world's largest pulse producers, and the largest exporter, as over 80 per cent of the pulses grown are shipped internationally. Researchers from the University of Manitoba have developed a simple technique to reduce cooking time for lentils and chickpeas by exposing the to microwaves during the drying process. Exports of these crops are growing, as appetite for lentils, peas, and chickpeas increase in places like India, where they are an important source of dietary protein. Using advanced imaging techniques, the team could pinpoint how proteins, carbohydrates, and fats shifted due to treatment, indicating exactly how faster cooking times could be achieved to make pulses easier to cook with.

DOI: 10.1080/10942912.2016.1163578

RECYCLING FERTILIZERS

Phosphorus is essential for plant growth, yet many soils lack enough to support strong crop yields. Researchers from the University of Copenhagen used the CLS to study fertilizers containing phosphorus derived from recycled sources such as sewage sludge, ash, and meat-and-bone meal. They wanted to see how it compares to fertilizer made with mined phosphorus, a limited, non-renewable resource. The scientists found that phosphorus from recycled materials moves further in soil, making it easier for plants to access. This research represents a key step in reducing reliance on mined fertilizers and advancing a more circular agricultural system that reuses waste materials.

DOI: 10.1111/sum.70219

TAKING THE STRESS OUT OF GROWING CORN

Global warming is bringing longer growing seasons, allowing producers to expand the types of crops they cultivate. While this can be a benefit, a longer growing season increases the risk of environmental stressors, like frost and cool overnight temperatures. Researchers from the University of Saskatchewan investigated how the first frost impacts corn varieties, in the hopes of finding new ways to maximize crop yields. The team was particularly interested in the cuticular layer of the plant, a defensive barrier that acts like the plant's skin. They found that the cool temperatures preceding the first frost influence the composition and quantity of the plant's cuticle layer, making it more susceptible to freezing temperatures.

DOI: 10.1111/ppl.13962

ADDRESSING IRON DEFICIENCY THROUGH RICE

Approximately two billion people worldwide have an iron deficiency. A research team led by scientists in Brazil has developed a way to boost iron content in rice, one of the most consumed foods globally. They found that modifying two genes in the plant can increase iron levels. However, they also found this change can create iron toxicity in plants grown in flooded fields, which is where most rice is grown. The team plans to test the same gene edits with rice plants grown in regular soils and in crops genetically similar to rice, such as wheat, barley, and maize.

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