



Grain harvest: making use of the whole plant

Did you know?

The Food and Agriculture Organization of the United Nations (FAO) estimates that, worldwide, one-third of food produced for human consumption is lost or wasted. According to a report released by Second Harvest and Value Chain Management International, 58 per cent of the food we produce is lost and wasted every year in Canada. This amounts to nearly 35.5 million metric tonnes annually. Food waste can be seen in your daily consumption at home, at restaurants, and in grocery stores.

Like many other agri-food sectors, the grain and oilseed sector experiences food loss and waste but is fortunate for the ability to store the crop without spoilage. Furthermore, the grain and oilseed sector has the ability to utilize products and co-products to ensure food loss and waste is minimized.

Corn

The two products produced from corn are corn kernels and corn stover. In Ontario, corn is harvested every fall. Combines travel the field and break corn cobs off from the corn plant as it moves through the field. Inside the combine, a machine separates the husks, kernels, and cob. The corn stover (which is the combination of cob and husks) is spread back onto the field and the corn kernels are stored.



What happens to the corn kernels?

In Ontario, corn kernels are used in animal feed, the ethanol industry, and corn refining. In the corn ethanol process, corn is processed into sugar and then a form of alcohol (called ethanol) that is blended into our gasoline. During this process, several co-products are created including dried distillers' grains (DDGs) which are used in animal feed. During the corn refining process, products produced include corn sweeteners and corn starches. A number of co-products are also created, including corn gluten meal, corn gluten grain, corn germ, corn oil, and DDGs. Through the corn refining process, all co-products are consumed in some way, ensuring no products are wasted.

What happens to the corn stover?

In most cases, the corn stover is left on the ground. Leaving the corn stover on the ground helps return plant matter to the soil through decomposition. This has a positive impact on the soil.

New innovative practices are also creating additional demands for corn stover. Corn stover can be converted into cellulosic glucose (sugar) which is a renewable resource used for biochemicals and biofuels.



Over/... wheat



Wheat

The two products produced from wheat are wheat kernels and wheat straw. In Ontario, wheat is harvested every summer. Similar to corn, a combine cuts the wheat stalk and separates the wheat kernels from the plant as it moves through the field. Inside the combine, a machine separates the wheat kernels and wheat stalk. The wheat straw (what the stripped wheat stalk is called) is spread back onto the field and the wheat kernels are stored.

What happens to the wheat kernels?

In Ontario, wheat kernels are used in animal feed and ground and milled into flour. Wheat flour is used in a number of products, including breads, pastries, cookies, and crackers. Secondary products from the milling process include wheat bran, wheat germ and oil, and wheat shorts. These products are used in



a variety of ways to ensure there is limited waste through the milling process. They can be added back into flour or food products, or end up in animal feed.

What happens to the wheat straw?

There are multiple ways wheat straw is used. Similar to corn stover, wheat straw can be chopped and left on the field to decompose into the soil.

Often, straw is baled into large square or round bales. These bales are then used for livestock as a form of bedding. The bales are also used by mushroom farms as the straw is an important factor in growing mushrooms.

Furthermore, wheat straw is now being processed into non-pulp paper products. Wheat straw can be made into several different non-pulp products that have the potential to be biodegradable.



Summary

The grain and oilseed sector tries to ensure food loss and waste is minimal. Through multiple processes, efforts are made to ensure that potential waste is diverted from landfills. There is a primary product created when grain is processed (eg. flour, ethanol, corn starch) but continuing to look for new novel uses and value from co-products ensures minimal waste while improving the circularity of our sector.

Grain Farmers of Ontario is the province's largest commodity organization, representing Ontario's 28,000 barley, corn, oat, soybean, and wheat farmers. The crops they grow cover over 6 million acres of farm land across the province, generate over \$4.1 billion in production value, result in over \$18 billion in economic output and are responsible for over 75,000 jobs in the province.

