

Jerusalem artichoke hailed as the crop of the future

by TAMARA LEIGH

DUNCAN – If someone gave you a plant that could be used as a biofuel, a vegetable, a nutritional supplement, feedstock and cocktails, would you grow it? Jerusalem artichoke may be one of the most resilient and versatile crops around, but it is slow to find a following among Canadian farmers.

Jerusalem Artichoke is indigenous to North America. As a prolific, drought-tolerant plant that is able to grow in marginal soils, it has earned a reputation in some circles as a weed. The plants grow up to three metres high and produce tubers in late summer or early fall.

Jerusalem Artichoke is a natural source of inulin, a complex sugar and source of soluble fibre that is an increasingly common additive to food because it has a low glycemic index and is easy to digest. Larry Whetstone imports and sells food ingredients, and imports inulin from Holland made from chickory. He found Jerusalem Artichoke when he started looking for an alternate source.

“Canada has a long history of growing and breeding Jerusalem Artichoke tubers at Agriculture Canada in Morden. There are 163 varieties still stored at the gene repository in Saskatoon,” says Whetstone. “Last year, we imported several hundred thousand kilograms of inulin that could be produced in Canada with this plant.”

In addition to inulin, Jerusalem Artichoke is a non-genetically modified source of fructose, a registered feed for livestock. Its high sugar content makes it an excellent feedstock for advanced biofuels and other industrial products, and in some European countries, it is even used to make vodka and brandy.

Whetstone is convinced that JA is a crop with a future. He is growing test plots on his acreage near Duncan, and has dedicated the last few years to promoting the crop across Canada and the U.S. Despite his best efforts, he has struggled to get interest among growers in B.C.

“This crop is manna,” says Whetstone. “B.C. could have a sugar crop coming out of Northern B.C. Thinking down the road, this is a crop that farmers in B.C. could actually make some money off of. We’re importing fructose from Israel right now at \$195 for a 50 pound bag.”

What’s missing in B.C. is processing capacity, and so far he hasn’t been able to generate interest from the provincial government’s innovation team or secure funding for any kind of pilot.

Potential seen

A business group in Alberta has seen the potential and is working with Jann Slasky, a researcher with Alberta

Innovates, to develop pilot a processing model and prove that there’s a market for Jerusalem Artichoke.

The process started by rethinking the way that the plant was used. Most commonly, people process Jerusalem Artichoke tubers. The stalks of the plant would be cut for biofuel stock, and the tubers harvested with standard equipment used in potato farming.

Slasky has developed a new technique to produce inulin and other products from the stalks of the plant, allowing growers to maintain the Jerusalem Artichoke as a perennial plant, and shortening the required number of growing days before harvest – an important factor for growing in Central Alberta.

“We developed a processing concept for sugar extraction from the stems to improve economics. Sugars reside in the stems at high concentrations for two to three weeks and then they move to the tubers. We optimize harvest time and use standard silage harvesting equipment,” Slasky explains.

Nova Green Inc. is taking the technology developed by Slasky and scaling it up – first to a pilot facility, then to full commercialization. They are working with Battle River Agri-Ventures Co-operative to grow the crop, and other partners to manage a series of stages that allow them to extract inulin and xylos (which is converted to xylitol), and then convert the remnants into active biochar used in commercial



Larry Whetstone in his Jerusalem Artichoke plot this fall. (Tamara Leigh photo)

purification processes.

“In the first 18 months, we will process less than a ton of inulin, xylitol and biochar, but we intend to take this to commercial by 2014,” says Barry Farquharson, CEO of Nova Green.

Farquharson is confident that things will move quickly once customers see the quality of their products. He estimates that they will need at least 40,000 tonnes per year once the process is commercialized.

“The prospects for Jerusalem Artichoke are very promising, and the products we are extracting are in extremely high

demand,” he says. “The intent for us is to develop a turnkey approach – we’ll provide the

guidance and feedstock that will enable growers to get on board really quickly and be successful.”



The Jerusalem artichoke is not truly an artichoke but a variety of sunflower with a lumpy, brown-skinned tuber that often resembles a ginger root. Contrary to what the name implies, this vegetable has nothing to do with Jerusalem but is derived instead from the Italian word for sunflower, girasole.

