

# Pennycress — By This Name, This Plant Smells Sweeter

## Grows Like A Weed, Spreads Like A Weed... So Is It Still A Weed?

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HIGH PRAIRIE

No, Stan Peacock's fields are not infested with stinkweed. "Infested" would mean he didn't want it there in the first place. And by the way, please don't call it stinkweed. It's Pennycress, or *Thlaspi arvense* if you want to be technical.

Peacock, a High Prairie-area cattle and hay producer since 1972, is in the end stages of securing funding for a \$35-million crushing and biodiesel plant in the Peace country. Ultimately, he plans to use pennycress to target what he and other stakeholders consider a huge market.

Unco-operative weather and high input costs in the farming business sparked Peacock's interest in biofuels a few years ago. He started exploring ways he could make his farm less dependent on cattle. Then, one day while crushing canola, Peacock noticed that some errant pennycress also crushed very well. It set him to thinking.

Now, Peacock has the support of the Lesser Slave Lake Economic Alliance (LSLEA) as well as the Peace Region Economic Development Alliance, whose funding has moved forward pennycress research work through Alberta Agriculture's Special Crops Division and the Olds School of Innovation.

"The goal is to evaluate the potential of pennycress for development into a viable commercial source of oil for biodiesel," explains LSLEA Chair Alvin Billings.

Research will evaluate pennycress yields on marginal lands as well as the economic feasibility of harvesting wild stands using conventional combines. The project will evaluate a two-crop per year growing system.

"Agriculture is growing and now includes a focus on biofuels, chemicals and materials," says Kwesi Ampong-Nyarko, a special crops research scientist with Alberta Agriculture. "It means new crops need to be cultivated to meet new demands." His work will



Smells like money: Stan Peacock of High Prairie says he's never had such an easy crop to grow. —Supplied photo

In High Prairie, fall-seeded plants

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SMELLS LIKE MONEY. STAN PEACOCK OF HIGH PRAIRIE SAYS HE'S NEVER HAD SUCH AN EASY CROP TO GROW.



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explore pennycress on a large scale, and will be the basis for implementing improvements in crop production. Ampong-Nyarko is working out of his research facility in Edmonton in tandem with field testing in the Peace.

Experiments in the greenhouse showed pennycress meal controls weeds well and the meal residue can also be used as a fertilizer. Alberta Agriculture is helping to put together a feasibility study that will develop a business model for pennycress as an alternative feedstock in biofuel production.

Tanya McDonald, a bioenergy research scientist at the college, thinks there is "huge potential" for pennycress. She and Olds College students are looking at developing a best-practices model for commercial production. Their work will explore the quality of seed and the oil, she said, and how growing conditions and harvest times have an impact.

## **BETTER IN COLD WEATHER**

"We'll also be looking at how pennycress meal (the byproduct of oilseed pressing) might be used for bioherbicide, biopesticide and possibly even feedstock applications," says McDonald. "The quality of pennycress oil has significant advantages over other oilseed crops particularly for biodiesel use in a cold climate," she says. "There's lots of potential."

It's projected that within five years, 40,000 hectares of pennycress will be required to produce 26 million litres of biodiesel per year with an annual cash value of \$52 million, says Ampong-Nyarko. He's enthusiastic about the crop's potential, especially as a substitute for canola oil for biodiesel.

Pennycress grows across Canada, particularly on the heavier soils of the Prairies. Project supporters believe the crop could make the leap to commercialization unusually quickly because it already grows wild and prolifically throughout Canada, Ampong-Nyarko says.

As any farmer already knows, stinkweed, er..., pennycress spreads readily, producing up to 15,000 seeds per plant. In High Prairie, fall-seeded plants produced 2,200 pounds of seed per acre without weed control or any other inputs, he said. In Edmonton, similar plantings produced yields of 2,500 pounds per acre.

Canada's diesel fuel demand in 2006 was 30.3 billion litres. Even at a modest two per cent blend, says Ampong-Nyarko, there would be a substantial amount of feedstock required from a variety of sources. "Potential biodiesel production from Canadian feedstock sources from 2007 to 2010 is expected to total 500 million litres," he said.

Currently, the industry depends upon the availability of off-grade canola seed to meet its needs in Western Canada, and biodiesel production in Eastern Canada has depended upon the availability of yellow grease and tallow from the restaurant and rendering industries there, as well as limited supplies of soybean oil. "If the Canadian biodiesel industry is to expand, other sources of oil feedstock need to be identified for use in biodiesel production," says Ampong-Nyarko.

According to Alberta Agriculture, feedstocks can account for more than 70 per cent of the total cost of producing biodiesel. "Feedstock cost and availability are very important in determining the feasibility of a biodiesel industry," says Ampong-Nyarko.

Pennycress also has another strong attribute: A transition to second-generation biofuels made from non-food crops will reduce food-versus-fuel concerns because pennycress will be grown on marginal lands and will not compete with food crops for prime

agricultural land. "We will think it catch on," says Ampong-Nyarko. He's worked with many crops and says he's "never seen one so easy."

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