Scientists develop plan to end the use of environmentally harmful chemicals on commercial crops

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(Edmonton) Two University of Alberta researchers have published a step by step plan to one-day end the use of environmentally harmful chemicals on commercial crops by developing plants that produce their own fertilizer.

U of A plant biologist Allen Good says the energy required to produce nitrogen fertilizers has pushed the world-wide cost for agricultural producers to a $100 billion a year. Good says that while they are necessary for high yields, those nitrogen fertilizers also damage the environment. Emissions from nitrogen fertilizers add to greenhouse gas emissions and chemical run-off from farm fields cause algae blooms in fresh water lakes and rivers. Good says the cost of cleaning up the environment adds another $50 billion to the world-wide cost of commercial agriculture fertilizers.

Good and his U of A co-author Perrin Beatty says some plants, like peas, have the natural ability to split atoms of nitrogen gas and use the bioactive elements that enhance growth. Mass produced and consumed cereal crops like wheat, rice and maize cannot naturally split nitrogen atoms and need commercial fertilizers. Fertilizer producers use huge amounts of natural gas to to split nitrogen atoms to supply its bioactive components that are then spread on fields in the form of a chemical .

Good and his U of A co-author Perrin Beatty say the fix is to genetically

alter agricultural products like cereal crops so they can process nitrogen from the atmosphere naturally and still get the same growth enhancing effect as commercial fertilizers.

Good and Beatty have published their perspective on Future Prospects for Cereals That Fix Nitrogen in the journal *Science*. The paper will be published by Science on Friday, 22 July 2011.

Provided by University of Alberta

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