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## Pilot plant turns waste materials into cattle food

Within a few years cattle and poultry may fatten on feeds that once were the waste materials of forest and agriculture industries as far apart as Canada and South-east Asia.

Production of single cell protein (SCP) feed supplement has in fact already begun at a pilot plant, designed and operated by Envirocon Limited, a Vancouver-based firm specializing in environmental management and resource development. The plant takes sludge, sawdust and other wastes trucked in from a pulp and paper mill in Prince George, British Columbia and turns them into SCP supplement at the rate of .9 tonnes of waste in, for .45 tonne of supplement out. It is being operated by Envirocon to determine whether animal feed produced this way can compete in price with soymeal and other natural substances now used by poultry and livestock producers.

### Biotech methods

Envirocon's plant makes use of a biotechnological process originally developed by the University of Waterloo in Ontario, and modified for volume production by the company. Earlier this year Envirocon announced it had acquired licensing rights to make use of the process in plants which, if the tests go well, it plans to design and market on a turnkey basis throughout the world.

In the SCP process, cellulose waste materials are combined with small quantities of chemical or organic fertilizer and fed to living fungus organisms under carefully controlled conditions of temperature and chemistry. The fungus consumes the wastes and turns them into protein which is then filtered dry and packaged for dispatch to the farm or feedlot. The final product of the Vancouver plant is a fine brown-green powder, but other forms can be woven by the process for different feeding needs — ranging from large granules to string-like fibres.

Although Envirocon is still studying the economics, there is no doubt about

the high nutritional value of the product. "We know, going in, that the protein content of our product is 30 per cent," said company president Richard Buchanan.

Other processes have been developed to turn non-food materials into food, but Envirocon's system has characteristics which put it in a class by itself. The earlier systems all made use of complicated technology and used costly or scarce substances (petroleum and starch products for instance) as raw material.

"Ours is a low-technology system," said Buchanan. "Conditions have to be carefully controlled but the system is geared for simple, small-scale operation. This means that a relatively inexpensive plant can be set up very close to the source of raw materials."

Mr. Buchanan pointed out that although the Vancouver plant is starting with forest-industry wastes, the SCP system makes good use of a multitude of other cellulose-based crop leftovers including cornstover, bagasse (sugar cuttings), rice hulls and straw.

### System can be used worldwide

In earlier tests, University of Waterloo researchers used an assortment of materials ranging from Indonesian ramie leaves to peanut shells from Georgia. "This system can be employed anywhere in the world," said Buchanan.

Because of these features, Envirocon expects its plants will interest a wide range of customers including governments of developing countries looking for ways to stretch scarce food resources. In these areas the system could be used to replace soymeal and fish with manufactured SCP supplement, and natural foods turned over to human consumption.

In North America, animal feed manufacturers now use more than 1.8-million tonnes of protein supplement a year. On the supply side, the Canadian forest industry alone generates 270 000 to 360 000 tonnes of wastes a year of the kind used in the process. "As things stand now this



*Canada and France will celebrate in 1984, the four-hundred-and-fiftieth anniversary of the discovery of Canada by Jacques Cartier. The above monument was unveiled this summer in Gaspé, Quebec, in memory of the explorer.*



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