



Plant explants in the culture medium.  
(Agriforest Technologies Ltd.)



Spring barley.  
(Semico Inc.)

now conducting research in order to select the types of rhizobium that are compatible with lupin and chick peas.

Les Tourbières Premier Ltée, a Rivière-du-Loup, Quebec, firm that specializes in peat moss and peat moss-based products is interested in a type of mycorrhiza (endomycorhiza) that forms a symbiosis in the plant root, where it bonds. The company is involved in the production of endomycorhiza and substrates compatible with their use. It has recently marketed a peat moss-based substrate that carries an endomycorhizal inoculum called Mycori-mix. This accomplishment is a first both nationally and internationally. The product can be used with market garden and ornamental commercial crops that use peat moss-based culture media. These crops consist mainly of market garden plants grown in greenhouses or transplanted in the field, especially celery, pepper, lettuce, tomato and cucumber, as well as plants obtained from *in vitro* culture, particularly apple trees, ferns and asparagus.

#### Genetic improvement of plants: Already a reality

Humans did not wait for biotechnology in order to start improving their crops, that is, to obtain cultivated plants with the most desirable characteristics, such as resistance to disease, early maturation or productivity. However, early attempts at plant improvement met with various problems. Genetic engineering can solve these problems by making it possible to change the genetic make-up of plants without involving sexual reproduction.

In the past, time was a major constraint, particularly the amount of time required to obtain a pure strain in a genetic improvement process. The Semico Inc. company of Sainte-Rosalie, Quebec, uses a technique called the "double-haploid method" to shorten the selection cycle of new cultivars of spring barley. It is now possible to create genetically pure plants from the second generation on. In comparison with the conventional genetic improvement process, this new technique makes it possible to jump 15 to 20 generations, thereby reducing the time required to develop a new variety of cultivar by four or five years.

W.G. Thompson & Sons Ltd. of Blenheim, Ontario, is also interested in the improvement of spring barley. Using the double-haploid technique, mainly with six-rowed spring barley, the company has been able to develop cultivars with valuable characteristics, such as good resistance to various diseases, strong stems with firm resistance to bending, and round, full, plump seeds.

Genetic engineering has also been used to develop genetically superior varieties of plants through different techniques. One of the most striking examples of this approach is the program for the genetic improvement of colza, a crop for which Canada is the largest world exporter, and which occupies a surface area of 1.2 million ha. Allelix Biopharmaceutical Inc. of Mississauga, Ontario, has managed to develop a genetically superior variety of this oil-producing plant. In 1987, the company announced that it now had colza plants that were both