Project Title: Microspore culture technologies for field pea and oat breeding.

S 6/05 Final Report

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Executive Summary

Isolated microspore culture is an important biotechnology for generating doubled haploid plants which allows new varieties to be bred 3 to 5 years more rapidly than with conventional breeding methods alone. This project aimed to develop isolated microspore culture methods for oat and field pea based on the barley protocol.

This was a very challenging project because no other laboratories in the world have successfully produced haploid or doubled haploid plants from isolated microspores of either field pea or oat. Over the course of this project we were successful in producing plants from oat microspores but did not succeed with field pea. The successful oat method requires the use of “conditioned” culture medium obtained from barley microspore cultures together with long cold pre-treatment of microspores and medium with high pH. Some genotypes have greater success than others.

The method developed for oat will be further developed through the SAGIT project S0308R, which also includes developing a similar method for wheat and is supported by Australian Grain Technologies and LongReach Plant Breeders. The aim is to apply the technique successfully to commercial oat and wheat breeding programs.