Final Performance Report

This template is aimed to provide a summary of the performance results achieved against the targets identified in the work plans for the Contribution Agreement (CA) and the Collaborative Research and Development Agreement (CRDA) during the entire life of the activity/project.

Please write for a general audience using plain language. Do not include sensitive or confidential information.

Name of Recipient: Canola Council of Canada	
Project Title: Canola Agri-Science Cluster – Partnership for an Innovative and Competitive Industry	
Project Number: AIP-P353	Period Covered by Report: 2015-04-01 to 2018-03-31
Activity #: 2v.10 2015-6 Name of Activity: Identification and genetic mapping of Brassica napus for resistance to pathotype 5X of *Plasmodiophora brassicae*	Principal Investigator: Fengqun Yu
Start Date (YYYY-MM-DD): 2015-04-1	End Date (YYYY-MM-DD): 2018-03-31

1. Summary of Performance Results for the entire life of the activity/project

Targets: Should be the sum of the targets that were set out in the work plan of the CA and in the Performance Measures Table for projects with a CRDA.

Results Achieved: Should be the sum of the results reported in all your Annual Performance Reports (APRs) including results achieved under the activities both in the CA and the CRDA.

Explain any variance: If the targets and the results achieved are different, provide a brief explanation using plain language. If there is no difference between the targets and the results achieved, leave it blank. Do not list each item of the results achieved here as they were already reported in the APRs. If a result was finalized but not included in any of the APRs, it can be reported here; however, you need to provide a brief description about the result and a brief explanation about why it was not reported in an APR.

Performance Measures	Targets	Results Achieved	Explain any variance between targets and results achieved. Use plain language.
# of Intellectual property items flowing from the project	2	5	1. Thirty five out of 845 *B. napus* lines resistant to pathotype 5X. 2. Ten out of 43 *B. oleracea* resistant to pathotype 5X. 3. Seven out of 51 *B. nigra* resistant to pathotype 5X. 4. Five *B. napus* lines resistant to novel pathotypes 3A, 2B and 3D. 5. Three genetic regions with a total of 147 significant SNP associated with resistance to pathotype 5X
# of new/improved products			

# of new/improved processes or systems	**0**	**1**	Genotyping by sequencing for association mapping and identification of multiple genes for resistance to clubroot
# of new/improved practices			
# of new varieties			
# of new/improved genetic materials	**1**	**1**	More than ten *B. napus* lines highly resistant to pathotype 5X and five to pathotypes 3A, 2B and 3D were identified.
# of new/ improved gene sequences	**1**	**1**	Resistance to clubroot associated with two new genetic regions (one on chromosome A09 and the other on C06) was identified.
# of improved knowledge			

2. New/Improved Products: Of the new/improved products developed and reported above during the project, which products have commercial potential? Which have been commercialized? And which have been used/adopted by the sector? Explain what stage each product is at and the impact on the sector.

This is a genetic project, which requires a couple of years intensive work so it can reach to the commercial stage. Information on the sources of resistance and SNP markers associated regions could be released. However, all the resistant lines were identified from winter type *B. napus* so introgression of resistance into Canadian canola cultivars is required. More closely linked SNP markers associated with each of genomic regions need further confirmation. There is a great commercial potential through continuing studies by further funding support.

3. What is your target audience for sharing information about the results of your project? Describe your strategy and success in reaching this target audience.

The target audience will be canola breeders, pathologists and growers. To reach these target audiences, presentations in conferences, scientific publications and meeting in persons will be needed.