

## DFCC CAP Project Update Summary

Dr. Howard Love, Mustard 21 Canada Inc.

The fourth year of the DFCC CAP funded projects was completed April 1, 2022 and annual reports are being finalized. Some of the highlights.

**Activity 7** Germplasm and Variety Development of Condiment Mustard for Improved Yield and Quality. (PI Bifang Cheng). The 2021 drought impacted yield trial yields with the Brooks, AB location lost early and others lost to high CV's post-harvest. Sprouting was unusually high in the Brown mustard allowing Bifang to make some excellent selections for sprouting resistance. Oriental hybrid candidates are in the pipeline with first variety registration expected during 2023.

**Activity 8** Developing Carinata Varieties and Hybrids for Drier Canadian Prairies with Key Traits using Molecular Breeding Tools as a Preferred Industrial Oilseed Platform. (PI Isobel Parkin). AAFC Saskatoon evaluated over 2000 early generation plots during 2021. Maturity continues to be a challenge for reliable Canadian Production. Although drought conditions prevailed this did not impact seed quality and in fact shortened the maturity dates, which was a positive. All the breeding targets are on track and the first commercial hybrid, resulting from the project is being launched. Industry partner Nuseed, in collaboration with Mustard 21 Canada Inc. and AAFC Saskatoon is now commercializing Carinata hybrid such as NuJet400 into specialized jet fuel bio-fuel EU markets with production in South America and second crop cover crop trials in Southern USA. Hybrids have boosted yields ~30% over conventional open pollinated varieties.

**Activity 11** Identifying and Developing Herbicide-Tolerant Germplasm for Carinata and Yellow Mustard (PI Christina Eynck). For carinata and yellow mustard, germplasm with increased tolerance to the Group 2 herbicide, Solo, has been developed. This is a significant achievement for both crops as it represents the first step in the development of herbicide-tolerant varieties

**Activity 13** Identifying Agronomic and Environmental Benefits and Drawbacks of Diverse Crops in Cereal/Canola/Pulse Crop Rotations on Semi-Arid Canadian Prairies (PI Mervin St. Luce). The 2021 growing season was exceptionally hot and dry, which adversely impacted crop growth and performance at all test sites. Except for few cases and also due to poor emergence, pest and disease incidence, agronomic data was collected as planned for the crop rotation and nitrogen response studies. Spring and fall soil sampling were carried out as planned at all sites but results from the contracted laboratory (CARA Soil Health Lab, Oyen, AB) are delayed. One positive outcome this season, there was no apparent relationship between Brassica seed glucosinolate contents and biological nitrogen fixation capacities in subsequent pulse crops.

**Activity 16** Defining Functional Protein, Mucilage and Fibre Value of Yellow Mustard for the Food Industry (PI Janitha Wanasundara) Protein: In 2021 the first evaluations of co-extruded product/snacks containing up to 15% Yellow Mustard meal were reasonable with improved protein content. Follow up evaluations are underway. Mucilage/Gum: Evaluations of YM formulations in vegan mayonnaise have been promising and could completely replace egg yolk without sacrifice in stability or characteristics.