North Central Region Canola Research

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Project Title: **Development of spring canola lines for biodiesel applications in the North Central Region**

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High oil per acre is the major breeding objective of NDSU canola breeding program. A breeding program was taken to develop spring canola lines with high seed yield and high oil content for biodiesel production. A total of 350 F_3's developed in the summer nursery at Prosper in 2009 were sent to winter nursery Chile for generation advancement ($F_{3:4}$ generation) during 2009-10 winter nursery program. In the winter nursery, three plants per line were selfed for generation advance and seed from the rest of the plants on each line was bulked for evaluating in North Dakota in summer 2010. Agronomic data of the lines were taken from the winter nursery. The seed shipment from winter nursery was received on April 2010. A total of 200 lines were selected on the basis of 2009 summer nursery evaluation, and 2009-2010 winter nursery evaluation. The selfed seeds collected from winter nursery were planted in the breeding nursery at Prosper, ND for self generation advancement. Three plants from each line were self pollinated by microperforated selfing beg. The bulk seeds collected from winter nursery were planted at four different locations, such as, Prosper, Langdon, Minot and Garrison with augmented design using hybrid DKL-72-55 as check variety in this trial. Experimental unit was of 6-row plots (48" width by 15' length) with 8" distance between rows. The lines were evaluated for seed yield, seed moisture at harvest, seed oil content and fatty acid composition, days to flowering, relative maturity and standability. Twenty two lines showed higher average seed yield for four locations compared to the hybrid check. The best line showed 20.9 % higher seed yield over the hybrid. The oil content of the lines varies from 41.5 % to 47.6%. The best selected lines have sent to winter nursery for generation advance for 2011 preliminary yield trial in North Dakota.