

Innovative production technology for oilseed rape with very low α -linolenic acid content

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HOLL (High Oleic, Low Linolenic) oilseed rape (OSR) was developed for its oil, stable at high temperature thanks to a low linolenic acid content (less than 3.5%). An innovative research project supported by the CTI (Swiss Innovation promotion Agency), in association with public and private international partners, aims for a linolenic acid content lower than 2%, with a high oleic acid content in rapeseed oil. This would allow to totally suppress rapeseed oil hydrogenation, even for industrial frying use, and hence reduce *trans* fatty acids consumption. To achieve this goal, 4 areas of research are developed; (1) Breeding new varieties with very low linolenic acid content and a high oleic acid content. (2) Developing efficient crop management (to control conventional OSR volunteers and weeds, affecting harvest quality). (3) Understanding environmental impacts on OSR oil quality. (4) Modelling harvest quality and simulating linolenic acid content for various growing conditions.

In this poster, one of the many trials, focusing on the second area of research, is presented. An HOLL Clearfield® variety, tolerant to Imazamox, was sown together with conventional OSR, susceptible to the herbicide, to simulate the presence of 33 % volunteers in the HOLL crop. Eight crop management techniques were tested, including a control without herbicide, a pre-emergence herbicide treatment, 4 Clearfield® post-emergence treatments (at different times of application) and 2 intercropped cover crops (mainly legumes) plots. The efficiency to control volunteers was assessed by measuring the plant density in the different plots, given that 33% of the crop is conventional OSR "volunteers", susceptible to the Clearfield® treatment. Besides, efficiency of the treatments against weeds was evaluated by counting the number of weeds in each plot. Our results showed that for both aspects, the Clearfield® treatment applied at the optimal time (OSR CD12-13) was the most efficient. Further measurements and analysis of oil composition at harvest will show the effect of these different treatments on oil quality.