

Changes in Free Fatty Acids during Near-ambient Rapeseed Drying

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Rapeseed is one of the most important oil crops, its seeds and fruits constitute raw material for the production of vegetable fats. Postharvest moisture content of rapeseed may be as high as 18%. Since the quality of oil depends on the condition of seeds used in its production, it needs to be adequately preserved after harvest. In Poland it is recommended to dry seeds for long-term storage to moisture content of 7%; however, since 2011 in commercial turnover transactions have been made on seeds with a moisture content of 9%. Near-ambient temperatures used in drying provide the most energy-efficient process which is capable of preserving grain at the best quality.

The aim of this study was to investigate the effect of the applied drying method and further rapeseeds storage on changes of free fatty acids. Material for analyses comprised seeds of three winter rape cultivars, i.e. *Californium*, *Elektra* and *Livius*. After harvest rapeseeds were dried by the near-ambient method in a thick immobile layer of 2 m and using air heated to a temperature of 60, 80 and 100°C. Seeds of cv. *Californium* were dried by the near-ambient method at an experimental station. The station comprised a 28-ton BIN silo of 3.2 m in diameter. Seeds of cv. *Elektra* and *Livius* were dried under laboratory conditions, in a specially designed drier. Initial seeds moisture content was 14 – 16%.

Analyses of free fatty acids were performed immediately after drying and after 6 and 12 months of storage at a temperature of 10±2 °C.

In all samples the contents of free fatty acids increased. After the completion of rapeseed near-ambient drying the total content of fatty acids in samples collected for analyses were 0,64 -0,80 mg KOH/g. Drying of rapeseed using heated air also caused increasing of fatty acids and was proportional to the applied drying temperature. In these seeds, the contents of free fatty acids were 0,82 – 2,7 mg KOH/g. In all the analyzed samples during high-temperature drying rise of free fatty acids were greater than during near-ambient drying.

These results indicate that near-ambient drying is a sufficient method for the preservation of good quality rapeseeds.