

INFLUENCE OF DEFOLIATION ON THE QUALITY OF COTTONSEED OIL

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We have studied the quality of cottonseed oil from the variety Tashkent-3 grown in fields treated with the defoliant butiphos.

The main indices of the seeds and of the oils obtained from them were determined by the methods generally adopted [1]:

<u>Index</u>	<u>Seeds before defoliation</u> <u>(sample taken from the</u> <u>fields on Sept. 19, 1977)</u>	<u>Seeds after</u> <u>defoliation</u> <u>(sample taken</u> <u>from the</u> <u>fields on</u> <u>Oct. 5, 1977)</u>
Oil content, % on the absolutely dry weight	19.81	20.33
Weight of 1000 seeds, g	112.52	111.19
Acid No. of the oil in the seeds, mg KOH/g	2.8	3.4
Peroxide No., % I ₂	0.059	0.051
Epoxide content, % O ₂	0.106	0.113
Native gossypol, % (in the seeds)	0.57	0.47
Fatty-acid composition (% on the total)		
C _{14:0}	0.30	0.30
C _{16:0}	23.90	23.90
C _{18:0}	0.60	1.10
C _{19:1}	Tr.	Tr.
C _{18:1}	15.00	14.90
C _{18:2}	60.20	59.80

The ultraviolet absorption spectra of the oils and fatty acids showed the presence of primary oxidation products (absorption in the 235 nm region relating to unsaturated hydroperoxides with a system of conjugated bonds) in an amount of 1.8% in the oil of the seeds before defoliation and 1.1% after defoliation, and of secondary oxidation products (275-277 nm region - unsaturated carbonyl compounds) amounting to 0.5 and 0.3%, respectively.

As can be seen from the figures given, the treatment of fields with the defoliant butiphos caused no appreciable changes in the indices of the cottonseed oil or in the fatty-acid composition of the oil. However, defoliation did lead to a rise in the acid No. of the seed oil.

Investigations of selected batches of the seeds during storage under laboratory conditions (t = 20-22°C) for ten months showed that the oil contents and fatty-acid composition of the oils remained practically constant throughout this period, and the acid Nos. rose continuously because of the hydrolytic cleavage of the glycerides.

LITERATURE CITED

1. Handbook on Methods of Investigation, Technical and Chemical Control, and the Accounting of Production in the Oils and Fats Industry [in Russian], Vol. 1, Book 2, Leningrad (1967), pp. 833-1012.

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