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VARIETIES OF MUSTARD CROPS WITH HIGH OIL PRODUCTION IN RAIN FIELDS**Mavlanov Laziz Bakhtiyor ugli¹**

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Abstract. In this study, the oil yield of mustard (*Sinapis alba* L.) varieties grown in rainfed conditions was assessed using the Soxhlet method. The 5/2019 (Bakhmal-70) variety had the highest oil content (38.15%) and was considered promising for industrial cultivation. The research results are of practical importance for the development of the domestic oil industry, increasing agricultural productivity, and ensuring agroecological sustainability.

Keywords. Mustard, dryland farming, oil yield, variety selection, quality, Soxhlet, efficiency.

Introduction. Rainfed lands located in the foothills, hills, and plains of Uzbekistan are considered non-irrigated agricultural zones, relying only on natural precipitation. In such conditions, crop selection is very important, and drought-resistant crops with a short vegetation period and economically profitable crops prevail. Among them, white mustard (*Sinapis alba* L., Brassicaceae family) occupies a special place.

Mustard is an oilseed crop, from the seeds of which 35-41% of food and technical oil is obtained. This crop is important for stable yields in rainfed conditions, suppression of weeds, improvement of soil structure, and entomofauna. In particular, the selection of varieties with high oil yields on rainfed lands plays an important role in increasing agro-economic efficiency.

Local studies show that Karshiboev H.K. defines the main criteria for selecting varieties for rainfed lands as the duration of vegetation, oil content, and adaptability to agro-climatic conditions [2]. On the Agroinspeksiya.uz portal, a detailed analysis of the varieties planned for sowing in rainfed areas, their agrotechnical characteristics, and factors influencing yields is presented. This information has practical significance in the selection of crops in rainfed conditions and serves to increase agro-economic efficiency [5].

Research conducted worldwide also shows that agrotechnical measures and variety selection play an important role in increasing the oil yield of mustard crops. For example, in field experiments conducted in India, it was found that leaf treatment with sulfate fertilizers increased the oil content of mustard seeds to 39.8% [1]. Also, the use of inorganic and organic fertilizers significantly increased the inorganic yield of mustard [3].

Analyses provided by Agecon Search show that improved mustard varieties increased oil crop yields to 42% in India's Indo-Gang River valley, and these varieties provide stable yields even in arid regions [4]. This defines mustard as an important crop for sustainable agriculture.

Based on this domestic and world literature, it can be said that the selection of high-oil-producing varieties of mustard crops in rainfed conditions contributes to the development of the local oil industry and ensures food security.

Purpose and methodology of research. Experiments were conducted at the Bakhmal Research Station of the Research Institute of Irrigated Agriculture in 2021-2023. Determination of oil yield in the seeds obtained during the research was carried out at the Southern Research Institute of Agriculture. The Soxhlet extraction method was used to determine the oil yield. This method is based on the extraction of oil from seeds using an organic solvent and has high accuracy and reproducibility.

Research results. During the research, 10 varieties of mustard were tested in rainfed conditions. From each variety, 10 grams of seed samples were analyzed using the Soxhlet method. The amount of oil was determined and evaluated as a percentage. As can be seen from the table, the highest oil yield was observed in the 5/2019 variety -38.1%, which is 3.0% higher compared to the standard variety "Nika." This variety stands out as the most efficient oil-gathering variety in rainfed conditions.

Table 1
Oil yield indicators of mustard crop varieties
(Bakhmal-2021-2023)

No.	Name of variety samples	Oil content (g)	Percent
1	Nika(standard)	3,5	35,1
2	Arletta	3,7	37,3
3	Bella	3,7	37,2
4	Bravo	3,4	34,0
5	Kristal	3,6	36,2
6	№5/2019	3,8	38,1
7	№1/2019	3,5	35,0
8	№3/2019	3,6	36,1
9	№4/2019	3,3	33,1
10	№9/2019	3,6	36,2

The oil yield of the 1/2019 variety was 35.0%, which is almost the same as the standard variety. The varieties Arletta, Bella, Kristal, 9/2019 and 3/2019 yielded stable results with an oil yield of more than 36-37%.

The Bravo and 4/2019 varieties showed lower oil accumulation than the standard (in the range of 34-33.1%).

Conclusion. The results of the conducted research showed that the oil accumulation capacity of mustard crops under rainfed conditions differs significantly depending on the variety. Based on the oil content determined by the Soxhlet extraction method, the following scientific conclusions were made:

1. The oil yield of the 5/2019 variety was 38.1%, which is the highest indicator compared to the standard variety (Nika). This variety was assessed as promising for industrial cultivation in rainfed conditions.
2. The varieties Arletta, Bella, Kristal, 9/2019 and 3/2019 have stable and high indicators of oil accumulation and can be recommended for breeding and agrotechnical purposes.
3. The Bravo and 4/2019 varieties showed the lowest oil yield. For these varieties, additional agrobiological assessment and breeding work should be carried out, or these varieties should be evaluated with restrictive recommendations for cultivation as oilseeds in rainfed conditions.

In general, the study proved that the selection of mustard varieties in rainfed areas significantly determines oil yield. By selecting varieties with high oil accumulation capacity, it is possible to develop the local oil industry, increase agricultural productivity, and ensure agroecological sustainability.

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