

New Oil Crops for Seeds

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Annotation: Oil radish and winter rape were studied in the field research carried out by the authors between 2012 and 2017 for the purpose of providing seed for new crops for irrigated conditions of the Zarafshan Valley of Uzbekistan. When grown in winter, crops from frost are successfully preserved, but they start to grow from early spring and early summer and can provide a seed yield of oil radish 22.9-26.9 centners / ha and for winter rapeseed 21.1-2. Their biological characteristics allow them to produce 40–60 t/ha of biomass yield at a positive temperature of 600–700 degrees for 40–45 days as well as 3.0–3.5 t/ha of excellent-quality seeds, which is equivalent to a yield of 2.0–2.5 t / ha of edible oil. Additionally, oilseed radish is successfully combined with crops of the cotton–grain complex, and it can be harvested from it three times a year.

Keywords: population growth, traditional oilseeds, new crops, assortment, cotton-grain complex, oilseed radish, winter rape, sowing dates, seeding rates, root system, safety, regrowth, stem formation with buds, seed yield, etc.

It is known that the demographic growth of the population of Uzbekistan and its need for agricultural products all year round inevitably requires a sharp increase in the yield of not only our traditional (flax, sesame, safflower, etc.) for rainfed lands, but also new oilseeds for irrigated conditions (rapeseed, soybean, sunflower, oil radish, etc.) crops [2;-47 .s.] given that according to Milashchenko N.F. and others [3;-239.p.] vegetable oil resources in the world since the end of the last century increased from 20.8 to 31.4 million tons, or by more than 50%, consumption over this period reached from 15.3 kg (France) to 27.6 kg (Holland) on average per year.

These crops can be grown virtually all year long, and their biomass and seeds can be used for a variety of things, including green manure, fodder, and the manufacture of edible oil from the seeds. Unfortunately, due to a lack of information and the small number of different varieties of these crops in the cotton-grain complex of irrigated fields, it is imperative to research the technologies for their cultivation for various purposes and develop recommendations for the production that are supported by science. [1;-419 .p.]

Many of these crops also benefit from biological advantages and straightforward technical solutions. Thus, after sowing seeds, oil radish can produce up to 600 c/ha of biomass in 40–45 days or 3.0–3.5 t/ha of seeds, which is equal to an output of 2.0–2.5 t/ha of high-quality edible oil. However, according to V.S. Klyuy et al. [4;-11.s.], this crop only needs 600–700 degrees Celsius to reach cutting maturity and roughly 1200 degrees to ripen seeds with good sowing properties, both of which are easily attainable under our conditions.

Materials and methods. In light of this, we felt it necessary to do research in this area. As a result, from 2012 to 2016, we looked at the viability of growing winter rape and oil radish for seed. The Payaryk district of the Samarkand region provided the irrigated lands on which the trials were conducted. The groundwater level in the experimental plot is between 5-7 meters, and the soils are typical gray irrigation soils (Table 1).

Table 1. The content of food elements in the soils of experimental plots

By soil layers, cm	Humus, %	Total nitrogen, %	Mobile forms, mg/kg	
			P ₂ O ₅	K ₂ O
<i>Taylak stronghold UzNII OBK and K (2010-2012 y.)</i>				
0-20	1,05	0,113	37,2	148
20-40	0,87	0,074	24,7	215
40-60	0,53	0,037	12,0	250
<i>ICC N. Azimov of Samarkand region (2012-2014 y.)</i>				
0-20	1,01	0,099	34,8	155
20-40	0,88	0,085	30,2	190
40-60	0,70	0,060	16,0	249
<i>ICC E. Kurbonov of Samarkand region (2014-2016 y.)</i>				
0-20	0,91	0,087	30,6	130
20-40	0,79	0,061	27,0	160
40-60	0,67	0,056	19,1	230
<i>ICC "Faiziabod" of Samarkand region (2016-2017 y.)</i>				
0-20	1,09	0,100	31,0	161
20-40	0,91	0,082	28,2	197
40-60	0,73	0,053	17,4	252

Humus (humus) concentration in soils ranged from 0.73 to 1.09% on average, as did total nitrogen (0.53-0.100%), transportable forms of phosphorus (17–37 mg/kg), and exchangeable potassium (130–252 mg/kg). The sowing dates of September 20, October 1, 10, and the seeding rates of oil radish and winter rape at the rate of 30, 45, and 60 pcs per 1 p.m. row were tested in experimental versions.

After thoroughly preparing the soil with harrowing in two tracks and threshing, seeds were sown. In the summer, the experimental field was lightly plowed to a depth of 22–25 cm, and in the fall, when cotton was being grown, seeds were planted to a depth of 2-3 cm using an SPC–6.0 seeder following conventional grain harvesting. The method of field experience was used for bookmarking and conducting field experiments as well as accounting for the crop in the studies (B.A. Dospekhov, 1985). Generally accepted methods were used for the corresponding records, observations, and analyses. Agricultural technology was advised for this zone (2: 146).

Results. The plants were watered twice at a rate of 600-650 m³/ha after germination in the fall. This was repeated three to four times in the spring along with the application of two top dressings at a rate of 90 to 100 kg/ha of nitrogen fertilizer and extensive treatment of row spacing to a depth of 12 to 14 cm using a KRX-4.0 cultivator based on an MTZ-80 tractor. In order to tackle the weeds, illnesses, and pests identified during the studies, steps were implemented during the growing season. Interesting findings came from research on the temperature of the soil and air in the study region (Table 2).

Table 2. Soil and air temperature in experiments during the winter period of plant vegetation (According to the Samarkand regional meteorological station, 2012-2017)

Indicators	By month							Total	Average
	X	XI	XII	I	II	III	IV		
Air temperature, 0C	12,1	8,0	2,3	2,3	-0,8	6,5	14,4	44,8	6,4
soil temperature, 0C, sm									
0-5	13,6	8,0	2,4	2,5	2,9	7,0	15,4	51,8	7,4
5-10	14,9	8,2	3,1	3,5	3,7	7,5	15,0	55,9	8,0
10-20	15,8	8,4	3,3	4,2	5,1	9,6	15,3	61,7	6,8
The sum of the average daily temperature, 0C									
5 0C	389,5	250,2	132,1	62,4	97,2	217,5	439,	1588,3	-
10 0C	239,5	116,8	33,1	12,4	14,7	87,1	4	559,2	-
	99,1	25,7	0	0	0	10,2	295,	280,1	-
							1		
							145,		
							1		
Precipitation, mm	29,34	21,70	42,46	36,1	24,7	76,08	58,2	288,34	41,9
				2	2		4		

According to our observations, oilseed radish and winter rape have root systems that reach a depth of 40–60 cm in the autumn and rosettes of leaves that average 10–12 leaves per plant. In such circumstances, the hardening process proceeds smoothly, spring regrowth is seen in the early spring (February 28–March 4), and the safety of cultures was noted within 95–98% of their initial standing density throughout all years of investigation. It should be mentioned that if plants are within 30-35 cm tall following spring regrowth, a stem with buds will typically develop to a height of 110-130 cm during the flowering stage and, on average, 149-157 cm (Table 3).

Table 3. Pre-harvest state of the studied plants in experiments

Indicators	In Samarkand region			
	Tailyak strong point of the Research Institute of OBK and K	Пайарыкский район		
		ICC N.Azimova	ICC "Fayziobod"	
	2010-12012	2012-014	2016-2017	
	Oil radish	Winter rape	Swede	Fodder cabbage
Productive stems, %	97,5	89,4	95,3	92,7
Plant height, sm	311,0	275,6	298,5	282,3
Root mass, g	95,4	75,8	84,2	78,9
Stems, %				
single stem	91,2	88,4	94,7	93,0
double stem	8,8	11,6	5,3	7,0

The information in the table shows that a plant's productivity changes according to its state and the production of biomass or high-quality seeds. Therefore, they primarily have single stems, which, for example, amounted to 91.2% for oilseed radish, for novel crops studied by us, such as fodder cabbage, 93.0% of the original standing density, etc. Plants in experiments ranged in height from 275.6 to 311.0 cm.

In all years, the experiment's seeds began to ripen at the end of May, and the testes were essentially ready for harvesting around the start of June, which took place 25–33 days after the flowering stage. It should be emphasized that, depending on the timing of sowing and sowing rates, the seed yield was 22.9 c/ha when sown on September 20, and 24.4 and 26.9 c/ha, respectively, and the highest yield. was obtained at a seeding rate of 45 pcs. per 1 running meter of a row 27.1 centners per hectare, and at a rate of 30 and 60 seeds per 1 linear meter of a row, respectively, 21.7 and 23.8 centners per hectare with seed germination of oil radish 95.0-97.3% (Raduga variety), and rapeseed (Izumrud variety) seed yield was in the range of 21.1-25.3 c/ha with their germination rate of 94.0-96.5%.

Conclusion. Accordingly, it should be taken into account that, based on our studies in the Samarkand region, it is possible to cultivate oilseeds that are new to Uzbekistan, like oil radish and winter rape, on 1 hectare of land and get a seed yield that is between 21.7 and 23.8 c/ha with good sowing qualities. It is important to note that the technology for growing oil radish and colza between 2017 and 2019 successfully completed a production test under the conditions of the farms "Darvesshaikh" and them. U. Makhmudov on a surface area of 10 hectares, where the birth of seeds weighing at least 20 to 24 centners per hectare with good quality was obtained.

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