

## The Basic Techniques of Cultivation of the Castor in the Foothill Zone of Almaty Region

AIGERIM ERJANOVNA KOIGELDINA, TAKEN NURGASENOV  
and SEMBY SALMENOVICH ARYSTANGULOV

Kazakh National Agrarian University, Kazakhstan, 050010, Almaty, Abai avenue, 8.

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### ABSTRACT

Later periods accelerate the development and reduce the growing season. Length of the growing season reduced later and was 124-127 days. Maximum productivity castor reached at sowing in the second period and was 18.7 centners per hectare. Most productive plants castor reached at seeding method in wide rows with a width of 90 cm and the distance between plants 60 cm. Optimum planting depth should be considered castor 7-8 cm, where the yield was 17.9 centners per hectare.

**Key words:** Castor, Sowing, Biometrics castor, Innovation, Seeding depth.

### INTRODUCTION

The level of development of the agricultural sector has always been and continues to be a determining factor in the economic and political stability of Kazakhstani society, because agriculture is one of the key sectors of the economy of Kazakhstan.

The rise of agriculture along with the decision of the grain problem accompanied by a review of the structure of sown areas, expanding the range of field crops and the replacement of traditional crops with alternative, having great national economic significance.

For the conditions of the south and south-east of Kazakhstan in recent years, oilseeds having huge prospects, of which castor oil takes a special place, because it is the only culture which gives a raw material for high-quality non-drying industrial oil, which is widely used in aviation, aerospace, metallurgy and defense industries and medicine, have high indicators of crop yields and oil content<sup>1</sup>.

Castor plant with scientific name of *Ricinus Communis* from of Euphorbiaceae is a kind of oil that is a single year long plant that is cultivated in moderate regions. Oil grains are grown in order to that oil be extracted from it. also they are valuable sources of protein. Castor oil is the most important grain-forming substance between 40-60 percent of its value in commercial varieties<sup>2</sup>. Iran because of its position (25 to 38 degrees north latitude) is climatic and natural percent semidry<sup>3</sup>.

So drought is one of problems that in many parts of country decreases crops, such as sorghum and cowpea which are cultivated in dry and semidry areas. Because by pass plant from growth stage, to vegetative stage water limitation leads to more decrease in photosynthesis compared with the that time the number and weight of grains are forming it causes the decrease the period of increasing, the number of decrease, the period of increasing, the number of grain, and weight of grain by aging and finally decrease of grain yield<sup>4</sup>.

Methods of sowing are not important for the castor. However, cultivated, net of perennial weeds fields, harvest seeds at spaced planters slightly higher than for square-nesting, due to more uniform distribution of plants in a row. On weedy plots castor better sow square-cluster method (70X70 cm) in order to increase the area to be treated cultivator. When spaced planters in accordance with the plant population seeded 5-6 seeds per 1 running meter, with square-cluster -3-4 seed in the nest. Seeding depth -7-10sm<sup>5</sup>.

Due to the inconsistency of the data obtained previously in VNIIMK conducted additional experiments in terms of sowing castor beans on the background of a seedbed cultivation. By planting castor proceeded at soil at a depth of seeding from 6-8 up to 14-16 ° C<sup>6</sup>.

In areas of unstable and insufficient humidification of Krasnodar region gives good results growing at a density of 40 to 60 thousand. Plants per 1 ha, but for the purposes of mechanical harvesting thicken better seeding.

In the southern regions of the Ukrainian, which is dominated by rainfall during the second

half of the summer, it is advisable to reduce the number of plants to 30-40 thousand / ha, which provide a favorable years high fees seeds with side brushes<sup>7</sup>.

Previously castor was not cultivated in the investigated region. Therefore, the development of adaptive, resource-saving technologies of cultivation is an actual task.

## METHODS

The object of study, castor, cultivar "Donskaya krupnokistnaya". Experiments were laid by the standard technique in the fields of Educational Production Agriculture "Agrouniversity" of Yenbekshikazakh district of Almaty region in triplicate, accounting area of plots is 50-70m<sup>2</sup>, the location is systematic. Soils of experimental plot are meadow- chestnut of heavy mechanical composition that are specific types of foothill soils that differ with excessive moistening because of the closely occurrence of ground waters. Humus content in the plow horizon of 4.38%, which gradually decreases with depth. The content of total nitrogen and total phosphorus high-0, 258, and 0.211%, respectively.

**Table. 1: Biometrical indices of castor, depending on the sowing date (average for 2012 - 2014)**

#	Sowing periods	Plant height, cm	Number of leaves, pieces	The number of bolls of one plant	Number of seeds per plant, pieces	Weight of seeds per plant, grams	The weight of 1000 seeds, grams	Yield of oil seed centner / hectare
1	10-12 <sup>01</sup>	147,2	35,7	61,0	218,4	155,1	401,5	17,2
2	14-16 <sup>01</sup>	150,4	34,2	65,8	223,5	163,1	402,7	18,7
3	18-20 <sup>01</sup>	148,3	26,2	48,3	146,3	148,2	403,7	13,6

**Table. 2: Effect of seeding depth on elements of castor yield structure (average for 2012-2014)**

Planting depth, cm	The number of plants for harvest, thousands of units / ha	The number of bolls of one plant, units	Weight of seeds of one plant, grams	The weight of 1000 seeds, grams	Yield of seeds, c / ha
5-6	17,3	51,3	752,0	401,8	12,8
7-8	17,7	64,7	1019,9	401,7	17,9
9-10	13,4	43,2	890,8	401,0	11,7

On supportability with the available elements of soil nutrients experimental plots are characterized as high provided with nitrogen and exchangeable potassium. The content of phosphorus is low-22 mg / kg of soil.

**Main part**

The structure was determined before harvesting the crop at all the options in the two non-adjacent repetitions. Determined by the total number of plants from test plots, plant height, number of bolls, number of seeds in them, and their mass, oil seeds yield.

Observations made by the passage of the main phases of the growing season of castor showed that planting dates had a significant effect on seed-germination period because the period of plant of three planting dates was different and ranged from 14-22 days. The onset of subsequent phases of the growing season passed roughly the same, branching occurred on 10-15 days after germination, bud formation after 12-22 hours.

A certain regularity that a later periods accelerate the development and reduce the growing season observed The length of the growing season declined from the early to the later period, and was 124-127 dney. In plant height castor of first term of planting reached 147.2 cm for harvest, later periods increased this index to 150.4 and 148.3 cm. A similar regularity observed throughout the growing season<sup>1,8</sup>.

The highest yield of castor oil seeds was obtained at sowing in the second period, when the soil temperature at a depth of 0-10cm 14-16°C, where it reached 18.7 t / ha (table 1).

There marked the largest number of bolls to one plant, 65, 8 pieces, weight of seeds per plant, 163, 1g. Sowing in the first period reduced rates of yield structure as well as seed yield on 9% made in total -17, 2 c / ha, whereas the third term of sowing decreased yield on -30.0%, made in total - 13, 0 c / ha.

Planting depth also had a significant influence on the productivity of castor plants (table 2).

The best conditions for the growth, development, formation of yield structure and productivity are created at planting to a depth of 7-8cm, which has provided the highest yield of castor oil seeds 17.9 c / ha. When reducing sowing depth of up to 5-6cm, and increase to 9-10cm leads to yield decreasing on 28-33%.

Measurement of plant height showed that increasing of plant density depending on the castor sowing schemes to increasing height of plants from 142.2 to 154.1 cm. Minimum height is marked at seeding according to the scheme 90x90 cm, where the index was 142.2 cm<sup>5</sup>. (Table 3).

**Table. 3: Biometrical indices depending on castor sowing schemes (2012 - 2014)**

#	Sowing schemes ,cm	Plant height ,cm	Number of leaves, pieces	The number of bolls per one plant, pieces	Number of seeds per one plant, pieces	Weight of seeds of one plant , grams	The weight of 1000 seeds, grams	Yield of oil seed centner / hectare
1	60E45	154,1	46,2	84,7	259,3	105,1	402	15,8
2	60E60	150,2	43,0	92,6	284,5	113,8	403	16,5
3	70E45	150,7	36,6	74,0	228,9	84,9	403	14,3
4	70E60	147,4	33,7	73,6	224,5	87,3	404	13,4
5	70E70	144,8	31,0	82,1	244,7	95,0	404	12,2
6	90E45	147,0	40,9	76,5	237,2	93,0	403	16,2
7	90E60	145,3	34,2	99,1	295,7	122,3	406,5	19,7
8	90E70	142,6	31,8	95,6	283,2	117,1	407,8	14,3
9	90E90	142,2	29,8	87,6	257,7	105,1	409,5	10,9

In the analysis of the data seen that the best conditions for the formation of structural elements of yield and crop yields of castor are created at sowing with 90cm row spacing and the distance between plants in rows 60cm. Increasing the distance between the plants up to 90 cm and the reduction of row spacing up to 60 - 70cm reduces crop yields by 7,5-8,8 c / ha<sup>9</sup>.

At sowing castor with 60cm of row spacing, increasing the distance between the plants from 45 to 60 cm increases the yield of oil seeds from 15,8 to 16,5 c / ha. Increase of the width of row spacing to 70cm and the distance between the plants in a row from 45 to 70 cm leads to a decrease of yield from 14,3 to 12,2 c / ha.

## CONCLUSIONS

From the above it can be noted that the later periods accelerate the development and reduce the growing season. The length of the growing season has been declining from the early to the later period, and was-124-127 days.

The greatest productivity depending on the sowing castor reached at sowing of the second period and was 18,7 c/ha. For a stated period of sowing the highest indices of yield structure were formed. The highest productivity plants of castor reached at sowing in wide rows with the row spacing of 60 cm and distance of 60 cm between plants .

The optimum depth of sowing of castor should be considered as 7-8cm, where the crop yield was 17,9 c/ha<sup>10</sup>.

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