



Use of Intermediate Crops in the Establishment of Sown Parsley (*Coriandrum Sativum L.*) Plantations

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ABSTRACT: The article states that the *Coriandrum sativum L.* plant can be used as an intermediate crop in the establishment of plantations. Experiments have shown that the use of intermediate crops in the cultivation of cashmere (*Coriandrum sativum L.*) on plantations has yielded effective results. In particular, in the cultivation of *Coriandrum sativum L.*, the use of intermediate crops for one year increased the yield to 6%, and in the case of continuous crop rotation using intermediate crops, this figure increased to 12-14%. The use of intermediate crops in the cultivation of medicinal and spice plants is important not only to improve the structure of the soil, but also to increase its economic efficiency.

KEYWORDS: Agroforestry, Biodiversity, *Coriandrum sativum L.*, Intermediate crops, Monoculture, *Nordeum bulbosum*, Plantation, *Sorghum bicolor (L.) Moench*, Yield, *Zéa máys L.*

INTRODUCTION

According to many scientists, the use of intermediate crops before sowing the main crops in the process of land development in agriculture is effective, which in turn has a positive effect on improving the reclamation condition of the soil (weeding, soil loosening, physical and water permeability properties of the soil and subsequent chemical composition) [3-5].

According to A.E. Nerosin [3], in rice fields, the groundwater of the soil converges, its top layers condense, and as a result, the water permeability of the soil decreases and its physical properties are impaired. According to the author, the use of winter barley (*Nordeum bulbosum*), corn (*Zéa máys L.*), alfalfa (*Sorghum bicolor (L.) Moench*) and other agricultural crops as intermediate crops on such lands allows to reduce groundwater and efficient use of land [4].

In other literature, the use of corn as an intermediate crop in the development of saline soils gives positive results. According to the author, due to the rapid growth of corn, the surface layer of the soil is completely covered and shade is formed, which delays the germination of weed seeds [6].

In the scientific research of foreign (Spanish) scientists, the planting of Arpa- *Hordeum vulgare L.* and Hairy wiki- *Vicia villosa* Roth from agricultural crops in a range of plantations of Cherry (*Prunus dulcis* Mill. [D.A. Webb]) gives effective results. It is noted that plants planted in row spacing (Arpa - *Hordeum vulgare L.* and Hairy wiki - *Vicia villosa* Roth) soften the surface layer of the soil, help retain nitrogen, and also increase soil fertility [7,11].

According to Chinese scientists, it is preferable to grow a wheat plant in a row range of ordinary almond plantations, rather than growing it by the monoculture method. According to the authors, such an approach is important not only in the efficient use of land in the agro-forestry system, but also in improving the economic efficiency of farmers and other farms and the condition of other ecosystems such as biodiversity conservation [8,12].

Based on the above-mentioned data, we also approved the introduction of methods of using intermediate crops in the cultivation of sown parsley (*Coriandrum sativum L.*) on plantations.

THE MAIN FINDINGS AND RESULTS

Coriander (*Coriandrum sativum L.*) was selected as the scientific object of the study. *Coriandrum sativum L.* - Apiaceae is an annual herbaceous plant belonging to the family. It is widely used as a spice and medicinal plant in various sectors of the economy [1,2].



Scientific research on the planting, cultivation and use of intermediate crops in the planted plantations was carried out in the “Chodak” department of the specialized state forestry named after Abu Ali Ibn Sino.

Field experiments were set in 3 different variants; 1) The experimental fields were planted continuously (for 1-4 years) with sown parsley plant (control). 2) Experimental fields were planted with cultivar parsley for 2 years, white beans (*Phaseolus L.*) in 3 years, and back sowing parsley. 3) The experimental field was planted over the years alternately with a variety of plants (*Coriandrum sativum L.* in 1 year, *Phaseolus L.*, in second year, *Zéa máys L.* in third year, and reversible *Coriandrum sativum L.* in fourth year).

RESULTS AND DISCUSSION

Scientific research has shown that intermediate crops (crop rotation) can be used in the creation of industrial plantations of medicinal plants. In particular, when studying the data on seed germination of plants, it was noted that these indicators are close to each other in all variants, while the amount of fertility was recorded around 81-93%. In our opinion, the sown parsley plant has a high yield, mainly due to three factors (i.e., first, the increase in soil moisture above 70%, second, the soil temperature above 10-12°C, and third, the soil density around 6-8 g per 1 cm³ area) explained by.

Observations have shown that the use of intermediate crops in areas where sown parsley is grown has a positive effect on their growth and development. Thus, the average height of the main stem was 47.9 cm, number of first-order stems 11.3, length 11-13 cm, leaves 17-18, number of second-order stems 15.7, length 9-10 cm, leaves 8-9, number of buds 42-45, the number of flowers is 41-45 and the seeds are 40-43, the yield is 600-612 kg / ha. The average height of the main stem is 51.7 cm, the number of leaves is 8.3, the number of stems of the 1st order is 12. 1, length 12-14 cm, leaves 18-19, 2nd order stems 17.0, length 8-9 cm, leaves 8-10, number of buds 56-57, number of flowers 51-53, the number of leaves was 8-9 and the seeds were 50-52, and the yield was 630-650 kg / ha.

Significant growth and development were recorded in Option 3 (i.e., in experimental plots where continuous intercropping was introduced), with an average plant height of 51.7 cm, 10.1 leaves, and 14 first-order stems, 6, length 14-15 cm, leaves 20-21, number of secondary stems 23.1, length 11-12 cm, leaves 10-11, number of buds 66-68, number of flowers 63-65 and 61-62 seeds and a yield of 720-725 kg / ha (Table 1).

The duration of vegetation of white beans and corn planted in experimental fields as an intermediate crop is directly related to favorable climate (temperature) and soil (humidity) conditions. In particular, when irrigation capacity is increased (soil moisture is sufficient), the process of plant growth and development and the total vegetation period is extended to 110-130 days, and conversely, when irrigation capacity is limited, growth and development and vegetation duration is 75-85 days in white beans. in maize it was 95-100 days.

In Uzbekistan, white beans can be sown as the main crop in the spring (late April and early May) and as a secondary crop in the first month of summer (June) [8].

The white bean plant was planted in experimental fields in mid-April (15.04.2013) 3-5 cm. planted at depth and 50-60 kg / ha of seeds were consumed. In plants planted at this time, the growth and development of vegetative organs mainly continues until the flowering phase, and with the onset of the flowering period, the growth rate in them decreases significantly. The flowering phase in plants was observed from the second decade of May (17. 05. 2013) with air temperature reaching 15-18°C, and the sloping flowering period was recorded with air temperature reaching 21-25°C. The fertilization process lasts until the end of May and the beginning of June, and the full maturation of the seeds took place in late June and early July. The average seed yield (0.7 ha) was 700 kg, 105 kg of sorghum and 700 kg of bean stalks.

In Uzbekistan, the sowing period for corn is April 10-15 for the Central region (Tashkent, Syrdarya, Jizzakh, Samarkand and Fergana Valley regions), 2 weeks ago (March 25-30) and 2 for the Northern regions, weeks later (April 25-30).

The corn plant was planted in the experimental fields in mid-April (12.04.2014) at a depth of 5-6 cm and 24-25 kg / ha of seeds were used. At this time the soil temperature was 12.50 C and the seeds germinated after 8-10 days. In plants planted at this time, the growth and development of vegetative organs continued mainly until the flowering phase, and the flowering phase was recorded from the second decade of May (11.05.2014). With the onset of the flowering period, their growth rate decreases relatively. The process of fertilization in plants was observed from the last days of June, and the full maturation of seeds coincided with the first days of July. Seed (grain) yield of the plant (in the area of 0.7 ha) was recorded as 1200 kg, tassel 35 kg and stem (hay) around 1302 kg.



In general, the vegetation duration of plants planted as an intermediate crop depends on climatic and soil conditions (2013, 2014, 2015) and is mainly 115-125 days when irrigation opportunities are increased and 95-105 days when some irrigation opportunities are limited.

CONCLUSION

Thus, the use of intermediate crops in the cultivation of cashmere on large plantations has yielded effective results. In particular, if the yield of plants in permanently planted (controlled) areas is assumed to be 100% (612 kg / ha), the yield (647 kg / ha) can be increased by 106% by using intermediate crops for 1 year (Option 2). In experiments with continuous crop rotation (Option 3), an increase of 11-14% was observed.

Table 1. Influence of use of sown parsley (crop rotation) on plant growth and development

Variants	sowing time	seed germination, %	The main stem				Branches						number of buds	number of flowers	Number of seeds, fruits		Yield, kg		Productivity, %
			height, cm	number of leaves	leaf fall	timber, cm	first order			second order					formed	cooked	seed	on the ground	
							number	length, cm	number of leaves	number	length, cm	number of leaves							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
Permanently (1-4 years) planted the same medicinal plant (control)	spring	81,7	47,9 ± 0,9	8,4 ± 0,0	-	8,1 ± 1,1	11,3 ± 1,3	12,5 ± 1,1	17,5 ± 1,5	15,7 ± 1,3	9,2 ± 1,3	8,3 ± 1,1	45,1 ± 1,1	43,7 ± 2,1	41,7 ± 2,1	43,7 ± 1,2	612 ± 1	419 ± 4	100
In the experimental field, he used intermediate crops for 1 year	spring	83,2	51,7 ± 1,1	8,3 ± 0,6	-	8,7 ± 1,1	12,1 ± 1,3	12,7 ± 1,1	18,3 ± 1,7	16,9 ± 1,5	9,7 ± 1,1	9,6 ± 1,2	56,3 ± 1,6	53,1 ± 2,3	51,3 ± 1,1	49,1 ± 1,4	647 ± 4	457 ± 4	106
In the experimental field, he used intermediate crops continuously (2 years)	spring	87,9	56,9 ± 1,3	10,1 ± 1,2	-	10,4 ± 1,2	14,6 ± 1,4	14,5 ± 1,1	20,5 ± 1,5	23,1 ± 1,7	11,2 ± 1,2	10,1 ± 1,3	67,1 ± 2,3	63,7 ± 2,5	61,3 ± 2,4	61,3 ± 1,6	701 ± 4	553 ± 4	114

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