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COMPARISON OF FUNCTION AND FUNCTIONING COMPONENTS OF (*BRASSICA NAPUS L.*) SPRING TYPE RAPE IN SOUTH EAST OF KHOZESTAN PROVINCE

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Abstract

To compare the function and functioning component of spring types Rape, a test in the form of complete blocks with 6 treatments of (Hayola401, Hayola 308, Q 6501, Q6503, H1432, H 1750j) have been executed in 4 repetitions. Considering the results obtained among varieties for the seed's function, there has been a meaningful difference at the level of %1. H308 and H401 varieties according to characteristics of their weight of 1000seeds 3/68 and 4/67), percentage of oil content %46 and %45/5) and oil function 1315/6 and 1249 kilo grams respectively in relation to other varieties have been studied were well recognized superiority. Variety of Q6503 with average function of 2912 kilograms in hectare had the most and variety of H1750j with average function of 2215 kilograms in hectare had the least level of functioning.

Keywords: function and function component, Rape, Behbahan.

Introduction

Edible oils are among the most important energizers for human body and consideration of these materials role in determination of fat and vitamins needed, after the starch material are from the most important energy resources.

In current years, Rape (Brassica napus L) has been considered as one of the suitable plant for production of oil in the Iranian climate conditions. Considering the increasing needs for the vegetable oil and its high importing condition in the country, now days there are very important consideration towards the plantation of Rape has been felt in Iran. According to "FAO" report global average of Rape functioning is 1725 kilograms in a Hectare which can be improved with the use of crop and race correction.[13] Therefore in addition to introducing the varieties having higher functioning, maximum genetic capacity of varieties available should be considered with regard to the different climates.

Gholami[3] in Alshter with analyzing the effects of the space between rows of cultivation on the function and function components of different varieties of Rape, the most numbers of sheaths from hybrid Hayola 308 at the amount of 132 sheaths and the least number of sheaths in shrub from hybrid 401 with about 84 sheaths have been obtained. Afsharmenesh[2] in an experiment in Jiroft for obtain the effects of cultivation history on 4

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different Rape varieties of " Orica, Shiraly, Global and PF 7045.91" found out that the most number of sheaths in shrub at the amount of 174/3 sheaths belong to Orica. The size of seeds are different mainly between genotypes and different environmental conditions. There are meaningful mutual effects between varieties and environment that to obtain the seeds functioning, high percentage of oil with good quality, it needs varieties that have the maximum suitability with the considered environment.[21] Christmas[11] had 3 years of canalization on 41 different varieties to evaluate the suitable cultivation history of varities of falls Rape in Indiana, and he found out that Tochan variety was the best variety which could bear the most difficult climatic condition and obtain the most functioning while he believes that Liboreyos variety is the weakest variety among the varieties used in the experiment. Salisbourg and Green[25] in comparing the spring varieties showed that generally the European varieties show more reaction to photoperiod and vernalizing. And in this regard the Australian varieties were in the middle and Canadian varieties have shown the least reaction. In all the varieties shortage of light caused flowering to be delayed and there were differences between varieties regarding the amount. High temperature has advances flowering but regarding the French variety of Draker, with 22.7 degree centigrade temperature flowering has been delayed similarly which was the same as the effect of temperature on the VASIL variety.

The aim of this research is to find out comparison of functioning and functioning components of spring type Rape in the south east of Khozistan province.

Material and methods

This research has been conducted in the cultivation year of 2012 in Behbahan Islamic Azad University farm in the Khuzistan province. The experiment has been conducted in the form of random complete block plans with 6 treatments which means 6 varieties of spring Rape plants (h1750j, H1432, Q6503, Q650I, Hayola308, Hayola401,) with 4 repetitions. The land has been terraced after it has been plowed. Each experimental plot consisted of 4 meters length and the space between each row was 30 cm. which has been constituted in the form trench and bed. Each experimental terrace received basic urea manure of 300 kilograms in a hectare, 100 kilograms of potassium sulfide and 100 kilograms of super Triple phosphate. The cultivation has been conducted in 15thAban on both sides of beds. Spaces between terraces were 60 Cm and spaces between blocks were 150 Cm. irrigation has been conducted in the form of trench and beds.

To determine characteristics like bush's height, number of seeds in the sheath, number of sheaths in the bush (shrub), weight of each thousand seeds, seeds functioning, percentage of oil and oil's functioning have been chosen after physiological analysis of 15 shrubs which were chosen randomly in each experimental terrace and then they were evaluated and average of each characteristic was calculated. Final yield have been conducted in 16th of Ordibehasht for all the time treatments when about 75 percent of sheaths of each terrace were brown in color. Therefore to emit two edge of each terrace and 50 Cm from each side of the terrace, yielding was done. To measure percentage of oil seed SOKSELE method was used.[18]

Statistical calculation has been conducted with the use of SAS software and drawing of diagrams has been prepared with Excel software. To compare averages the LSD test at the level of 5% was used.

Results and discussion

Plant's height

Considering results obtained from the variance analysis between genotypes studied regarding the shrub's height, meaningful difference have been observed (table 1). Results of average comparison of varieties tested show that varieties of Q6503 and Q6501 have the most height among the shrubs. The least height belong to H1750j and H1432 varieties (124.5Cm). Major[20] from his experiments obtained the result that the changes in the length and height of the shrub in many of the varieties of Rape have considerable effects on the seed's production. This can be noticed from the test that varieties with higher foot in the research (Q6503) have more seed functioning while they have the chance of constituting more sheaths on the main stem and upper auxiliary branches. Other researchers have been reporting the same differences for height between varieties and types of Brasika.[13, 18] The height of plant is more which is due to inflorescence axis or in the other words dueto having the most flowers and sheaths on the

inflorescence of the branch. Falling of the leaves during filling of sheaths causes plant photosynthesis which will take place only by sheaths and stems. Therefore having wider stem means having more surfaces for photosynthesis and therefore production of more metabolic material for filling the sheaths and seeds[8, 17] which might show that the rational advantages of seed's function ofQ6503 variety is because of this characteristic. Analysis of correlation coefficient show that there is a positive and meaningful relation at the level of probably 1% between shrub's height and seed's function, oil function and number of sheaths in shrub (table 2).

Table No. 01: Results of variance analysis of characteristic analyzed in Rape varieties

Change resources	degree of freedom	Mean squares---------- height	no. of seeds in the sheath	No. of seeds in the shrub
weight of 1000seeds	seed's functioning		oil%	oil function
Block	3	29/48ns2/15ns47/7**0/007ns		1576/01*
Block Oil% oil function				
		0/04ns	234/32ns	
Variety	5	1272/17**	101/57**	10286/34**
0/71**			287587/74** 6/85**	53109/08**
Error	15		41/88	2/61 8/34
0/003		376/9		
			0/17	174/16
Change's coefficient(%)			4/47	7/15 16/5
15/3 7/2				
		11/1		
9/3				

ns and ** are meaningful ans non meaningful respectably at the level of possible percentage.

No. of seeds in sheath

According to the results obtained from variance analysis it has been proved that there are meaningful differences between varieties studied according to the number of seeds in the sheath which are at the possible of 1% (table 1. Varieties H401, H1750j and H1432 are having the most numbers of seeds in the sheath. According to the results obtained the least numbers of seeds in the sheath belong to Q6501 variety. More the number of seeds, there is need for bigger reservoir for metabolic material produced and each element causes increase in the function with increase in this parameter.[6] Increase in the number of seeds in the sheath is a key cause of increase in the new varieties in Australia. Therefore those varieties of Rape with more seeds in the sheath are more useful, since the environmental effect on them are less.[6] On the other hand Melekzadeh has mentioned.[7] that number of seeds in the sheath is the most important element of affectivity on the seed's function.

Number of sheaths in the bush (shrub)

Considering the results obtained from the variance analysis between genotypes studied regarding the number of sheaths in the bush there is a meaningful difference (table 1). Results of comparison of tested varieties average regarding the characteristics of sheaths number in the bush showed that the Q6501 variety with 264/5 sheaths in the bush mentioned as the variety with highest in the test regarding characteristics. On the other hand the least number of sheaths in the bush (115/25) belonged to H1432 variety (pic 3). High productivity varieties in this test regarding the

number of sheaths in the bush had meaningful difference with the varieties yielding low productivity and the differences in the sheath of each bush were mentioned as 120 to 130. Duration of determination of first part of function means the number of husks in m^2, which laps with second determination function and similar elements affect both parts.[3] No. of sheaths in the bush is one of the most important and most effective factors on the functioning. Production of sheath in the plant depends on the plant ability, genetic elements and environmental conditions.[23] Tylore and colleagues[26] believe that the numbers of sheaths in the bush are the most important factors for differences in the function of varieties of Rape. Hoking and Mayson[16] also believe that 12 percent of photosynthesis share during filling of the seeds depend on the sheaths. Results obtained from coordination coefficients (table 2) showed that there is meaningful and positive coordination between the number of sheaths in the bush and seeds functioning (R2=%66**). Gholami[3] in Alshter in a test for analysis of effects of rows space of cultivation on the function and function components of different varieties of Rape mentions the more number of husk in the bush in hybrid Hyola306 at the amount of 132husks and the least is in the hybrid Hyola 420 with 84 husks.

Weight in thousand seeds

Results obtained from variance analysis of data show that there is meaningful difference between the weight of thousand seeds at the probable level of %1 (table 1). According to results obtained from the comparison of treatments average the most weight of thousand seeds (4/67gs) belong to H308 variety and the least weight belonged to H1750j variety . In this analysis there isn't a meaningful coordination between thousand seeds and other two parts (No. of sheaths in bush and No. of sheaths) (table 2).

According to AlahDadi[6] weight of thousand seeds is one of the determinant part of seed's functioning and most of the time there is a positive and meaningful coordination between weight of thousand seeds and seed's functioning. Weight of thousand seeds in plants is one of the genetic characteristics and it mainly depends on the variety at the cultivation and environment condition.[11] According to some of the researchers weight of each thousand seeds is the most stable part of functioning at different conditions.[16] Usually weight of thousand seeds is not affected by the environment condition. Different genotypes have different weight in thousand seeds and in untimely varieties the seeds remain stable more than the Serotinous varieties.[2] Weight of thousand seeds is one of the most important elements of determination of function. Having strong and complete filled seeds can insure better and more functioning.[1] Fatali[4] in an experiment for analysis of functioning parts morphology in different varieties of fall Rape in Kaleh found out that the most weight of thousand seeds in the LADY variety with 5/400 gand MS3 variety with 5/200 gs weight and the least belong to Canyon variety. Gholami[3] in an experiment in Alshter for finding the effects of space of cultivation rows on the functioning and functioning parts in different Rapes found out that the most weight in thousand seeds belong to Hyola308 and Hayola 330 at the amount of 3/66 g and the least belong to Hayola 420 with the amount of 3/44 g in thousand seeds. Different research results show that high heritability of seed's weight in thousand seeds in relation to other characters and with characters like height of the bush and sheath (Brassica napus L) have negative coordination which corresponds to the results obtained.

Seed's functioning

Results obtained from the variance analysis between genotypes studiedfor their seed's functioning showed meaningful differences (table1). Comparisons of seed's functioning average show that Q6503 with 2912 kilograms of production in hectare has the highest function. Space available between functioning averages obtained by the farmers and functioning potential can be determined through production function ability by the available varieties and hybrids of agricultural plants and also the degree of effect of agricultural management part and genetic potential of agricultural soil.[11] Functioning and functioning components is affected through the management method. It is clear that with improvement in the methods of agriculture and reform in them the seeds functioning will increase. Seed's function is due to plant society activity during the growth season, use of radiance, nutrition, water and other environmental factors.[9] Different genetic and environmental factors such as plant genotype, temperature, moisture, and soil productivity,

duration of growth and pests and sicknesses affect the transference of photosynthesis on the photosynthesis parts to the seeds and therefore seed's functioning.[10] Also according to the results obtained there weren't meaningful differences between Q6501 and H401 varieties. On the other hand the results of average comparisons show that the least seed function (2215kgs in Hectare) belonging to H1750j variety. Low height of variety and especially relatively low numbers of sheath are due to non suitability of this variety with the climate of the area and one of the main reasons for reduction of seed's functioning in this variety. Rao and Mendham[23] mentioned that varieties which at the beginning of growth, have broader leaf use more sun radiation and produce more dried material and since the production of dried material have positive coordination with seed's function in sheath fine seed are mainly the reason for increase in the index of harvesting. In this way extra dried materials will not be produced. But most of dried material will belong to economical functioning of the seed.[12]

Percentage of oil

According to the results obtained from the analysis of data variance there are meaningful differences between the genotypes analyzed according to the oil percentage (table 1). Comparison of varieties averages according to percentage of oil production show that H401 variety has the most percentage of oil (46%) and Q6503 and Q6501 have the least percentage of oil production. Important point is that in this research the coordination between oil percentage and seed's function is not meaningful and most of low productive varieties have produced oil with high percentages and opposite high productive seeds varieties had less oil. (Table2). Ghalibaf[5] had shown that among the spring type Rape seeds cultivated SERZ contain the most oil and it is superior to the other types. In the research conducted by Nebevi,[9] it showed that among the spring Rape variety according to the percentage of oil seeds the differences are meaningful. BOLANDA variety with 38.6% is the most and SERZ variety with 34.56 % is the least percentages of oil seed's content.

Alahdady[6] had shown that the most important qualitative characteristics in rape seed is its percentage of oil production and the characteristics have been the main aim in many of the researches about the oil productive plants race specially Rape.

Oil functioning

According to the result obtained from analysis of data variance show that there are meaningful differences between analyzed treatments according to the oil functioning characteristics (t.1).Results of average comparison show that the most oil functioning belong to H401 variety with average of 1315/6 kilograms in Hectare and least amount of oil functioning belong to Q1750j with average of 995/25 kilograms in Hectare. Since the oil functioning is affected by seed's function and percentage of oil therefore it is clear that Q6503 variety with high high oil seed's function could compensate low percentage of oil and have one the highest oil functioning average and it is located to the same class as H308 variety. According to results of Gholami's study,[3] H401 variety with the average of 2034 kilograms in Hectare is the highest and H308 variety with average of 648/6 kilograms oil production in Hectare have the lowest oil functioning which is corresponding with the results of research.

Table No. 02: Coordination between analyzed characteristics of varieties of Rape

Characteristics	height	No. of seeds in sheath	No. of sheath in bush	weight of 1000seeds	Seed's function	%oil	oil function
Height	1						
No. of seeds in sheath	-/76	1					
No. of sheath in bush	/83**	-/56**					
Weight of 1000seeds	/04ns	-/21ns	-/05ns	1			
Seed's function	/77**	-/54**	/66**	/33ns	1		
Oil%	-/61**	/72**	-./44*	-/17ns	-/27ns	1	
Oil function	/59**	-/31ns	/53**	/40ns	/94**	./.5ns	1

ns and **.* ;are non meaningful and meaning ful respectively with the levels of 1 and 5 %.

Conclusion

The best variety in this test belong to Q6503 variety with the average of seed's functioning of 2912 kilograms in Hectare .varieties of H401 and H308 according to oil percentage and oil functioning were better than the other varieties and according to seed's functioning also these varieties had meaningful differences with the other varieties. It has also been suggested that for suitable evaluation the test should at least be repeated once a year.

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