Assessment Characteristics Morphophysiology of plant varieties horse Bean (*Vicia FabaL*) in different plant densities

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Abstract: In order to study the effect of different densities on bean cultivars, experimental farm in 2008 Farm Research, Islamic Azad University of Ahvaz was executed. Factorial experiment in randomized complete block design in three replications was formed. The first factor consists of three densities (45, 55, 65) plants m and the second factor consists of three cultivar (ZOHREH, SHAME and JAZAYERI) were. The results showed that most varieties LAI ZOHREH to figure the 13 quarters in the early stage of flowering and pod development were achieved. Based on the results, the number of branches to reduce plant density increased. Most biological yield in 55 of the plant density, 3042.89 kg ha was obtained with the other density levels significantly different at 5 percent showed. Process of dry matter accumulation in different cultivars and varieties are not the same ZOHREHs to other two varieties showed superiority, as well as increasing the density of total plant dry matter accumulation increased. The results showed that with increasing density levels also increased CGR and also increase the speed of the CGR in high densities are higher. Bless growth figures earlier CGR respectively higher than the figures had SHAME and JAZAYERI and in shorter time, has reached the maximum CGR. Maximum CGR will be achieved when the vegetation has reached its maximum rate.
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1. Introduction

Grains of the main sources of protein-rich food for human and animal nutrition are known. About 22 percent in human nutrition of plant protein, 32 percent fat and 7 percent of carbohydrates are whole grains provide. Similarly, 38 percent of protein in animal feed plant, 16 percent fat and 5 percent of the carbohydrate source is provided. Some grains in addition to international trade oil production for different purposes are used in human and animal nutrition. After their importance in Iran cereals, wheat and rice are. Land under cereal cultivation for about 10 percent of food grain production (2),

Planted area of cereals and their total production were about 3.5 per cent. Among grains, soy, beans and peas in terms of acreage, respectively first to third place are met. Nightingale eyed beans in tropical countries especially African countries; the wide level is automatically assigned (3).

A- Density effect on the number of branches

Saki Nejad (2004) declared that the regression relationship between yield and a higher number of branches (r^2 = 0.9) is. Increasing yield of branches increases (6).

Mung bean plant Hassan Zadeh 2000 and McEwen in bean plants (1988) reported that increasing the number of stems per plant density decreases (1, 2).

B- Effect of density on accumulation of dry matter

Slim and Saxena (1998) to increase bean yield rate of 15 percent increase in density from 22 to 44 plants per square meter reported that due to increased absorption of light in the photosynthetic activity is plant community. In this study the absorption of light in the growing season as leaf area index had a trend increase in the value of unlimited growth figures, particularly local varieties grow more varieties was limited(5).

In this report, differences in dry matter production of bean varieties at different growth stages may indicate differences in light absorption and efficiency of its use in the plant canopy is (5).

Pylbm colleagues (2000) Studies and in relation to dry matter accumulation in bean plants suggests reduce the efficiency of light, especially in indeterminate cultivars bean, is due to increased density(7).

His opinion luminous efficiency of energy use to produce solid addition to the light intensity in leaves

of light absorption and factors affecting the efficiency of carbon capture processes such as photosynthesis, nutrient uptake and chemical a participant in photosynthesis and carbon dioxide concentrations in environment depends on the plant(7).

2. Materials and Methods

This test Crop in 2008 University Research Farm in three kilometers south of Ahwaz, Ahwaz city geographic 31 degrees 20 minutes North and longitude 48 degrees 41 minutes east and 18 m above sea level is located. To determine the physical properties and chemical field soil test before planting field soil sampling conducted Shadow following results were obtained.

Treatments were tested in compression as the main treatment and bean cultivars as sub-treatment is intended. In this review Tuesday Picks 45, 55 and 65 plants per square meter as the main factor was applied. That it will provide for easy order results with D1, D2 and D3 will be shown. The bean genotypes tested Tuesday as has been under cultivation, these figures include ZOHREH, had SHAME and JAZAYERI.

3. Results and Discussion

A- LAI

LAI trend of change in all three levels of density is almost the same as the first growth period so that the changes were slow and then with increasing days after planting and then increased rapidly to reach maximum LAI has continued at a constant rate. After This stage of gradually falling leaves and vegetation in lower grain filling period LAI value has declined. With increasing density, LAI raised in shorter time than low planting densities, the maximum LAI is reached. Seedling density (55) plants per square meter after approximately 85 days after planting to its maximum to 3.94 hit.

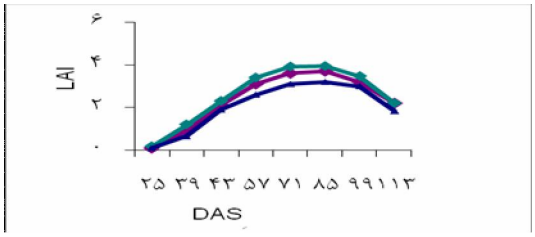

Figure 1 - The trend in leaf area index in different plant densities

LAI changes in trends of different varieties as in the diagram can be seen near the bottom figure ZOHREH to the growing season had the highest LAI. In the process of development between cultivars cultivar LAI ZOHREH of all the other figures were higher, this figure does period and early in their growth and delivered them to 34 days to complete their rapid growth period was entered, the maximum numerical value in the figure blessed with an average LAI 4.22 was obtained and then the figures Shame Jazayeri maximum LAI were allocated to.

B- TDM vegetative organs (TDW)

Process of vegetative organs in total dry matter of different densities is shown. Density increased total plant dry matter accumulation, which increased due to increased leaf area and photosynthesis in line with the increase in plant dry matter accumulation is (4).

The whole process of dry matter accumulation in vegetative organs of all varieties and cultivars was not quite the same slope blessed with rapid growth was higher than other. Process of dry matter accumulation in different cultivars depends Bean has two important parameters are: leaf area index and leaf area duration and period to grow faster during their rapid growth period can be entered and can provide more leaf area duration in This figure therefore completely true ZOHREH.

C- Crop growth rate (CGR)

CGR process of change for different levels of density shows that with increasing density levels also increased CGR and also increase the speed of the CGR at high densities is more, the reason there vegetation (photosynthetic surface types), followed by the emission and absorption Dry matter production per unit area increases and eventually lead to increased crop growth rate has been. Trend changes in the CGR for different cultivars won. As can be seen in the early stages of growth due to the complete absence of vegetation absorbed radiation levels low CGR precedent vegetation is down. Cultivars grown in early ZOHREH CGR respectively were higher than the JAZAYERI and had SHAME and shorter time to maximum CGR reached.

4. Conclusion

General purpose of testing conditions to get the best crop varieties for production in order to achieve the desired yield is maximum. Appropriate distribution of plants per unit area in one of the most consistent factor is to increase performance (4).

The results show that all three varieties in terms of vegetative characteristics, reproductive and physiological environmental conditions suitable for the growth have been good. "Vegetative cultivars affected by plant density and the density increased number of

branches declined. Highest numbers of branches plant varieties were blessed. Density effect on physiological indices also showed a notable difference in the density of 55 plants m these indicators showed the greatest increase. Cultivars tested the physiological parameters of growth, the difference was in terms of variety and excellence was a ZOHREH.

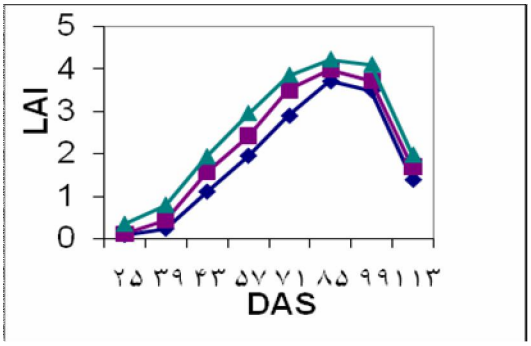

Figure 2 - The trend in LAI plant varieties

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