



Response two cultivars of Beans to planting date.

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Abstract

A global experiment was carried out at the agricultural research site within longitude of 45.25o east and latitude 31.39 north for the 2023- 2024 planting season to demonstrate the effect of planting date on two bean varieties. An experiment was designed according to a randomized complete block design with two factors, the first being two types of beans (local and aquadolge), and the second factor, planting dates: (15/10 and 1/11/2023).

The study a significant improvement in the Equadulge variety in (plant height, number of branches, leaf area and number of pods), and gave averages for the mentioned characteristics of 61.50cm, 6.15 branches. Plant-1, 3673cm² and 7.05 (pods). Plant-1 sequentially. While the results of planting dates indicated that the first date,15/10/2023 was superior in the number of branches, leaf area and number of pods, and recorded values of 6.09 branches. Plant-1, 3810 cm² and 6.70 (pods). Plant-1 in sequence.The interaction also showed an effect on all the growth traits studied.

Key words: cultivars, planting dates

Introduction

Bean belong to the Fabaceae family, which is one of the most important leguminous food crops. Bean can be

divided according to the size of the seeds into Broad Beans, as the seeds of this group are characterized by being flat and large in size and mainly used for human nutrition. The other group is called Horse Beans, and

their seeds are characterized by their small size and spherical shape and are used as animal feed [9].

The nutritional importance of the bean crop lies in its dry seeds containing 28.40% protein, 41.39% carbohydrates, 7% fiber and 1% oil. In addition, every 100 grams of dry bean seeds contain 91 grams of calcium, 3.5% of vitamin C, and 10% of vitamin A [8].

It was found that the response of varieties to environmental conditions differs among them, as many studies have shown that the planting date varies according to the response of the variety, so increasing the productivity of the bean crop requires choosing the variety appropriate to the conditions of the region.

The economic and nutritional importance of the bean crop calls for thinking about finding ways and scientific methods to increase the productivity of this crop. Therefore, it is necessary to work on

determining the appropriate date for planting the crop, which is no less important than crop management operations through knowing the most appropriate conditions for growth, as it has been shown that high temperatures and the photoperiod during the flowering period leads to damage to the flowers and failure to form pods [10].

Working Methods

The experiment was conducted at a location with longitude 45.25 east and latitude 31.39 north in the agricultural season 2023- 2024 to determine the extent of the effect of planting date on the growth and yield of the bean plant.

The experiment included two factors

Planting dates: 15/10/2023, code D1, and 1/11/2023, code D2.

The second factor: Two types of beans: Local variety with code V1, and Aquadology variety and its symbol is V2.

Studied growth characteristics:

- Plant height.
- Number of branches.
- Leaf area.
- Number of pods.

The average values of the traits were tested using the least significant difference at probability 0.05 [3].

discussion

Plant height (cm).

From table 1, the results showed a significant difference in plant height between the varieties, where the V2 variety gave the highest value of 61.50 cm, while the V1 variety recorded the lowest value of 58.88 cm, with a relative increase of 4.45%. The reason for this may be due to the genetic inheritance of each variety, or it may be due to adaptation of the V2 variety (Equadulge) to the different growth

factors of that region. This result agreed with what was indicated by [[5] and [2]].

From the same table we note that there are no significant differences between the planting date for this variety.

The results of the interaction of varieties with planting date also indicated a significant difference in plant height in the V2D2 treatment, which was 62.01cm

Table 1: The effect of varieties and planting date on plant height.

Planting date Varieties	D ₁	D ₂	Averages of varieties
V ₁	57.32	60.43	58.88
V ₂	61.00	62.01	61.50
Averages of planting date	59.16	61.22	
L.S.D. (0.05)	V= 2.47	D= NS	VD= 3.16

Number of branches (branch. Plant-1)

The V2 variety recorded a significant superiority in the number of branches, with an average of 6.15 branches, with a relative difference of 14.31% compared to the V1 variety, where the lowest value reached 5.38 branches, (table 2). Perhaps the difference between the varieties in the number of branches is due to the genetic characteristics of the varieties, and the difference in their response to the climatic conditions surrounding them in that location. This is consistent with the findings of [4], who indicated that faba bean varieties differ from each other in the number of branches.

From the same table, there is a superiority in the number of branches for the planting date, as date D1 recorded 6.09 branches, but date D2 recorded 5.44 branches. Perhaps the plant growth at the first date obtained optimal growth factors, which reflected positively on grown indicators, including the number of branches. This results agreed with [7].

As for the varieties and planting date, the V2D1 intervention was superior in terms of the number of branches and recorded 7.23 branches. Plant-1.

Table 2: The effect of varieties and planting dates on the number of branches.

Planting date Varieties	D ₁	D ₂	Averages of varieties
V ₁	4.95	5.81	5.38
V ₂	7.23	5.07	6.15
Averages of planting date	6.09	5.44	
L.S.D. (0.05)	V= 0.52	D= 0.47	VD= 0.98

Leaf area (cm²)

The V2 variety excelled in leaf area, reaching an average of 3539 cm², compared to the V1 variety, which gave the lowest average of 3162 cm², with a relative increase of 11.92%. The variation of varieties in leaf area may be related to the genetic characteristics of each variety, and the extent to which the varieties are compatible with the environmental factors prevailing in the region.

The same table indicated that planting dates have an impact on the leaf area. The D1 date was superior and gave the highest

average of 3417 cm², but we find that the D2 date reached the lowest value of 3283 cm², with a relative difference of 4.04%. This may be due to the first planting date, D1, being appropriate in terms of environmental factors encouraging growth. Which reflected positively on the increase in leaf area, as indicated by [7].

The result of the double interaction also showed an increase in the leaf area of the bean crop when treated D1V2, which reached 3765 cm².

.Table 3: The effect of varieties and planting dates on the leaf area

Planting date Varieties	D ₁	D ₂	Averages of varieties
V ₁	3070	3254	3162
V ₂	3765	3312	3539
Averages of planting date	3417	3283	
L.S.D. (0.05)	V= 100.7	D= 97.9	VD= 203.4

Number of pods (pod. Plant⁻¹)

It is noted that the number of pods increased between the varieties, as the V2 variety excelled significantly and obtained the highest value for this trait, amounting to 7.05 pods. but the V1 variety recorded the lowest number, amounting to 5.73 pods, with an increase rate of 23.04%. This increase is likely due to the varieties increasing the number of branches (Table 3), as well as their differences in genetic characteristics. This result agreed with what was indicated by [6] and [1], who showed the differences between the varieties in terms of the number of pods.

There was also an increase in the number of bean pods for the two planting dates, as the first date D1 recorded a number of pods of 6.70, but the second planting date D2 recorded the lowest number of 6.08. This result is due to an increase in the number of branches in the first appointment, table 2. This was pointed out before [7].

The result of the binary interaction between the varieties and planting date showed significant differences in the V2D2 treatment, with 7.20 pods recorded.

Table 3: The effect of varieties and planting dates on the number of pods

Planting date Varieties	D ₁	D ₂	Averages of varieties
V ₁	6.50	4.95	5.73
V ₂	6.90	7.20	7.05
Averages of planting date	6.70	6.08	
L.S.D. (0.05)	V= 0.64	D= 0.47	VD= 0.98

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