



THE EFFECT OF PAPER FEEDING (ORGANIC FERTILIZER) HUMAX IN THE GROWTH AND PRODUCTION OF TWO VARIETIES OF *VICIA FABAL*.

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Abstract

The experiment was carried out in a field out to Mussaib district (7 km) from the Technical College of Mussaib for the winter season 2018-2017 in Fertile clay soil to determine the effect of Humax paper spraying on two of the remaining *Vicia faba* L. species (local, Luzde Otono). Three levels of organic fertilizer (12, 6, 0) g / L were used in the experiment according to the global experience of designing the whole randomized sector by three replicates. The results of the experiment showed significant differences between the levels of addition and varieties and the interaction between them, with the superiority of treatment with organic fertilizer at a concentration of (12) g / L in all significant traits studied: plant height (70.15) cm. Number of Branches (20.45) Branch. Plant 1- , Number of pods (22.56) Pod. Plant 1- , Number of seeds of pod (7.05) Seed. Pod, Weight 100 Seed (150.6) G, and Seed Yield (2642 Kg). And dry plant extract Total Yield (13.82 ton). The experiment surpassed the Spanish class Luzde Otono on the local varieties in the height of the plant (71.54 cm), the number of seeds (6.29) seed, the pod, the weight of 100 seeds (170.1)g, the total yield (2812) and the biological reserve (12.53) ton, while the superiority of the local variety in terms of the number of branches: (20.20) branch, plant-1 and the number of pods in the plant (20.24) pod.

Key words: Organic Fertilizer (Humax), Faba beans, Varieties, Concentrations

Introduction

Faba beans *Vicia faba* L. is one of the most important winter legumes, a crop that is important for its high nutritional value of 28% protein, 58% carbohydrate, many vitamins and other nutrients, and consumes seeds, soft green seeds and dry seeds. It is therefore an important food source, especially for people with limited income, as well as its importance in improving soil properties as a source of nitrogen fixation in the soil as a source crop.

The crop yields a large quantity of small and large nutrients for optimal production, which leads farmers to add large amounts of chemical fertilizers with negative effects on the environment, plants and humans.

Studies indicated that organic fertilizer could be added to spray or irrigation water, depending on the speed of the plants' response to one of these methods and the concentration of the fertilizer. It is also one of the best types of leonardite in the world, which increases the efficiency, effectiveness and solubility when used in organic materials and high rates work with the ability of the crop to reduce the use of chemical fertilizers and

reduce the spread between Plant producers, as well as the content of Humax on potassium by 10%, gave greater importance to the humax, since its presence stimulates and activates enzymes and contributes to the achievement of many vital activities, contributes to plant resistance to drought and contributes to the presence of pressure (Abu Dahi and Yunis, 1988).

Organic fertilizers are not only a way to improve productivity, but also an important tool to reduce the amount of chemical fertilizers added. The various studies have shown that the spraying of organic fertilizers by the leaves, starting from the appearance of the third paper until the flowering phase, on one plant and the components of the crop (Kassab, 2005; Thalooh *et al.* 2006).

The organic fertilizer treatment also caused an increase in the paper area index (Haghighi *et al.*, 2011) and in turn will increase the photosynthetic materials and hence the growth of the plant (Fernandez *et al.*, 2013; El-Bassiony *et al.*, 2010) to the positive role of humic in the growth rate and the percentage of cut flowers), Reduced the amount of chemical fertilizers to be added to the crop.

By 50% and improved vegetative growth and productivity of both green pods and dry seeds and their quality. In order to determine the effect of organic fertilized paper feeding in the growth and yield of the rest of the interaction of the varieties and concentrations.

Materials and methods

The experiment was carried out in Mussaib, which is 7 km away from the technical college of Mussaib during the winter season 2017-2018 by using the full randomized sections of (Randomized Complete Block Design) with three replicates and two factors. The first factor is the varieties (local and Luzde Otono) and the other is different levels of organic fertilizer with three levels of 0, 6, 12 g/l (M0, M1, M12 respectively) for the nutritious solution (Humax) is a white powder. The active ingredient of the fertilizer is composed of 70% humic acid (Dubal acid) 10% potassium and organic carbon and a group of major and minor elements in the soil of Fertile clay (Abu Dahi and Yunis, 1988). shows the chemical and physical properties of the soil experiment.

Soil service operations have been carried out as recommended by peritoneal and soft tillage and were added during the process of phosphate fertilizer tillage at a rate of 40 kg. In agriculture, nitrogen fertilizer was added to 50 N kg. (Abu Dahi and Yunis, 1988). m² to prevent the volatilization of the spray when treatment with the nutritious solution planted varieties on the distance between the distance of a distance (70 cm) and The distance between the jour (30 cm) was the cultivation of two of the local class and the Spanish class Luzde Otono on 15/10/2017 at the rate of two seeds in each the pit, and after the emergence and the emergence of real leaves subsided to one plant The operations of the service of the crop was performed and the fertilization and irrigation at Humax concentrations were required according to the required ratios (M0, M1, M2) and the paper spray was carried out early in the morning FH (liquid detergent) as a stabilized substance and the full coverage of the vegetative total while the comparative treatment of water use The following traits were studied: Plant height, number of branches, number of pods per plant, number of Seeds of pod, average seed weight, seed yield, and total yield.

Data were collected and analyzed according to the design used and using the Genstat program and compared to the experimental averages of the experimental units using the least significant difference (L.S.D)

Table 1: Some chemical and physical properties of soil experiment.

Soil Texture	Organic matter%	Silt %	Sand %	Caly %	K ppm	NO3 ppm	P ppm	EC (ds/m)	PH
Mix is fertile	1.9	47.3	30.4	33.2	60.8	80.7	23.5	6.87	7.4

Table 2: Effect of Humax concentrations in plant height average (cm) for two of the faba beans

Concentrations Varieties	M0	M1	M2	Rate
Local	58.00	61.03	67.90	62.31
Luzde Otono	71.67	70.57	72.40	71.54
Rate	64.83	65.80	70.15	
LSD 0.05	3.663	2.991	5.181	
	Concentrations	Varieties	Interference	

The level of the probability (0.05).

Results and discussion

The results of table 2 indicate significant differences in plant height due to the effect of concentrations and different types of Humax and their interaction. The increase was positive in increasing concentrations. It is noticed from the table that the Humax concentration of 12g/L gave the highest plant height of 70.15 cm compared to the untreated (Without spraying), where the lowest plant height of 64.83 cm was given, plant height at 12g/L Humax concentration compared to a spray-free treatment may be attributed to the role of these nutrients (acids) and elements in the encouraging effect on the efficiency of enzymes and related pigments in increasing The process of optical synthesis (Kandil, 2007), increasing the plant's vegetative efficiency and encouraging vegetative growth in the early stages of plant growth. The necessary elements in the plant's vital activities as a catalyst in the formation of chlorophyll, cytokromates and organic compounds play an important role in the activation of numerous enzymes as well as in the production of IAA necessary for elongation Cells and plant height (Abu Dahi and Yunis, 1988).

As for the varieties Class superiority, Luzde Otono gave the highest rate of plant height of 71.54 cm while the local cultivar gave its lowest height of 62.31 cm. Luzde Otono is superior to the genetic

differences between the varieties. This is consistent with (Mousawi *et al.*, 2013) Differ in their height in the plant and these results are consistent with what they found (Abou Seeda, 1999).

As well as the overlap between concentrations and varieties noted that the highest rate of plant height 72.40 cm Luzde otono level of M2, the lowest rate of height of the plant was 58.00 cm without treated spraying.

Number of Lateral Branches/plant

The results in table 3 indicate that there are significant differences in the number of branches of the plant by indicating the superiority of the humax spray at the third level (12 g/L) with a significant increase in the number of branches of 20.45 branches. compared to the second and first levels of Hums The average values of the branches of 18.46, 15.37 branches. Plants. This may be due to the content of the hums of the organic substances and the major and minor elements and concentration, which leads to increased processing of the plant elements such as phosphorus, potassium and nitrogen as well as some minor elements such as iron, sulfur, manganese and magnesium Has led to higher efficiency of representation To light and improve growth, and in turn, this leads to a break apical sovereignty and increase the branching plant (Kaya *et al.*, 2005).

Where the Spanish class Luzde Otono. With an average of 20.20 branches. Plant, for the local category, which reached 15.98 branches/Plant.

We also note from the table that there are significant differences in the number of branches and the effect of concentrations and varieties gave the Spanish class Luzde

Table 3: Effect of Humax concentrations in the average number of branches for two of the faba beans

Concentrations Varieties	M0	M1	M2	Rate
Local	13.87	16.22	17.86	15.98
Luzde Otono	16.86	20.71	23.04	20.20
Rate	15.37	18.46	20.45	
LSD 0.05	0.984	0.803	1.391	
	Concen-trations	Varieties	Inter-ference	

Otono at the level of M0 highest value of the number of branches amounted to 23.04 branch, from the overlap equation and significantly higher than the comparison untreated of the local class, which reached 13.87 branches Plant.

Yield Characters

Number of Pods/plant and Number of Seeds/plant

The results of table 4 and 5 indicate that there are significant differences where the Humax concentrations were given in the number of pods . in the plant and the number of seeds in pod, the concentration exceeded 12 g/L reaching 22.56 pod/plants and 7.05 seed/pod respectively while the treated to compare the lowest number of pods and the number of seeds in pod reached

15.24 pod. The seeds and seeds in Faba beans are affected by the inadequate processing of metals in the stage of proliferative development and the spraying of metals on the part. Vegetative during the stage of flower development is a practical way to increase the value offaba beans). (Bargal and Billore, 1992) These results are consistent with what he found (Azzapour *et al.*, 2011; Janeczek *et al.*, 2004; El-Nemr *et al.*, 2012).

The results showed that there were no significant differences between the average species, the number of pods and the number of seeds in pod. This difference may be due to the genetic factors of the varieties. The number of seeds/pods that are affected by genetic factors more than those affected by growth factors.

The number of pods in the plant and the number of seeds in pod showed significant difference in the number of seeds. In the interaction between species and

Table 4: Effect of Humax concentrations in the average number of pods for two of faba beans.

Concentrations Varieties	M0	M1	M2	Rate
Local	16.19	21.20	21.56	19.65
Luzde Otono	14.29	22.86	23.56	20.24
Rate	15.24	22.03	22.56	
LSD 0.05	3.485	2.846	4.929	
	Concen-trations	Varieties	Inter-ference	

Table 5: Effect of Humax concentrations (Humax) In the average number of seeds in pod /Plant For two of the faba beans .

Concentrations Varieties	M0	M1	M2	Rate
Local	4.00	6.03	6.53	5.52
Luzde Otono	4.97	6.33	7.57	6.29
Rate	4.48	6.18	7.05	
LSD 0.05	1.485	1.213	2.101	
	Concen-trations	Varieties	Inter-ference	

concentrations, Luzde Otono gave the highest number of pods and seeds respectively, 23.56 branches/ Plant, 7.57 seed / pod of the overlap equation and significantly higher than the treated of comparison to the Spanish variety, where it reached (14.29) pod. The number of pods in the plant and the number of seeds in pod (Ahmed *et al.*, 2008; Li-Juan, 1988).

Weight 100 seeds (g)

The results of table 6 showed a significant effect of spraying with Humax in the weight of 100 seeds. The treatment was given at a concentration of 12 g/L, the

highest rate of 191.5g compared to the comparison treatment, which gave the least significant difference of 150.6g. This may be due to the fast supply of nutrients during the period of full grain. Naturally growing without the comparator, which gave the lowest rate, and these results are consistent with what they found. As well as the content of the humax of the major elements and micro-potassium such as raising the rate of chlorophyll in the plant and thus increase the efficiency of photosynthesis and efficiency of the use of water and open and close the gaps and delay the aging of the plant as well as increased paper area and reduce evaporation contributed significantly to raise the rate of yield and biological. The effect of spraying of humax in the components of the plant (number of pods seeds, average seeds of pod and weight of 100 seeds) was directly reflected in the green yield and the dry grain yield of the plant. Thus, the humax spray significantly increased the yield without treated Spraying, and spraying at 12g/L resulted in a significant increase compared to the treatment (without spraying). These results are consistent with what he found (Janeczek *et al.*, 2004); Bargal and Billore, 1992).

Table 6: Effect of Humax concentrations in the average weight of 100 seeds (g) for two of Faba beans

Concentrations Varieties	M0	M1	M2	Rate
Local	155.5	159.0	191.0	168.5
Luzde Otono	145.6	172.5	192.1	170.1
Rate	150.6	165.7	191.5	
LSD 0.05	20.86	17.03	29.50	
	Concen-trations	Varieties	Inter-ference	

The concentration of concentrations and the interaction between concentrations and varieties gave the Spanish class Luzde Otono the highest value of the weight of 100 seeds (192.1g) of the overlap equation and significantly superior to the comparison treatment of the Spanish class Luzde Otono and the M2 level It reached (145.6)g.

Table 7 shows that the total effect was significant in concentrations, varieties and overlapping between concentrations and varieties, with significant differences in addition to different levels of Humax.

The level of 12g/l gave the highest mean yield of 2642 kg. compared to the comparison treatment of 1698 kg. This may be attributed to the increased role of the humax components of organic substances (DUBAL) and the large and small elements in the processing and the good supply of nutrients, which show their effect on the characteristics of growth and yield and agree with the

results of many researchers (Shaaban and Okasha, 2007; El-Bassiony *et al.*, 2010). The Spanish class (Luzde Otono) gave the highest average yield of 2812 kg compared to the local category, which amounted to 1667 kg. This is due to the effect of Humax and its components of the major and minor elements.

Table 7: Effect of Humax concentrations in the average total of kg for two of Faba beans.

Concentrations Varieties	M0	M1	M2	Rate
Local	1264	1671	2067	1667
Luzde Otono	2133	3086	3217	2812
Rate	1698	2379	2642	
LSD 0.05	269.7	220.2	381.4	
	Concen-trations	Varieties	Inter-ference	

We also note from the table that there are significant differences in the weight of the total amount kg. The concentration of the concentrations and the interaction between the concentrations and varieties gave the Spanish class Luzde Otono the highest value of the average of 3217 kg. from the overlap equation and with a significant superiority over the comparison treatment of the local variety, where the average yield was 1264 kg.

Total Yield (biological Yield) ton

The results of table 8 indicate a significant increase in this characteristic by adding different levels of Humax, where the concentration gave 12g/L above the average biological yield of 13.82 tons. Compared to the comparative treatment of 9.77 tons. The reason may be due to the content of the humax of the major and minor elements such as potassium and increase the chlorophyll rate in the plant and thus increase the efficiency of photosynthesis and the efficiency of the use of water and open and close the gaps and delay the aging of the plant as well as increase the area Paper and reduce evaporation It contributed significantly to raising the rate of yield and yield biological weapons.

Substantial differences were also found for the dry ingredients of the varieties (local, Spanish type Luzde Otono), where the Spanish category gave the highest rate of dry matter production (12.53) tons. Compared to the local category which reached (11.70) tons.

With reference to table 8, the interaction coefficients between the concentrations and the cultivars achieved a significant difference. The treated of the Spanish cultivar at the M2 level gave the highest dry yield of 14.31 tons. While the comparative treatment of the local category

gave the lowest yield of 9.74 tons.

Table 8: Effect of Humax concentrations on the average of the biological yield of 1 ton of Faba beans

Concentrations Varieties	M0	M1	M2	Rate
Local	9.74	12.02	13.34	11.70
Luzde Otono	9.79	13.49	14.31	12.53
Rate	9.77	12.75	13.82	
LSD 0.05	0.849	0.849	1.201	
	Concen- trations	Varieties	Inter- ference	

The biological agent represents the leaves, pods and seeds, which represent the bulk of the components of the crop, explaining the increase to the superiority of this combination in all studied traits. We conclude from the study that spraying with organic acid at a concentration of 12 g/L has given a significant increase in the studied traits as well as the Spanish variety. Therefore, it is recommended to use Humax with a concentration of 12g and the Spanish variety for the purpose of increasing.

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