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THE RESPONSE OF COWPEA PLANT *VIGNA UNGUICULATA* L. WHEN EXPOSED IT TO AMINO ACIDS AND BORON AND THE ADDITION OF PHOSPHORUS TO SOIL IN SOME VEGETATIVE AND PRODUCTIVE CHARACTERISTICS.

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Abstract

The research was conducted in the department of horticulture, which belong to the Directorate of Agriculture of Najaf Governorate, during the agricultural season 2017 and the spring and autumn berries to study the effect of spraying amino acids and the addition of phosphorus and boron in the growth and yield of cowpea (*Vigna unguiculata* L.). The experiment included four levels of total amino acids 0, 2, 4, and 6 ml. The second factor was the addition of phosphorus at the level of 160 kg P_2O_5, ha-1 and boron at 2 gl^{-1}. Addition of phosphorus + boron and the same levels in addition to the treatment of the comparison and the experiment was carried out as a global experiment, Full (CRBD) And three replicates were compared to the averages using the multimodal Duncan test at the 0.05% probability level.

The most important results reached can be summarized as follows:

Vegetative growth characteristics: The results showed the superiority of the amino acid spray at the level of 6 ml. 1 - Significant increase in the height of the plant to 42.10 and 53.80 cm and the content of the leaves of total chlorophyll to 73.02 and 78.50 mg. And 44.50 knots, respectively. On the effect of fertilizer treatments, phosphorus + boron treatment showed a significant increase in plant height of 43.85 and 50.44 cm and leaf content of total chlorophyll to 71.94 and 77.70 mg. 1 - The number of bacterial nodes to 20.40 and 49.00 knots. Plants - 1 of the spring and autumn berries on the and by analogy to the treatment comparison, which showed a decrease in the studied traits. The interaction between the two factors of the experiment had a moral effect in all the attributes of growth.

Key words : Amino acids, *Vigna unguiculata L.,* Boron, Phosphorus

Introduction

The Leguminosae (Fabaceae) family consists of 35 species and about 300 species, divided into three groups: Subfamilies *Caesalpinoideae, Mimosoideae* and *Papilionoideae*. However, some other sources, including the Iraqi Botanical Encyclopedia, divide this plant group as three separate families: *Mimosoideae, Papilionoideae* and *Caesalpinoideae* (Musawi, 1987).

It is believed that Central Africa is the original home of the cowpea and is spread in the warm and temperate regions of the world, and plants known to withstand the hot and dry environmental conditions as well as tolerance to salinity and other crops for the pulmonary helps improve Natural soil properties of plants that stabilize atmospheric nitrogen in soil (Pradeep and Elamathi, 2007).

Amino Acids have a positive role in stimulating growth and increase production, which is no less important than the positive role of humic compounds.

This is proven in light of more than one study. It was found that spraying plants with acid acids would increase the speed of vegetative growth, Chlorophyll increases production and improves its quality as well as making plants more resistant to tolerating some environmental stresses (Faten *et al*., 2010).

Phosphorus is one of the main elements in plant nutrition. It enters into the growth, formation and division of plant cells and the formation of seeds. Phosphorus enters many compounds and biological reactions. It enters the structure of phospholipids, which plays an important role in building the cell's cytoplasm. Constructing nucleic acid and transfer of genetic traits via DNA and RNA in addition to the composition of energy compounds such as ADP and ATP (Sahaf, 1989 and Verma, 2007)

Boron is usually present in limited quantities, where it is absorbed in the plant in the form of BOOR (Zahoor and others, 2011), which is one of the most important mineral elements of plant nutrients because it has a role in controlling the degree of absorption of water from the soil and the movement of sugars inside the plant to storage places Its effect is on the absorption of certain nutrients such as nitrogen, potassium and calcium (Kumar et al., 2006). Its importance is in the synthesis of plant hormones such as oxins. Boron helps to germinate the pollen and the growth of germination tubes and the need of the plant is greater in the flowering and fruiting stage. Win seeds and fruits (Bayati and Hanchel, 2016)

Materials and Procedures

Implementation of the experiment and service processes

The experiment was carried out during the agricultural season (2017) and the spring and autumn berries in the Directorate of Agriculture of Najaf / Department of Plant Production/Division of Horticulture and Forestry.

Soil samples were taken before planting to study some physical and chemical properties at different depths of 30-0 cm from different locations of the field. They mixed homogenous mixture and exposed for 24 hours under the sun and were sifted after grinding with a 2 mm slotted sieve. One sample was randomly taken and analyzed Laboratories of the Department of Agriculture Najaf the table (1) shows the results of laboratory analyzes of soil field.

Table 1 : Some physical and chemical properties of soil before planting

Soil	Unite	Quantity
Clay	%	17.9
Silt	%	25.9
Sand	%	58.0
Soil texture		**Loam soil**
EC	M-1 . Ω^{-1}	3.8
PH		7.7
N	mg. Kg^{-1}	39.4
P	mg. Kg^{-1}	8.1
K	mg. Kg^{-1}	233
Organic matter	%	0.1

The seeds were planted directly in the field by 2017/3/15 for spring and 2017/8/15 autumn, and the plants were irrigated immediately after planting by drip irrigation and repeated irrigation whenever the need of plants was required depending on the prevailing environmental conditions and in accordance with what is recommended with all the service operations (Matloob and Others, 1989)

Transactions and experimental design

The trial consisted of two treatments: the first treatment consisted of four levels of amino acids (6, 4, 2, 0) ml. L1 - and the symbol of A3, A2, A1, A0 respectively. The source of amino acids is TARAVER AMIFOL solution, which contains acids Total amino acid by 20% and free amino acids by 11.5% (Appendix 1)

The second treatment consists of the following: the addition of phosphorus fertilizer at the level of 160 kg per hectare to the soil (samurai and others, 2013) and a symbol of F1 with two additional factors at seed planting and one month after the addition of the first workshops of boron element on the vegetative and The level of 2 g / L1 - according to the recommendation of the company produced by two Rashtin during the first growth season after the formation of 5-4 real and second pages after 15 days of the first tile and symbol with the symbol F2, while the third factor is a combination of phosphorus at the level of (160) kg. Ha-1 + boron element and at 2 g / l-1 level and symbol with F3 and comparison treatment with distilled water Her F0. (Dujoe, 1996)

The experiment was designed as a Randomized Complete Block experiment

Design (R.C.B.D). The data were analyzed statistically using the Duncans Muliples Range test between the averages and the probability level (0.05) (Alrawi and Khalafalaa, 2000) and used the Gen stat software to analyze data.

Measured attributes

Plant height (cm)

The plant was measured by the metric ruler from the soil surface to the top of the plant.

Number of plants

Three plants were randomly selected from each experimental unit and the number of leaves per plant was calculated.

Leaf content of chlorophyll (mg. 100 g^{-1} liter)

The total color of chlorophyll in the leaves was estimated by the acetone extraction method. A 0.5 g sample was taken from the whole leaves of each experimental unit and placed in a ceramic vase. 10 mL of acetone was added to the concentration of 80% and crushed well until the color of the tissue was white. Added 10 ml of acetone and crushed once. The sample was then filtered to separate the dye solution from the paper tissue with a filter paper. The mixture was then filtered to separate the dye solution from the paper tissue with a whattman no.1 and the spectrophotometer was used to measure the optical absorption of pigments at two wavelengths, 646 and 663 nanometers (Al-Sahaf, 1989) and applied the following equation to calculate the total amount of chlorophyll in the unit (mg. / Dye / 100 g1 - fresh paper texture)

$$\text{Total chlorophyll} = 20.2 \times D(645) + 8.02 \times D(663) \ (V / W \times 1000)$$

Number of bacterial nodes formed on plant roots

Calculated after 15 days of addition of phosphorus fertilizer and five plants from each experimental unit and then taking the rate.

Protein ratio in seeds

Nitrogen ratio was estimated by the seeds in Micro Kjeldhal and then the percentage of nitrogen was multiplied by 6.25 as indicated in A.O.A.C (1980) to obtain the percentage of protein in the seeds.

Seed content of nitrates

Nitrates were estimated in the manner described by Cataldo *et al*. (1975) by grinding a sample of dry seeds and taking 0.1 g of them into a test tube and adding 10 ml of distilled water with constant shaking. The tubes were then placed for 1 hour in the incubator at 45 ° C Horizontal rocking for 15 minutes and then transferred to the centrifuge 500 cycles / min followed by 0.2 mL of suspense and 0.8 mL of salicylic acid and sulfuric acid concentration of 5% (weight / volume). After 20 minutes 19 ml of $NAOH_2$ was added to the previous solution and then recorded using a] Spectrophotometer and wavelength along 410 nm

Results and Discussion

Plant height (cm)

Table 2 shows that spraying of amino acids at 6 ml^{-1} level has a significant effect on the increase of plant height by 45.10 and 53.80 cm compared with the comparison treatment, which gave the lowest rate of 39.62 and 44.19 for spring and autumn spring, respectively.

As for the effect of fertilizer treatments, the phosphoric acid + boron composition significantly exceeded the plant height by 43.85 and 50.44 cm compared with the non-treated plants which gave the lowest rate of 40.97 and 47.64 cm for both cultivars respectively

While the overlap between the spraying of amino acids and toxicity factors the moral effect of the studied recipe, the superiority of spraying amino acids at the level of 6 ml. L1 - with the combination of fertilizers of phosphorus + boron, which did not differ significantly from the same concentration of amino acids and Boron factor increase in plant height, reaching 47.62 And 46.74 cm, respectively, compared with the comparison treatment, which gave the lowest rate of 38.49 for the spring crop. In the autumn loop, the interaction between spraying of amino acids remained at 6 ml. L1 with the phosphorus + boron combination was significantly higher at 56.77 cm, while in the comparison treatment it was 43.33 cm and the amino acid spray treatment was 2 ml. L1 and phosphorus to 43.55 cm.

Table (2) : Effect of spraying amino acids and fertilizer treatments in plant height (cm) for spring and autumn spring

Autumn					Spring					
Effect of spraying amino acids	Implementation of fertilizers				Effect of spraying amino acids	Implementation of fertilizers				Effect of spraying amino acids
	Boron & Phosphorus	Boron	Phosphorus	control		Boron & Phosphorus	Boron	Phosphorus	control	
44.19 d	45.00 d..f	44.11 Ef	44.30 d..f	43.33 f	39.62 d	41.01 de	39.56 Fg	39.42 fg	38.49 G	**control**
45.50 c	46.44 d	46.11 de	43.55 f	45.89 de	41.19 c	42.07 cd	42.10 Cd	40.52 ef	40.08 Ef	**2**
51.83 b	53.55 b	51.89 B	52.77 b	49.11 c	43.19 b	44.70 b	42.56 C	42.92 c	42.57 C	**4**
53.80 a	56.77 a	53.11 B	53.11 b	52.22 b	45.10 a	47.62 a	46.74 A	43.30 c	42.75 C	**6**
	50.44 a	48.81 B	48.43 bc	47.64 c		43.85 a	42.74 B	41.54 c	40.97 C	**Effect of Implementation of fertilizers**

* The rates that carry the same alphabet are not significantly different from each other according to the Duncan Multiplicity test at a probability level of 0.05.

Number of leaves (leaf .1)

The results of Table (3) showed the superiority of the spray of amino acids at the level of 6 ml1. The increase in the number of papers reached 58.68 and 35.60 sheets. Plants1 compared to the comparison treatment, which decreased to 45.63 and 24.64 sheets. Plant-1 for the bride in succession.

The same table showed that the fertilizer coefficients had a significant effect on the studied properties. The fertilizer combination showed phosphorus + boron, giving it the highest rate of 60.26

and 32.22 sheets. Compared to the treatment of the comparison, which gave the lowest rate of 44.92 and 26.68 leaf plant1 - for the spring and autumn spring sequentially.

The results indicated in the same table that the interaction between spraying amino acids and fertilizer treatments had a moral effect in the studied character as it gave the level of 6 ml.-1 of the amino acids and the combination of fertilizers of phosphorus + boron the highest average of 67.75 leaf plant 1 - in comparison with the treatment of comparison and treatment of phosphorus which The lowest average was 41.05 and 40.87 leaves. The plants 1 - sequentially for the spring crop, while in the autumn loop, the level of 6 and 4 ml.lter1 of amino acids with the combination of phosphorus + boron and the same level of amino acids with boron only significantly increased Number of leaves To 40.11, 37.55, and 39.22 leaf-1, respectively, compared to non-treated plants, which gave the lowest rate of 23.22 leaf plant-1.

Table 3 : Effect of spraying amino acids and fertilizer combination in the number of leaves per plant (leaf .1 - plants) for spring and autumn spring

Autumn					**Spring**					
Effect of spraying amino acids	**Implementation of fertilizers**				**Effect of spraying amino acids**	**Implementation of fertilizers**				**Effect of spraying amino acids**
	Boron & Phosphorus	**Boron**	**Phosphorus**	**control**		**Boron & Phosphorus**	**Boron**	**Phosphorus**	**control**	
24.64 d	25.44 ef	24.77 F	25.11 f	23.22 f	45.63 d	51.43 gh	49.16 h	40.87 j	41.05 J	**control**
25.34 c	25.78 ef	23.78 F	26.50 d..f	25.28 f	52.27 c	58.50 cd	55.02 ef	49.39 h	46.18 I	**2**
31.72 b	37.55 a	30.44 C	29.44 cd	29.44 cd	54.11 b	63.37 b	56.22 d..f	53.74 fg	43.10 J	**4**
35.60 a	40.11 a	39.22 A	34.28 b	28.79 c..e	58.68 a	67.75 a	60.60 c	57.02 de	49.33 H	**6**
	32.22 a	29.55 B	28.83 b	26.68 c		60.26 a	55.26 b	50.26 c	44.92 D	**Effect of Implementation of fertilizers**

* The rates that carry the same alphabet are not significantly different from each other according to the Duncan Multiplicity test at a probability level of 0.05.

The content of the leaves of total chlorophyll (mg) 100 g.

The results of Table (4) showed a significant effect of different levels of different amino acids in the ratio of chlorophyll and the level of 6 ml. 69.25 mg, 100 g / 1 liter weight for spring and autumn spring, respectively

Table 4 : Effect of spraying amino acids and fertilizers in chlorophyll ratio in plant (100 gm, 1 g^{-1}) for the spring and autumn spring.

Autumn					**Spring**					
Effect of spraying amino acids	**Implementation of fertilizers**				**Effect of spraying amino acids**	**Implementation of fertilizers**				**Effect of spraying amino acids**
	Boron & Phosphorus	**Boron**	**Phosphorus**	**control**		**Boron & Phosphorus**	**Boron**	**Phosphorus**	**control**	
69.25 d	72.31 gh	67.26 J	70.70 hi	66.73 j	64.66 c	67.27 d..g	63.44 hi	65.39 f..i	62.53 I	**control**
73.21 c	75.97 cd	72.05 gh	73.27 fg	71.54 i	67.84 b	72.14 b	64.20 g..i	68.56 c..f	66.46 e..h	**2**
75.94 b	80.65 a	74.90 de	74.19 ef	74.00 ef	68.77 b	70.84 bc	68.90 c..e	69.77 b..d	65.56 f..i	**4**
78.50 a	81.86 a	77.96 b	77.16 bc	77.03 bc	73.02 a	77.50 a	72.27 b	71.39 bc	70.90 b..c	**6**
	77.70 a	73.04 c	73.83 b	72.33 d		71.94 a	67.20 c	68.78 b	66.36 C	**Effect of Implementation of fertilizers**

* The rates that carry the same alphabet are not significantly different from each other according to the Duncan Multiplicity test at a probability level of 0.05.

The same table shows that the fertilizer treatments have a significant effect on the increase of the chlorophyll ratio in the plant. The phosphoric acid + boron combination has exceeded the highest rate of 71.94 and 77.70 mg. 100 g. 1 - compared with the comparison treatment which gave the lowest rate of 66.36 and 72.32 mg. G-1 for the bride in succession.

As for the interference, it is noted from the same table that the amino acid and fertilizer treatments showed the significant effect of the total chlorophyll content and gave the plants that sprayed the amino acids at 6 ml1. The phosphorus / boron sulfate combination was the highest of 77.50 mg. In the autumn loop, the spray treatment with amino acids remained at 6 ml. -1 with the phosphoric acid + boron combination significantly higher to 81.86 mg. 100 g -1, which did not differ significantly from the treatment of ammonia at 4 ml. It was 80.65 mg The comparator gave the lowest rate of 62.53 and 66.73 mg

Number Rhizobium (Node .1-Plants)

The results of Table (5) showed that there was no significant difference between the levels of amino acid spray for the spring crop. In the autumn loop, the level of 6 ml1 was significantly higher than the bacterial mean of 44.50 knots. Hit 23.80 knots.

It is noted from the results of the same table that the highest number of bacterial nodes for treatment of phosphorus + boron sulfate aggregation was 20.40 knots. The plants were 1-spring seed, while the phosphorus + boron and phosphorus phosphorus combination exceeded the highest mean of 49.00 and 46.20 knots. Respectively, while the comparison treatment gave the lowest rate of 10.08 and 15.80 knots.

The same table shows that there is a significant overlap between the spraying of amino acids and fertilizer treatments for both laurins, which exceeds 6 ml. Of the spraying of amino acids and phosphorus + boron sulfate at the highest rate of 25.00 and 68.30 knots. The lowest rate was 6.7 and 5.00 for spring and autumn spring, respectively.

Table 5 : Effect of spraying amino acids and fertilizer treatments in the number of rhizomes of plants (knot - plants - 1) for spring and autumn spring.

Autumn					Spring					
Effect of spraying amino acids	Implementation of fertilizers				Effect of spraying amino acids	Implementation of fertilizers				Effect of spraying amino acids
	Boron & Phosphorus	Boron	Phosphorus	control		Boron & Phosphorus	Boron	Phosphorus	control	
23.80 b	40.00 a..d	18.30 c..e	31.70 b..e	5.00 e	11.25 a	13.30 ab	12.30 ab	12.70 ab	6.70 B	**control**
28.00 b	37.70 a..e	12.70 De	46.70 a..d	15.00 de	15.40 a	23.30 ab	15.70 ab	14.30 ab	8.30 Ab	**2**
35.80 ab	50.00 a..c	17.70 c..e	50.00 a..c	25.70 b..e	14.60 a	20.00 ab	18.70 ab	9.70 ab	10.00 Ab	**4**
44.50 a	68.30 a	35.30 a..e	56.70 Ab	17.70 c..e	18.33 a	25.00 a	12.30 ab	20.70 ab	15.30 Ab	**6**
	49.00 a	21.00 B	46.20 A	15.80 b		20.40 a	14.75 ab	14.35 ab	10.08 B	**Effect of Implementation of fertilizers**

* The rates that carry the same alphabet are not significantly different from each other according to the Duncan Multiplicity test at a probability level of 0.05.

The importance of amino acids in the improvement of the characteristics of vegetative growth of its role in many of the vital events occurring within the plant tissues because of its effects in the construction and stimulation of enzymatic systems and enzyme accompaniments and various Purine & Pyrimidine bases and increase the composition of DNA and RNA (Francesco and Michele, 2009) And the production of plant hormones such as kaoxins, gerlins and cytokines, which promote the increase of cellular divisions and elongation of cells, and a positive reflection of this increase in plant height and number of leaves (Kazem and Kazim, 2013)

On the other hand, the spraying of amino acids and their absorption directly within the paper cells have contributed to the increase of the food industry by increasing the efficiency of photosynthesis and carbonation, which led to the increase of food processed in the plant and its accumulation as carbohydrates (Tayeb, 2012) or the role of these acids in increasing the content (El-Shabasi, 2005). This was reflected in an increase in plant height and number of leaves (Table 2 and 3). The reason for the role of amino acids, which is a source of nitrogen processing (Abd El- Aziz and Balbaa, 2007) This increases the plant content of chlorophyll (Table 4), which converts photovoltaic energy to chemical energy, which invests in increasing the production of the number of leaves (eg, chlorophyll, Table 3), which resulted in the formation of a large vegetative group that contributed to the increase in the nitrogen component, which stimulated the plant to increase the bacterial nodes formed on the roots (Table 5).

Phosphorus is an essential component in large quantities where metabolism is high and cellular division is rapid (Dokora and Ndakidemi, 2007). This element is vital in the formation of ATP, which transmits energy, which increases the efficiency of photosynthesis and increases the size and number of cells. The increase in the height of the plant and the number of leaves (Table 2 and 3) are reflected positively.

On the other hand, the addition of phosphorus has encouraged the formation of the contract Rhizobium (Table 5). This is in line with Munns (1977). The Rhizobium contract requires more phosphorus abundance than the plant needs to grow in the legume family. Nitrogen fixation (Robson *et al*., 1981). In addition, it reduces the formation of the contract which causes a decrease in the nitrogen fixation. This is reflected negatively in plant growth, in addition to its role in increasing bacterial co-existence with the leguminous family plants (Aliyu, 2011) In several components within the cell Such as photosynthesis, respiration, energy storage and transport, cell division and expansion, which stimulated plant growth and development (Bibi *et al*., 2005).

As for boron, it is very important to transfer sugars or photosynthetic materials to areas of effective growth (membranous tissue) through the cell membrane to the parts of the plant, which enters the metabolism of carbohydrates, acetic acid and phenols, and building DNA (Dordas and Brown, 2001) Increases plant height and number of leaves.

On the other hand, legume plants have the ability to stabilize atmospheric nitrogen by Rhizobium bacteria, which are in the form of a radical contract for the production of nitrogen taken into the atmosphere and converted to its ready form in the plant, which increases the nitrogen content in the plant, which represents the important part in the building of amino acids and nuclear and then Proteins, Enzymes and Composition of Chlorophyll (Verma and Verma, 2010)

On the other hand, the lack of boron causes an abnormal system in the form and size of the bacterial contract Rhizobium and its distribution affects the content of the diabetes protein in the wall of this contract, which causes an abnormal distribution of Polygalacturonan and Rhamogalacturonan, which affects the process of symbiosis and nitrogen stabilization (Verma and Verma, 2010)

Protein ratio in seeds (%)

The results of Table (6) showed a significant effect of acidic acid spraying in the ratio of seeds of protein above 6 ml. With the highest rate of 23.43 and 23.51% compared to the lowest rate of 20.88 and 21.12% for spring and autumn berries. Respectively.

Table 6 : Effect of spraying of amino acids and fertilizer treatments in the percentage of protein in seeds (%) for spring and autumn spring.

Autumn					Spring					
Effect of spraying amino acids	Implementation of fertilizers				Effect of spraying amino acids	Implementation of fertilizers				Effect of spraying amino acids
	Boron & Phosphorus	Boron	Phosphorus	control		Boron & Phosphorus	Boron	Phosphorus	control	
21.12 d	21.33 g	21.13 H	21.11 H	20.92 i	20.88 d	21.15 g	20.92 h	20.86 h	20.58 I	**control**
21.84 c	21.96 e	21.86 Ef	21.81 Ef	21.71 f	21.70 c	21.88 e	21.71 f	21.65 f	21.56 F	**2**
22.75 b	22.94 c	22.98 C	22.61 D	22.48 d	22.57 b	22.82 c	22.73 c	22.44 d	22.29 D	**4**
23.51 a	23.86 a	23.40 B	23.44 B	23.33 b	23.43 a	23.79 a	23.36 b	23.29 b	23.27 B	**6**
	22.52 a	22.34 B	22.24 C	22.11 d		22.41 a	22.18 b	22.06 c	21.93 D	**Effect of Implementation of fertilizers**

* The rates that carry the same alphabet are not significantly different from each other according to the Duncan Multiplicity test at a probability level of 0.05.

The same table showed that the fertilizer transactions had a significant effect in the same capacity. The phosphorus + boron combination was highest with 22.41 and 22.52% compared with the comparison plants which decreased to 21.93 and 22.11% for both cultivars, respectively.

The effect of the interaction between spraying of amino acids and fertilizer treatments was higher than 6 ml. Of spray of amino acids and phosphorus + boron composition significantly for the percentage of protein in seeds was 23.79 and 23.86% compared with untreated plants which decreased to 20.58 and 20.92 % For spring and autumn spring, respectively.

Seed content of nitrates (mg. Kg dry weight)

The results of Table (7) showed that the plants that were sprayed at 6 ml^{-1} level of amino acids were significantly higher in nitrate seed content, which reached 25.04 and 25.69 mg. Kg dry weight by comparison with the lowest rate of 15.19 and 15.05 Mg /kg dry weight for spring and autumn spring, respectively.

The same table shows that the fertilizer transactions had a significant effect on the content of the seeds of nitrates, which exceeded the combination of fertilizers of phosphorus + boron the highest content of nitrates of 24.94 mg. Kg dry weight of the spring-spring and in the autumn loop has exceeded each of the combinations of fertilizer combination of phosphorus + Boron and boron treatment only increased the content of nitrates to 21.71 and 21.56 mg. Kg dry weight -1, respectively, compared to untreated plants which decreased to 18.08 and 18.17 mg. Kg dry weight-1 respectively.

The interaction between the spraying of amino acids and fertilizer treatments had a significant effect on the increase in the content of the seeds of nitrates, which exceeded the spray of amino acids at the level of 6 ml. L1 - with the combination of fertilizers of phosphorus + boron in the increase in the studied capacity, which amounted to 28.99 and 30.19 mg. Dry-1 compared to comparison plants, which decreased to 11.17 and 12.07 mg. Kg dry weight for the two berries respectively.

Table 7 : Effect of spraying amino acids and fertilizer treatments Nitrate ratio in the corneas of the plant (mg. Kg dry weight) for spring and autumn spring.

Autumn					Spring					
Effect of spraying amino acids	Implementation of fertilizers				Effect of spraying amino acids	Implementation of fertilizers				Effect of spraying amino acids
	Boron & Phosphorus	Boron	Phosphorus	control		Boron & Phosphorus	Boron	Phosphorus	control	
15.05 c	16.63 gh	16.29 Gh	15.22 H	12.07 i	15.19 c	19.73 cd	15.83 ef	14.03 fg	11.17 G	**control**
20.94 b	22.85 cd	21.45 c..e	20.89 E	18.56 f	21.69 b	23.34 bc	23.31 bc	21.31 cd	18.79 De	**2**
20.28 b	17.18 fg	21.96 c..e	20.71 E	21.26 de	23.45 ab	27.68 a	23.27 cd	21.13 cd	21.71 Cd	**4**
25.69 a	30.19 a	26.54 B	22.83 cd	23.19 c	25.04 a	28.99 a	27.11 ab	23.42 c	20.65 Cd	**6**
	21.71 a	21.56 A	19.91 B	18.77 c		24.94 a	22.38 b	19.97 c	18.08 D	**Effect of Implementation of fertilizers**

* The rates that carry the same alphabet are not significantly different from each other according to the Duncan Multiplicity test at a probability level of 0.05.

On the other hand, the spraying of amino acids or the high content of nitrogen in the plant has positively affected the manufacture of proteins and collected in the seeds, which led to an increase in the proportion of protein inside (Table 6).

This is due to the high content of the seeds of nitrates to transfer from leaves to seeds as well as the lack of nitrogen in the leaves and increase in seeds, and the amino acids transmitted through the bark in the development of seeds and horns, which increases the content of nitrates during the stages of development of the fetus (Hua-Jing, 2007).

Kindle is due to the increased nitrogen content of the plant which directly contributed to the accumulation of this element, leading to increased nitrate content in seeds (Table 7).

Phosphorus also helped to increase the formation of the bacterial nodes Rhizobium (Table 5), which resulted in higher nitrogen content in the plant (Singh *et al*., 2011). This was reflected in increased protein content in seeds (Table 6).

On the other hand, the boron stimulates the formation of the bacterial contract Rhizobium, which produces the nitrogen taken from the atmosphere and converted to form ready in the plant through small plants for the production of the hormone enters the boron in the formation of the bonds of the cross-membrane surrounding the contract and rich Cis-diol groups after infected root hairs Then grow and multiply (Bolanos et al., 2004) This increases the protein content in seeds (Table 6)

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