Calculate changes of bean germination process in the presence of various compounds of biological fertilizer Humic acid mixed with micro and macro elements

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Abstract*:* Biological products that are organic fertilizers include different types of microorganisms have the ability to convert the elements of the form unavailable to available form through biological processes have them. Biological fertilizers increased microbial activity of microorganisms and intensify them to make food available in forms which are easily absorbed by the plant are. Huomic acid as an organic acid from humus and other natural resources through the hormonal effects of improved nutrient absorption and increased root and shoot biomass is. Therefore, it seems, especially biological fertilizers Huomic acid increased root biomass, increased solubility of nutrients in the soil and can increase the absorption is increased yield. Germination of seeds is a complex physiological process triggered by imbibitions of water after possible dormancy mechanisms have been released by appropriate triggers. Organic matter due to the beneficial effects on physical properties, chemical and biological soil has an important role in soil fertility, plant nutrition and crop yield have increased. Huomic acid humus material that is part of the property due to the complex hormonal and audience an important influence in increasing crop production and supply is balanced. Effect of micro-fertilizers in the new debate is the speed and germination. Huomic micro elements like iron and acid compounds or elements Clat Huomic complete micro or treatment Huomic Clat, complete micro and macro elements on the speed of germination and affect. These substances cause a change in speed and percentage germination for causing water absorption and osmotic regulation are. The purpose of this experiment was how to effect of micro fertilizers on germination. After three days of testing, counting and investigation was initiated seeds results indicate that the five treatments applied after the third day: 10 numbers in the control of the number 5 seed was germinated but in treatment Huomic Clat magnesium and calcium from number 10 seed did not do any germination.

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1. INTRODUCTION

Biological products that are organic fertilizers include different types of living cells and microorganisms capable of converting nutrients inaccessible form accessible form through biological processes have the (32). This material increases the number Microorganisms and microbial activities increased to make food available in the form which are easily absorbed by plants are (27).

Huomic acid as an organic acid from humus and other natural resources through the hormonal effects of improved nutrient absorption and increased biomass and root shoots are (5). Is investigated in many Huomic acid reduces the need for fertilizers and improved ability to use them has been. In many cases, if the soil organic matter is enough to require chemical fertilizers can be eliminated completely, because the soil through microbiological processes and plant nutrient producing humus need to be resolved (25).

Huomic acid on growth and root shoots of wheat cultivars were investigated. The results showed that the ratio of root to leaf area affected was significantly increased (5). In similar study (11) Huomic acid increases in root growth was lettuce .

Research (13) Four Huomic acid levels (0, 10, 20 and 30 g m) and four levels of sulfur (0, 125, 250 and 375 g m) on yield components and macro nutrients absorbed by plant spinach were studied. Huomic acid intake to yield 29% over the control (1810 g m) increased. Huomic acid intake increased dose, a significant increase in plant nitrogen was obtained. Huomic acid and sulfur significant effect on emergence rate and number of leaves did not. Increased acid consumption Huomic absorptions increased macro elements so that for phosphorus,

potassium, calcium and magnesium were 0.56, 6.30, 1.33 and 0.55kg in wet weight was spinach .

However, there are many studies that the ability of humus material in growth of aerial parts of different species in different growing conditions has been reported (19, 24 and 25). However, the mechanism of reaction to these substances is less known. Likely that the effects of acid Huomic through its early roots and activities - and nitrate divided between plant root and shoot growth may alter the starting Saytvknyn specified in division, and ABA poly amine root and shoot of is the effect on shoot growth (24). It seems that Huomic acid intake increased the enzyme activity was increased nitrate accumulation in the shoot and the root is reduced. The simultaneous significant increase in concentration and poly amine cytokine in shoot is observed (19 and 24) .

It seems that taking acid soil application and foliar application Huomic different results regarding the absorption of minerals from the soil to be (19 and 24). A Present (17) Huomic acid on plant growth and nutrient uptake by wheat at different concentrations of salt were studied. Huomic solid acid (0, 1 and 2 kg) one month before planting the soil was added and the acid liquid Huomic (0, 1 / 0 2 / 0 percent) in two stages 20 and 35 days after emergence of solutions were sprayed. Salinity reduces crop growth and dry weight loss and absorption of nutrients such as nitrogen and magnesium Krdd. Soil application of solid acid intake increased Huomic nitrogen and liquid intake that increases the absorption of phosphorus, potash, sodium manganese, zinc and cobalt were. However Huomic acid intake by increasing root growth was increased nutrient absorption (25, 27).

a. GERMINATION OF SEEDS

The seed of a higher plant is a small package produced in a flowering plant or gymnosperm containing an embryo and stored food reserves. Under favorable conditions rapid expansion growth of the embryo culminates in rupture of the covering layers and emergence of the radicle. Radicle emergence is considered as the completion of germination. The definition that a visible protrusion of radicle tip is the completion of germination is not only a definition issue of seed physiologists. This transition point is also characterized by the loss of desiccation tolerance and this is a molecular checkpoint, a developmental molecular switch from the germination program to the seedling program. The seed looks apparently dead. In fact, even with biochemical tests for the metabolic processes we associate with life (respiration, etc.) the rate of these processes is so slow that it would be difficult to determine whether there really was anything alive in a seed. Germination is the resumption of growth of the dormant embryonic plant inside the seed; it implies complex physical and chemical changes that occur as the embryo begins to develop into a young shoot and root (seedling). The germinating seed sends its first root (radicle) into the soil and the first stem with the first leaves (cotyledon) toward the sunlight(1, 5,6).

b. GERMINATION IN DICOTYLEDONS

1. The primary root emerges through the seed coats while the seed is still buried in the soil.
2. The hypocotyls emerges from the seed coats and push its way up through the soil. The two cotyledons protect the epicotyls structures — the plumule — from mechanical damage.
3. Once the hypocotyl emerges from the soil, it straightens out.
4. The cotyledons spread apart exposing the epicotyls, consisting of the primary leaf (or leaves) and the apical meristem. In many dicots, the cotyledons not only supply their food reserve to the developing plant but also turn green and make more food by photosynthesis until they drop off (1).

c. Organic matter

Organic matters due to the beneficial effects on physical properties, chemical and biological soil have an important role in soil fertility, plant nutrition and crop yield have increased. Huomic acid humus material that is part of the property due to the complex hormonal and audience an important influence in increasing crop production and supply is balanced. Huomiclat products with micro and macro elements of plant needs in addition to quantitative and qualitative improvement in products of plant resistance against pests and diseases also increases

d. Huomic acid

Humus of different compounds, including acid Huomic Folic acid respectively to complex nutrients, their ability for plant uptake increases continuously as a result of plant nutrients during the growing season will reach. Huomic acid intake according to the plant increased quantitative and qualitative performance of the product is remarkable. The earth used as fertilizer, sprayed on plants and seeds and use in irrigation systems is usability (9).

e. **Application advantages:**

1 - Increased nutrient absorption.
2 - Increase beneficial soil microbial populations.
3 - Hormonal modification of soil physical properties.
4 - Hormonal and enzymatic effects on plant growth.
5 - Pests and diseases and reduce pesticide use.
6 - Plant resistance to drought and salinity stress.
7 - Increasing product quality.
8 - Increasing the percentage of seed germination.
9 - Balanced PH soil.

2. MATERIAL AND METHOD

Humic acid extracted in the application of plants in crop water uptake, germination rate and breathing increase. Similar results were obtained in soybeans. Speed of germination in barley, maize and wheat in the presence of acid was substantially increased Humic. Speed and germination of seeds treated lettuce and tomatoes in containers Humic acid extracted from oxidized Lignite increased. However Humic material evidence to show that seeds of life increases is still not observed. Beans treated with acid Humic as seed germination rate significantly increases.

Different amounts of acid in Humic obtained from urban wastes Humic acid derived from organic sources on tobacco seed germination of barley and found that Humic acid derived from urban waste regulators greater role in the germination rate and germination time was reduced . Humic in experimental acid and calcium on the germination of tomato seeds was examined and results showed that growth and Humic acid and calcium content of nitrogen applied and what amount of nitrogen and potassium increased the root.

.Huomic micro elements like iron and acid compounds or elements Clat Huomic complete micro or treatment Huomic Clat, complete micro and macro elements on the speed of germination and affect. These substances cause a change in speed and percentage germination for causing water absorption and osmotic regulation are. The purpose of this experiment, how to effect of micro fertilizers on germination. Horse bean seeds were used in this experiment. 10 seeds were placed in each container separately. The treatments are:

1 – control
2 - Iron treatment Huomic Clat
3 - Clat Huomic zinc
4 - Clat Huomic zinc and iron treatment
5 - Magnesium and calcium treatment Huomic Clat

This way the seeds first immersed into distilled water for 2 hours and then represented to within experimental treatments containing seeds are added at room temperature 25 degrees Celsius and the daily number of stored seeds germinated notes are all treatments and ultimately get results And brought in the formula are presented. The average time needed for germination (MTG): The average times needed for the germination index of germination velocity and acceleration are considered below were calculated from the relationship (Ellis and Robert., 1981):

$$MTG = \frac{\Sigma(nd)}{\Sigma n}$$

n = number of seeds germinated during the day d
d = number of days from beginning of germination
Σ n = is the total number of germinated seeds.

3. RESULT

After three days of testing, counting and investigation was initiated seeds results indicate that the five treatments applied after the third day:

1 - 10 numbers in the control of the number five seed was germinated.
2 - The number 10 seed in the treatment of iron Huomic Clat was germinated 5 numbers.
3 - Number 10 seed treatments Huomic Clat were germinated on 4 numbers.
4 - Number 10 seed treatments Huomic Clat and iron on number 6 was germinated.
5 - Number 10 seed treatment Huomic Clat magnesium and calcium did not do any germination.

Table1: MTG Result

Treatments	MTG
control	5.5
Huomic Clat Iron	5.1
Clat Huomic zinc	6.2
Clat Huomic zinc and iron	4.9
Magnesium and calcium Huomic Clat	n.s

Therefore, the effect of fertilizer containing macro and micro elements on germination is determined according to results of experiments on biological fertilizers bean seed was determined that probably the effect of fertilizers used in nutrient absorption, growth hormone stimulation increases the germination of seeds But actions are different

combinations of calcium and magnesium fertilizers prevent seed germination is.

4. DISCUSSION

Calat Humic acid produced by the different nutrient elements such as sodium, potassium, magnesium, zinc, calcium, iron, copper, and.... In order to overcome the shortage of nutrient elements, plant growth will increase due to the effects of hormonal compounds useful in increasing production and improving the quality of agricultural products are. Humic acid solution used in the diet increased the growth of branches, roots and nitrogen content in the aerial and the disappearance of chlorosis in corn leaves was Lupin. It also causes acid Humic high chlorophyll concentration, more lateral roots grow, improve nutrient uptake and high consumption and low consumption of other biological effects are large. In a three-year study of 3 with phosphorus acid Humic without it looked on the growth of potatoes. The results showed that phosphorus content of leaflets on treatments with acid levels Humic 0.03% increase. Humic gland treated with acid to more than 10 times in two to three years of study increase. The results showed that treatment with acid Humic lumps on density had no significant effect. Due to environmental considerations, most recently using a variety of organic acids to improve the quality and quantity, and garden crops has increased. Very small quantities of organic acids significantly effects on improving physical and chemical and biological properties of soil due to have beneficial effects on hormonal compounds to increase production and improve the quality of agricultural products have. Humus organic matter can be established to define which parts Humic acid, acid and humic & folic is composed. The most part the composition of soil humus acid and acid Humic folic form a variety of sources (terrestrial plants and vegetative resources) are obtained with regard to its source in molecular size and chemical structure together are different. Humic acid compounds naturally in soil, peat, coal, and ... There. Tests showed that adding humus to the soil in the planting material of barley and sugar beet, potatoes, watermelon, tomato, a significant performance increase was caused by Calat elements enhance absorption by the plant material and humus are caused storage long-term soil carbon, root and stem growth in plants, nitrogen uptake and storage, increased photosynthesis, increased resistance to disease and .... Be(10, 13).

Seeds from Ages and ages ago, since mankind have been considered. Due to the size at first was a practical aspect, because many seeds of a major source of food in most parts of the world. Thus, information about their seeds nutritional value, chemical composition, changes in the composition of storing their acorns additionally, the ability to warehouse and stored seeds, viability, etc. holding power is concerned. Farmers and gardeners to factors that are related to the growing seeds are interested in large part because of the common agricultural contracts and associated with growth and plant breeding in order to obtain their seeds (2, 5) .

Physiologists in order to study the effect of the seed temperature, moisture, oxygen, light and other factors affecting their growth and the emergence of transplant have been used. Most successful modern agriculture in the United States and Western Europe depend on the genetic quality of having good quality seeds and the ability to prove they tried growing emergence seedling transplant and strong growth, parallel to create pressure to increase food production around the world, using modified and quality has been emphasized, similarly, need to plant other products such as vegetable oils, textiles and industrial chemicals, excess demand for greater access to seed varieties and new varieties are created. Although the importance of quality seed is fully known and documented, but still clean and recognition of quality seeds for a scientific basis not sustain. Objective The present experiment discusses some recent research in the field of seed physiology and the impact on the metabolism of micro-fertilizers is germination. That is not working on it (6) .

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