INTERNATIONAL JOURNAL OF PLANT, ANIMAL AND ENVIRONMENTAL SCIENCES
IJPAES
Volume-4, Issue-3, July-Sept-2014
ISSN 2231-4490
Copyrights@2014
Coden : IJPAES www.ijpaes.com
Received: 05th May-2014 *Revised: 27th June-2014* *Accepted: 29th June-2014*
Research article

COMPARISON THE EFFECTS OF SPRAYING DIFFERENT AMOUNTS OF NANO ZINCOXIDE AND ZINC OXIDE ON, WHEAT

Isa Afshar[1], Akbar RahimiHaghighi[2], MinooShirazi[3]

[1]Assistant Professor, University Yasooj
[2]Department of Agriculture, the University Yasooj
[3]MSc in Analytical Chemistry, Azad University of Gachsaran

ABSTRACT: In order to compare the effects of different spraying of nano zinc oxide and zinc oxide, the arable irrigated wheat was conducted in two separate trials in 2011-2014 lands of Abadeh city. Experiments were conducted in a randomized complete block design, with five treatments and five replications. In the first experiment, treatments included the application of nano zinc oxide to five levels (0 , 24 , 36 , 48 and 60 g ha) and fertilizer treatments including zinc oxide in a second experiment at five levels (0 , 24 , 36 , 48 , 60 g ha) applied to five replications. It should be noted that nano-compounds are quickly absorbed by plants in large amounts it can be toxic effects on plants and plant products, consumers can. It would have been chosen according to the amount Nano oxide. Data were analyzed statistically using the software Mstat-c and means were compared using Duncan multiple range test was used. Maximum yield rate of 95/401 grams per square meter of treated nano zinc oxide 60 g ha and the lowest yield rate 28/267 grams per square meter to the control treatments without foliar zinc oxide was obtained.
Keywords: Zinc oxide, Fertilizer, Grain, spraying, Nano zinc oxide

INTRODUCTION

Along with the rapid increase in world population, and with this growth, we must think about the alternative, to provide food, particularly cereals. It is assumed that agricultural science, especially in agriculture, is the production of more and better quality which is able to satisfy the growing population, thereby eliminate poverty and hunger [6]. The most active form of plant hormones such as chloroplast starch and water management activities is involved. This element is involved in protein production, as part of the structure of RNA - polymerase and the ribosome is needed to maintain the building. Nuclides and many other activities forming plant plays an important role in seed rate greater than shoot (straw) and roots [9,8,4].Nanotechnology has been used extensively in all stages of production, processing, storage, packaging and transport of agricultural products. (Special Committee nanotechnology development) nano compounds rapidly and completely absorbed by the plant and will fix it as well as nutritional needs and deficiencies. (www. nano. ir).they can be extremely dangerous to the health of plants and plant products are the consumer. For this drug to be more precise and standard is recommended. (www. nano. ir). Wheat production in Mediterranean region is often limited by sub-optimal moisture conditions. Visible syndromes of plant exposure to drought in the vegetative phase are leaf wilting, decrease of plant height, number and area of leaves and delay in accuracy of buds and flowers Pigments are integrally related to the physiological function of leaves. Chlorophylls absorb light energy and transfer it into the photosynthetic apparatus. Carotenoids (yellow pigments) can also contribute energy to the photosynthetic system. Chlorophyll content can directly determine photosynthetic potential and primary production. In addition, chlorophyll gives an indirect estimation of the nutrient status because much of leaf nitrogen is incorporated in [10].

MATERIALS AND METHODS

An experiment is done in the 2011-2010 crop year abadeh city 270 kilometers from Shiraz. The testing materials fertilizers, zinc oxide, zinc Nanvaksyd fertilizers, seeds, wheat and alcohol. These tests in a randomized complete block design with five Tymaranjam Pnjtkrar Astazmaysh taken first Nanvaksyd fertilizers on five levels: 0 (control), 24, 36, 48 and 60 grams per hectare. Experiment II: fertilizers, zinc oxide at five levels: 0 (control), 24, 36, 48 and 60 grams per hectare. Five replicates were performed on wheat Bkrasclear. The experimental procedure is as follows where the land was fallow experiment before the experiment. Land preparation consists of a spring plowing for weed control and soil moisture storage. In the autumn of 0 to 30 cm soil depth, samples were sent to the laboratory to determine fertilizer needs. Using two-way plow, plowing was done on the disk. Potassium fertilizers , phosphate and nitrogen requirements based on soil testing and fertilizer potassium and phosphate levels were measured at planting, the soil was mixed with half of the land was needed for urea fertilizer at planting and the remaining two tillering the plant was given as stemming roads . The seed needs to work smoothly, and using the seed was planted. For all the plots the same as the operation was performed. After weighing the zinc oxide and zinc oxide nano fertilizer with precision digital scale plot was randomly selected three times before tillering stage, booting and milky spray was going. The number of plants per square meter , number of stems per square meter and the number of spikes per square meter were counted after threshers , grain separation and the number of grains per spike , seed weight and seed yield per square meter were measured. And shoot dry weight was calculated and then straw yield, biological yield and harvest index were calculated and statistical analysis was performed in the final calculations. Traits are: the number of spikes per square meter, number of grains per panicle, grain weight, biological yield, grain yield, straw yield, harvest index. Gyrysfat measurement method is evaluated on the basis of data collected using the analysis software Mstat-c.

Research findings

1. Analysis of variance, of nano zinc oxide and zinc oxide fertilizer on wheat yield

Analysis of variance of nano- zinc oxide on the characteristics (Table 1) showed that the effect of repetition on grain weight at 1% level significantly and the number of clusters at the 5% level significantly and the number of seeds were not significant. Well effect of treatment (fertilizer Nano ZnO), the number of clusters, number of grains per panicle, seed weight, is significant at the 1% level. The results of the analysis on the characteristics of ZnO fertilizer (Table 2) showed a significant 5% level of repetition on seed weight and seed number per cluster and number of clusters are not significant. The effect of treatment (fertilizer zinc oxide) on seed number per panicle is Mnydarmy the 5% level.

Table 1: Analysis of variance of yield changes of nano- zinc oxide

nano oxide zinc	Degrees of free domto change source	Number of clusters(m2)	The number of grains per panicle	Grain weight(gr)
Repeat	4	*3357.44	Ns18.74	**34.25
Treatment	4	**13276.64	**50.23	**48.34
Error	16	873.61	10.35	1.79
Coefficient changes	-	8.53	13.56	3.14

*, ** And ns, respectively, significance at 1%, 5% significance level is not significant.

Table 2: Analysis of variance of the effect of fertilizers on the yield of zinc oxide

Sources modified ZnO	Degrees of freedom	Number of clusters(m2)	The number of grains per panicle	Grain weight(gr)
Repeat	4	Ns 3100.14	Ns4 3.53	*23.52
Treatment	4	Ns 4957.94	4.53*	Ns04/17
Error	16	2046.11	4.54	7.53
Coefficient changes		14.33	9.74	6.73

*, ** And ns, respectively, significance at 1%, 5% and no significant

2. Comparison of the effects of different amounts of fertilizer zinc oxide nano- clusters.
Based on the results of the analysis of variance (Table 1), the effect of different amounts of fertilizer zinc oxide nano clusters on the square is significant at the 1% level. Comparison by Duncan's method in Figure (1) shows that different amounts of zinc oxide nano fertilizer together in a group and not statistically significant differences are. 60 and no treatment (control) g each in statistical treatments of 48, 36 and 24 mg groups are analyzed. This finding Crmicallus [2], Azizi and Amini [1] and Rangel and Graham [6] stated that they used wheat is on the rise in the number of clusters is consistent.

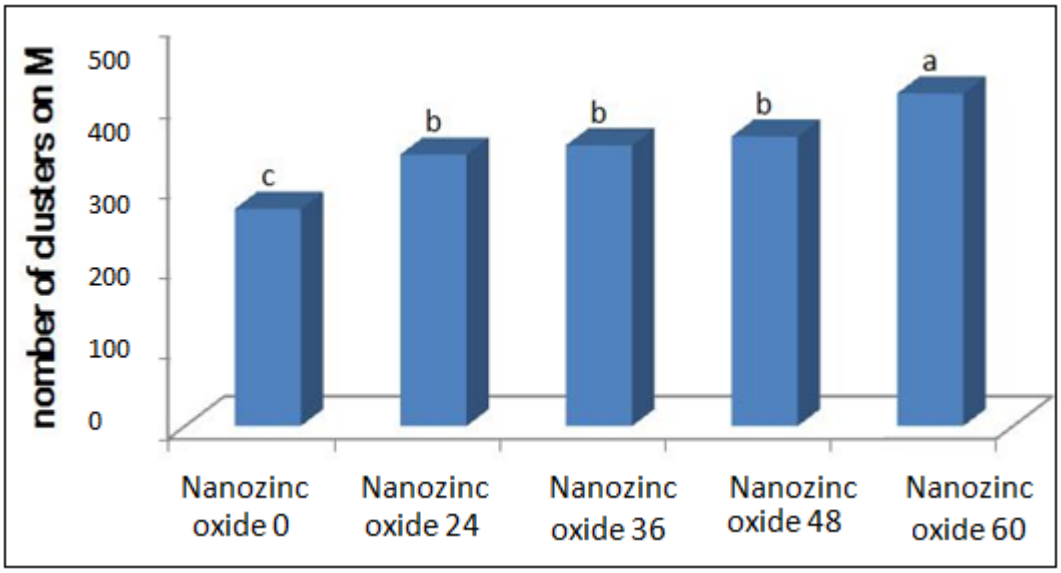

Figure 1 : Comparison of the effects of different amounts of fertilizer Average Nano oxide on the number of clusters

3. Comparison of the effects of different amounts of fertilizer zinc oxide clusters.
Based on the results of the analysis of variance (Table2) the effect of different amounts of fertilizer zinc oxide clusters on the square are not significant. Duncan's method in comparison Chart 2 shows that different amounts of fertilizer placed together in the same statistical differences were not significant. So that a maximum number of 48 g of fertilizer per square meter cluster with 4/350 and the minimum number of clusters in the area of control is equal to 272. This finding crimcalus [2], Azizi and Amini [1] and Rangel and Graham [6] stated that they used wheat is on the rise in the number of clusters is consistent.

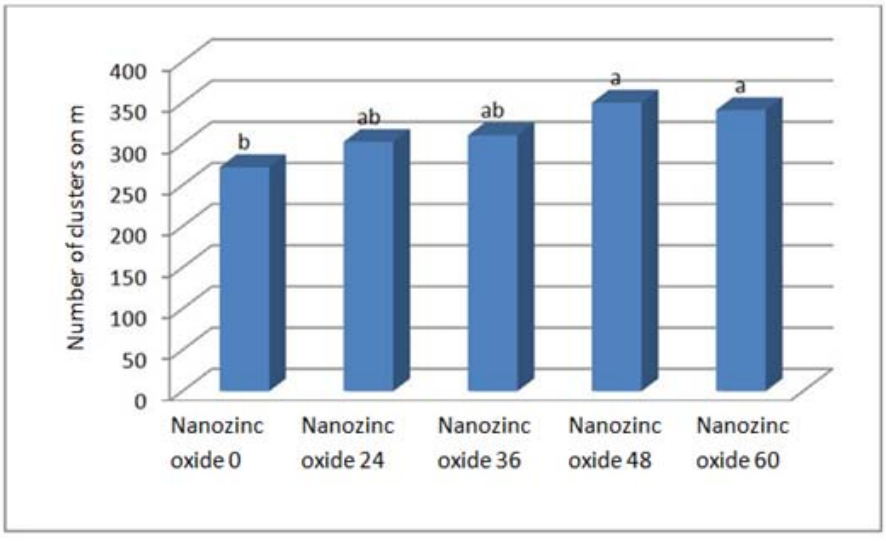

Figure 2: A comparison of the effects of different amounts of fertilizer zinc oxide clusters

4 . Comparison of the effects of different amounts of zinc oxide nano fertilizer, seeds per panicle.
Based on the results of the analysis of variance (Table 1) and different amounts of fertilizer nano oxide effect on the number of grains per panicle was significant at the 1% level. Comparison by Duncan's method in Figure (3) shows that different amounts of fertilizer together in a group and not statistically significant differences are. So that the maximum number of seeds per panicle about 60 grams of fertilizer amount equal to 63/28 and the lowest number of grains per panicle of control with 98/20 is. Treatments 60, 48 and 36 gram together in a group and statistical treatments of 48, 36, 24 and control (zero fertilizer) are analyzed together in a group. This finding of Tolerance (2010), Cream Callus [2] , Azizi and Amini [1] , Ziaeian of Malakouti [9] and Rangel and Graham [6] reported that wheat consumption in its research on the causes increase the number of grains is consistent cluster.

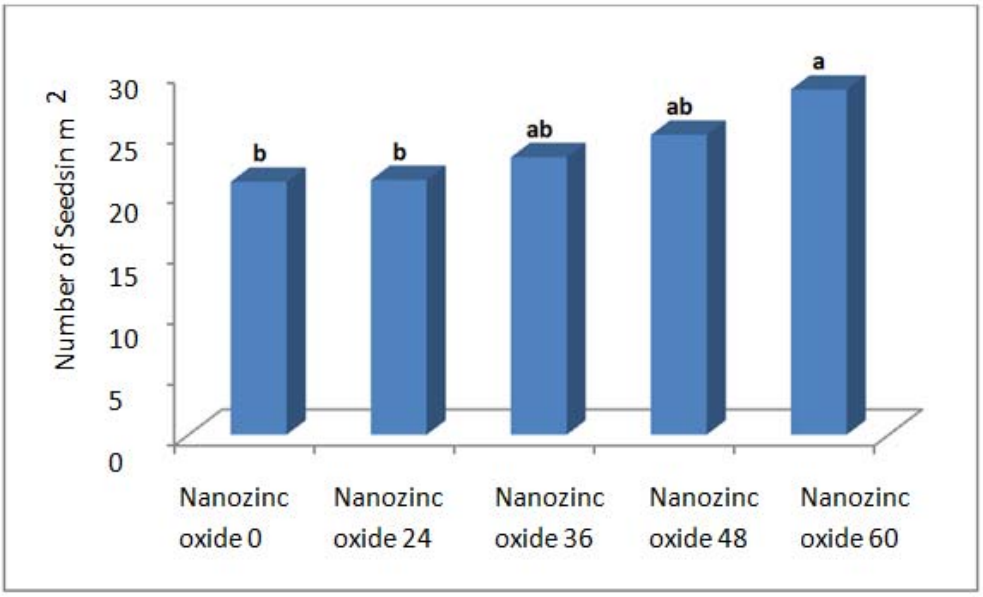

Figure 3 : Comparison of mean values fertilizer effect on the number of grains per panicle Nanvaksyd

5 . Comparison of the effects of different amounts of fertilizer zinc oxide grain per panicle.
Based on the results of the analysis of variance (Table 2) the effect of different amounts of ZnO fertilizer on grain number per panicle was significant at the 5% level. Comparison by Duncan's method in Figure (4) shows that different amounts of fertilizer together in a group and not statistically significant differences are. So that the maximum number of seeds per panicle about 48 grams of fertilizer amount equal to 3/24 and the lowest number of grains per panicle of control with 75/19 is. Treatments 60, 48 and 36 gram together in a group and statistical treatments of 6, 24 and control (zero fertilizer) are analyzed together in a group. This finding of Modara, Crimcalus [2], Azizi and Amini [1], Ziaeian and Malakouti [9] and Rangel and Graham [6] reported that wheat consumption in its research on the causes increase the number of grains is consistent cluster.

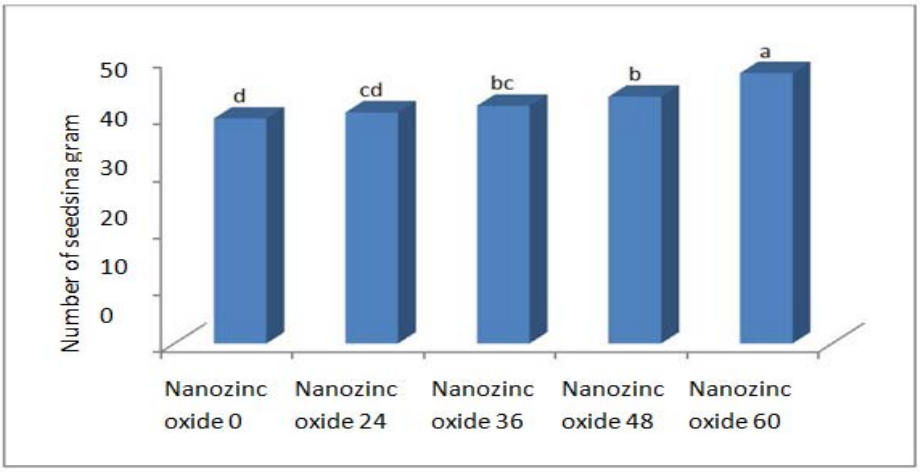

Figure 4 : Comparison of the effects of different amounts of fertilizer zinc oxide on the average number of seeds per panicle

6. Comparison of the effects of different amounts of zinc oxide nano fertilizer, seed weight.

Based on the results of the analysis of variance (Table 1), the effect of different amounts of zinc oxide nano fertilizer on grain weight was significant at the 1% level. Comparison by Duncan's method in Figure (5) shows that different amounts of fertilizer put together in a group and not statistically significant differences are. So that the highest seed weight of 60 g manure with 48/47 mg and lowest seed weight of the evidence against the 51/39 grams. In one group are analyzed.

This finding of Modara, Crmicallus [2], Azizi and Amini [1], and Ziaeian and Malakouti [9] reported that zinc increases your research on wheat grain weight be consistent.

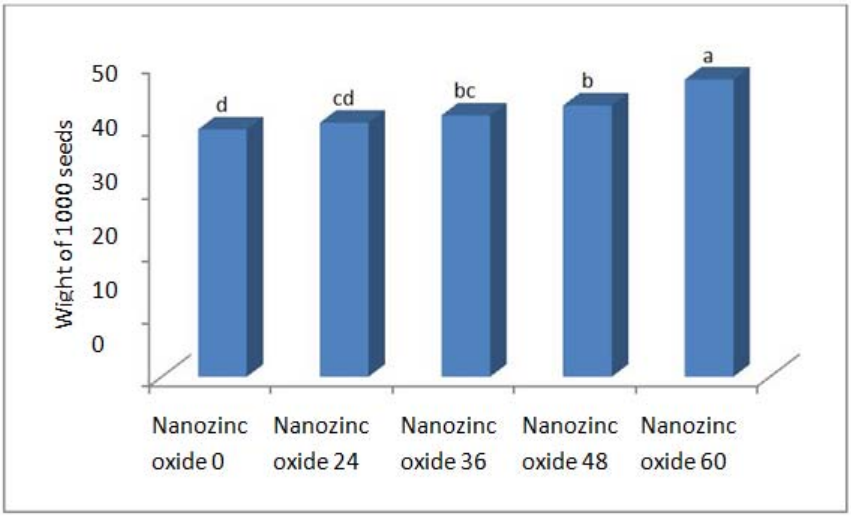

Figure 5: Comparison of the mean effect of different amounts of fertilizer on grain weight oano oxide

7. Comparison of different amounts of fertilizer effect on grain weight of zinc oxide.

Based on the results of the analysis of variance (Table 2) Effect of different fertilizer levels on grain weight of zinc oxide were not significant. Comparison by Duncan's method in Figure (6) shows that the highest seed weight of 60 g manure with 68/42 mg and lowest seed weight of the evidence against the 66/38 grams. It is observed that 60 and 48 grams of fertilizer treatments together in a group and statistical treatments of 48 and 36 and zero (control) g fertilizer statistics are together in a group.

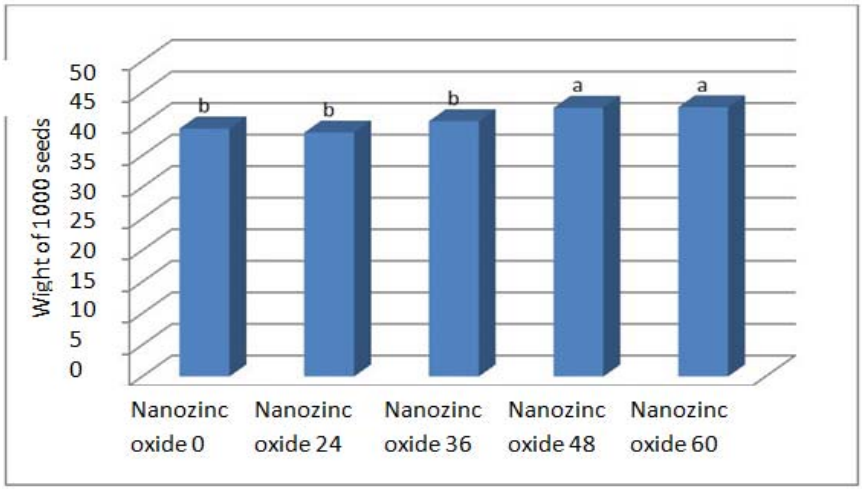

Figure 6: Comparison mean different amounts of ZnO fertilizer on grain weight

The research concludes

THE RESEARCH CONCLUSIONS

Several factors reduce the required nutrients and micro-nutrients such as zinc deficiency in plants, especially plants that could have contributed to the continuous cultivation of agricultural land, especially in areas where cultivation compact object (the cultivation of in two sessions, shall be made crop year), nonconformity proper crop rotation, use of organic fertilizers, lime and alkali soils are not suited to the use of particular nutrients and micronutrients.

According to the analysis performed and the comparison is observed that the nano zinc oxide is better than zinc oxide. Between different levels of fertilizer and fertilizer level of 60 grams per hectare in all traits have a better performance than other surfaces and levels of fertilizer (control) had the lowest yield in all traits Analysis of variance seen in the table that have significant interaction effects on seed traits and other traits were not significant. But the comparison with observations is considered that the nano zinc oxide treated with 60 g ha in all treatments was higher than other traits and treatment of non- application (control) yields were highest.

Can it justifies the fertilizer on wheat plants on the activation of enzymes by fusing with the formation of chlorophyll in most plants and accelerate company growth hormone formation, such as tryptophan material Oksin. This increase in production is the main place to store carbohydrates in plant carbohydrates are grains that eventually led to an increased number of seeds per plant as a source (sourc), and storage carbohydrates, and increased yield has been the experiment 90-1389 crop year as compared to the effect of foliar application of different amounts of zinc oxide and zinc oxide nanoparticles on wheat yield in the region was done ABADEH overall results obtained are

1 - Use of nano zinc oxide has a better effect than the wheat plant.
2 - Use of nano zinc oxide, 60 g ha sprayed on the plant's maximum performance.
3 - No use of fertilizers on crop yield is reduced.

Research Offers

1 - It is recommended that the results obtained in Abadeh farmers to supply the wheat required using nano zinc oxide.
2 - It is recommended according to the results of 60 g per hectare, farmers sprayed nano zinc oxide used.
3 - It is recommended that this test be performed at levels greater than 60 g per hectare.

REFERENCES

[1] Azizi.Amini, M. 2008. The effect of foliar application of zinc on yield and yield components in wheat cultivars and climatic conditions Khorramabad. Journal of Daneshvar. The first volume. No. 1

[2] Crimcallus, AD. 2010. Effect of foliar application of potassium and zinc on yield and yield components of irrigated wheat in the plains, leaving YasoojAlvand, MS Thesis, 68 pages.

[3] Malakouti, M. C. 1993. The diagnosis requires a comprehensive approach and recommended plants fertilized crops Drarazy Iran. 120 p.

[4] Malakoui, M. C. Homaei. 2004. Fertile soils of arid and semiarid regions. Tarbiat Modarres University, Tehran. 150 p.

[5] Noormohammadi, Gh. Siadat Kashani, E. 2001. The first volume of agricultural crops, martyr Chamran University Press. 248 p.

[6] Rangel, Z. Graham, R. d. 1995. Importance of seed Zn content for growth on zinc – deficient soil plant and soil. 173: 267-272.

[7] SalehiEskandari, b. Kharaty, M. 2002 Review of Plant Physiology. Publication Nasim Hayat

[8] Fink, A. 1969, Pflanzenernährung in Stichworten. Ferdinant HirtVerlag, Kiel Germany.

[9] Ziaeian, A. H. Malakouti, M. J. 2001. Effects of Fe, Mn, Zn and Cu fertilijation of wheat in the calcareous soils of Iran. In W. J. Horstetal. (eds.). Plant Nutrition-food security and sustainability of Agro-Ecosystems 840-841. Kluwer Academic publishers, Dordrecht, the Netherlands.

[10] Guendouz .A, Hafsi. M, Khebbat. Z, Moumeni .L, and Achiri .A.2014. Evaluation of Grain yield, 1000 kernels weight and Chlorophyll Content as Indicators for Drought Tolerance In Durum Wheat (*Triticum durum* Desf.). Advance in Agriculture and Biology. 1 (2), pp: 89-92