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Effects the different amount of zine sulphate and seed amounts on dill essence and yielding

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ABSTRACT

This experiment was carried out is researches field of Islamic Azad University, Bam Branch, Iran at 1995. This city is a subtropical city in south of Iran. In this experiment," Rondoms Compelet Blocks" was used in a factorial designe at four replications. Main factor is fertilizer(zinc sulphate) at four levels such as : Z_1=0 Z_2=1.5 Z_3=2.5 and Z_n=3.5 Per thousands and sub main factor is seed density at there levels including D_1=14 D_2=16 and D_3=18 kilograms per hectare and as a result : Maximumed the essence is in zinc sulphate at value of 2.5 percent and seed density of 14 kg/h .

Key words: Density, Dill, Essence, Seed weight , Zinc sulphate

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INTRODUCTION

Iran has dry weather and rain average in this country is low .Dill is an Iran native plant that has three species including :Graviolance , Krizium and Inolocratum .Dill is used as a medicine plant and as a vegetable [1] and is used as a antibacterial plant in some disease such as stomach ache . Medicine material is named mentol in this plant [2]. Dill is a famous plant in world and is used in nutritional and drink industerial . Anual consumption of dill is 60- 70 ton /year[3] . Essence is extracted from seed and vegetation organs .Essence of seed is including : Limonen ,Dihydrocaron , Alfapinen , Terpinen ,Terpenoeid . its essence is antibacterial[4]. Zinc Sulphate is very important . If Zinc Sulphate increas,tanen will be increased [12] .Density is very important in essence concentration[13] .

MATERIALS AND METHODS

This experiment was carried out in research field of Islamic Azad University ,Bam Branch , Iran at 1995 . Average of annual rain in this city is 60 milimeter, relative humidity is 30 – 45 Percent , maximum of temperatur is – 1 ℃ .Temperature average was 28 ℃ . Rain average was 32 millimeters .Climate in this city is subtropical and soil texture is loamy sand . Soil was analysed befor experiment and were sampeled in four points on field in depth of 0-35 centimeters . PH was 7.2 and EC was 0.6 mm/cm. This experiment was carried out in a" Rondoms Compelet Blocks" in a factorial designe at four replications. Main Factor is zinc sulphate at four levels such as : Z_1=0 , Z_2=1.5 , Z_3=2.5 , Z_4=3.5 per thousands and sub main factor is seed density at three levels including D_1=14 , D_2=16 and D_3=18 kilograms per hectar . Length of plots was four meters , wide of plots were two meters and intervals between replications was 2 meters .Field of experiment was 800 square meters . Land in Pervious year was in follow

and was fertilizated 100 kg Phosphorus From triple super phosphate and 100 kg potassium oxidate in authum and then was plowed at late of feburary and then seeds was sowed . Date of planting was early of March . Nitrogen was used in three times[5] . At First Nitrogon was used one thirth of total, at planting date, second time was used before flowering[6] and zinc sulphate were used in two times , including : time of stem growth and then flowering time[7] . There was not any pests and diseases in field and didnot used any poison and in harvest time,were sampeled and were separated haugh of meters as residual effects . Some factors were measured in filed such as hight of stems (with ruler) , The number of umberella branches . For Some parameters were sampeled four squre meters for example : yielding , oil percent and weight of seeds . Humidity in seeds were 14 percent. The value of oil were measured by" sukcele" method[8]. Digital scale was used for weighting of seeds . Seed essence were measured by densing of vapore [9] . seeds were grided at first of experiment[10] .

RESULT AND DISCUSSION

The effect of zinc sulphate on yielding was significant (Table 1 – 4) . Maximum of yielding was belonged To Z_3(2.5 per thousand zinc sulphate) Interaction between zinc sulphate and seed amount is not siginificant . Maximum of yielding (838.3 kyhc) was belonged To 14 kg seeds Per hectare and minimum of yielding was belonged To 16 kg/h seeds and zero per thousand zinc sulphate .

table 1-4 – Anova analysis (yielding)

S.O.V	F	SS	MS
replication	3	806.7	268.9 n.s
A	3	4126.5	1375.5 **
B	2	4693	2346.5**
AB	6	780.6	130.1 n.s
Erore	33	5204.1	157.7

table 2-4 –Anova analysis (yielding)

Zinc sulphate solution	Mean	Class
z4=3.5 per thousand	810.4	A
Z3=2.5 per thousand	820.2	A
Z2=1.5 per thousand	780.9	B
Z1=0.0 per thousand	770.6	B

table 3-4 – Anova analysis (yielding)

Seed density	Mean	Class
14 kg/ha	774.1	B
16 kg/ha	795.3	A
18 kg/ha	771.5	B

table 4-4 – Anova analysis (yielding)

Treatment	Mean	Class
Z_3D_1	838.3	A
Z_4D_1	818.0	AB
Z_3D_3	814.0	ABC
Z_4D_2	811.0	ABC
Z_4D_3	810.7	ABC
Z_3D_2	819.7	ABC
Z_2D_3	805.0	BCD
Z_2D_2	794.3	BCD
Z_2D_1	794.3	BCD
Z_1D_1	782.3	BCD
Z_1D_3	780.7	CD
Z_1D_2	768.7	D

Effect of zinc sulphate and seed density on weight of seeds :

Maximum of weight of seed was at spray of 1.5 per thousands of zinc sulphate and seed density 14 kg seeds per hectare and minimum of weight of seed was at 2-5 per thousands of zinc sulphate and seed density 16 kg seeds per hectare. Interaction between seed density and zinc solphate is not significant .

table 5-4 – Anova analysis (seed weight)

S.O.V	F	SS	M.S
replication	3	0.249	0.083
A	3	0.3	0.1000 n.s
B	2	0.68	0.3400 n.s
AB	6	1.26	0.2100 n.s
Errore	33	12.21	0.370

table 6-4- Effect of zinc sulphate on seed weight .

Zinc sulphate solution	Mean	Class
1.5 per thousands	2.27	A
2.5 per thousands	2.121	A
0.0 per thousands	2.116	A
3.5 per thousands	2.109	A

table 7-4- Effect of seed density on seed weight

Seed density	Mean	Class
14 kg/ha	2.543	A
16 kg/ha	2.538	A
18 kg/ha	2.513	A

table 8-4- Intraction between seed density and zinc sulphate .

Treatment	Mean	Class
Z_2D_1	2.600	A
Z_2D_2	2.580	AB
Z_3D_1	2.370	AB
Z_2D_3	2.150	ABC
Z_3D_2	2.550	ABC
Z_1D_1	2.547	ABC
Z_4D_1	2.530	BC
Z_4D_2	2.510	BC
Z_4D_3	2.509	C
Z_1D_2	2.506	C
Z_1D_3	2.507	C
Z_3D_3	2.258	D

Effect of zincsulphate and seed density on essence value :

Maximum of value was belonged to 1.5 per Thousands of zinc sulphate and seed density 14 kg seeds per hectare . Minimum was at zero Per thousands of zinc sulphate .difference between seed density and zinc salphate is significant .

table 9-4- Anova analysis on essence percent

S.O.V	F	SS	M.S
replication	3	0.66	0.2200 n.s
A	3	0.687	0.229 **
B	2	0.568	0.284 *
AB	6	0.88	0.148 *
Errore	33	1.65	0.050

table 10-4- Effect of zinc sulphate on essence percent

Zinc sulphate solution	Mean	Class
1.5 per thousands	1.337	A
2.5 per thousands	1.455	A
3.5 per thousands	1.287	B
0.0 per thousands	1.067	C

table 11-4- Effect of seed density on essence percent .

Seed density	Mean	Class
14 kg/ha	1.340	A
16 kg/ha	1.093	B
18 kg/ha	0.736	C

table 12-4- Intraction between seed density and zinc sulphate on essence percent

treatment	Mean	Class
Z2D1	1.769	A
Z2D2	1.556	AB
Z2D3	1.439	B
Z1D2	1.419	B
Z3D3	1.379	BC
Z3D1	1.329	BC
Z3D2	1.102	CD
Z4D1	1.099	CD
Z4D2	0.882	CDE
Z4D3	0.679	DE
Z1D3	0.576	E
Z1D1	0.406	E

Effect of zincsulphate and seed density on number of umberla branches :

Maximum of number of umberla branches was belonged To 3.5 per thousands of zinc sulphate and seed density 16 kg seeds per hectare and minimum was at zero per thousands of zin sulphate and seed density 18 kg seeds per hectare . Interaction between seed density and zinc sulphate is Significant and effect of zinc sulphate on number of umberela branches is not sighificant . As a result because essence is very important , it is suggested will be used zinc sulphat at value of 2.5 perecent and seed density of 14 kg/h[11] .

table 13-4- Anova analysis of number of umberella branches .

S.O.V	F	SS	M.S
replication	3	0.251	0.0837 n.s
A	3	0.2163	0.0721 n.s
B	2	0.92	0. 46**
AB	6	0.192	0.032 n.s
Errore	33	1.22	0.037

table 14-4- Effect of zinc sulphate on number of umberella branches .

Zinc sulphate solution	Mean	Class
3.5 per thousands	41.67	A
2.5 per thousands	41.33	A
1.5 per thousands	39.66	A
0.0 per thousands	39.45	A

table 15-4- Effect of seed density on number of umberella branches .

Seed density	Mean	Class
14 kg/ha	37.56	B
16 kg/ha	41.10	A
18 kg/ha	**35.57**	**C**

table 16-4- Intraction seed density and zinc sulphate on number of umberella branches .

Treatment	Mean	Class
Z_3D_1	43.00	A
Z_4D_1	42.30	AB
Z_4D_2	41.35	ABC
Z_4D_3	41.35	ABC
Z_3D_2	41.00	ABC
Z_1D_1	41.00	ABC
Z_1D_2	41.30	BC
Z_3D_3	41.00	BCD
Z_2D_1	39.65	CD
Z_2D_3	39.31	CD
Z_2D_2	39.31	CD
Z_1D_3	37.65	D

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