The comparison of direct seed cultivation and atmospheric and barrowing seedling on some quantity and quality of two kinds of champ cucumber in darrehshahr city

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Abstract: The comparison of direct seed cultivation and atmospheric and barrowing seedling on some quantity and quality of two kinds of champ cucumber (Super Daminus and Maxim) in Darrehshahr city in complete accidental blocks design with four kinds (including direct seed cultivation, seedling in two foliar steps, seedling in three foliar step, and seedling in four foliar step) in three duplication (frequencies). The obtained results revealed that the accessory stock attributes, bushy length, fruit weight, precocious operation, the first fruit formation date, total function, fruits number, the first grade fruits percent, the second-rate fruit percent, one percent level and leaf width features, the main stock thickness, the accessory stock thickness, fruit thickness, the first flower formation date, leaf numbers, and the bushy wet weight were meaningful in 5 percent level. As well, the comparison of seedling age average and brand showed that the trifoliate seedling of Superdaminus from precocious function (606/26 gram in bushy) and the total function (2813/749 gram in bushy) views was better than other kinds. Meanwhile, the average direct seed cultivation of Superdaminus from precocious function (334/12 gram in bushy and the four foliate seedling of Maxim with the total function of 1504/36 gram in bushy are smaller in comparison to other experimented kinds. The results clarified that seedling use in comparison to direct seed cultivation from precocious and total function. Aspects were excessively better and are recommended to be used in Darrehshahr aired for cucumber cultivation.

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Introduction

According to some scientific sources, the age of cucumber is estimated 5000 years ago. The exit birth place of this fruit is not known. Some know it as a native fruit of north tropical areas in India and some others believe that the Self-grown kind of this fruit has been found in the height of Himalaya. Cucumber plant is from Cucumis which totally 30 t0 40 breeds of it has been recorded in Asia and Africa Since cucumber is sensitive to cold and is agreeable and adaptable to heat, It's cultivation should be in relatively hot areas (peivast.1384).

Using seedling for producing vegetable in comparison to direct seed cultivation necessitates realization of physiological approaches dominant on plant growth. This necessity which reduces the barriers of seedling growth is also felt, but from economic justification the plants should be raised in the least and smallest place before seedling (Javanmard, 1388). Since today hybrid seed (F1) are usually used for commercial levels for production and their prices is almost high, the use of seedling can be an appropriate method for cost reduction. This is because, in this system the individual seeds are used and the necessity to removal and sparsity of the seeds in the beginning of the period is not felt. With the use of seedling at the beginning of the period the irrigation and fertilization can be done with a high efficiency (Schrader, 2000). The greenness obtained from seedling can be harvested earlier than those grown from seeds. Those using seedling, can enjoy the markets at the beginning of the area and shorten the necessary time for producing a product which this will allow them to produce the second and third cultivation in a season. Seedlings in greenhouses can be preserved better against environmental tensions and parasites, calamities and other pathogen factors (Wayne, 2005). Three to four weeks are needed for providing seedlings and when they reach a height of 5-10 centimeters, should be carried without damages to their roots to be preserved perfectly (Daneshvar, 1379). Cucumber is usually cultivated directly, but in cold climate it should be cultivated three or four weeks earlier. The seeds are grown in containers. Which are called pit pat individually and when the bushy grew 5-10 cm they are delivered to the main place without any damage (Daneshvar, 1385). Cucumber cultivation is done via direct, seedling and

seed cultivation germination techniques. In seedling method, the cultivation is done in glass pots. And the deliverance is when the bushy is 10 centimeters or it has two real leaves (Hasandokht and Nosrati, 1382). The prepared seedling should be delivered to the main place in the appropriate time and if dislocated, the root will go out from the pot bottom and will be cut while delivering and this will have a negative effect on its growth. To prevent this position, root negative phototropism should be used so that the pots can be put on cribriform surfaces and while the roots go out from the bottom and face the light go back to the pot again (Bidarigh, 1377. & Noori, 1380).

1. The importance and significance of the study

It is worth mentioning to say that the current design has been conducted in Darrehshahr area in Ilam province. In this city, for existence of Saymareh river condensation depth of soil is largely average and the soil brand is suitable for agriculture. According to sample experiments, this city lands (from salt, mire and salts and draining aspects) do not make limitation for productions. The reason for selecting Darrehshahr City for conducting the current the research is that from 1346 onward most people have been engaged in aestivation and excessive use of grit and gravel. The excessive use of grit and gravel in agriculture lands of Darrehshahr city has caused the lands lose their adhesiveness. And gradually become poor. Therefore, the necessity of introducing a guideline for farmers' persuasion for changing the current cultivation system and applying appropriate from agriculture lands should be taken into account seriously. Meanwhile, in split method since all the surface of split is covered with cucumber basks. So care should be taken while taking production, otherwise, the basks will be destroyed after several picking the plant. In reality, atmospheric and barrowing method has solved this problem. Irrigation via atmospheric and barrowing method prevents soil roughness. As well, in this method removal of brushes becomes easier and the water doesn't reach directly to the bask, therefore; fungal diseases reduce remarkably. Bask growth facilitation is another benefit related to this method. Since no other research relevant to the substitution of seedling to direct seed cultivation has not be conducted, doing such a research seems logical and necessary.

2. Methods: Experiment conduction steps

For land preparation to be cultivated, the intended piece of land was selected for experiment (irrigation) and after cultivation, fertilizer was added to the soil, it was plowed and was plowed by Disc machine and after that a ditch was prepared by a cannel digger machine. The distance of barrows was one and a half meter. Three canals (ditches) were made and each one included eight splits and each split which was two meters involved six basks and the distance of basks from each other was 30 centimeters first, for providing seedlings plastic pots were used and in each pot one or two seeds were grown. And the pots under lights were put in a preselected room. The distance of each pot was half meter. The bulb light heated the room to 27 centigrade and this resulted in fast germination of seed in 24-48 hours. Finally, two kinds of seeds in the main land (400 square meters) were grown, and since the seeds were fresh, the irrigation was done every day. With seedlings stabilization the irrigation was reduced a little.

3. The characteristics of the experimental design

The experiment as a factorial in accidental perfect blocs including four kinds was done in three repetitions. In this experiment, the seedling cultivation date with four levels including direct seed cultivation, bi foliate seedling, trifoliate seedling, and four foliate seedlings were considered. The total under experiment splits were 24 and each split included six ditches with two meters space and the basks distances were 30 centimeters. The total space of the design, including borders made was 400 square meters. The measured characters included leaves number, leaf length, leaf width, and the main stock diagonal, the wet weight of bushy, bushy length, the first flower date, and the first flower date, the first fruit date, the number of fruits, fruit length, fruit diagonal, fruit weight, first grade fruits percent, second grade fruits percent, precocious function and total function.

4. Methods

After the last harvesting, the bushy was taken out of the soil and all its leaves were counted and in each bushy the biggest leaf was selected and it's length and width was calculated. The average was also calculated. In the last harvestation, the bushy were taken out of the soil and then were measured and heightened. And then the longest bush was determined by a ruler. As well, in each split, the first date of the first fruit and flower were reordered. To measure the average fruit weight in each harvestation, the weight of all fruits of four bushs was calculated by a digital scale. To calculate the character of first grade fruits (four basks) in each harvest, fruits with 25 to 35 diagonal millimeters and a length of 12 to 20 centimeters were regarded as the first grade fruits. To determine the second grade fruits characters in each harvestation, the fruits with 35 millimeter diagonal and higher and lower than 25 centimeters were considered as the second grade fruits. To determine the precocious characteristic function, with three harvestations with four bushy were considered as the precocious function. At the end, The MSTATS software package was used for

analyzing the data and Danken's multi-domains test was done for average comparison and Excel software was used for diagram designs.

5. Results and discussion

The results of the variance analysis of the measured characteristic in table 1 show that seedling effect in most cases such as subsidiary stock number, precautious function, flower function, fruit diagonal, fruit number, first grade fruits percent, second grade fruits percent, the date of the first fruit formation in 1% level, the main stock diagonal, bushy length, fruit length, fruit weight, the first flower formation date, leaves number, wet bushy weight have been meaningful in 5% level.

Table 1: The analysis variance results of seedling effect on some characters of the kinds of cucumber average

The subsidiary stock diagonal (millimeter)	The number of subsidiary stocks	The main stock diagonal (millimeter)	Leaf width	The leaf length(cm)	Leaf number	Freedom degree	Changing sources
0.52 ns	0.85 ns	2.98 ns	10.06 **	14.97 ns	4.66١ ns	٢	repetition
0 ns	0.01 ns	2.37 ns	1.33 ns	0 ns	0.08 ns	١	kind
92 *	5.26 **	3.88 *	4.56 *	4.41 ns	9.71٢ *	٣	Seedling age
60 ns	5.26 **	1.35 ns	3.13 ns	4.82 ns	6.84 ns	٣	Kind & seedling age
0.27	0.50	0.93	17.64	2.16	8.10	١٤	Experiment error

ns, *and** Show not having meaningful different, meaningful difference in 5% level, and meaningful difference in 1% level respectively

Continued table 1: The analysis variance results of seedling effect on some characters of the kinds of cucumber average

Fruit length (cm)	The total number of fruit per plant	The number of days to first fruit	The number of days to first flower	Plant (m) length	(g)Plant weight	Freedom degree	Changing sources
[illegible]	38*	8.86 ns	[illegible]	[illegible]	[illegible]	٢	repetition
.09١ ns	4٣ ns	8.17 ns	80.63 **	0.01 ns	8855.15 ns٣	١	kind
.26١ ns	82.78١**	81.66**	32.49 *	0.81**	4283.17٣*	٣	Seedling age
.10١ ns	.89١١ ns	.62٣ ns	.30١*	0.031 ns	39749.54 ns	٣	Kind & Seedling age
0.50	7.14	7.78	8.99	0.12	69140.02	١٤	Experiment error

ns, *and** Show not having meaningful different, meaningful difference in 5% level, and meaningful difference in 1% level respectively

Continued table 1: The analysis variance results of Seedling effect on some characters of the kinds of cucumber average

Total function (G per plant)	The early (G per plant)	Second grade fruit percent	First grade fruit percent	Fruit weight	Fruit diagonal(millimeter)	Freedom degree	Changing sources
8907.99١ ns	994.33 ns	8.85١ ns	70.4 *	974.3١ **	3.12١*	٢	repetition
9062.54 ns	3838.26 ns	84.60 ns	10.34 ٣**	9.08 ns	0.62 ns	١	kind
781340.33 ٣**	70562.25 **	63.84٣**	53.57١ **	50.16 **	.26١٣*	٣	Seedling age
6172.78 ns	955.98 ١ ns	3.56 ns	31.79 ns	68.72 ns	6.46١**	٣	Kind & seedling age
5595.65	091.89١	9.18٢	.62١٢	73.06١	.29٣	١٤	Experiment error

ns, *and** Show not having meaningful different, meaningful difference in 5% level, and meaningful difference in 1% level respectively

table2: The comparison of seedling age average on some characters of the two kinds of cucumber

Subsidiary stock diagonal (millimeter)	The number of subsidiary stocks	Main stock diagonal(millimeter)	Leaf width(cm)	Leaf number	characters / seedling age
6.49 b	5.33 b	15.77 a	15.31 a	76/28 a	(mt1)seed
6.53 b	7.05 a	13.88 b	13.80 a	70.94 b	Bifoliate seedling (mt2)
7.32 a	7.22 a	14.53 b	15.61 a	74.22 ab	Trifoliate seedling (mt3)
6.96 ab	7.30 a	14.40 b	14.18 ab	73.11 ab	Fourfoliate seedling (mt4)

The average in each column with the same letter is not meaningfully different

Continued table2: The comparison of seedling age average on some characters of the two kinds of cucumber

The number of fruits	The days number total first fruit formation	The days number total first flower formation	Bush length(meter)	Bush weight(gram)	Characteristics / Seedling age
62 a	59.27 a	42.61 a	2.19 a	1426 b	(mt1)seed
53.33 b	54.16 b	41.61 a	1.48 b	1862 a	Bifoliate seedling (mt2)
63.50 a	51.99 b	37.66 b	2.02 a	1590 ab	Trifoliate seedling (mt3)
53.17 b	50.99 b	37.78 ab	1.48 b	1805 a	Fourfoliate seedling (mt4)

The average in each column with the same letter is not meaningfully different

Continued table2: The comparison of seedling age average on some characters of the two kinds of cucumber

Overall performance (G per plant)	The early (G per plant)	Fruit of the quadratic	Percent grade fruit	Fruit weight. (G)	Fruit diameter (Mm)	Characteristics / Seedling age
2787.19 a	339.93 d	39.86 b	58.48 a	90.43 a	26.32 b	)seed (mt1
1577.44 b	517.34 b	49.77 a	51.90 b	63.88 c	25.43 b	Bifoliate seedling (mt2)
2665.15 a	1578.18 a	39.11 b	60.23 a	85.08 ab	28.70 a	Trifoliate seedling (mt3)
1523.92 b	339.86 c	51.94 a	49.73 b	69.40 bc	26.07 b	Fourfoliate seedling (mt4)

The average in each column with the same letter is not meaningfully different

Continued table2: Compared to figure out the traits of cucumber

Percent grade fruit	The number of days to first flower	Traits / Figure
58.04 a	38.33 a	(a1) Superdaminus
52.12 a	42 a	(a2)Maxim

The average in each column with the same letter is not meaningfully different

Table 3 - Comparison of the average number of interactions and seedling age on yield of cucumber

Fruit diameter (Mm)	The number of days to first flower	Number of stems Subsidiary	Traits / Figure Seedling age ×
24.24 d	40.67 abc	5.66 cd	a1mt1
25.34 cd	40.11 abc	5.66 cd	a1mt2
30.16 a	35.22 c	7.78 ab	a1mt3
27.43 abc	37.33 bc	7.83 ab	a1mt4
28.40 ab	44.55 a	4.99 d	a2mt1
25.53 cd	43.11 ab	8.44 a	a2mt2
24.24 bc	40.11 abc	6.66 bc	a2mt3
24.70 cd	40.22 abc	6.77 bc	a2mt4

The average in each column with the same letter is not meaningfully different

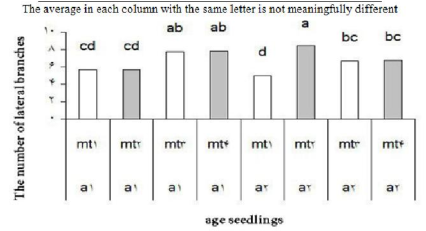

Figure 1: The comparison of seedling kinds and age on the characteristic of the accessory stock numbers

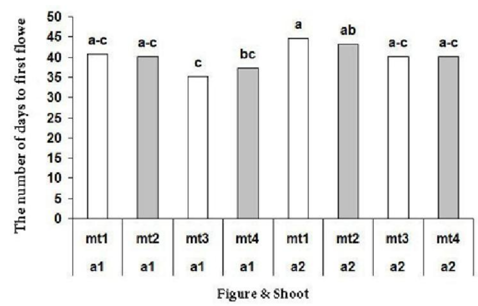

Figure 2: The comparison of the average of the seedling kind and age on the first flower formation

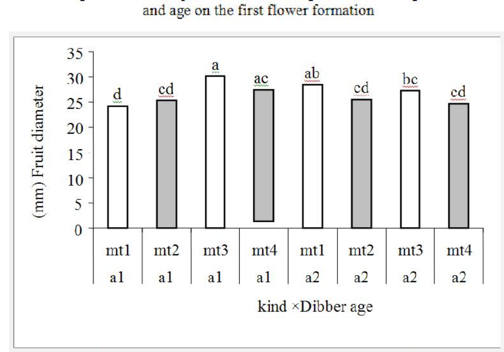

Figure 3: The comparison of seedling age average reaction on fruit diagonal

6. Results and discussion

The observation of delivered seedlings to the field showed that trifoliate seedlings were well established in the field soil and continued their growth rapidly, while in direct seed cultivation the growth was slow. According to the results obtained. Trifoliate seedlings had a better function in comparison to total and precocious functions. Variance analysis results showed that precocious product and total function of bibbers with different ages statistically were meaningfully. As well, trifoliate total function and precocious production was double of the direct seed cultivation. The variance of the leaves numbers revealed that direct seed cultivation and seedling in 5 percent level had a meaningful difference. The most number of leaves was related to Maxim (77/78) and the least number of leaves was related to bi foliate seedling of Maxim kind (70/66). The number of first grade fruits in direct seed cultivation and seedling in 1% level were meaningfully different. The most percent of first grade was related to trifoliate seedling of Superdaminus(65/87) and the least was related to the four foliate seedling kind of Maxim (46/87). The main stock diagonal in the two cultivation method showed a meaningful difference. According to the statistical analysis, viewing the comparison of interaction average on main stock diagonal, it was witnessed that Sperdaminus kind had a bigger stock. Diagonal in relation to Maxim. Ni Smith (19993), Vavrina, et al. (1993) revealed that seedling age had no effect on precocious production and summer pumpkin, Watermelom, but I was inversely right about Superdaminus cucumber. Put another way, the results showed that there is a direct relationship between seedling age and precocious product and trifoliate Superdaminus seedling. Hachmat (1990), Robatzki and Viyamaguchi(1997) stated that the most suitable time for cucumber seedling deliver was when they were four or five foliate which is not adaptable with our experiments. McGraw and Gric (1986) mentioned that eleven weeks pepper seedlings had a better function in comparison to younger seedlings, and these researchers results were in contrast with our own. The studies done in his regard on celery, lettuce, Cabbage and tomatoes showed that the celery production and cabbage in seedling period were not influenced by light. Just tomatoes were influenced by light. This had 12% higher than the normal tomatoes. This experiment, because tri-foliate seedling which has been in exposure to the light had been more precocious. The researchers showed that pepper 60 days seedlings had a precocious and bigger fruits in comparison to the 30, 40 or 50 days ones, but the total function of fruits was not influenced by seedling age. This experiment from precocious aspect is in harmony with our experiment. The four years done research of Javanmard (1388) in various areas showed that watermelon seedling age had no influence on precocious or the function. The results of this research were not in harmony with our research.

7. The final results

The final results of the experiments showed that direct seed cultivation in comparison to seedling method had a smaller weight bushy so that the bushiest weight was related to bi-foliate seedling of Maxim and the least was related to Superdaminus. This showed that seedling results in higher biological functions. As well, our experiment results showed that direct seed cultivation in comparison to seedling method had a smaller weight bushy so that the bushiest weight was related to bi-foliate seedling of Maxim and the least was related to Superdaminus. This showed that seedling results in higher biological functions. As well, our experiment results showed that direct seed cultivation with seedling method caused a more lengthy bushy but this had no positive impact on the production. The seedling method accelerated the formation of the first flower as well. The increase in the first grade fruits, percent, and reduction of second grade fruits, precocious function, and increase in the number of fruits in bushy were the other consequences of seedling method. Finally, the variance analysis results show that though seedling age hasn't a meaningful impact on the amount of function, but seedling method had a higher and meaningful function in comparison to direct to direct seed cultivation.

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