



# NURSERY RAISING PRACTICES OF THE VEGETABLES

Santhosh s j

Lovely professional university,  
jalandhar

**Abstract:** Problems regarding raising of seedlings of vegetables are found very easily, to prevent from bad impacts we can follow protective structure, providing appropriate climatic conditions, micro climate etc. The maximum germination percentage (95%). Growing seedlings on port trays is very beneficial as using of artificial media, proper nutrients, growth management. The success of vegetable farm depends on the reliable planting material. The major problem in this regards is non-availability of true to type and healthy nursery plants. This technology was introduced in Korea in 1992.

**Keywords:** Vegetables productivity, quality seed production, increment growth, farmer benefits, increased outcome.

**Introduction:** In order to enhance better germination of seedlings in vegetables, we opt for protected structure such as poly house, but due to high cost of establishment farmers do not get chance to adopt it. Its highlights “why a basic farmer is unable to opt for protected culture” this review aims to highlight the importance of growing vegetable on portrays for better productivity at less input. In fact, majority farmers do not own even land holdings they work on land owners farm and get wages accordingly. AS implementation of protected culture is very high for a farmer government should focus on this issue. Major issues in vegetable production, according to Anuradha (2015), woman involves in vegetable production but indirectly, major decisions are taken by men [3]. These problems are directly or indirectly affected in the crop production. Reasons for not able to handle the protected structure as they heavily require technical information and

labours. Since, our country is second in vegetable production, it could be on first if successful measures are taken for production of vegetables in country. Growing off season with hybrids can even show higher output in production and productivity. Basic farmers are also afraid of taking risks in their farming life because their livelihood depends upon this.

Country	Area(ha)
India	525

References- Kouser Parveen Wani, Pradeep Kumar Singh, Asima Amin\*, Faheema Mushtaq and Zahoor Ahmad Dar, PROTECTED CULTIVATION OF TOMATO, CAPSICUM AND CUCUMBER UNDER KASHMIR VALLEY CONDITIONS, Asian Journal of Science and Technology Vol. 1, Issue 4, July, 2011, pp.056-061

Country	Area(ha)
India	211.12( viiiith plan)

References - Hillolmoy Chakraborty<sup>1</sup> and Laxmi Narayan Sethi<sup>2</sup>, Prospects of Protected Cultivation of Vegetable Crops in North Eastern Hilly Region, International Journal of Basic and Applied Biology, Volume 2, Number 5; April-June, 2015, pp. 284-289

The low-cost polyhouse can be the choice for basic farmers at very cheap cost. Also, hilly regions eg: himachal Pradesh, Ladakh etc. vegetables growing is too much difficult as mostly they need warm to moderate temperature, whereas hilly areas have very cold weather all seasons. So, this is why vegetables growing in protected structure is very important factor specially in these areas. Vegetables are very exposed to frosting, freezing, it can be a severe loss due to damage. Also, very major concern about different regions in country due to different climatic conditions, the very first initializing stage it is needed to be taken to next stage. Due to very extremely high cost of equipment's of protected structures it's very tough to get, it by hiring labours is Rs. 10900.00, by 50-50 type half family and half hired labours cost can be Rs. 7700.00, and also if an individual cannot afford hiring then only for family labours cost can be Rs. 4500.00. And the income earned for any sequence of planting vegetable crops differ in range of 15,000 to 19,000[2]. Likewise there are different types of vegetable diseases which mostly interrupt in growing vegetables which increases the chance of failure production of vegetables, there are different types of research conducted in order to identify and take measures against the diseases and pests too. Also, there are various types of harmful diseases on vegetables, and experiments were conducted to deal with them [4].

## **EXPERIMENTAL DETAILS**

Different vegetables require different types of growing media in order to grow vegetables but most important is in case of soil, vegetable plants are prone to diseases as well as pest's infestation very easily also it has very less viability rate compared to soil. Therefore, growing with soil less media is a great option to grow inside protected structure. There are different types of vegetables which require different composition of different artificial media. Many experiments were conducted in order to determine viability, germination %, productivity, etc. Several experiments were conducted for determining productions in different regions. According to P. Vivek & V. M. Duraisamy, tomato plant seedlings need to be imported from the other countries in addition with custom charges. Moreover,

there is no effective promotion for protected structure in rural areas and no instructors had been set up to instruct farmers. Farmers at present situation they make nursery beds and they grow seedlings on them, and later they transplant it. But there is recommended raising seedlings under protected structure has most success, rather than failure in soil growing media, as it has various amount of soil borne diseases. Most importantly business aspects in agriculture requires protected structure, and environment for production for eg: seed growing and selling extremely requires protected climate. Cost involved in buying different types of seeds of which every seed to germinated to avoid loss by using like hybrid seeds but its cost is high so in order to prevent the loss from less germinating ratio of plants, under required climatic and proper controlling micro climate of plants to achieve 100% success rate. More examples of low cost protected structure can be net house, plastic low tunnel. According to Kouser Parveen Wani (2011), total cost for producing in Himalayan regions can be sown in selected medias as one in (1.) coir pith and other two as (2.)vermi compost (3.) coir pith+ vermi compost. It was found that coir pith growing media has 99% germination rate, vermi compost has 87%, and coir pith+ vermi compost has 92%. It's because coir pith has very good EC, pH and more. The oxygen circulation in coir pith is far better than the other media. With coir pith it was recorded as shoot length having 89.3mm, root length having 37.9mm, stem diameter having 1.77mm, and no. of leaves having 4 at the age of 30 days. Also, experiment conducted for determining the best suitable particle size of media which ensures maximum production. According to HKMS Kumarasinghe, S Subasinghe and D Ransimala, the tests were conducted on these vegetables are bell pepper, tomato, t four week for growth and 20 to 26 degrees Celsius for fifth and sixth weeks. Brinjal seed germinate VAT 21 to 24 degree Celsius. Chilli seed germinate at 28 to 32 degrees Celsius

$$\text{Germination (\%)} = \frac{\text{seeds germinated}}{\text{total no of seeds}} * 100 \quad \text{--- (1)}$$

$$\text{Seedling vigor index} = \text{germination (\%)} * (\text{shoot length} + \text{root length}) \quad \text{--- (2)}$$

$$\text{Dry matter accumulation (\%)} = \frac{\text{dry weight}}{\text{fresh weight}} * 100 \quad \text{--- (3)}$$

**Reference: Herrera, F., J.E. Castillo, A.F. Chica and Lopez- Bellido, 2008. Use of municipal solid waste compost (MSMC) as a growing medium in the nursery production of tomato plant. Bioresource technology., 99; 287-296.**

#### YEARLY DEMAND OF VEGETABLE SEEDLINGS AND SEEDS IN INDIA:

S.NO	Crop	Seedling(millions)	Seed(kgs)
1	Tomato	13028	600
2	Brinjal	200000	635
3	Chilli	14157	195
4	Onion	695000	2779
5	Cabbage	22963	101
6	cauliflower	12669	87

(Resource Book on horticulture nursery management, NAIP, ICAR, 2012)

## **Experiment results**

### **Tomato (Protected region)**

The average highest fruit yield was found 3826.80 q/ha, and then 3572.18.22 q/ha.

### **Capsicum (Protected region)**

The average highest fruit yield was found 1304.60 q/ha, and then 1257.29 q/ha.

### **Cucumber (Protected region)**

The average highest fruit yield was cucumber and cabbage on which different particle size of same media was used as 3 categories named as fine, coarse, medium. In case of media coco peat was taken, on which it was found that the medium was the best particle size out of three with particle size of (0.5 mm - 3.0 mm). This experiment was to ensure increase in germination rate. And also, for higher viable rate this particle size can be used in case of coco peat media. The next experiment is also on the tomato seedlings which shows the growth characteristics on raising it on soil less media. According to Kanchhi Maya Waiba and Sharma, the experiment was conducted in pro-trays having artificial media coco peat+ perlite+ vermiculite having the ratio of 3:1:1 respectively. The experiment was focussed on studying differences of hybrids of tomato their genotype and performances accordingly. So, it was found that hybrid mixing of 2 i.e.; CLN2126, CLN1314G shows very high growth characteristics, increased germination rate, by using the artificial media. According to cantliffe j. Daniel Pelleting builds up seed size and uniformity by layering the seed with layer of clay type material and binder. seed normally pelleted included tomato, brinjal, chilli, onion. The coating does not build up seed size, nor it does it change the shape of seed. The coating makes the seeds more flowable in seeders. Pelleting process allows the seeds to more visible at sowing. According to kitaya y.,niu.,kozai T.& ohasi M the transplant tray is the first area that the transplant tray is first area that facilitates mechanization both in seedling and potentially automatic field transplanting. The seeds are pelleted, round and of reasonable size. According to Singh D. K and Peter K. V the warm temperature and uniform moisture is important for successful germination. Tomato seeds germinate are best at 21 degree Celsius. the ideal root zone temperature is 26 to 29 degree Celsius during firs found 3859.45 q/ha, and then 3435.73 q/ha.

References-Kouser Parveen Wani, Pradeep Kumar Singh, Asima Amin\*, Faheema Mushtaq and Zahoor Ahmad Dar, PROTECTED CULTIVATION OF TOMATO, CAPSICUM AND CUCUMBER UNDER KASHMIR VALLEY CONDITIONS, Asian Journal of Science and Technology Vol. 1, Issue 4, July, 2011, pp.056-061

### **Pest and diseases management:**

Hygiene has a vital role in the control of pest and diseases. Effective ventilation and air movement is also a sound diseases prevention method. Greenhouse plants can be more sensitive to chemicals than in the open field. Understand pests and diseases that could affect the growth of healthy seedling. Lack of trained personnel and skilled labour for doing nursery activities.

## Errors of nursery activities

Container not filled properly. Cylindrical shape of container not maintained. Sowing seed too deep. Container not in upright position. Soil or sand used in germination beds not changed after each production cycle. Bad root pruning while transplanting. Exposure of seedling to air after lifting. Hardening off process starting too late or neglected. Reference: Banerjee, A.k.1987.nursery manual of species commonly used in social forestry in India,Rep: national wasteland development board/001/007/1987, Kappor press, new Delhi, p64

## Nutrient specific fertilizer recommendation:

DAS Fertilizer dosage (g in 10 litres of water 19:19:19

+micronutrient)

8-16 5

16-19 10

19-22 15

22-24 20

Chemical control

Day Recommendation

13 IF Damping off is noticed, drenching with  
COC @3g/Lof water/copper hydroxide @2g/L

17 spray leaf miners + silicon @1ml/L

25 drenching with broad spectrum fungicides + systemic fungicides

Pathogen on cauliflower: grows on vegetable and make loss as nutritive.

Nutrient alteration-water availability (-1.63), Gross carbohydrate (-63.043), Reducing sugar (-65.218), Fibre (-52), Protein (33.333), Amino acids (33.333), Lipids (-100), Vitamin c (-85.714), Dry matter (6.579).

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Brinjal and spider mites-Experiment was conducted on which it was found that growing brinjals normal varieties were severely infected whereas hybrid variety was very less infected thus choice of hybrid varieties can be a better option for cultivation and maximum output. References-GURPREET SINGH WALIA<sup>1</sup>, MANMEET BRAR BHULLAR<sup>2</sup> and PARAMJIT KAUR<sup>3</sup>, Screening of brinjal (Solanum melongena) varieties/hybrids against two-spotted spider mite (Tetranychus urticae) \*, Indian Journal of Agricultural Sciences 82 (11): 1003–5, November 2012

**Experiment on tomato cultivation:** water problem-60%, Labour requirement-76.6%, seedling nonviability66.6%, - Sale of seedlings-50.0%, Lack of technical guidance-30.0%, credit facility absence- 83.3, nurseries rivals-90.0%, Pest and Disease Infestations-53.3%.  
References- Ashoka N, Lingamurthy KR, Dhanraj P, Ravi Kumar B, Gajanana Kumatagi, Anupama G, Area and seedlings forecast of tomato and economic analysis of nursery in Karnataka, Journal of Pharmacognosy and Phytochemistry 2019; 8(4): 1709-1713

**Experiment on cowpea of various types of varieties:** Varieties check: v1yield-108.6/ha, v2-120.5/ha, v3-94.4/ha, v4-131.4/ha, v5-135.2/ha, v6-148.6/ha, v7-155.5/ha, v8-84.6/ha, v9-128.02/ha, v10-131.2/ha.

**Experiment on brinjal of various types of varieties:** ppl(B)-50 tonnes/ha, PLR.1-25 t/ha, KKM.1-37 t/ha, COBH.1-56t/ha, PKM.1-35t/ha, co.1 -20-25.

## Conclusion:

Vegetable nursery production has become a highly commercialized business, wherein most farmers buy their plugs from professional growers. Many factors help to produce quality seedlings. These include the use of high-quality seeds, growing media with good drainage, water holding capacity, and providing optimal rates of fertility. Further, seedlings are germinated under more or less optimal conditions to obtain uniform stands and are grown in protected culture under greenhouse conditions. Rate of plant development, root structure, plant height and vegetative matter can be tightly controlled under these conditions. Container cell sizes can be adjusted to help produce plant sizes that conform to strict can be adjusted to help produce plant sizes that conform to strict customer demands. The use of robots for tray filling, in the production greenhouse, and the mechanization of both the planting and growing process, as well as fertilization of the tray and harvest process can further reduce labour requirements of the plug production system. Reference: kitaya y.,niu G.,Kozai T. and ohashi M. (1998) Horticultural science,33,988-991

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