

Original Research Article

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## Constraints in Adoption of Modern Vegetable Cultivation Practices in Bastar Plateau

Ashwini Kumar Tiwari<sup>1\*</sup> and Jugul Kishor Tiwari<sup>2</sup>

<sup>1</sup>Fiji national university, College of Agriculture, Fisheries and Forestry,  
Koronivia, Fiji Islands

<sup>2</sup>Indira Gandhi Agricultural University, Raipur, Chhattisgarh, India

### ABSTRACT

The present study was conducted in the three blocks, namely Turenar, Tahkapal and bastanar block of Bastar district. These blocks are inhabited by the tribes, particularly Bhatra, Gond, Halwa, Maria, Muria, who are normally doing subsistence farming. Farmers of these regions are doing only traditional farming. Among these three blocks, 12 villages were selected randomly i.e. four villages from each block. From each village 10 vegetable growers were randomly selected by random sampling method. The total no of respondent to this study were 120 vegetable growers. The average productivity of vegetable crops in Chhattisgarh is 130.16 q per hectare which is below than the national average. It is mainly due to poor knowledge, facility as well as reluctant attitude of farmers in adopting the new technology. It is observed that a wide gap exist in production obtained and potential yield. Productivity per unit area can be obtained only by adopting improved varieties, hybrids as well as modern vegetable cultivation practices. The major bottlenecks in increasing production in this district were non availability of improved varieties (80%), Disease and insect resistant varieties (78%), high cost of seeds (77%), improper dose of fertilizer (74%), non-availability of skilled labour (74%) and price fluctuation of produce (58%), which discourages the farmers to adopt modern vegetable cultivation practices.

#### Keywords

Constraints,  
Vegetable,  
Improved practices,  
Bastar plateau

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### Introduction

In era of shrinking land holding, and more pressure per unit area of land, cultivation of fruit and vegetable has emerged as profitable venture. Cultivation of vegetable not only provide nutritional security, it also provides a substantial employment to rural people as well as open the door for export. Thus, plays an active role in increasing the livelihood condition of poor rural folks. Vegetables are one of the cheapest sources of natural

protective food, contributing carbohydrates, vitamins and mineral in human diet (Choudhury, 2006). Vegetables are rich in vitamins and in comparison to other sources it is cheaper. Vegetable consumption provides taste, increase appetite, palatability and provides necessary fibre, essential for proper functioning of digestive system.

Vegetable cultivation has a number of added advantage like vegetable are of shorter duration, than cereal crop, so, more crops can

be taken per unit area of land in a year, vegetable cultivation are helpful in diversification of agriculture, providing ample opportunities to conserve soil and moisture depletion. A farmer can fetch more prices for his produce in comparison to cereal crops from the small unit area of land, he can take more produce than other crops. Vegetable cultivation involves intensive cultural operations since sowing for marketing, providing regular employment opportunities to unemployed youth to farmer and farm family. At the same time perishable nature of vegetable demand skill and comprehensive planning for storage, movement, and distribution as well as processing of vegetable produce.

Nowadays, people are aware regarding their health proposition, as a result they want to add more and more fruit and vegetable in their food basket. Vegetable are cheapest source of carbohydrates, minerals and vitamins. Vegetables are now commercialized, but still traditional farming is done in far flung areas like Bastar Plateau in Chhattisgarh, which are normally inhabited by the tribes, particularly Maria, Muria, Gond, Bhatra, and Halwa, who are doing subsistence farming. Ninety seven per cent areas in Bastar Plateau are rain-fed. In Chhattisgarh, total area under vegetable cultivation is 3, 77,212 ha and production is 4,96,5331 metric tonnes per hectare and productivity is 13.16 metric tonnes (Anonymous, 2012). It shows that there is tremendous scope to increase the productivity per unit area. Nowadays vegetable cultivation is highly commercialized, but there is still a wide gap between production realized and potential production. So, efforts have to be made by researchers, extension workers and policy makers to bridge this gap (George and Singh, 2006). By adopting improved techniques and high yielding varieties, production and productivity can be increased (Sahu *et al.*, 2009). In vegetable cultivation, a

number of technology has been developed, but farmers do not show keen interest in adopting this technology. So, to enhance the production and adoption of new farming technology it is imperative to know, why farmers are reluctant in adaptation of this technology. So, to know that what are the constraints faced by farmers in adoption of Modern practice of vegetable cultivation. This study was undertaken at Bastar Plateau.

### **Materials and Methods**

The present study was conducted in Bastar district of Chhattisgarh in 2009-2011. For the purpose of study three blocks of Bastar viz. Bastar, Tahkapaland Turenar was purposely selected. These three blocks, are dominated by the tribe namely, Bhatra, Muria, Maria, Gond and Halwa. 12 villages were randomly selected from these three blocks, and from each village 10 vegetable growers were randomly selected by simple random sampling method. So the total number of 120 vegetable growers was selected.

A well-structured and pre-tested schedule was used to collect the information from the vegetable growers. In this study, an interview schedule, having 37 statements, regarding different constraints normally faced by the farmer were asked on different aspect of vegetable cultivation practice. The responses observed from the different farmers were divided into two categories i.e. yes and no. the statement having 'No' responses were given zero mark and the statement having "Yes" were given one mark. So, individual vegetable grower can get a maximum marks of 37 and thus minimum marks was zero.

### **Results and Discussion**

The present investigation was categorized into four major constraints, faced by farmer in this far flung area. The major constraints faced by

farmer, in vegetable cultivation are as follows: 1. Resource constraints, 2. Technological constraints, 3. Plant management constraints and 4. Storage and marketing constraints.

### **Resource constraints in improved vegetable cultivation practices**

The major constraints, in this area is non-availability of resources, Table 1 reveals that the major constraints faced by the farmers in this area is availability of seed of improved varieties (80%) is the first resource constraints. The second (78%) and third constraints (77%) are the non-availability of disease and pest resistant varieties, as well as high cost of seeds. Farmers are also unaware of seed treatment and its effect on crop yield, beside it high cost of fertilizer is one of the major bottleneck in applying sufficient doses of fertilizer, (75%), which ultimately hampering the production, other factors which re preventing the farmer in adoption of recommended vegetable cultivation practices are, non-availability of fertilizer (67%), labour availability in peak season (64%) as well as scattered and small holding (63%).

The similar result was also reported by Dhillon and Kumar (2004), that high cost of seed and lack of improved seed varieties were constraints faced by the farmer. Mandeep Sharma (2014) also opined that high cost of chemicals for seed treatment, is a major constraints for non-adaptation of modern cultivation practices.

### **Technology constraints in improved vegetable cultivation practices**

It is cleared in Table 2, Three fourth of respondents (74%) were unaware regarding importance of fertilizer, to the crop, farmers were not applying proper dose of fertilizer, second most important constraints were the lack of knowledge, on proper method of

fertigation (70%) third most important constraints faced by the farmers, are knowledge of improved varieties (68%), as we know, most of the improved varieties are fertilizer responsive, improver fertigation leads to less yield, other major technological constraints faced by the farmers are lack of availability of publication of modern technique of vegetable farming (65%), lack of farmers training on modern vegetable production technique (63%), lack of soil testing facility are the other constraints faced by the farmers in field. These findings were partially supported by Meena (2003) and Rai *et al.*, (2010).

### **Plant management constraints in improved vegetable cultivation practices**

From the analysis of Table 3, the major constraints emerge from the responses of farmer on plant management parts is non-availability of skilled labour (74%) during peak season. High cost of weedicides (58%), high cost of insecticide/fungicide, improper knowledge on proper dose of weedicide/insecticide/fungicide (55%), poor response of chemicals (52).

These are in accordance with findings of Dhillon and Kumar (2004). The data further reveals that unavailability of chemicals (weedicide/ fungicide/ pesticide). Technical knowledge on weed application (50%), knowledge on weedicide, lack of technical knowledge, non-availability of proper spraying instruments, are the major constraints in adoption of improved cultivation practices of vegetables. The inferences drawn from the Table 3 also says that financial problem (57%) is also one of the major bottlenecks in adoption of improved plant management, during adoption of modern vegetable cultivation practices. These finding are in accordance to findings of Kumar (2008) and Mandeep Sharma (2014).

**Table.1** Resource constraints

(N=120)

S.No	Constraints	Frequency	%	Rank
1	Availability of seed of improved variety	96	80	I
2	Availability of disease/ pest resistant varieties	94	78	II
3	Knowledge on seed treatment (chemicals)	90	75	IV
4	High cost of seed	92	77	III
5	High cost of fertilizer	90	75	IV
6	Labour availability in peak season	77	64	VI
7	Non-availability of fertilizer	80	67	V
8	Land holding (scattered, small)	75	63	VII

**Table.2** Technological constraints

(N=120)

S.No	Constraints	Frequency	%	Rank
1	Knowledge about improved varieties	82	68	III
2	Proper disease and pest management	65	54	VII
3	Proper fertigation	89	74	I
4	Method of fertigation	84	70	II
5	Training on modern vegetable production technique	76	63	V
6	Availability of publication on modern technique of vegetable farming	78	65	IV
7	Soil testing facility	70	58	VI

**Table.3** Plant management constraints

(N=120)

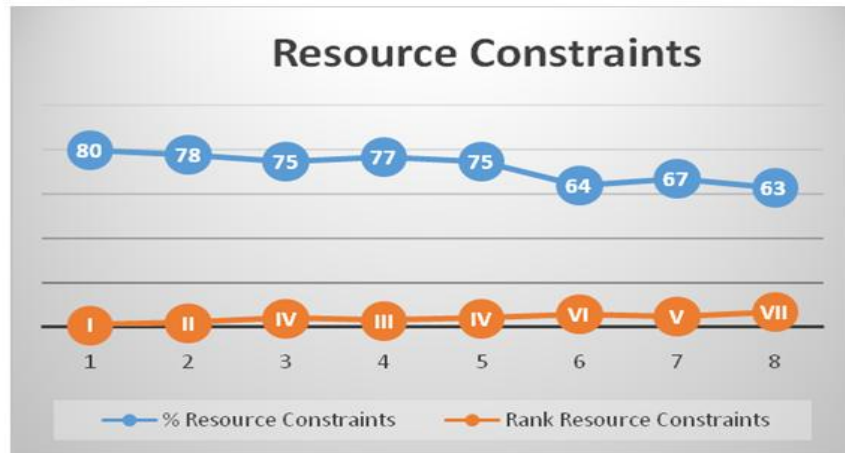
S.No	Constraints	Frequency	%	Rank
1	Knowledge on weedicides	55	46	VII
2	Technical knowledge on weed application	60	50	VI
3	High cost of weedicides	70	58	II
4	High cost of insecticide/ fungicide	68	57	III
5	Unavailability of chemical (weedicide/ fungicide/ pesticide)	56	47	VI
6	Difficulty in diagnosis of disease and insect pest	69	58	II
7	Availability of proper spraying instruments	55	46	VII
8	Lack of technical know how	42	35	VIII
9	Knowledge on proper dose of weedicide/ insecticide/ fungicide	66	55	IV
10	Poor response of chemicals	62	52	V
11	Non-availability of skilled labour	74	62	I
12	Financial problem	68	57	III

**Table.4** Storage and marketing constraints

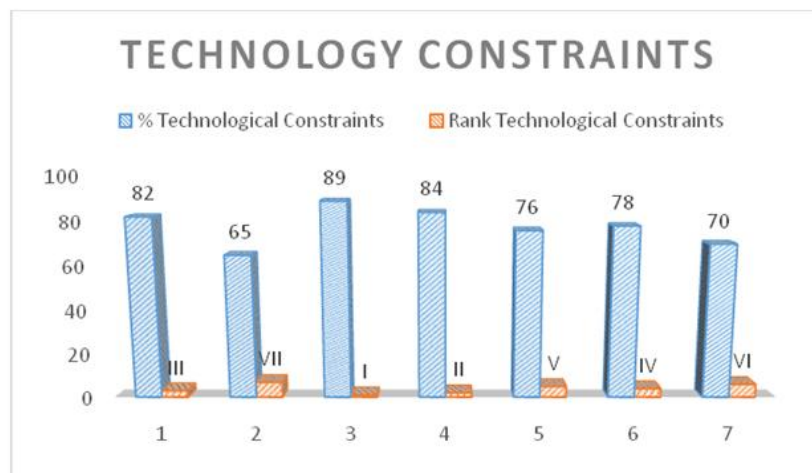
(N=120)

S.No	Constraints	Frequency	%	Rank
1	Poor shelf life	55	46	VII
2	Lack of cold storage	49	41	IX
3	Lack of market facility in nearby areas	47	39	X
4	Roads in poor conditions	60	50	V
5	Exploitation by commission agents	65	54	II
6	Non-standard weighing procedures	62	52	IV
7	Price fluctuation	70	58	I
8	Unattractive price	52	43	VII
9	Poor transportation facilities	63	53	III
10	High cost of transportation	57	48	VI

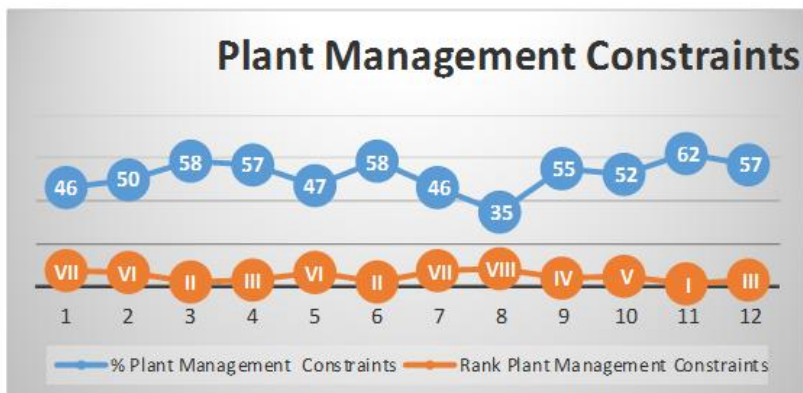
**Graph.1**



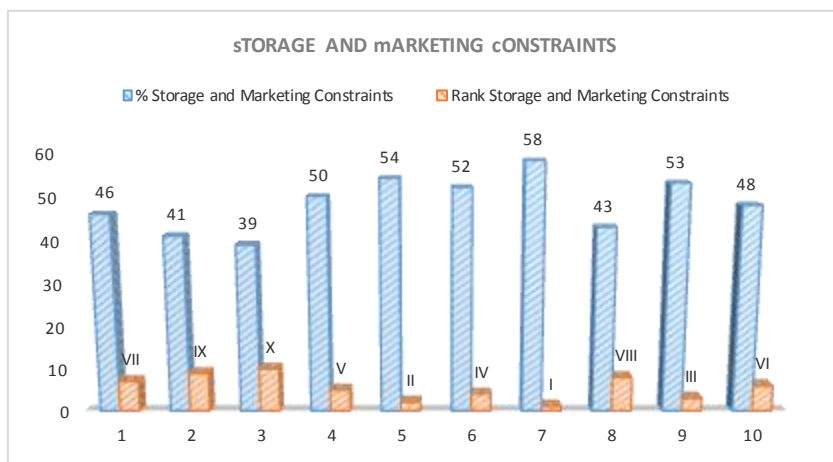
**Graph.2**



Graph.3



Graph.4



**Storage and marketing constraints in improved vegetable cultivation practices**

Analysis of Table 4, reveals that continuous price fluctuation (58%) is the major bottleneck in adoption of improved cultivation practices of vegetables. Beside it exploitation by commission agent (54%), poor transport facility (53%), non-standard weighing procedures (52%), poor condition of road (50%), high cost of transportation (48%), poor shelf life (46%) and sprouts in vegetables, are the constraints which discourage farmers in adopting modern vegetable cultivation practices. Data from Table 3 also reveals unavailability of cold storage (41%) and lack of market facility in nearby

areas (39%) also discourages the farmers to adopt modern vegetable cultivation practices. These findings are in conformity with the findings of Ghandi *et al.*, (2008).

**Suggestion to overcome these constraints is as follows**

Basic input to the farmers should be provided timely and in advance of cropping season.

Extension worker should conduct demonstration in farmers' field, Kisanmela should be organized at the site of demonstration.

Financial assistance and subsidy should be

provided timely to the farmer.

Poor irrigation facility in Bastar region, so more area should be covered under irrigation.

Better marketing as well as transportation facility should be provided to the farmer.

Training as well as extension programme should be well planned and before cropping season.

Stringent measures should be taken against commission agents who are exploiting farmers.

Strengthening of storage infrastructures and make them available to the farmer at cheaper rate.

This study reveals that non-availability of improved variety, disease free seeds, high cost of chemicals (weedicide/ fungicide/ pesticide), timely availability of chemicals, lack of knowledge on seed treatment, lack of Skilled labour, technical knowledge gap, financial problem, poor shelf life of vegetables, inappropriate equipment's, poor storage facility, poor market infrastructure, less support price and price fluctuation were the main constraints faced by the vegetable grower in the adoption of recommended vegetable cultivation practices by the vegetable growers, therefore planners should give importance to major constraints like technical literacy, infrastructure development and strengthening storage and marketing facility.

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