A STUDY ON PRODUCTION, MARKETING AND CONSUMPTION PATTERN OF PULSES IN TUMAKURU DISTRICT

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UNIVERSITY OF AGRICULTURAL SCIENCES
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Project report submitted to the

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In partial fulfilment of the requirement for the award of the degree of

MASTER OF BUSINESS ADMINISTRATION

(Agribusiness Management)

BANGALORE **SEPTEMBER, 2019**


Affectionately Dedicated to My
Beloved Parents, my Brothers
and my Guide

DEPARTMENT OF AGRICULTURAL MARKETING, CO-OPERATION AND BUSINESS MANAGEMENT UNIVERSITY OF AGRICULTURAL SCIENCES GKVK, BANGALORE - 560 065

CERTIFICATE

This is to certify that the project report entitled **"A STUDY ON PRODUCTION, MARKETING AND CONSUMPTION PATTERN OF PULSES IN TUMAKURU DISTRICT"** submitted by **Ms. REKHA, B. S., ID No. MBAL 5009 in** partial fulfilment of the requirement for the degree of **MASTER OF BUSINESS ADMINISTRATION (AGRIBUSINESS MANAGEMENT)** to the University of Agricultural Sciences, Bangalore, is a record of *bona-fide* research work done by her during the period of her study in this University under my guidance and supervision and no part of the project report has been submitted for the award of any other degree, diploma, associateship, fellowship or any other similar titles.

Bangalore
September, 2019

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A STUDY ON PRODUCTION, MARKETING AND CONSUMPTION PATTERN OF PULSES IN TUMAKURU DISTRICT

REKHA, B. S.

ABSTRACT

Pulses are one of the important food crops globally due to higher protein content. Pulses are an important group of crops in India, which is also responsible for yielding large financial gains to exporters. Pulses are the major sources of protein in the diet of all categories of people. Pulses form an integral part of the Indian diet, providing much needed protein to the carbohydrate rich diet. The main objectives of the present study were the production, marketing, and consumption pattern of pulses in Tumakuru district. The data was collected through pre-tested questionnaire from each of taluk which 20 pulse consumers and producers were selected from a sample size made up to 120 and was analyzed using percentage analysis and Garrett's ranking technique. The results indicated that natural properties of consumption pattern of pulses. A majority of respondents consume green gram and chickpea. 50 per cent both tables and snack purpose in marketing channel 2 is prefer rather than channel 1. Price spread was higher in channel-II(Rs.5920) compared to channel 1(Rs.90000) Consumption of pulses were more in rural area compared to urban areas because they more more junk foods. So it is necessary to processe more products from the pulses for the betterment of life.

September, 2019

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Dr. M. S. GANAPATHY
Major advisor

ತುಮಕೂರು ಜಿಲ್ಲೆಯಲ್ಲಿ ದ್ವಿದಳ ಧಾನ್ಯಗಳ ಉತ್ಪಾದನೆ, ಮಾರಾಟ ಮತ್ತು ಸೇವನೆ ಮಾದರಿಯ ಅಧ್ಯಯನ

ರೇಖಾ, ಬಿ. ಎಸ್.

ಸಾರಾಂಶ

ಹೆಚ್ಚಿನ ಪ್ರೋಟೀನ್ ಅಂಶದಿಂದಾಗಿ ದ್ವಿದಳ ಧಾನ್ಯಗಳು ಜಾಗತಿಕವಾಗಿ ಪ್ರಮುಖ ಆಹಾರ ಬೆಳೆಗಳಲ್ಲಿ ಒಂದಾಗಿದೆ ಬೇಳೆ ಕಾಳುಗಳು ಭಾರತದಲ್ಲಿ ಆಹಾರ ಬೆಳೆಗಳಲ್ಲಿ ಒಂದು ಪ್ರಮುಖ ಪಾತ್ರವಹಿಸಿದೆ ರಫ್ತುದಾರರಿಗೆ ದೊಡ್ಡಹಣಕಾಸಿನ ಅದಾಯಗಳನ್ನು ನೀಡುವ ಪ್ರಮುಖ ಜವಾಬ್ದಾರಿಯೂ ಇದೆ. ದ್ವಿದಳ ಧಾನ್ಯಗಳು ಭಾರತೀಯ ಆಹಾರದ ಆವಿಭಾಜ್ಯ ಅಂಗವಾಗಿದೆ. ಇದು ಕಾರ್ಬೋಹೈಡ್ರೇಟ್ಸ ಸಮೃದ್ಧ ಆಹಾರಕ್ಕೆ ಅಗತ್ಯವಾದ ಪ್ರೋಟೀನ್ ಅನ್ನು ಒದಗಿಸುತ್ತದೆ. ಪ್ರಸ್ತುತ ಅಧ್ಯಯನದ ಮುಖ್ಯ ಉದ್ದೇಶಗಳು ತುಮಕುರುಜಿಲ್ಲೆಯಲ್ಲಿ ಉತ್ಪಾದನೆ ಮರುಕಟ್ಟೆ ಮತ್ತು ದ್ವಿದಳ ಧಾನ್ಯಗಳ ಮಾದರಿಗಾಗಿ ಪ್ರತಿ ತಾಲ್ಲೂಕಿನಿಂದ ಪೂರ್ವ-ಪರೀಕ್ಷಿತ ಪ್ರಶ್ನಾವಳಿಯ ಯಾದೃಚ್ಚಿಕೆ ನಮೂನೆ ಮೂಲಕ ಅಂಕಿ ಅಂಶ ಸಂಗ್ರಹಿಸಲಾಗಿದೆ. ಇದರಲ್ಲಿ ೨೦ ಗ್ರಾಹಕರು ಮತ್ತು ರೈತರು ೧೨೦ ಮಾದರಿ ಗಾತ್ರವನ್ನು ಆಯ್ಕೆಮಾಡಲಾಯಿತು ಮತ್ತು ಶೇಕಡಾವಾರು ಗ್ಯಾರೆಟ್ ಯಾಂಕ ತಂತ್ರವನ್ನು ಬಳಸಿ ವಿಶ್ಲೇಷಿಸಲಾಗಿದೆ.ದ್ವಿದಳ ಧಾನ್ಯಗಳ ಬಳಕೆ ಮಾದರಿಯ ನೈಸರ್ಗಿಕ ಗುಣಲಕ್ಷಣಗಳು ಬಹುಪಾಲು ಪ್ರಭಾವ ಬೀರಿದೆ. ಹೆಸರುಕಾಳು ಮತ್ತ ಕಡಲೆ ಕಾಳು ತಲಾ ಶೇಕಡಾ ೫೦ ಆಹಾರಕ್ಕೆ ಮತ್ತು ಲಘು ಆಹಾರಕ್ಕೆ ಉಪಾಯೋಗಿಸುತ್ತಾರೆ. ರೈತರು ಮಾರಟಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ ಚಾನಲ್೧ ಕ್ಕಿಂತ ೨ರಲ್ಲಿ ಅವಲಂಬಿತರಗಿರುತ್ತಾರೆ. ಚಾನಲ್೧(ರೂ೫೯೨೦) ಕ್ಕೆ ಹೋಲಿಸಿದರೆ ಚಾನಲ್೨ (ರೂ೯೦೦೦) ರ ಬೆಲೆ ಹರಡುವಿಕೆ ಹೆಚ್ಚಾಗಿದೆ ಏಕೆಂದರೆ ಬೆಲೆ ಎರಿಳಿತದ ಪ್ರಭಾವ ನಗರಪ್ರದೇಶಗಳಿಗೆ ಹೋಲಿಸಿದರೆ ಗ್ರಾಮೀಣ ಪ್ರದೇಶಗಳಲ್ಲಿ ಹೆಚ್ಚು. ಆದ್ದರಿಂದ ಜೀವನದ ಉತ್ತಮತೆಗಾಗಿ ದ್ವಿದಳಧಾನ್ಯಗಳಿಂದ ಹೆಚ್ಚಿನ ಉತ್ಪನ್ನಗಳನ್ನು ಪ್ರಕ್ರಿಯೆಗೊಳಿಸುವುದು ಅವಶ್ಯಕ.

ಸೆಪ್ಟೆಂಬರ್, 2019

(ಡಾ. ಎಂ. ಎಸ್. ಗಣಪತಿ)
ಪ್ರಧಾನ ಸಲಹಗಾರರು

ಕೃಷಿ ಮಾರುಕಟ್ಟೆ, ಸಹಕಾರ ಮತ್ತು
ವ್ಯವಹಾರ ನಿರ್ವಹಣೆ ವಿಭಾಗ
ಕೃಷಿ ಕಾಲೇಜು, ಕೃಷಿ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ
ಬೆಂಗಳೂರು-೫೬೦೦೬೫

Production Performance of Pulses and Study In Karnataka.

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INTRODUCTION

Pulses are important leguminous crop, which is a cheap source of plant protein. India is the largest producer and consumer of pulses in the world accounting for about 29 per cent of the world area and 19 per cent of the world's production. India is also the largest importer and processor of pulses in the World. Major pulse produce N states are Madhya Pradesh (20.3percent), Maharashtra (13.8percent), Rajasthan (16.4percent), Uttar Pradesh (9.5percent), Karnataka (9.3percent), Andhra Pradesh (7.9percent), Chhattisgarh (3.8percent), Bihar (2.6percent) and Tamil Nadu(2.9percent). The technological break through since mid sixties resulted in greater strides in augmenting agricultural production and contributed much for pulses production. The growth in area and production are not as important as growth in productivity because it serves as a barometer to gauge the technological development and its adoption in the country.

As a cost-effective protein source, an increase in the availability of pulses and their consumption, particularly by individuals below the poverty line (BPL),can address the nutritional security of the poorest people in India.

OBJECTIVE

1.To analyse the trend in area, production and productivity of important pulses in Karnataka.

MATERIAL AND METHODS

For the present study secondary data was collected from Directorate of Economics and Statistics, Bengaluru for the selected pulse crops of Karnataka for a period of 16 years (2000 to 2016) and Growth rates for area production and productivity of selected pulses and total pulses were computed

Compound growth rate analysis:

Compound growth rates of Area, Production, Productivity of pulses were estimated by using non linear function of the form

$Y_t = ab^t U_t$. . . . . (1)

Where, Y_t = area, productivity or production of pulse in period t.

t = in years 1, 2, 3 . . . . . n.

U_t = disturbance term.

"a" and "b" are parameters to be estimated.

Log transformation of (1) provided equation given by

$\log Y_t = \log a + t \log b + \log U_t$ . . . .(2)

Equation (2) was estimated by ordinary least square technique. The compound annual growth rate (CAGR) was then estimated by identity given in equation (3)

CAGR (g)= (b^-1)100. . . . . .(3)

Where, g^= estimated compound growth rate in percent per year and b^= antilog of b

The standard error of growth rate was estimated and tested for its significance with "F" statistics

RESULTS

Growth rates for area production and productivity for selected pulse crops and total pulse crop of Karnataka for period 2000 to 2016 was shown in Table.1 and Fig.1

Table. 1 Compound Annual Growth rate for Area, Production and Productivity from 20001-2016 in percent

Pulse Crops	Area	Production	Productivity
Tur	2.74	5.50	2.68
Bengal gram	7.95	8.56	0.56
Horse gram	-4.66	-3.14	1.59
Black gram	-4.12	-1.15	3.05
Green gram	-2.28	-1.74	0.55
Avare	-1.67	-1.74	13.84
Cowpea	-1.12	4.82	1.88
Total pulses	1.88	4.82	2.73

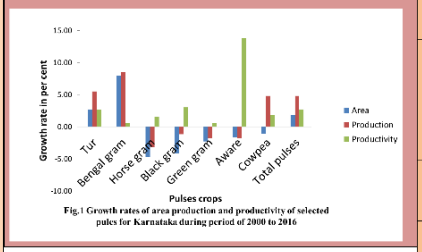

Fig.1 Growth rates of area production and productivity of selected pulses for Karnataka during period of 2000 to 2016

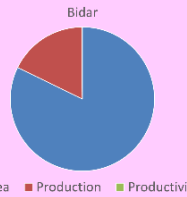

Fig.2 Major Producer of total pulses in Karnataka State 2015-2016

Significance of growth rate area, production and productivity 0f pulse in Karnataka From 2001-2016

Pulses	Area	Production	Productivity
	F-value		(p-value)
Tur	18.71 (0.000698)	8.76 (0.01035)	3.48 (0.083399)
Bengal gram	81.8 (3.18E-07)	44.04 (1.12E-05)	0.22 (0.64837)
Horse gram	86.54 (2.27E-07)	10.26 (0.006378)	2.07 (0.172534)
Block gram	29.47 (8.9E-05)	0.17 (0.685922)	1.32 (0.269798)
Green gram	7.68 (0.156111)	0.43 (0.523749)	0.05 (0.835023)
Avare	7.68 (0.015001)	0.22 (0.644848)	49.36 (6E-06)
Cowpea	2.51 (0.135192)	17.23 (0.00098)	1.88 (0.134287)
Total pulses	16.14 (0.001273)	17.23 (0.00098)	6.36 (0.024431)

DISUSSION

From Table.1 it could be observed that growth rate of total pulses for area, production, and productivity had positive trend value that is 1.88, 4.8 To 2.73 respectively.

The highest growth rate was observed in Bengal gram area (7.95) and production (8.56). where as for productivity it was observed in Avare (13.84) and the lowest growth rate was seen in Horse gram for area (-4.66) and production (-3.14). where as for productivity it was observed in Green gram(0.55)

Except Tur, Bengal gram other pulses showed negative growth rate in area.

Tur, Bengal gram, Cowpea showed positive growth rate in production while remaining pulses showed negative growth rate in production. Growth rate in productivity was positive for all pulses. for production except Green gram and Aware all the pulses were significant at 1(percent) level of significance.

For productivity except Bengal gram and Green gram all other pulses are significant, Over all total pulses showed significant in area, production and productivity. The CAGR of area, production and productivity of pulses is depicted in fig.1 The growth rates are significant at increase 1 percent level except Horse gram, Black gram ,and Green gram which gradually decreasing in area, production and productivity.

While Horse gram and Tur area decreased by 4.66 percent and 3.14 percent per annum.

SUMMARY

The Present study was carried out using secondary data and growth rate was estimated for the selected pulses for the period from 2000 to 2016.

The result showed that the over all growth rate was positive in area, production and productivity and it was significant at 1percent level of growth rates

Further, it was observed that all other pulses were significant except Horse gram, Black gram and Green gram which showed negative growth rate in area, production and productivity.

Thus, there is need to increase pulse production for area and productivity using technology and high yielding varieties.

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I INTRODUCTION

Agriculture plays a strategic role in the process of economic development of a country. It has already made a significant contribution to the economic prosperity of advanced countries and its role in the economic development of less developed countries is of vital importance. The agriculture sector is a backbone of an economy which provides the basic ingredients to mankind and raw material for industrialization. Thus, industrial and agricultural developments are not alternatives but are complementary and are mutually supporting with respect to both inputs and outputs. It is seen that increased agricultural output and productivity tend to contribute substantially to an overall economic development of the country. It is observed that the leading industrialized countries of today were once predominantly agricultural while the developing economies still have dominance of agriculture and it largely contributes to national income. In India, still,17- 18 per cent of Gross Domestic Product (GDP) comes from the agricultural sector.

Indian agriculture is witnessing a gradual change particularly in the cropping system, land use system, input utilization, marketing and above all the monetary returns. On the one hand, the land area available for agriculture is decreasing due to increase in urbanization, while the other, the demand for higher productivity and returns from the cultivable land is increasing rapidly. India is blessed with various types of soils and varied agro-climatic conditions.

Pulses are one of the important food crops globally due to higher protein content. Pulses are an important group of crops in India, which is also responsible for yielding large financial grains to exporters. Pulses are the major sources of protein in the diet of all categories of people pulses form an integral part of the Indian diet, providing much needed protein to the carbohydrate rich diet. India is the largest producer of pulses in the world. Pulses have 20 to 25 per cent protein by weight which is double the protein content of wheat and three times that of rice. The production front, value of pulses to soils where they grow is well known. Their pre-eminent role as a source of protein in India’s vegetarian diet is also well recognized.

Importance of Pulse Crops in India

Pulses are rich in proteins and found to be main source of protein to vegetarian people of India. It is second important constituent of Indian diet after cereals. They can be grown on all types of soil and climatic conditions. Pulses being legumes fix atmospheric nitrogen into the soil. They play important role in crop rotation, mixed and intercropping, as they help maintaining the soil fertility. They add organic matter into the soil in the form of leaf mould. Pulses are generally not manured or require less manuring. They are helpful for checking the soil erosion as they have more leafy growth and close spacing. They supply additional fodder for cattle. Some pulses are turned into soil as green manure crops. Majority pulses crops are short durational so that second crop may be taken on same land in a year. They provide raw material to various Agro-based industries.

Ex. Dal industry, Roasted grain industry, Papad industry etc

Global pulse production

The world production pulses are cultivated in 83.3 million hectares in 171 countries with the production of 81.8 million tonnes. India is the world's largest producer, accounting for 34% of area and 24% of production. Myanmar is the second largest producer, followed by Canada, China, Nigeria, Brazil, and Australia.

(Source: Horticultural Statistics at a glance 2017, Directorate of Economics Statistics, New Delhi).

Pulse production in India

India is the largest producer, consumer, processor and also the importer. About 90% of the global pigeon pea, 75% of chickpea and 37% of lentil area falls in India. The major pulses producing states are Madhya Pradesh, Uttar Pradesh, Maharashtra, Rajasthan and Andhra Pradesh. India's annual pulse production is about 18.45 million tones covering an area of about 23.47 million hectares-- majority of which falls under rain fed, resource poor and harsh environments frequently prone to drought and other a biotic stress conditions. India is at present importing about 4.02 million tons from

different countries. In order to ensure self-sufficiency, the pulse requirement in the country is projected to be 32 million tonnes by 2030. However, import of pulses declined from 100 lakh tonnes in 2016-17 to 56.5 lakh tonnes in 2017-18.

Source: Directorate of Economics and Statistics (DES), Department of Agriculture & co-operation (DAC) and Department of Commerce (DOC).

Pulse production in Karnataka

Karnataka is one of the important pulses growing state in India and pulses are grown in an area of about 24.32 lakh ha with the production of 15.24 lakh tonnes and the productivity was 626 kgs/ha during 2014-15. The important pulses grown in Karnataka are pigeon pea, chickpea, horse gram, green gram and black gram. More than 60 per cent of the area under total pulses in Karnataka is covered by pigeon pea and chickpea crops. The major pulse growing districts in Karnataka are Kalaburagi, Vijayapura, Bagalakot, Belagavi, Bidar, Raichur, Dharwad and Mysuru.

Karnataka is one among the seven pulse growing states in the country which accounts for 22.14 per cent of total production. All most types pulse crops are cultivated in Karnataka but the important pulse crops which are cultivated on large scale include Pigeon Pea, Chickpea, Green Gram and Black Gram. These four crops together accounts for 61.21 per cent of total pulse production area in Karnataka.

1.1 Objectives of the study:

1) To analyze the trend in area, production and productivity of important pulses in Karnataka.
2) To analyze consumption pattern of different pulses among rural and urban households.
3) To estimate the producers, share in consumer rupee in different marketing channels.
4) To identify the constrains in production, marketing and consumption of pulses.

Table 1: Nutritional Composition of Pulses

Sl. No.	Pulses (100g)	Protein (g)	Fat (g)	Carbohydrate (g)	Energy (K cal)	Crude fibre (g)	Calcium (mg)	Iron (mg)
1.	Bengal gram	17.1	53	60.9	360	3.9	202	4.6
2.	Black gram	24	14	59.6	347	0.9	154	3.8
3.	Cowpea	24.1	1.0	54.5	323	3.8	77	8.6
4.	Field bean	24.9	0.8	60.1	347	14	60	2.7
5.	Green gram (whole)	24	13	56.7	334	4.1	124	4.4
6.	Green gram (split)	24.5	1.2	59.9	348	0.8	75	3.9
7.	Horse gram	22	0.5	57.2	321	53	287	6.77
8.	Kesari dhal	22	0.6	56.6	345	2.3	90	6.3
9.	Peas(green)	7.2	0.1	15.9	93	4.0	20	1.5
10.	Peas(dry)	19.7	1.1	56.5	345	4.5	75	7.05
11.	Rajmah	22.9	13	60.6	346	4.8	260	5.1
12.	Red gram	22.3	1.7	57.6	335	1.5	73	27
13.	Soyabean	43.2	19.5	20.9	432	3.7	240	10.4
14.	Groundnut	25.3	40.1	26.1	567	3.1	90	2.5

Source: Directorate of Economics and Statistics (DES), Department of Agriculture co-operation (DAC) and Department of Commerce (DOC).

1.2 Hypotheses of the study:

1) There is significant growth in area, production, productivity of important pulses in Karnataka.

2) There is significant change in consumption pattern of different pulses among rural and urban households.

1.3 Limitations of the study

This study is based on primary and secondary data, Secondary data was collected from Directorate of Economics & Statistics, GOK, and primary data collected from sample respondents by survey method. Since many of respondents furnished the primary data, required information from their memory and experience, the collected data would be likely to have recall bias. In the study, the ultimate consumers in other cities are not be applicable as vast difference exists among the respondents with regard to demographic and psychographic characteristics. Hence, the findings of the study may be considered appropriate for the situation similar to study area and extra care should be taken while generalizing the results.

1.4 Scope of the study

Pulse production is profitable in India and also in Karnataka. There is a bright scope for expansion of area under pulses in the upcoming years, therefore, the present study is an effort to bring out a clear picture existing situation with respective of area, production and productivity, marketing channels, consumption constraints and consumption pattern of pulse growers and pulse consumers. Therefore, the results of the study would be importance to planners, policy makers and extension workers to take stock of the situation and balanced policy that will be line with the existing needs of the pulse growers.

1.5 Presentation of the study

The study has been organized into several chapters

Chapter I – Deals with introduction, production, marketing and consumption pattern of pulses importance, specific objectives, hypotheses and limitations of the study

Chapter II – Pertains to review of literature to topic of the study

Chapter III - Deals with methodology covering features of the study area, sampling procedure, data collection and the analytical tools used in the study

Chapter IV – Deals with presentation of main findings of the study through tables and description

Chapter V - Summary and suggestions for the policy implications arising from findings of the study

Chapter VI - List of references

II REVIEW OF LITERATURE

In this chapter, an attempt has been made to critically review the literature of the past research work relevant to the present study. The available literature on the subject has been reviewed and presented under the following headings.

2.1 Studies on trend in area, production and productivity of important pulses in Karnataka

2.2 Studies on consumption pattern of different pulses among rural and urban households.

2.3 Studies on estimation of producers share in consumer rupee in different marketing channels.

2.4 Studies on identification of the constrains in production, marketing and consumption of pulses.

2.1 Studies on trend in area, production and productivity of important pulses in Karnataka

Mundinamani *et a1*. (1998) computed the growth rates in area, productivity and production of red gram in Karnataka. This paper delt for district level the period 1970-71 to 1984-85 was considered for analysis over the period 1970-71 to 1984-85. Growth rates remained almost stagnant at state level, but three districts registered positive growth rates in area, yield and production.

Usha (2001) analyzed the productivity level of pulses and other crops. The survey was conducted in Samastipur and Muzzafarpur districts of Bihar, India, to investigate the productivity level of pulses compared to other crops. The farmers in the area were categorized as marginal, small, medium and large farmers according to the size of their farms. The average yield of pulse crops was the lowest among the major crops grown in the region. Small farmers had the highest average yield of pulses followed by medium, large and marginal farmers in that order.

Mathur and Henry (2005) worked on compound growth rate of area, production and productivity of pulses (Moth bean, Cowpea, and Mung bean) in arid districts of Rajasthan. The compound growth rate (CGR) of Moth bean, Cowpea and Mung bean for different parameters were determined for two periods: long-term (1976-2000) and recent years (1991-2000) for different agro climatic regions of western Rajasthan, India and the Chow's test indicated significant differences in two periods for zone Ib for Mung bean and zones Ib, IIa and for Cowpea and there was a positive shift to the technological development during recent years' period.

Sahu *et a1*. (2007) worked on statistical account of pulse production in world, India and West Bengal during pre-green revolution, green revolution and post-green revolution periods. This study was conducted to analyse the trend in area, production and productivity of pulses in world, India and West Bengal during pre-green revolution, green revolution and post green revolution. It was found that though the area under pulses for world showed different trends, the trends were the same for India and West Bengal since the green revolution.

Asmatoddin *et a1*. (2009) worked on resource productivity and resource use efficiency in pulses production on medium farm in Marathwada. The study of resource productivity; resource use efficiency and optimum resources used with respect to various explanatory variables in pulse crops Pigeon pea and Green gram was undertaken on medium farm during agricultural year 2005-06 in Marathwada region of Maharashtra. The data was taken from cost of cultivation scheme Marathwada Agricultural University, Parbani the sample of 100 medium farm size farms throughout the zone was tabulated and analyzed by appropriate statistical tools. The results revealed that in recase of Pigeon pea, area and bullock labor was positive and significant at 1 and 5 per cent level, respectively. Coefficient of multiple determinations (R^2) 0.70 which indicated 70 per cent variation was explained by independent variables. The sum of elasticity was 0.83 which indicated decreasing return to scale. With regard to Green gram area was positive and significant at 1 per cent level, the sum of elasticity was 1.01 per cent which indicated increasing return to scale and the coefficient of multiple determinations was 0.86 indicating that 86 per cent was explained variation in explanatory variable.

Pandey and Mahatma (2011) worked on an empirical study of trends in production and marketing of pulses in two villages of Uttar Pradesh and Madhya Pradesh. Despite the implementation of various programs, the growth of pulse production was far away from the rate of population growth in the country.This research was an effort to find out constraints faced in the pulses production, trends in the cultivation, production, processing and marketing in two different villages under different geographic and demographic areas. From the above studies it can be concluded the area under pulses for world showed different trends and the production, area and productivity of pulses has remained static over the last three decades and the growth of pulse production was far away from the rate of population growth in the country also Growth rates remained almost stagnant at state level, but in some districts registered positive growth rates in area, yield and production.

2.2 Studies on analyze consumption pattern of different pulses among rural and urban households

Reddy (2004) analysed the regional patterns in the production and consumption of pulses. The results of the study show that there is large variability in the production performance of the states. Also, there is considerable heterogeneity in consumption patterns as well. The paper argues for a region-specific approach and adoption of improved technology, backed by improved package of practices. The paper, using data of CRIDA (2002), shows that although the gross returns are highest when improved varieties are used in conjunction with improved farming practices, the incremental benefit-cost ratio is higher (about 7) for improved varieties with current farmers' practices. This is because the improved practices are relatively expensive.

Sathe and Agarwal (2004) analysed the issues related to liberalization of pulses sector. The paper examines issues such as major players in the world pulses market, international prices of pulses, production, consumption, main import sources, and domestic prices in India. The results of the study indicate that there is a need for further opening up the Indian markets for pulses imports. Summing up, availability of improved

technology at affordable prices, input provision particularly pesticides, assured market through procurement were some of the major problems highlighted in the previous work.

Bera and Nandi (2011) worked on variability of pulses production of West Bengal. Recent sky-rocketing price rise in pulses may be attributed to the huge demand – supply gap in pulses production. West Bengal experienced a gross reduction in area by 71.64 per cent, but comparatively higher rise in productivity (39.56%) restricted the fall in production only by 11.52% whereas in spite of marginal loss in area (1.58%), India witnessed an acceleration in production by 6.05 per cent due to 13.57per cent rise in productivity over the period 1960–07. Exponential growth rate of area, production and productivity of pulses was estimated to be – 3.49, -2.47 and 1.02 percent for West Bengal and the corresponding figures for al India were found to be -0.12, 0.37 and 0.87 per cent respectively. From the above studies it can be concluded that India continues to be the largest producer of pulses in the world. However, its production during this period declined to 11.93 million tonnes from 13.44 million tones, registering thereby a decline of 11.24 per cent. The other countries showing a steep decline included USA (17.06 percent), Russian Federation (13.73 per cent) and China (13.62 per cent). On the other hand, Canada\ showed a significant growth of 34.06 per cent. India's production of pulses during the last five years was found to be in the range of 11 to 15 million metric tonnes. Normal area under pulse cultivation was grown rapidly due to improved soil condition and for better earnings prospects. Area under cultivation of pulses was 12.85 million hectares and yield ranges between 600 and 1200 kg per hectare. In the current season, production of pulses is estimated to cross 15 million tonnes, which will account for 62 to 67 per cent of world pulse production. Given its strong production pattern and consumption profile, India plays a major role in the world pulses market. Madhya Pradesh was the largest producing state followed by Uttar Pradesh, Maharashtra, Rajasthan, Karnataka, Andhra Pradesh and Bihar.

Geetha (2011) on consumption patterns among selected rural urban households in Coimbatore city reveals a significant differential in consumption expenditure not only between the groups (rural vs. urban) but also within the group. Low expenditure elasticity

for cereals and high expenditure elasticity for other food items signifies a shifting food consumption pattern in both rural and urban areas as income increases.

Banerjee and Shivani (2011) confirms that throughout the world a consumption transition is taking place in which people shift towards more affluent types of consumption pattern. This transition is taking place at different stages and form. In general, whenever and wherever economic growth occurs per capita shift in consumption shows the same change of direction. With the emerging trends in consumerism, Indians are less likely to reduce their spending on household amenities and lifestyle essential factors like education, healthcare and transportation. However, most of the Indians might refrain from purchasing luxury items, as they consider it to be insignificant for their lives. On the other hand, with the fast economic growths, we can see distinct variations in the spending patterns of Indians. According to the study conducted by Morgan Stanley on Asian inflation, Indian consumers feel that the time is right for investing on properties and cars. The spending habits, especially in the urban areas are tilting more towards the purchase of luxury items as well.

Oldiges (2012) examine the relationship between per capita cereal consumption and per capita income in India using the India Human Development Survey 2004-05. It turns out that per capita cereal consumption remains much the same at different levels of per capita income, though it does vary substantially with education levels, household size, occupation patterns and urbanization. The recent decline of cereal consumption over time may reflect changes in these non-income factors. While cereal consumption seems unrelated to per capita income, it is positively related to per capita expenditure.

2.3 Studies on estimation of producers share in consumer rupee in different marketing channels.

Agarwal arid Sharma (1994) identified five channels in soybean marketing in Rajasthan. Channel-I: Producer à seller à Oilseed grower cooperative society à Tilham Sangh Channel-II: Producer à seller à Commission agent TilhamSangh Channel-III: Producer à Seller à Commission agent à Local Processor Channel-IV: Producer à seller à Commission agent à Wholesaler à Local Processor Channel-V: Producer à seller à

Commission agent à Wholesaler à 0utside processor. Producer sellers received highest share of 96.22 per cent of the processors price under Channel-I. In other channels, producer's share ranged between 86 to 92 per cent. The marketing costs ranged from 3.78 per cent in Channel-I to around 8 to 10 per cent in other four channels.

Anita (1995) estimated the producer's share in consumer's rupee for potato in Gujarat. In 1987-88, producer's share ranged between 51.76 to 60.61 percent in different seasons with an average of 54.72 percent. In the second year i.e., 1988-89 producer's average share was higher by 8 percent compared to the previous year. However, in the third year i.e., 1989-90 except the October February season, producer's share in the two seasons and average share was lower compared to 1988-89 but higher than 1887-88.

Lal and Brahm (1996) in their study on economic constraints in pulse marketing mentioned low marketable surplus and large price spread as the problems in marketing. Most of the farmers grow pulses for their own domestic requirement on a limited area. This results in low marketable surplus and the farmers sell the produce at the village level only to the village traders who offer lower price for the produce. The data collected on price spread at Kanpur revealed that the producer's share in consumer's rupee remained as low as 60.69 and 50.78 paise in pigeon pea and chickpea respectively. The constraints can be eradicated by appropriate transfer of technology for cultivation of pulses under dry farming or limited irrigation agriculture, expansion of crop insurance schemes to cover pulse crops and improving the marketing efficiency so that the producers could get their due share in the prices paid by the ultimate consumer.

Madan and Singh (1997) in their study on efficiency and price spread of pea marketing in Ranchi district estimated the producer's share in consumer's rupee under 7 channels of pea marketing. Although the producer received net price of Rs. 723.83 per quintal and also the highest percentage of consumer price, 92.33 per cent by selling directly to consumer in periodical/daily market in channel - VII, this channel was of less importance in terms of quantity handled and therefore was excluded from analysis. The relative share of producer in consumers' price was highest in Channel I (60.92%,) followed by channels. IV to VI (each 57.76%) and channels II (48.18%) and, Ill

(47.01%). It is obvious that channel I provided higher net returns in terms of both relative and absolute price to the farmer.

Yadav *et al.* (1997) noticed some of the important constraints in chickpea production in India which include the technical constraints like non-availability of quality seeds of high yielding varieties, poor response of chickpea crop to high fertility level and managerial constraints like non availability of cheap and good quality insecticides and pesticides to chickpea farmers, lack of systematic linkage between chickpea scientists - extension workers-farmers. The socio-economic constraints included lack of incentive to chickpea growing farmers, low procurement and support price to pulses and poor agro-based marketing infrastructure in chickpea growing areas.

Saravanan *et al.*(2006)Studied various marketing channels involved in cashew kernel marketing; and analyses the marketing efficiency of cashew kernels. A survey was conducted on 30 cashew processing units in Tamil Nadu state, Cuddalore district in India. Three channels were found to be major in cashew kernel marketing in the district. Channel I was the most efficient followed by Channels III and II due to lower price spread, larger share of consumer's rupee received by the processor and lower marketing margin per rupee of consumers' price in channel I.

More *et al.* (2008) Analysed constraints in banana cultivation by survey the 120 farmers all the cultivators faced the constraints of Musa Sercospora followed by 45 per cent faced the problem of high wages of labour while major constrains in marketing of banana was delayed payments (67.50%) followed by high commission of market intermediaries (55.00%).

Chavan and Kalyanka*et al.*(2009) Represented the price spread of the marketing of Banana in the Parbani market of Maharashtra in India. A survey was conducted on 27 commission agent/wholesalers who paid license fees and 30 retailers. The per quintal marketing cost in Channel-I, was higher by Rs. 17.05 than that of channel-II. It was higher by 17.90per cent while the marketing margins were lower by Rs. 17.05 in Channel-I than II. The peak period of market arrivals was identified from October to

November for banana in the Parbani market however the peak period for the price was March. The arrivals and prices were inversely related. Further reported that the 41 and 32 per cent of the respondents expressed the high cost of improved planting material and irregular supply of this input, respectively.

2.4 Studies on identification of the constrains in production, marketing and consumption of pulses.

Bhatia (1991) noticed some of the economic constraints which retard the growth of pulse production in India. Some of the important constraints were production under rain fed situation low yield and value productivity, higher risk associated with pulse cultivation, low level of technology adoption and susceptibility to pests and diseases. From the point of marketing, the most important problem was the large price spread. To increase the yield per hectare, appropriate measures may have to be taken up for reducing/shifting the risk of adopting new technology through expansion of crop insurance scheme to cover pulse crops. Efforts should also be made to improve the efficiency of marketing so that producers could get their due share in the prices paid by the ultimate consumer.

Lal and Brahm (1996) in their study on economic constraints in pulse marketing mentioned low marketable surplus and large price spread as the problems in marketing. The constraints can be eradicated by appropriate transfer of technology for cultivation of pulses under dry farming or limited irrigation agriculture, expansion of crop insurance schemes to cover pulse crops and improving the marketing efficiency so that the producers could get their due share in the prices paid by the ultimate consumer.

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based marketing infrastructure in chickpea growing areas. Most of the studies indicated the problems of non-availability of high yielding variety and good quality pesticides, lack of irrigation facilities as the major problems in production of pulses and low procurement and low support price as the major problems in marketing of pulses.

Joshua (2010) analysed the marketing constraints facing smallholder farmers in agribusiness value chain in Limpopo province, South Africa. The study reported that access to markets is an essential requirement for the poor in rural areas to enjoy the benefits of agricultural growth. Limited access to agricultural markets by smallholder farmers in rural areas represents one of the most important challenges confronting policymakers in developing countries. Due to the stringent sourcing criteria of formal markets, small-scale farmers were excluded from the agricultural value chains. It may be easy to access the market, but it is very difficult for smallholder farmers to retain that market. This is attributed to the fact that smallholder farmers face various constraints along the value chain such as production and marketing constraints.

Sadika *et al*. (2013) compared food consumption pattern in Rural and Urban areas of Bangladesh between 2005 and 2010. The study aimed to know the food consumption pattern of rural and urban areas of Bangladesh to make comparison of calorie and protein intake in 2005 and 2010. The study revealed that rice, potato and vegetables were consumed more in rural areas than in urban areas. Other food items like pulses, milk, egg, fish, spices, fruits, sugar and other food items were most consumed in urban areas. The average per capita calorie intake per day was 2344.6 kcal in rural areas and 2244.5 kcal in urban areas**.**

Sain *et al*. (2013) studied the production and marketing constraints faced by guava growers in few districts of Haryana for the year 2011-12. They found that the major problems faced by the guava growers in production were damage due to aberrant weather conditions, non-availability of good seedling and lack of technical knowledge. The problems faced in marketing were lack of support price, lack of market organization and non-availability of processing facilities. They concluded that farmers were facing lot of problems due to lack of minimum support price; delayed payment by the commission

agent; lack of competition among buyers; inefficient market information and market intelligence; lack of grading, packing plant and waxing; lack of storage facilities, lack of processing plant, lack prices due to seasonal gluts, lack of stay arrangements in the market, malpractices in weighing and higher marketing cost.

Litan *et al.* (2014) studied constraints in marketing of fruits as perceived by the fruit growers and North Eastern Regional Agricultural Marketing Corporation Limited (NERAMAC) in Assam. The study revealed that marketing of fruits has was a very important concern in India. Efficiency in marketing system could be improved by identifying the constraints faced by farmers and formulating appropriate strategy to ameliorate the constraints. The results showed that the NERAMAC beneficiaries of fruit crop growers ranked less intensity of advisory services and storage of harvested produce as the first and foremost major constraint in fruit production and marketing. The non-beneficiaries ranked fluctuating market price and finding appropriate market price of produces as first and second constraint, respectively. Lack of proper management of work and poor co-operation at grass-root level were the prominent organizational and functional constraints.

Shilpa (2014) examined the food consumption pattern in Chikkaballapura district of Karnataka. The results showed that the quantity of cereal consumption was more in rural areas (43.24 kgs) than urban areas (36.83 kgs). Red gram, Bengal gram and green gram were the major pulses consumed. The study also revealed that family size and monthly income were the main factors influencing food consumption pattern.

III METHODOLOGY

This chapter deals with the characteristics of the area selected for the study, the methods adopted for drawing samples, nature and sources of data, statistical tools and techniques employed in the analysing the data. The methodology is presented under following sub headings:

3.1 Description of the study area

3.2 Sampling procedure

3.3 Nature and sources of the data

3.4 Analysis of data

3.5 Definitions of terms and concepts used

3.1 Description of the study area

Karnataka has a total geographical area of 1,91,791 sq. kms and accounts for 5.83 per cent of the total area of the country (32,88, 000.sq.kms). Karnataka is the seventh largest state in India with of 190.50 lakh hectares under forest cover, 10.17 lakh hectares of permanent pasture, 3.17 hectares under trees and groves and the rest 146.54 lakh hectares under cultivation. It is situated between 11º 30'North & 180 30' North latitude and between 74° and 78°eastlongitudes in the southern plateau. The state receives the average annual rain fall about 941 mm both from south-west and north-east monsoons. The important crops grown in the state are jowar, ragi, maize, bajra and wheat among cereals, red gram, green gram, tur and bengal gram among pulses, groundnut, sunflower and safflower among oilseed crops and cotton, sugar cane and tobacco among commercial crops.

Tumakuru district occupies an area of 10,598 km². According to the 2011 censes Tumakuru district has population of 2,678,980, the district ranked 4th place in terms of population in Karnataka after Bengaluru, Belgaum and Mysore. The district has a population density of 253 per square km. Its population growth rate over the decade

2001-2011 was 3.74 per cent Tumakuru has a sex ratio of 984 females for every 1000 males, and a literacy rate of 75.14per cent.

3.2 Sampling procedure

3.2.1Nature and sources of the data

Primary data

The data needed for the study were collected from the respondents by personal interview method using pre-tested schedule. Majority of the respondents did not maintain records of the expenditure and income from different pulse cultivation. Hence data was based on the memories of the respondents at the time of interview, personal bias of the sample farmers. The data was collected from 60 pulse growers and 60 consumers for the study.

The data collected and also convincing them about the genuinely for which the data were collected the data collected from selected respondents were to full fill the objectives of the study. Data were based on the different pulses particularly consumption pattern of different pulses among rural and urban households, producer share in consumer rupee constraints in production, marketing and consumption pattern

Secondary data

Secondary data were used to analyse the trend in area, production and productivity of important pulses in Karnataka were collected from the Directorate of economics and Statistics Karnataka.

Study Area

The study was conducted in Tumakuru district, the following hoblies were selected for the study *ie.,* Sira, Madhugiri and Chikkanayakanahalli. From which 20 pulse consumers and producers were selected from each and sample size made up to 120.

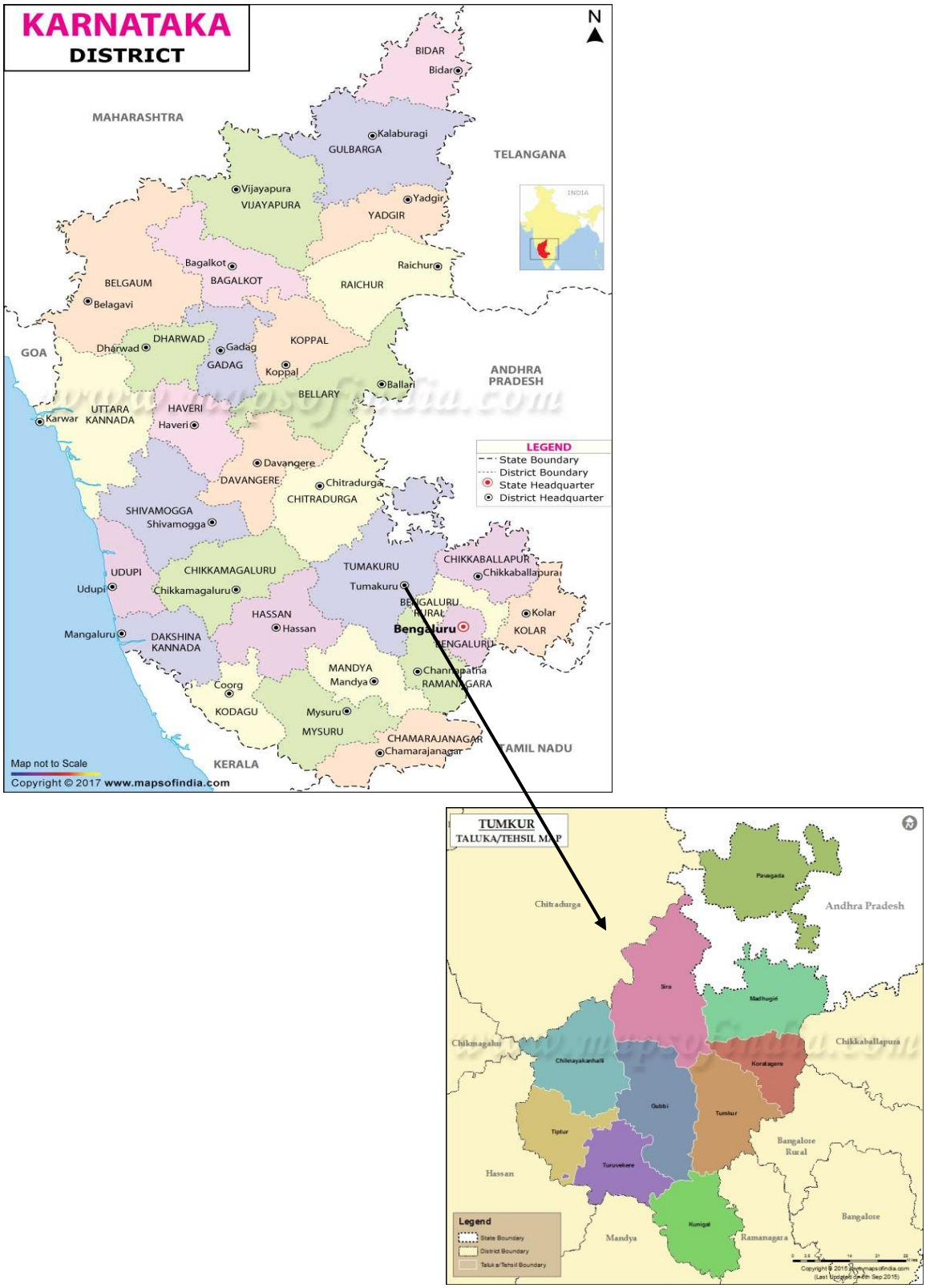

Fig. 1: Map depicting study area of Tumakuru district

3.4 Analysis of data

For the analysis the following statistical tools were used

1. Compound annual growth rate analysis

2. Descriptive statistics

3. Garrett ranking technique

3.4.1 Compound Annual Growth Rate Analysis

Compound growth rates of area, production, productivity of pulses were estimated by using nonlinear function of the form

$$Y_t = a^b t\ U_t. \ldots\ldots\ldots .. \quad (1)$$

Where, Y_t = area, productivity or production of pulse in period t.

t = in years 1, 2, 3 . . . . . n.

U_t = disturbance term.

"a" and "b" are parameters to be estimated.

Log transformation of (1) provided equation given by

$$\log Y_t = \log a + t \log b + \log U_t \ldots\ldots .. \ldots .. \quad (2)$$

Equation (2) was estimated by ordinary least square technique. The compound annual growth rate (CAGR) was then estimated by identity given in equation (3)

CAGR (g)= Where, g^= estimated compound growth rate in percent per year and b^= antilog of b

The standard error of growth rate was estimated at t-value

3.4.2 Descriptive Statistics

For the study, chosen for descriptive statistics such as mean and percentage capsulated general characteristics of the sample farmer's consumption pattern of pulses in rural and urban households, estimating producer share in consumer rupee in different

marketing channels and constraints in production, marketing and consumption pattern of pulses.

3.4.3 Garrett's Ranking

The respondents were asked to rank the constraints in pulse wastage and these ranks were converted into score by using Garret's ranking technique. the order of the merit given by respondents was changed into ranks by using formula.

$$Per\ cent\ position = \frac{100(R_{ij} - 0.50)}{N_{ij}}$$

Where, R_{ij} = Rank given for ith item by jth individual

N_{ij} =Number of items ranked by jth individual

The per cent position of each rank was converted to scores by referring to tables given by Garrett and Woodworth (1969). Then for each factor, the scores of individual respondents were summed up and divided by total number of respondents for whom scores were gathered. The mean scores for all the factors were ranked.

3.5 Definitions of terms and concepts used

a) Marketing channels

Marketing channels are defined as the routes through which, producer seller disposes off their pulses. Four main channels were noticed in the study markets, in the marketing of pulses by sample farmers.

b) Commission agent

Commission agent is a person who operates in the regulated market on behalf of producer-seller and purchasers (wholesale trader/ pulse miller). He receives commission (from purchaser) at a fixed rate on the amount involved in each transaction and is responsible for disbursement in each transaction and is responsible for disbursement in each transaction, Sales proceeds (to seller) received from buyers.

c) Wholesale trader

Whole trader is a person who buys the notified agricultural products in the market yard either for himself or on behalf of others for the purpose of reselling the same either in the original from or after processing.

d) Retailer:

The person who purchases the produce from the wholesaler/commission agents and sells it to the customers.

e) Market margin:

This refers to net share of the different market intermediaries in a particular produce after deducting marketing cost incurred by the intermediaries for handling the commodity.

f) Price Spread:

It refers to the difference between the price paid by the consumer and the net price received by the producer for an equivalent amount of commodity.

g) Producer's net price (PNP)

This is the difference between the price received (PR) and the cost incurred (MC) by the producer – seller.

$$PNP = PR - MC$$

h) Producer's share in the consumer's rupee (PSCR)

Producer's net price (PNP) expressed as a percentage of the retail price (RP) is defined as producer's share in the consumer's rupee.

$$PSCR = (PNP/ RP) \times 100$$

The producer's share in the consumer's rupee was computed separately for pulses and dals. For pulses, purchase price of the dal miller was considered as consumer's price and for dal, the price paid by the consumer was considered.

IV RESULTS AND DISCUSSION

The results of the study carried out in consistence with the objectives of the study are presented in this chapter under the following headings.

4.1 Compound annual growth rates of area, production and productivity of pulses from 2001-2016

4.2 Socio-economic profile of pulse consumers

4.3 Consumption pattern of pulses in rural and urban house holds

4.4 Personal and socio-Economic characteristics of pulse growers

4.5 Producer share in consumer rupee in different marketing channels

4.6 Constraints of Production, Marketing and Consumption of pulse growers

4.1 Compound Annual growth rates of area, production and productivity of pulses from 2001-2016

From Table 4.1 and depicted in fig.2. it is observed that growth rate of total pulses for area, production, and productivity had positive trend value that is 1.88, 4.82 to 2.73 respectively. The highest growth rate was observed in bengal gram area (7.95) and production (8.56). Whereas for the productivity it was observed in field bean (13.84) and the lowest growth rate was seen in horse gram for area (-4.66) and production (-3.14). Whereas for productivity it was observed in green gram (0.55) except tur, bengal gram other pulses showed negative growth rate in area. Tur, bengal gram, cowpea showed positive growth rate in production while remaining pulses showed negative growth rate in production. Growth rate in productivity was positive for all pulses. For production except green gram and field bean all the pulses were significant at 1percent level of significance.

For productivity it is significant for all pulses except bengal gram and green gram overall total pulses showed significant in area, production and productivity. The CAGR of area, production and productivity of pulses is depicted in Table 4.1 The growth rates are significant at increase for green gram level tur, bengal gram, horse gram, black gram and intra are for non-significant except horse gram, black gram, and green gram which

gradually decreasing in area, production and productivity. While horse gram and tur area decreased by -4.66 percent and 3.14 percent per annum. in the table even if area tends to negative, production and productivity will be the more. This is for main reason is depending upon climatic conditions.

Table 4.1: Compound Annual Growth Rate in Area, Production and Productivity of pulses from 2001-2016

Sl. No	Pulses	Area	Production	Productivity
1	Tur	2.74** (0.000698)	5.50** (0.01035)	2.68 (0.083399)
2	Bengal gram	7.95** (3.18E-07)	8.56** (1.12E-05)	0.56 (0.64837)
3	Horse gram	-4.66** (2.27E-07)	-3.14** (0.006378)	1.59 (0.172534)
4	Black gram	-4.12** (8.9E-05)	-1.15 (0.685922)	3.05 (0.26978)
5	Green gram	-2.28 (0.156111)	-1.74 (0.523749)	0.55 (0.83502)
6	Field	-1.67** (0.015001)	-1.74 (0.644848)	13.84** (6E-06)
7	Cowpea	-1.12 (0.135192)	4.82** (0.00098)	1.88 (0.13428)
8	Total pulses	1.88** (0.01273)	4.82** (0.00098)	2.73* (0.0244)

Note: Figures in the parenthesis are in percentage

** Significance at 1% level * Significance at 5% level

4.2 Socio-economic profile of pulse consumers in Tumakuru district

The socio-economic profile of pulse consumers is presented in the Table 4.2. Among the pulse consumers, majority of the consumers aged between 21 to 35 years (Table 4.2). This age group consists of young and middle age population and the main reason for the consumption of pulses is highest Indian populace as per 2011 census is lies in the age group of 15-40 years and consumers are heath conscious too.

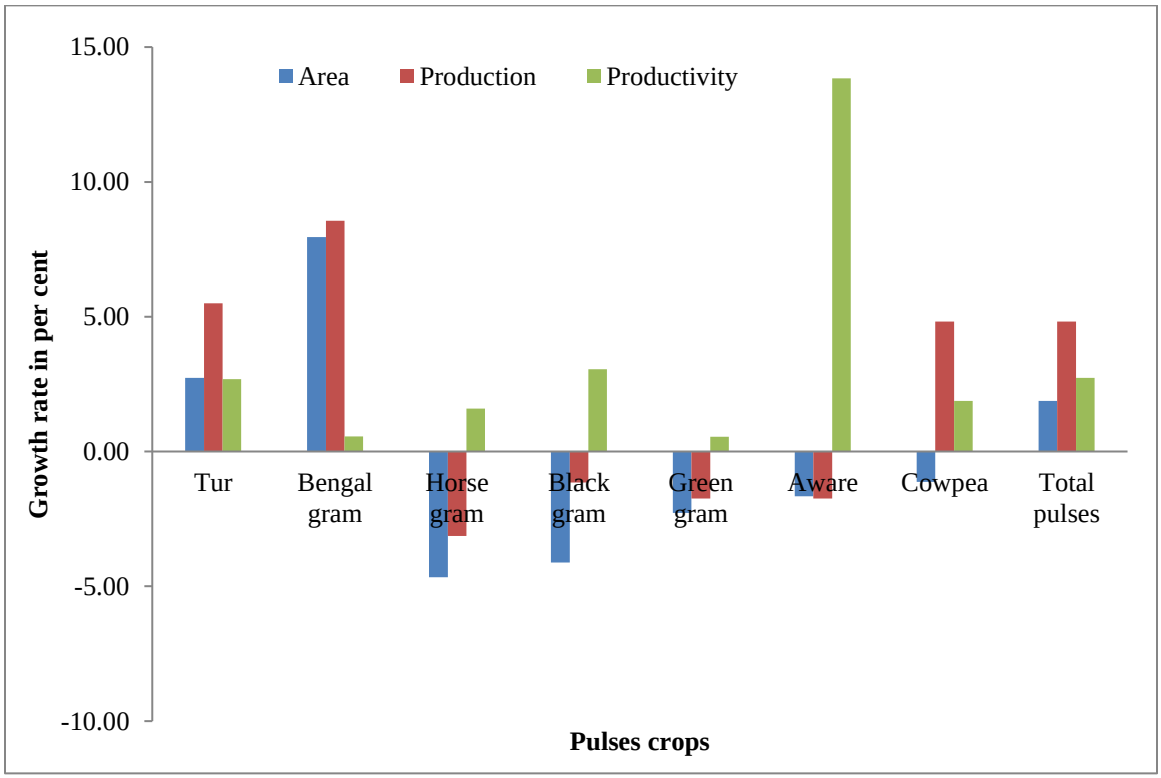

Fig. 2: Growth rates of area production and productivity of selected pules for Karnataka during period of 2001 to 2016

Table 4.2: Socio-economic profile of pulse consumers in Tumakuru district

(n=60)

Sl. No.	Particulars	No. of pulse consumers	Percentage
1	**Age**		
	20-30	30	50.00
	30-40	20	33.33
	60-70	10	16.66
	Total	**60**	**100.00**
2	**Gender**		
	Male	30	50.00
	Female	30	50.00
	Total	**60**	**100.00**
3	**Education**		
	Primary School	05	8.33
	High School	10	16.66
	Pre-University	20	33.33
	Graduation	20	33.33
	Post-Graduation	05	8.33
	Total	**60**	**100.00**
4	**Occupation**		
	Student	05	8.33
	Government employee	20	33.33
	Business	05	8.33
	Homemaker	05	8.33
	Private sector employee	21	35.00
	IT	04	6.66
	Total	**60**	**100.00**

Sl. No.	Particulars	No. of pulse consumers	Percentage
5	**Marital Status**		
	Single	24	40.00
	Married	36	60.00
	Total	**60**	**100.00**
6	**Type of family**		
	Nuclear	48	80.00
	Joint	12	20.00
	Total	**60**	**100.00**
7	**Family size**		
	Small size (2 to 3)	25	41.66
	Medium size (4 to 6)	10	16.66
	Large size (Above 10)	25	42.66
	Total	**60**	**100.00**
8	**Monthly household income (Rs.)**		
	25,000-50,000	25	41.66
	50,000-1,00,000	10	16.66
	Above-1,00,000	25	41.66
	Total	**60**	**100.00**
9	**Food habits**		
	Vegetarian	26	43.00
	Non-vegetarian	34	57.00
	Total	**60**	**100.00**

Gender of the consumers indicates that male and female consumption rate for pulses is same. This indicates that increasing urbanization and consumerism, favorable demographics, tastes and preferences among the genders are changing fast. Hence, it is clearly evident that it is essential to customize. According to gender specifically in growing Fast food markets in order to attract more young consumer respondents.

It was found that 34 per cent in consumers of consumer were graduates and pre-university was 33 per cent followed by primary 8 % with primary education. It is interesting to note that consumer's illiterates is less this offers quality of education with the literacy rate 75.14 per cent. Awareness about the importance of education and sufficient educational facilities in urban areas like Mysore enables there side have at least bare minimum education**.** This also indicates that the presence of educational institution is significantly contributing in promoting higher education in the study area.

Occupation of the consumers plays an important role in the spending on pulses. The highest number of consumers were from the category of private sector employees 35 per cent followed by the government sector employees 34 per cent.

The results of marital status showed that 60 per cent of consumers were married and the remaining 40 per cent consumers were unmarried.

With regards to family type, 80 per cent of consumers belonged to nuclear type and remaining belongs to joint family. A vast majority of the consumer respondents consuming pulses belonged to nuclear families indicating the influence of urbanization. Nuclear families and working couples are an important indicator of emerging cultural trends in urban India and they consume more of Fast food than joint families because of higher disposable incomes and a busy life style. The main characteristics of a nuclear urban family is that the members are highly individualistic, they have adequate spending powers.

Results pertaining to family size show that same per cent of the consumers were large size consisting more than 10 members and small size consisting less than three members. With changing lifestyles, there has been a shift from large families to small families.

Forty-two per cent of the consumers were having monthly income below 25,000 to 50,000 and medium is having sixteen per cent with monthly income falls under 50,000 to 1,00,000 and followed by large size with the per cent of Forty two per cent monthly income falls above 1,00,000.

Household income and food consumption are directly related. Higher the level of income there is a tendency among the consumers to spend more on food including all pulses.

Results with respect to consumption pattern of the consumer's shows that more than half of the consumers (57 %) were non vegetarians and the remaining were vegetarians. This is because of the health benefits of non veg food item.

4.3 Consumption pattern of pulses in rural and urban households of tumakuru district

4.3.1 Consumption pattern of pulses in rural households of Tumakuru district

From the table 4.3.1 and depicted in fig.3 it is clear that it is seen that nearly half of the consumers consume Green gram as table purpose followed snack (43 %) in rural areas. One fourth of the consumers use Chick Pea for table purpose and half of the consumers consume it as fresh vegetable. None of them consume Horse Gram as fresh vegetable. Since the pulses are being majorly grown in the rural areas, they directly use it for table purpose as raw seeds or vegetables and also, they were consumed in the raw form. Since they are not aware of value added or processed products, they will consume in little quantity for snack purpose.

Table 4.3.1: Consumption Pattern of pulses in rural households Tumakuru district

(n=60)

Sl. No.	Pulses	Method of consumption of pulses					
		Table purpose		Snacks		Fresh	
		No.	%	No.	%	No.	%
1.	Green gram	30	50.00	26	43.33	8	13.33
2.	Chick pea	15	25.00	21	35	30	50.00
3.	Black gram	05	8.33	4	6.66	4	4.44
4.	Field bean	06	10.00	4	6.66	2	2.22
5.	Horse gram	04	6.66	1	1.66	0	0.00

*Multiple response given by consumers

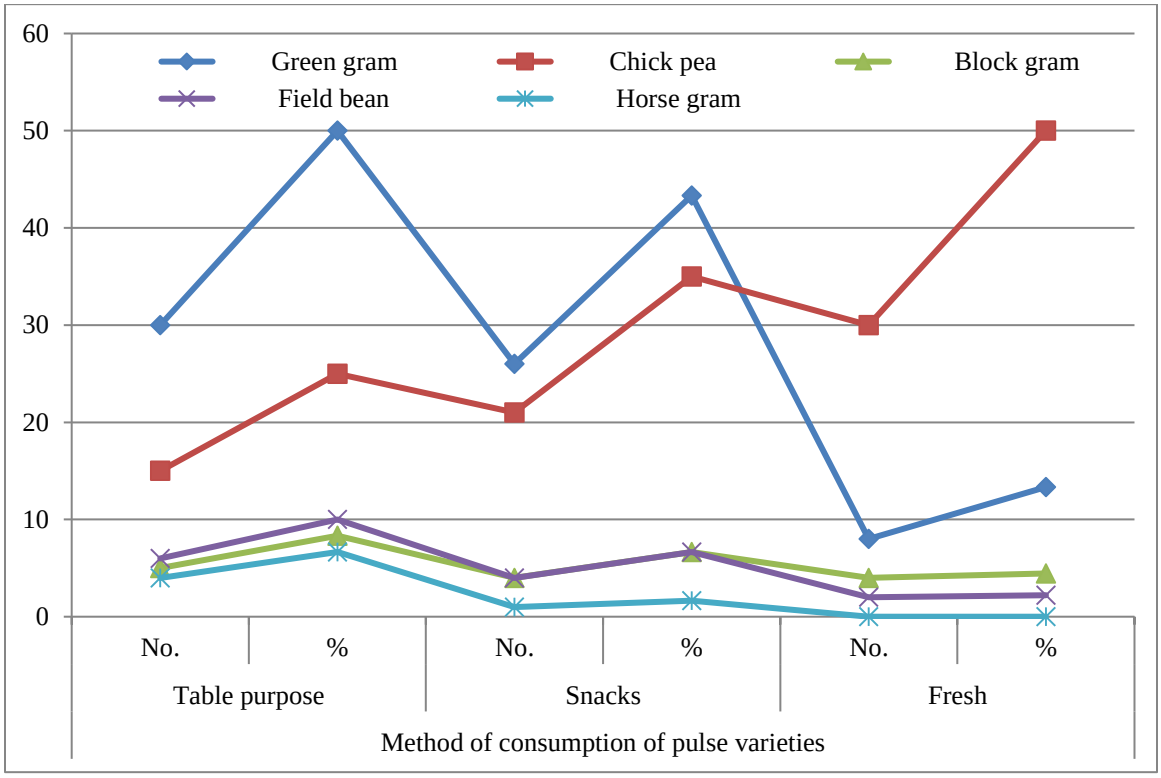

Fig. 3: Consumption Pattern of pulses in rural households of Tumakuru district

4.3.2Consumption pattern of pulses in urban households of Tumakuru district

Table 4.3.2 represents the consumption pattern of pulses in urban areas Majority (50%) of respondents consume Green Gram for table purpose followed by Black Gram (39%), Field bean (17 %), Chick pea (17 %), and Horse Gram (5 %). While in case of snack 25 per cent of respondents consume Field Bean as snack followed by Chickpea (6 %). Similarly, 42 percent of respondents consume Chickpea in the form of fresh followed by Green Gram with nine per cent it is shown in the fig 4 The consumption pattern of pulses is because of change in food habit of urban populace and more health conscious of the consumers, rich in protin and other nutrients.

Table 4.3.2: Consumption Pattern of Pulses in urban households of tumakuru district

(n=60)

Sl. No.	Pulses	Method of consumption of pulses					
		Table purpose		Snacks		Fresh	
		No.	%	No.	%	No.	%
1.	Green gram	30	50	1	1.11	8	9.00
2.	Chick pea	20	16.66	5	5.56	25	41.66
3.	Black gram	23	38.33	0	0.00	4	4.44
4.	Filed bean	10	16.66	15	25.00	2	2.22
5.	Horse gram	03	5	1	1.11	0	0.00

* Multiple response given by consumers

4.3.3 Attributes considered while purchasing pulses

The attributes while purchasing pulses were analysed and the results are presented in the Table 4.3.3it was found that the consumers attached highest score for Quality and ranked and it is depicted in the fig.5.it first followed by Taste, Price and Variety. Colour and size of the pulses were given least rank. This indicates that consumers are more nutritive conscious i.e. they mainly look for quality pulses with good taste. This may be because of the reason that consumers give more importance to health with regards to than price.

Table 4.3.3: Attributes considered by the consumer while purchasing of pulses

(n=60)

Sl. No.	Attributes	Mean Garrett Score	Rank
1.	Quality	65.49	I
2.	Taste	60.00	II
3.	Price	54.30	III
4.	Variety	49.91	IV
5.	Color	41.73	V
6.	Size	35.91	VII

4.4 Socio-economic characteristics of pulse growers in Tumakuru district

The socio-economic characteristics of pulse grower are presented in the Table 4.4. 43 per cent of the pulse growers were middle age group. Middle aged farmers are more enthusiastic, had more knowledge and experience about pulse cultivation. Further. Respondents between 36 to 50 years of age group have physical vigour and also more responsibility towards family than young ones. Thus, most of the pulse growers fell in the middle age group could be justified. the result was in line with the research

An overview of Table 4.4 revealed that 85 per cent of the pulse growers had graduate (25%) was found that the respondents who had received education up to high school (42%) was followed by an equal per cent age of (13.33%) respondents had completed PUC and graduation. Ten per cent respondents had completed their primary school level. The reason that could be offered for the above findings is the facilities of schooling available. Further, family background might be the reason.

Majority of pulse growers had medium had small family size with nuclear type of family. The possible reason is that majority of the respondents belongs to middle age group with entrepreneurship mind got separated from their elders immediately after their marriage and prefer to live large size family. Family problem is also may be one of the reasons of pulse growers belongs to large and medium size family size categories with nuclear family.

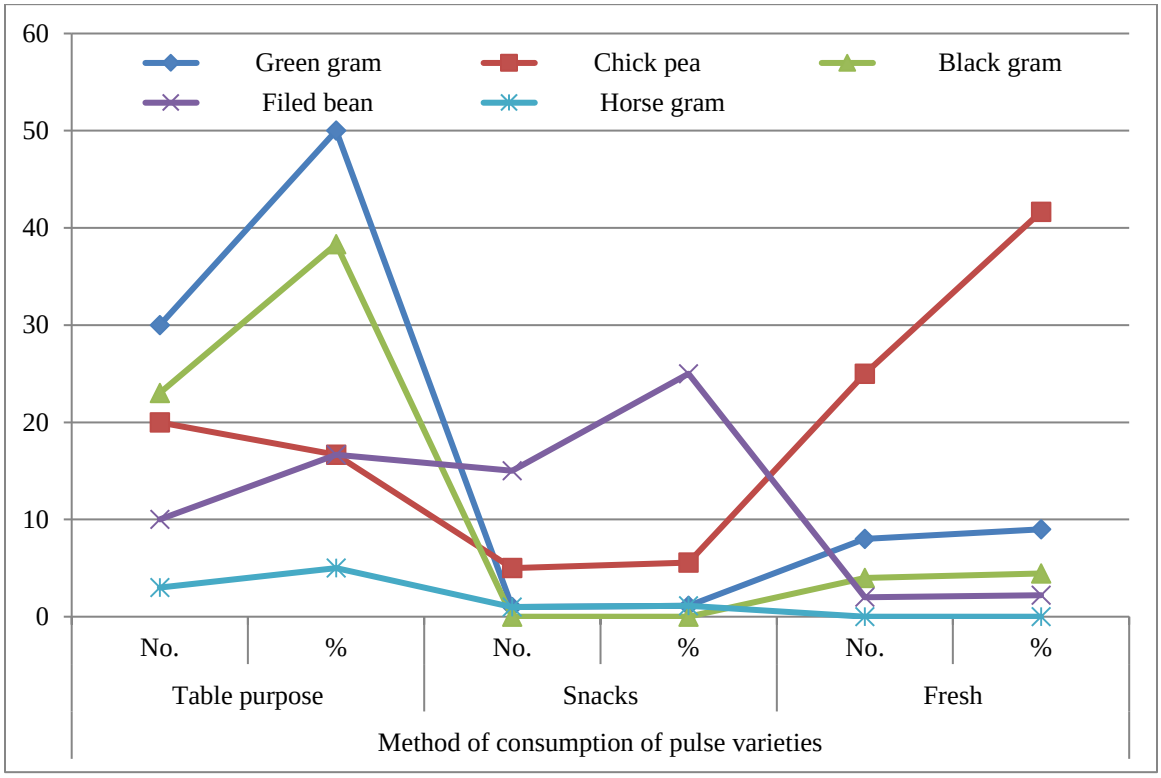

Fig. 4: Consumption Pattern of Pulses urban households of Tumakuru district

Table 4.4: Socio-economic characteristics of pulse growers in Tumakuru district

(n=60)

Sl. No.	Characteristics	No. of pulse growers	Percentage
1	**Age**		
	Young (10 to 21)	15	25.00
	Middle (21 to 35)	26	43.33
	Old (above 60)	19	31.66
	Total	**60**	**100.00**
	Illiterate	15	10.00
	Primary School	6	10.00
	High School	25	41.66
	PUC	8	13.33
	Graduation	6	25.00
	Total	**60**	**100.00**
3	**Family size**		
	Small	20	33.33
	Medium	35	58.33
	Large	5	8.33
	Total	**60**	**100.00**
4	**Type of family**		
	Nuclear	28	46.66
	Joint	32	53.33
	Total	**60**	**100.00**
5	**Occupation**		
	Agriculture as main occupation	52	86.66
	Agriculture as subsidiary occupation	08	13.33
	Total	**60**	**100.00**

4.5 Estimating producer share in consumer rupee in different marketing channels

In the study area two marketing channels were identified, and marketing cost, price spread was computed to understand the marketing of pulses. The sample respondents marketed pulses through the following channels.

Channel I: Producer→ → Wholesaler→ Retailer

Channel II: Producer→ village trader→ Wholesaler→ Retailer

Farmers in the study region choose different channels for marketing. The channels chosen by the farmers vary from season to season. In Tumakuru district, two predominant types of marketing channels were identified.

In the channel-I producer sell the produce to wholesaler. The wholesalers will transport the commodity to distant markets or nearby markets and sell to the retailers. About 40 farmers (66.67%) sold through this channel as shown in Table 4.5.In this channel farmer get more profit due to less number of intermediaries.

In channel-II, village trader buys pulses from farmers at farm gate itself and sold to wholesalers in the district, which in turn move into the hands of retailers for final sale to consumers. About 20 farmers (33.33%) sold through this channel as shown in Table 4.5.

Table 4.5: Channels for pulses marketing

Sl. No.	Channels	Number of intermediaries involved	No of farmers sold through this channel	Percentage
1.	I	Producer- Wholesaler- Retailer-consumers	40	66.67
2.	II	Producer- Village trader- Wholesaler- Retailer- consumers	20	33.33
		Total	60	100

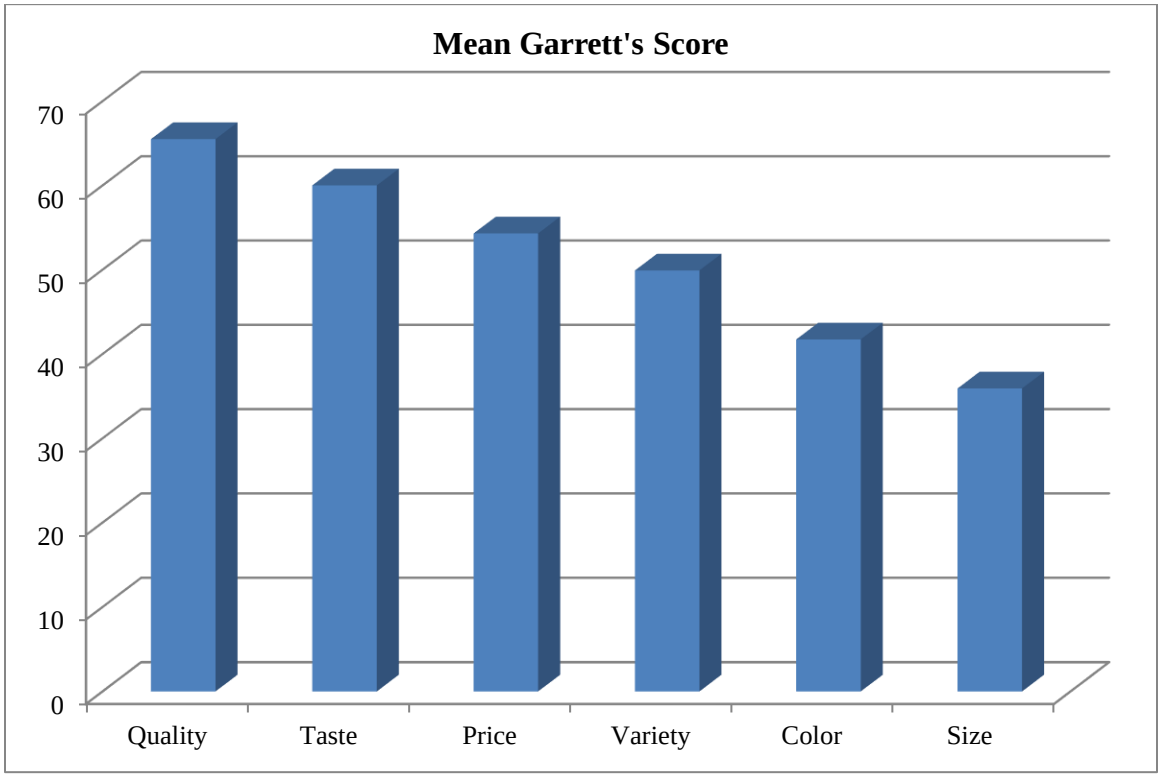

Fig. 5: Attributes considered by the consumer while purchasing of pulses

In this channel village trader play major role in the procuring of pulses. Pulses which yields up to 10 to 15 quintal per acre the farmer alone cannot market the produce, because of higher marketing costs like transportation, labour charges and inadequate demand in the local markets. But the village trader exploits the farmer without fetching him a remunerative price and the farmers sold through this channel.

4.5.1Marketing costs incurred by producers in channel-I

The details of marketing costs incurred by the pulses producer-sellers are presented in Table 4.5.1of channel- I the tables revealthat the total marketing cost incurred by producer-seller in the marketing of pulses was Rs. 2800(61.02%). In the total cost of marketing, transportation alone accounted for (26.36%) followed by labour charges (8.97%), pesticides and insecticides (8.27%), loading and unloading charges (6.59%) and other expenses (7.6%) in channel-I

In case of marketing of pulses, farmers incurred totally Rs. 2800 per quintal to market the produce. The farmers in channel-I sold their produce in nearby local market/ distant market and the details are presented in Table 4.5.1The produce is transported by trucks, irrespective of whether full truckload of produce is available or not and distance of market also increases the cost. Therefore, the share of transportation cost on per tonne basis works out to be higher. Exploitation by wholesalers by way of market practices has also caused lower price realization by pulse growers.

4.5.2 Marketing costs incurred by market intermediaries in channel-I

The marketing cost incurred by wholesaler in channel-I was Rs.791 per quintal (17.038) (Table 4.5.1). Among various components, pesticides and insecticides (3.2%) followed by market charges (3.9 %), other expenses (3.2 %), transportation (2.8 %), loading and unloading (2.4%), labour charges (1.98%), license fee (0.26 %), and shop rent (0.18 %).

Wholesaler transport the produce from local market to local /distant retailer, incur loss during handling the produce, should pay market charge on the amount of transaction, personal expenses and loss incur during transportation of the produce.

Table 4.5.1: Marketing costs incurred by producer seller and marketing Intermediaries in Channel-I (n=60)

Sl. No.	Particulars	Rs./quintal	Percentage to total
1.	**Producer-sellers**		
	Labour charges	800	17.57
	Transportation	1200	26.36
	Loading and unloading	300	6.59
	Pesticides and insecticides	100	2.9
	Other expenses	350	7.6
	Total	**2800**	**61.02**
2.	**Wholesaler**		
	Shop Rent	9	0.18
	License fee	12	0.26
	Labor salary	50	1.098
	Transportation	130	2.8
	Loading & unloading	110	2.4
	Market charges	180	3.7
	Pesticides and insecticides	150	3.2
	other expenses	150	3.2
	Total	**791**	**17.038**
4	**Retailer**		
	Shop Rent	9	0.16
	License fee	12	0.26
	Labour salary	52	1.14
	Transportation	92	1.97
	Loading & unloading	85	1.8
	Pesticides and insecticides	450	9.88
	Other expenses	300	6.5
	Total	**1020**	**21.71**
	Total Marketing cost	**4611**	**100.00**

The total marketing cost incurred by the retailer in channel-I was Rs. 1020 per quintal (21.71%) (Table 4.5.1). Pesticides and insecticides constituted as major component (9.88 %) followed by other expenses (6.5%), loading and unloading (1.97%), transportation cost (1.97%) labour charges (1.14 %), licence fee (0.26%) and shop rent (0.16 %).

The produce is spoilt at retailer level due to poor handling during transportation and overstocking in retail shops followed by personal expenses, as the standard of living is increasing and loading and unloading due lack of labour and high labour charge.

4.5.3 Marketing costs incurred by producers in channel-II

The details of marketing costs incurred by the pulses producer-sellers are presented in Table 4.5.2

Channel-II as the village trader buys harvested and well packed produce. The standards of packing of produce differ from market to market and exploitation of farmer by village trade with low price compared to market price.

4.5.4 Marketing costs incurred by market intermediaries in channel-II

The cost incurred in the marketing of pulses by the village trader was Rs. 1995 per quintal (50.84%) (Table 4.5.2). Majority of cost was transportation (14.02 %), followed by labour charge (12.11.%) Other expenses (8.92 %), loading and unloading (8.15 %) and pesticides and insecticides (7.64. %).

Here the village trader sell through wholesaler, so he incur commission charge of 10 percent of value of the produce. Transportation is other cost, as he sells produce in the distant market.

The total marketing cost incurred by commission agent cum wholesaler in channel-II was Rs. 923 per quintal (23.48.85%) (Table 4.5.2). Among various components market charge constituted (6.7%), followed by transportation cost (3.82 %), other expenses (3.82%), pesticides and insecticides (5.09%), license fee (0.22%), loading and unloading (2.54%), labour charges (1.40%), and shop rent (0.22%).

Table 4.5.2: Marketing costs incurred by marketing intermediaries in Channel-II

(n=60)

Sl. No.	Particulars	Rs./quintal	Percentage total
1.	**Producer-sellers**		
	Village trader		
	Labour charges	475	12.11
	Transportation	550	14.02
	Loading and unloading	320	8.15
	Pesticides and insecticides	300	7.64
	Other expenses	350	8.92
	Total	1995	50.84
2.	**Wholesaler**		
	Shop Rent	9	0.22
	License fee	9	0.22
	Labor salary	55	1.40
	Transportation	150	3.82
	Loading & unloading	100	2.54
	Market charges	250	6.37
	Pesticides and insecticides	200	5.09
	other expenses	150	3.82
	Total	923	23.48
3.	**Retailer**		
	Shop Rent	13	0.33
	License fee	11	0.28
	Labour salary	55	1.40
	Transportation	125	3.19
	Loading & unloading	150	3.82
	Pesticides and insecticides	300	7.65
	Other expenses	350	8.93
	Total	**1004**	**25.65**
	Total Marketing cost	**3922**	**100.00**

In channel-II both commission agent and wholesaler is single person so he incur less cost compare to wholesaler. Here commission agent cum wholesaler incurred cost of two percent value of transaction which is major component and followed by transportation cost and other expenses.

The total marketing cost incurred by retailer was Rs. 1004 per quintal (25.65%) (Table 4.5.2). Among various components constituted major pesticides and insecticides which is (9.39 %), followed by other expenses (6.04 %), loading and unloading (2.48), transportation cost (2.36 %), labour charges (1.32 %), and shop rent (0.37 %), Licence fee (025%).

The table revealed that pesticides and insecticides cost is more followed by cost incurred due to other expenses and loading and unloading charges.

4.5.5 Price spread in pulses marketing under different channels

The price spread is one of the measures of marketing efficiency. It indicates the extent of increase in the price of a commodity as it changes hand from one intermediary to another in the marketing channel. The price spread comprises of marketing cost incurred by different market intermediaries and their profits margin. As we know pulses susptable for insects and pests so the price spread will be higher, as a result of which consumer has to pay a higher price, while the producer doesn't receive a higher share in consumer's rupee. Here, price spread was studied to know the share of marketing costs and margins of pulses marketing.

Price spread in pulses marketing under different channels is presented in Table 4.5.3 the price spread is major indicator of marketing efficiency and performance. It revealed that the net producer's share in consumer rupee was found to be more in channel-I (72.42.43 %) in contrast with channel-II (57.64%). Correspondingly the net price received by the producer per quintal of pulses was highest in Channel-I (Rs.12,750 per quintal) compared to channel-II (Rs. 13000per quintal). The price spread was considerably high in channel-II (Rs. 9000 per quintal) in contrast to channel-I (Rs. 5920 per quintal).

Table 4.5.3: Price spread in pulses under different marketing channels

(Rs. Per quintal)

Sl. No.	Particulars	Channel-I	Channel-II
1.	**Producer**		
	Gross Price received	15,550	-------
	Marketing Cost	2800	-------
	Net price	12,750	13000
2.	**Village Trader**		
	Purchase price	-----	13000
	Marketing Cost	-----	1995
	Profit margin	-----	1005
	Sale price	-----	16000
4.	**Wholesaler**		
	Purchase price	15550	16000
	Marketing Cost	791	923
	Profit margin	1299	1077
	Sale price	17640	18000
6.	**Retailer**		
	Purchase price	17640	18000
	Marketing Cost	1020	1004
	Profit margin	2810	2996
	Sale price	21470	22000
7.	**Price spread**	**5920**	**9000**
8.	**Producer's share in consumer rupee**	**72.42**	**57.64**

In the channel-II margin of village trader was less (Rs. 1005 per quintal), whereas commission agent cum wholesaler's margin is Rs. 1077 per quintal and retailer's margin was high (Rs. 2996 per quintal). Similarly, in channel-I, the margin wholesaler it was Rs. 1,299 per quintal and retailer with Rs. 2,81002 per quintal respectively.

In both channels all intermediates keep large margin in selling produce to next, so the producers share in consumer's rupee differs based on number of intermediates involved in each. The pulse growers using channel-I realized higher share in consumer rupee and lower price spread is recorded compared to channel-II. This is because of marketing channel with fewer number of market intermediaries in channel-I. Hence, Channel-I is considered to be better marketing channel compared to channel-II.

Naveen *et al*. (2015) in there study on the marketing channels and price spread of banana in Chickaballapur district of Karnataka represented that channel without village trader have more producer's share in consumer rupee.

4.6 Constraints in Production, Marketing and Consumption of pulses

4.6.1 Constraints in Production of pulse growers.

Opinion survey was conducted to know the production constraints faced by pulse growers and results are presented in the Table 4.6.1 and it is shown in fig.6

Garrett's test was applied for ranking these problems. As told by the pulse growers, scarcity of labour was the major problem and therefore this problem was assigned first rank followed by high cost of labour (I). The main reason for this is because of migration from one place to another place so more scarcity of labour in villages and more expensive. Disease / pest attack (II) is another major problem, since pulses are susceptible to pest and diseases. adequate of subsidy for inputs (III) is the next major problem; this may be due to pulse growers faced problems in getting credit facilities from institutional agencies and subsidy for inputs. adequate of high yielding varieties (IV) is the next major problem, because of adoption traditional varieties and changing mind set of the formers leads to the low production. more care need to be taken for requirement of more fertilizers, pesticides etc. Adequate in quantity non availability

of credit in time (V) was also a problem because pulse production requires huge initial investment, (VI) no support from family member to manage the field were the problems faced by the pulse growers.

Table 4.6.1: constraints in production of pulse growers

(n=60)

Sl. No.	Problems	Mean Garrett's Score	Rank
1.	High labor charges	65.80	I
2.	Pest and diseases	60.30	II
3.	Adequate of subsidy for inputs	55.83	III
4.	adequate of high yielding verities	45.08	VI
5.	Non availability of credit in time	44.43	VII
6.	No support from family member to manage the filed	39.90	VIII

4.6.2 Constraints faced by the farmers in marketing of pulse growers

An informal discussion with the sample respondents revealed that they faced several problems in the marketing of pulses. Opinion survey was conducted among the sample respondents to know the problems in marketing of pulses. The results of the opinion survey are presented in the Table 4.6.2. and it is shown in Fig. 7. About 63.35 mean score of the respondents reported that price fluctuation and low price (60.73) in the market, was due to perishable nature of the pulses, bad climatic conditions and exploitation of market intermediaries are the major reasons. About 58.85 mean score of the respondents and limited exposer to marketing information was due to majority of the respondents sell to form gate and shops. About 55.45 mean score of the respondents opined that non- existence of processing units was another problem faced by the pulse growers.

The main reason for this is the lack of improvement in the industrial sector of the study area. About 47.85 mean score of respondents preferred that no buyers for the

produce at the right time are another problem. The main reason for this more availability of pulses at the same time. Lack of cold storage facilities in nearby areas, exploitation by middlemen, high cost of transportation, delayed cash payment was ranked sixth, seventh, eight, and ninth with mean score of 42.55, 42.43, 37.90 and 36.90 respectively.

Table 4.6.2: Constraints faced by the farmers in marketing pulses

(n=60)

Sl. No.	Problems	Mean Garrett's Score	Rank
1.	Price fluctuations	63.35	I
2.	Low price	60.73	II
3.	Limited exposes to marketing information	58.85	III
4.	Non-existence of processing units	55.45	IV
5.	No buyers for the produce at the right time	47.85	V
6.	Ware house storage facilities in nearby areas	42.55	VI
7.	Exploitation by middlemen	42.43	VII
8.	High cost of transportation	37.90	VIII
9.	Delayed cash payment	36.90	IX

4.6.3 Constraints faced by the farmers in consumption of pulses

Survey was conducted for giving to know the constraints faced by the pulse growers in the pulse consumption and the results are presented in the table 4.6.3 and in Fig 8.

Garrett's test is applied for giving ranks to these problems. Seasonality is the first consumption constraint with mean score of 62.21. Price factor is the second most problem with the mean score 61.73 followed by house hold characteristics, food consumption pattern, culture and traditions. Main constraint for the consumption of pulses is changing of climate from season to season and price factor.

Table 4.6.3: Constraints faced by the consumers for consumption of pulses

(n= 60)

Sl. No.	Problems	Mean Garrett's Score	Rank
1.	Seasonality	62.21	I
2.	Price factor	61.73	II
3.	Household Characteristics	46.00	III
4.	Food consumption pattern	42.50	IV
5.	Culture and traditions	41.53	V

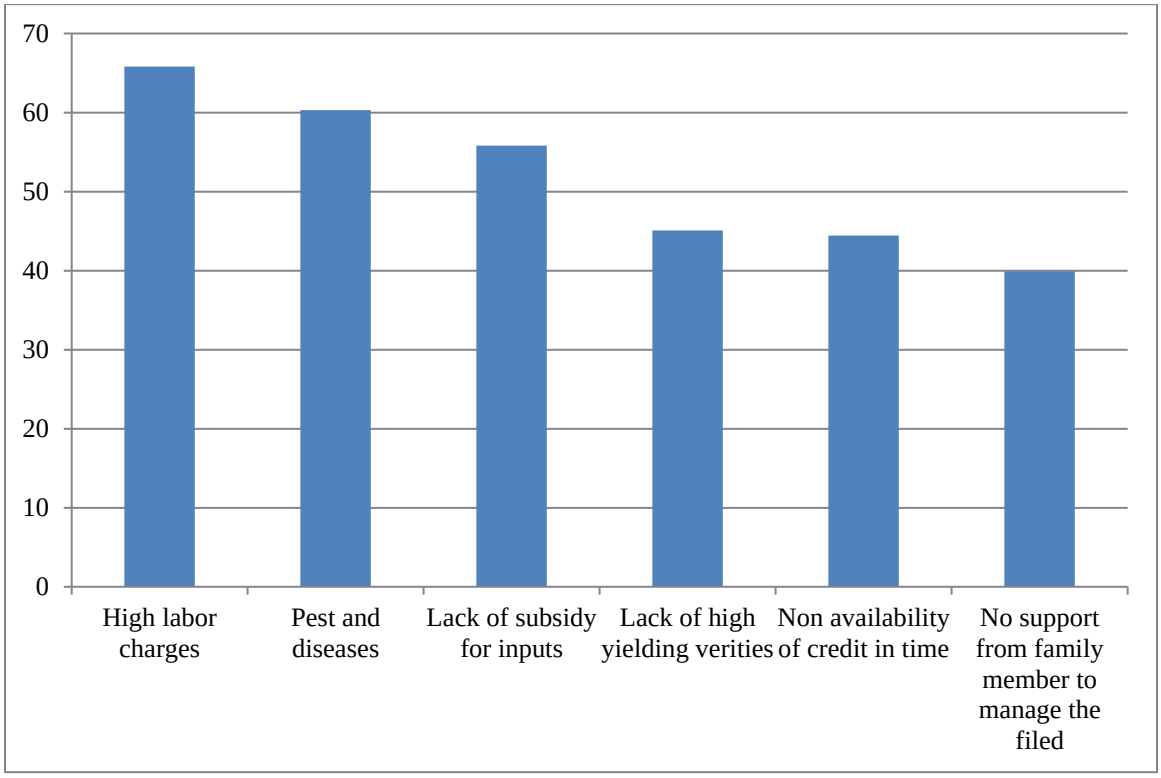

Fig. 6: constraints in production of pulse growers

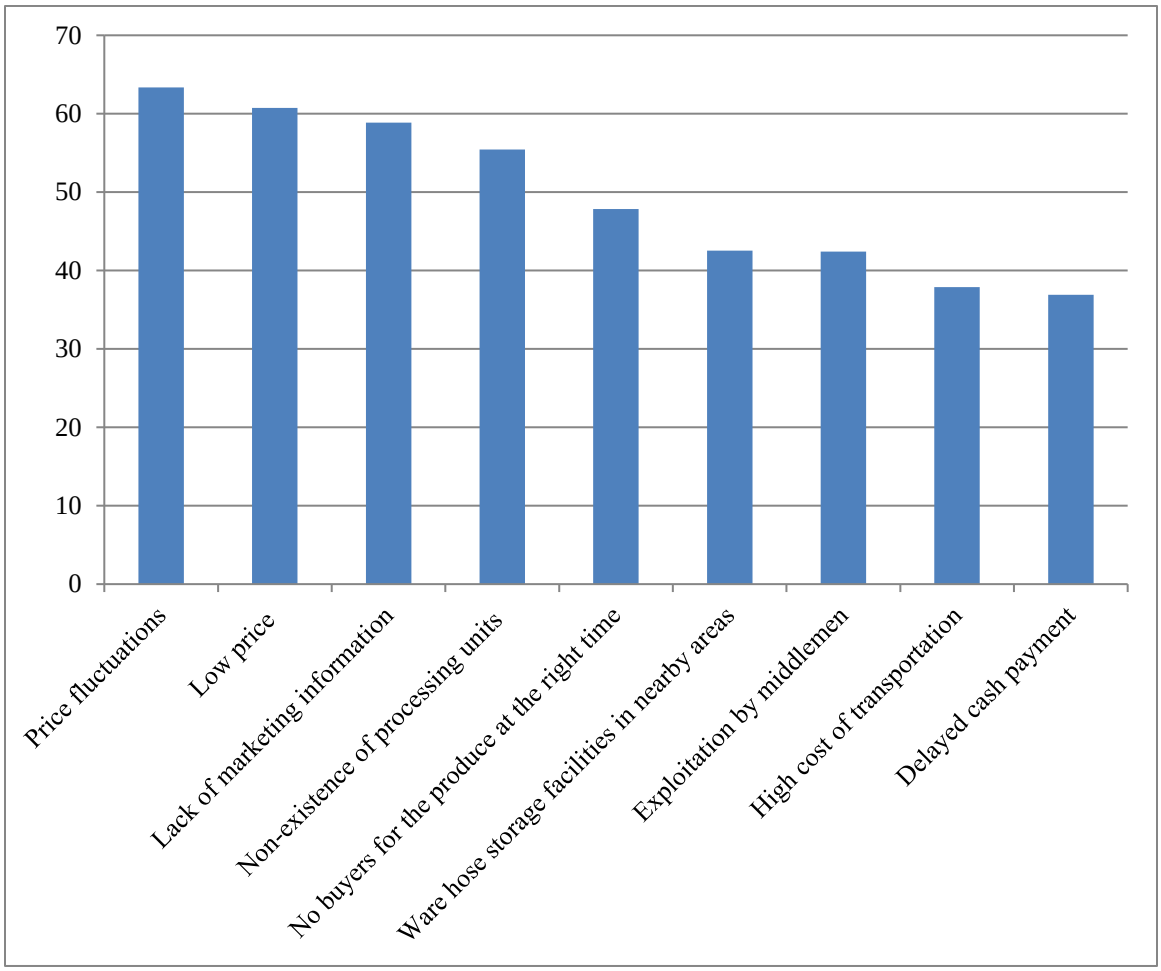

Fig. 7: Constraints faced by the farmers in marketing of pulses

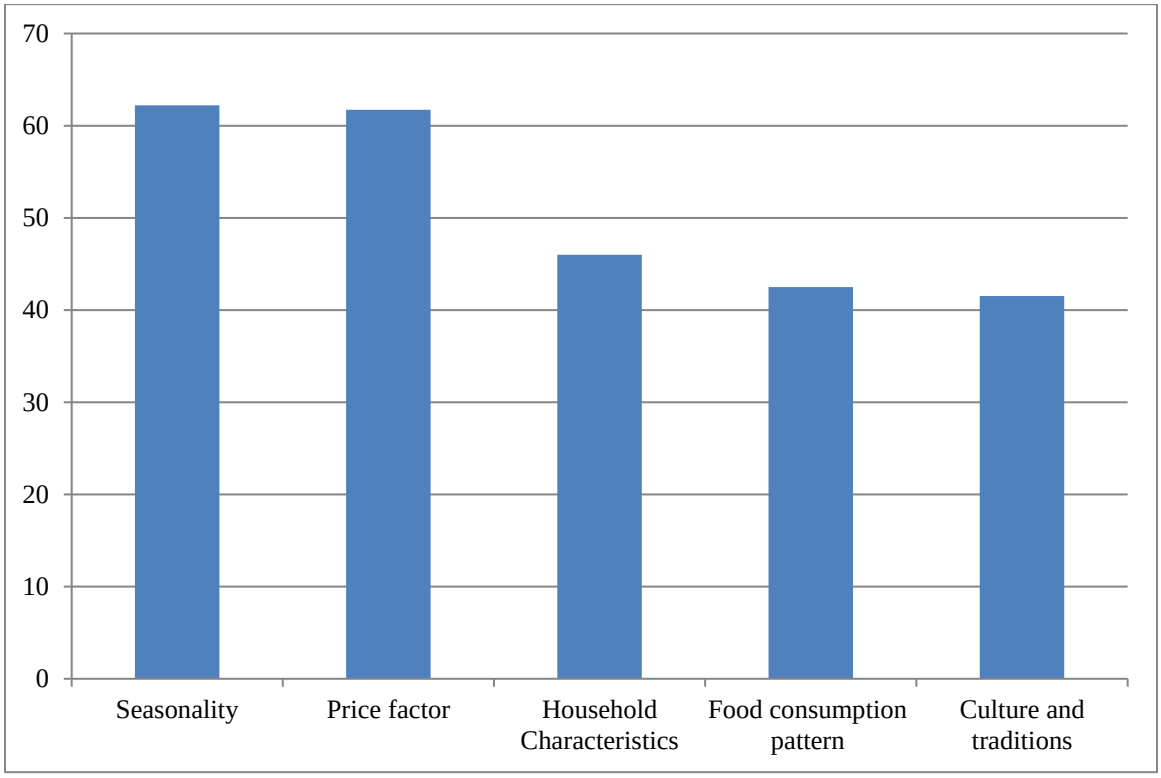

Fig. 8: Constraints faced by the consumers for consumption of pulses

V SUMMARY

Pulses are most popular agriculture crop in the world. India is world's largest producer, processor, importer and consumer of Pulses. Total demand is about 24-26 million tonnes. Imports are about 5.5- 6.5 million tonnes. There are more than 10,000 different varieties of pulses worldwide, which are consumed in a variety of forms. Whole pulses intended for fresh consumption are called "table purpose'' pulses can also be dried to make table and snack purposes, and preserved for longer period for the purposes of table and snack purposes. Global pulse production currently accounts 21-22 million tonnes per year. In the year 2016-17 recorded good harvest globally done to the year was recognized as International year of pulses

Pulses are rich in proteins and found to be main source of protein to vegetarian people of India. It is second important constituent of Indian diet after cereals. They can be grown on all types of soil and climatic conditions. They give ready cash to farmer. Pulses being legumes fix atmospheric nitrogen into the soil. They play important role in crop rotation, mixed and intercropping, as they help maintaining the soil fertility.

Keeping the above facts in view, an attempt is made to critically analyse production, marketing and consumption pattern of pulses. The specific objectives of the study include:

1. To analyse the trend in area, production and productivity of important pulses in Karnataka.
2. To analyse consumption pattern of different pulses among rural and urban households.
3. To estimate the producers, share in consumer rupee in different marketing channels.
4. To identify the constraints in production, marketing and consumption of pulses.

The present study was carried out in Tumakuru district of Karnataka state. Different pulses are grown in Tumakuru they are green gram, black gram, chickpea, field

Bean, horse gram. Sixtyconsumers and pulse growers were selected from near villages of Tumakuru city and they were personally interviewed using a pre - tested schedule.

The primary data needed for the study were collected from the respondents by personal interview method using structured schedule. The secondary data on trend in area, production and productivity of important pulses in Karnataka were collected from Department of Directorate of Economics and Statistics, Govt of Karnataka.

Major findings of the study are presented below:

1. Analysis of trend in area, production and productivity of important pulses in Karnataka. Field bean has the highest productivity.
2. About 50 per cent of the sample pulse growers belonged to the young age (<30) remaining are middle age group of 30-60.
3. Among the sample pulse growers 50 per cent were female and the remaining 50 per cent males.
4. Among the sample 33.33 per cent were graduates and pre-university, remaining followed by primary school.
5. Among the samplepulse growers 35 per cent were private sector employees followed by government employee 34 per cent.
6. About 60 per cent of the samplepulse growers were married and eighty per cent belongs to nuclear family.
7. About 41.66 % of respondents were belonged small size families with the income range of 25,000 Rs to 50,000 Rs and medium size family with the per cent of 16.66 per cent family income 50,000 to 1,00,000 remaining followed by the large family i.e. 41.66 per cent family income of above 1,00,000
8. About 57 per cent of the samplepulse growers were non-vegetarian and the remaining 43 per cent were vegetarian.
9. Quality is the major attribute considered by the sample consumers while purchasing pulses with mean score of 65.49 followed by taste 60.

11. In method of consumption pattern of pulses in both urban and rural areas majority of respondents consume green gram 50 per cent for both table snack purpose.
12. In method of consumption pattern of pulses rural areas majority of respondents consume chick pea 50 per cent as fresh followed by green gram. And majority of urban consumers use field bean as table purpose 38.33 per cent.
13. About 43.33 per cent of the sample pulse consumers belonged to the middle age remaining are old age group of 30-60.
14. Two marketing channels were identified in the study area for marketing of pulses.

Channel I: Producer → Wholesaler → Retailer → Consumers

Channel II: Producer → village trader → Wholesaler → Retailer → Consumers

15. The total marketing cost incurred by the producer-seller for marketing of pulses was 2800 per quintal in channel-I
16. The cost incurred in the marketing of pulses by the producer, wholesaler and retailer in channel-I were Rs.791, Rs. 1020 per quintal respectively. The cost incurred in the marketing of pulses by village trader, wholesaler, retailer, in channel-II was 1995 Rs.923 and Rs.1004 per quintal respectively.
17. The producer's share in consumer's rupee was found to be more in channel-I (72.42%), whereas, in channel-II, it accounted for 57.64 per cent. Price spread was more in channel-II as a number of market intermediaries were more involved compared to channel-I.
18. Th price spread in channel-I was Rs.5920 per quintal whereas in channel-II it was 9000 per quintal.
19. High labour charges is the major production problem faced by the pulse grower with mean score of 65.80. the other production problem is attack of pest and diseases, lack of subsidy for inputs, lack of high yielding verities, non-availability of credit in time and no support from family members to manage the field.
20. Price fluctuation is the major marketing problem faced by majority of the pulse growers with a mean score of 63. 35. The other marketing problems of pulse growers

are low price, lack of marketing information, non-existence of processing units, no buyer for the pulses a right time, lack of cold storage facilities in nearby areas, exploitation by middlemen, high cost of transportation and delayed cash payment.

21. Seasonability is the majority of problem faced by the consumer consumption with mean score of 62.21 followed by other consumption constraints are price factor, household characteristics, food consumption pattern, culture and traditions.

Implications of the study

- As we know that pulses are important protienatious dietary food and should include in diet but consumption of pulses in rural areas more compared to other urban areas they prefer more junk food rather than the protinatious food in order to overcome that the pulses can be processed in such a way that they can include day today life.
- I.E its necessary to processes more products from the pulses from the healthy betterment of life

VI REFERENCES

AGARWAL, N. L. AND SHARMA, J. L., 1994, Promoting Agri-business: Soya been Marketing Problems in Rajasthan. *The Bihar journal of Agricultural Marketing***, 2** (1): 43-53.

ANITHA ARYA, 1995, Pricing efficiency in the marketing of potato crop in Gujarat. The *Bihar journal of Agricultural Marketing*, **3**(2):153-161.

ASMATODDIN, M., JAWALE, S. V., GHULGHULE, J. N. AND TAWALE, J. B., 2009, Resource productivity and resource use efficiency in pulses production on medium farm in Marathwada. *International Journal of Agricultural Sciences***, 5**(2): 359-362

BERA, B.K., AND A.K. NANDI. "Variability in Pulses Production of West Bengal." *Economic Affairs*. **56.2**(2011): 197-202.

BHATIA, M. S., 1991, Economic constraints in increasing pulses production. Agricultural Situation in India, **46**(4): 279-284.

CONCEIÇÃO, PEDRO, SHANTANU MUKHERJEE, AND SHIVANI NAYYAR (2011). "Impacts of the economic crisis on human development and the MDGs in Africa." *African Development Review* **23(4)**: 439-460.

JOSHUA KENNETH BALOYI, 2010, An Analysis of Constraints facing Smallholder Farmers in the Agribusiness Value Chain: A case study of farmers in the Limpopo Province. *M. Sc. (Ag. Econ.) Thesis, (Unpub.) University of .Pretoria*

LAL, S. AND BRAHM PRAKASH,1996, Economic constraints on pulse production, yojana,**40**(3):366-374

LITAN DAS, NAIN M. S., SINGH RASHMI, BURMAN. R. ROY, 2014, Constraints in Marketing of Fruits as Perceived by the Fruit Growers and NERAMAC in Assam. *Journal of Community Mobilization and Sustainable Development,* **9**(2): 114-117.

MADAN, M.S. AND SINGH, M.L., 1997, Efficiency and Price Spread of Pea Marketing in Ranchi District. *The Bihar Journal ofAgricultural Marketing*, **5**(3): 366-374.

MATHUR, B. K. AND HENRY, A., 2005, Compound growth rate of area, production and productivity of pulses (moth bean, cowpea, and mung bean) in arid districts of Rajasthan. *Journal of Arid Legume*, **2**(1): 50-53.

MUNDINAMANI, S. M., BASAVARAJA, H., HOSAMANI, S. B. AND MAHAJANASHETTI, S. B. 1998., An economic analysis of growth rates in area, productivity and production of pulses in Karnataka. *Karnataka Journal of Agricultural Sciences.***11**(4): 961-964.

NAIDU, M. R. AND TIRUPATHI, G., 1991, A study on the marketing of kharif ground nut in viziangaram district of Andhra Pradesh *Indian Journal of Agricultural Marketing*, **5**(1): 93-94

NAVEEN, B., JAYARAM, M.S., DHANANJA SWAMY, P.S., RAMESH, G.B. AND RAGHAVENDRA, D.V., 2015, Marketing Channels and price spread of banana in Chickaballapur district of Karnataka. *Int. Res. J. Agric. Econ. Stat.*, 6(1):18-22

OLDIGES, CHRISTIAN, (2012) "Cereal consumption and per capita income in India." *Economic & Political Weekly* **47(6**): 63.

REDDY, A. AMARENDER (2004). "Consumption pattern, trade and production potential of pulses." *Economic and political weekly*: 4854-4860.

SADIKA, S., MOHD ISA B., AND WAN ABDUL MANAN, W.M., 2013, A Comparison of Food Consumption Pattern in Rural and Urban Areas of Bangladesh between 2005 and 2010. *Health and the Environment Journal*, **4**(1):10-20

SAHU, P. K., SARKAR, C., DEY, G., DEBSANKAR GUPTA AND RAKHEE BANERJEE. 2007. Statistical account of pulse production in World, India and West Bengal during pre-green revolution, green revolution and post-green revolution periods. *Environment and Ecology*.**25S** (3A): 925-929.

SAIN VEER, LUHACH, V.P., SINGH, V.K., MOHINDER SINGH MEHLA. AND VED JYOTI, 2013, Constraints faced by Guava growers in production and marketing in districts of Haryana state. *Journal of Agriculture and Veterinary Science,* **5** (5): 17-20.

SATHE, DHANMANJIRI, and Sunil Agarwal. "Liberalization of Pulses Sector: Production, Prices and Imports." *Economic and Political Weekly* (2004): 3391-3397.

SANTOSH KUMAR, S. P2008. *Marketing behavior, information source consultancy pattern and Problems of Vegetable Growers in Bijapur district of Karnataka*. Diss. M.Sc. Thesis (Unpub.) University of Agricultural Science UAS, Dharwad.

SHILPA, Y., 2014, Food consumption pattern in Chikkaballapur district, Karnataka. MBA (ABM) Thesis (Unpub.), University of Agricultural Science., (UAS) Bengaluru.

USHA SINGH. 2001. A comparative study on the productivity level of pulses and other crops. *Journal of Research,* **13(**2): 211-213.

YADAV, S. S., KUMAR, J., SHEORAJ SINGH AND YADAV, S K., 1997 Chickpea promise food security. *Intensive Agriculture*, .41-45.