AN ECONOMIC ANALYSIS OF PRODUCTION AND MARKETING OF COTTON IN KRISHNA DISTRICT OF ANDHRA PRADESH

M.Sc. (Ag) Thesis

by

TENTU SUPRIYA

DEPARTMENT OF AGRICULTURAL ECONOMICS

COLLEGE OF AGRICULTURE, RAIPUR

INDIRA GANDHI KRISHI VISHWAVIDYALAYA

RAIPUR (Chhattisgarh)

2021

AN ECONOMIC ANALYSIS OF PRODUCTION AND MARKETING OF COTTON IN KRISHNA DISTRICT OF ANDHRA PRADESH

Thesis

Submitted to the

Indira Gandhi Krishi Vishwavidyalaya, Raipur

by

TENTU SUPRIYA

IN PARTIAL FULFILLMENT OF THE REQUIREMENT

FOR THE DEGREE OF

Master of Science

In

Agriculture

(Agricultural Economics)

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AUGUST, 2021

CERTIFICATE – I

This is to certify that the thesis entitled **"An Economic Analysis of Production and Marketing of cotton in Krishna district of Andhra Pradesh"** submitted in partial fulfillment of the requirements for the degree of **Master of Science in Agricultural Economics** of Indira Gandhi Krishi Vishwavidyalaya, Raipur is a record of bonafide research work carried out by **TENTU SUPRIYA** under our Guidance or supervision. The subject of the thesis has been approved by Student's Advisory Committee and the Director of Instructions.

No part of the thesis has been submitted for any other degree or diploma or has been published/ published part has been fully acknowledged. All the assistance and help received during the course of the investigations have been duly acknowledged by her.

Chairman

Date: 03/08/2021

THESIS APPROVED BY THE STUDENT'S ADVISORY COMMITTEE

Major Advisor (Dr.V.K.Choudhary) ----------

Member (Dr.A.K.Koshta) ----------

Member (Dr.Shrikant Chitle) ----------

Member (Dr. M.K.Pradhan) ----------

CERTIFICATE -II

This is to certify that the thesis entitled **"An Economic Analysis of Production and Marketing of cotton in Krishna district of Andhra Pradesh"** submitted by **TENTU SUPRIYA** to the Indira Gandhi Krishi Vishwavidyalaya, Raipur in partial fulfillment of the requirements for the degree of **Master of Science in Agriculture** in the Department of Agricultural Economics has been approved by the external evaluator and Student's Advisory Committee after oral Examination under the Chairmanship of head of the Department/Dean.

Date: 11/08/2021

Signature of the Head of the Department/Dean

(Name : Dr. M.R. Chandrakar)

Major Advisor ----------

Faculty Dean ----------

Approved/ Not Approved

Director of Instructions ----------

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Date:

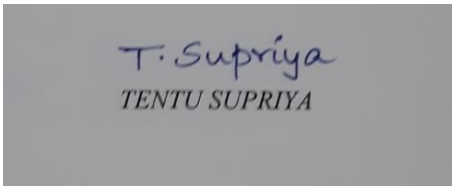


TABLE OF CONTENTS

LIST OF TABLES

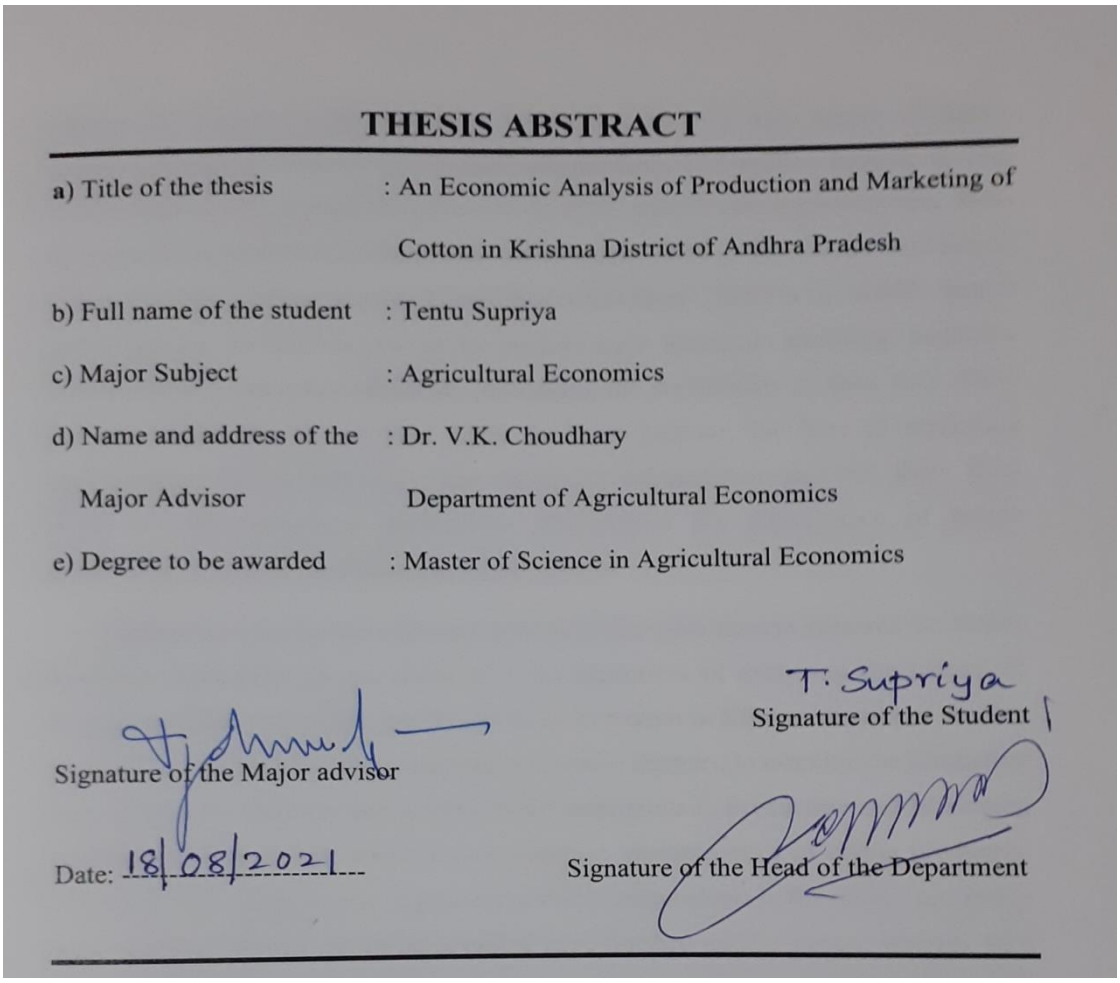
LIST OF FIGURES

LIST OF ABBREVATIONS

B:C	Benefit Cost Ratio
CCI	Cotton Corporation of India
CGR	Compound Growth Rate
COCPC	Committee on Cotton Production and Consumption
et.al	And Other /co-workers
Fig.	Figure
FY	Five Year
GVA	gross value added
i.e.,	That is
ICAC	International Cotton Advisory Committee
IOWC	Interest On Working Capital
MY	marketing Year
NS	Non-Significant
S. No.	Serial Number
USDA FAS	United States Department of Agriculture Foreign Agricultural Service

LIST OF NOTATIONS

Q	Quintal
%	Percent
Rs	Rupees
Sq. Km.	Square Kilometre
E	East
N	North
°	Degree



THESIS ABSTRACT

a) Title of the thesis : An Economic Analysis of Production and Marketing of Cotton in Krishna District of Andhra Pradesh

b) Full name of the student : Tentu Supriya

c) Major Subject : Agricultural Economics

d) Name and address of the Major Advisor : Dr. V.K. Choudhary, Department of Agricultural Economics

e) Degree to be awarded : Master of Science in Agricultural Economics

T. Supriya
Signature of the Student

Signature of the Major advisor

Date: 18/08/2021

Signature of the Head of the Department

ABSTRACT

Farming in developing nations needs undergo considerable transformation in order to address the associated climate change, difficulties, and achieve food security. The majority of projections indicate that climate change, development stability, and incomes are more likely to be responsible for a fall in agricultural output in those regions that already have severe food insecurity.

In order to achieve global food security and climate change goals, climate smart agriculture is essential. Indian cotton is a major cash crop and a major source of fibre. A third of the world's fibres are cotton, which is the most often used natural fibre in textiles. As a result of its versatility, cotton is used in a wide variety of textile

products. Cotton cultivation area in India ranges from 12.5 million hectares to 13.0 million hectares, accounting for around 41 % of the world's cotton growing area. India accounts for around 26% of worldwide cotton output. India is the world's third largest cotton exporter, trailing only the United States and Brazil. India is the world's largest cotton grower, as well as one of the world's most important exporting countries. Cotton farmers often have difficulty estimating the profitability of their crop. Most farmers would like to get paid fairly for their produce, but lack of marketing functionaries, market efficiency, and marketing infrastructure prevents them from doing so. The preceding perspectives demonstrate the significance of cotton production as well as the cotton marketing system.

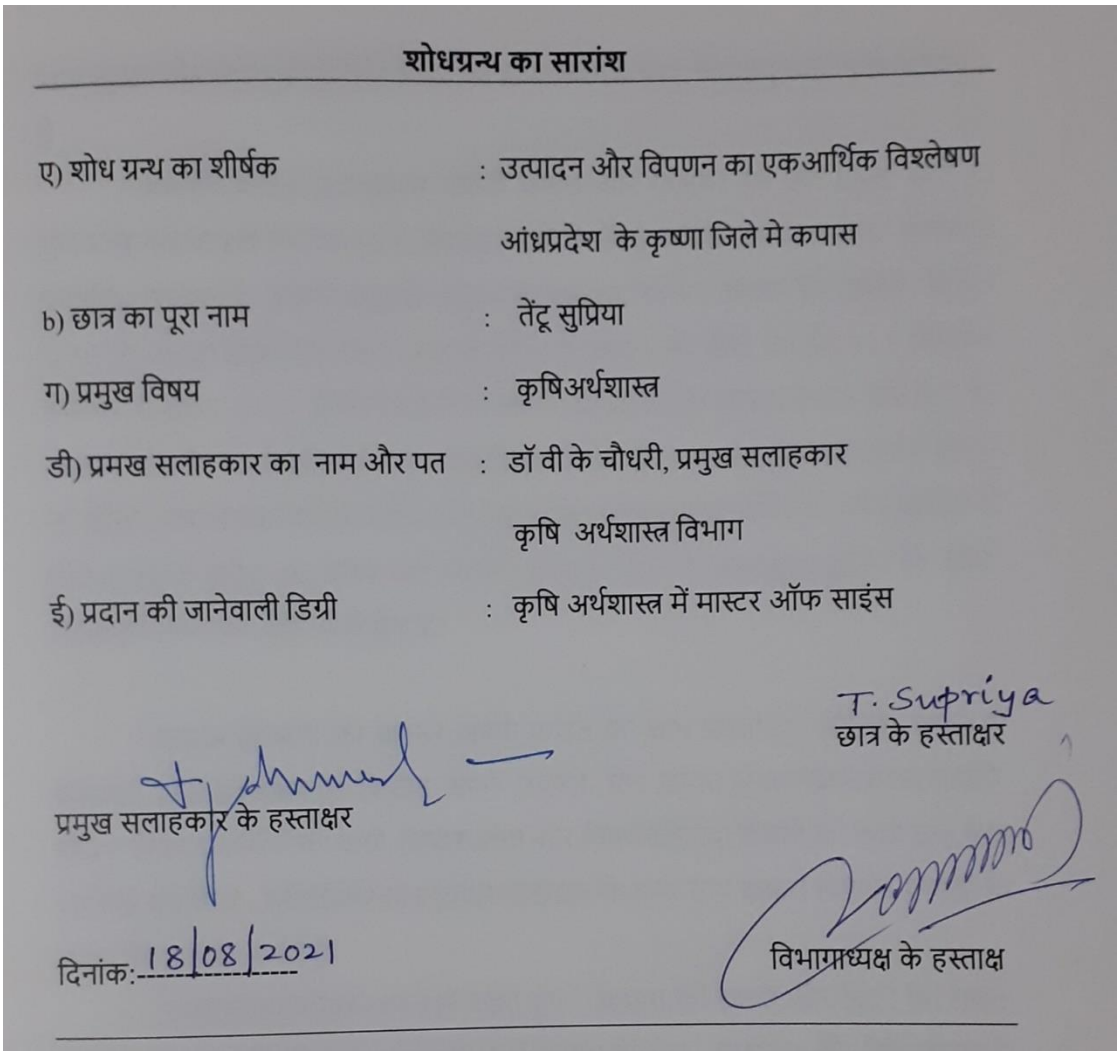
Taking into account the aforementioned factors, the current research on cotton has been considered for the study with the objectives of analyzing the pattern of Growth in Area, Production and Productivity of Cotton in Krishna district of Andhra Pradesh, to calculate the costs and returns of cotton farmers, to examine the Marketing pattern of cotton farmers and to identify the constraints in Production and Marketing of Cotton.The study uncovered several common characteristics of cotton producers. Among the total respondents, a greater number of respondents in the middle age group were observed. 40 percent of those polled have finished middle school, whereas 38.6 percent are illiterate. Farms with less than 1 hectare of land are considerably more common, with 34.6% of farmers doing so. Farms of 1 to 2 hectares are cultivated by 29.3% of respondents, whereas big farms are framed by just 13.3% of respondents. There was a slight decline in cotton production in Krishna district from 2010-11 to 2019-20. Although both production and productivity in Krishna district grew, the increase in cotton production was not substantial. Andhra Pradesh cotton area growth was deemed to be non-significant.

Cotton cultivation costs were marginally higher on marginal farms than in other farm types. Due to high production expenses, farmers' net profits are poor. As a percentage of the total cost, hired labour (32.06%) is the most expensive, followed by manures and fertilizers (8.89%), machinery labour (8.73%), and pesticides (8.27

percent). The overall cost of cotton cultivation is Rs. 98472.21/hectare. Calculated to be Rs.69923.06/ha and Rs.28549.07/ha, respectively, the operating Cost and overhead Cost accounted for 71 percent and 28 percent of the Total Cultivation cost, respectively. The gross revenue per hectare was Rs.150115.06. The overall net returns per hectare were Rs. 51642.85 rupees. Cotton was produced for Rs. 3014.14 per quintal. Cotton yield in the research area was judged to be 32.67 quintal per hectare on average.

The producer got the most amounts through the fair market, i.e., the regulated market. As a consequence, the first channel (Farmer---Cotton Corporation of India (CCI) ---Consumer (textile mills)) was found to be lucrative, with the producer receiving Rs. 5061 per quintal. Through the first channel, the farmer got a net price of 96.4 percent, and through the third channel, he earned a net price of 91.7 percent (Farmer---Commission Agent---Ginning Mills). The price spread in channel -1 is the lowest of all channels since no middleman was engaged. As the number of intermediaries in channel 2 (Farmer---Village traders---Retailer---Consumer (textile mills)) grew, so did the price spread.

As the most important productivity constraint, insect and disease damage was observed (Rank 1). Farmers who were larger in scale often indicated that pests and disease, together with lack of labour, were the major production constraints. Medium-sized farms mentioned finances as their biggest obstacle to success. The majority of farmers reported low market prices during harvest season (Rank-1) on their farm surveys. Lack of storage facilities posed a major marketing challenge for large growers.



शोधग्रन्थ का सारांश

ए) शोध ग्रन्थ का शीर्षक : उत्पादन और विपणन का एकआर्थिक विश्लेषण आंध्रप्रदेश के कृष्णा जिले मे कपास

b) छात्र का पूरा नाम : तेंटू सुप्रिया

ग) प्रमुख विषय : कृषिअर्थशास्त्र

डी) प्रमख सलाहकार का नाम और पत : डॉ वी के चौधरी, प्रमुख सलाहकार कृषि अर्थशास्त्र विभाग

ई) प्रदान की जानेवाली डिग्री : कृषि अर्थशास्त्र में मास्टर ऑफ साइंस

T. Supriya
छात्र के हस्ताक्षर

प्रमुख सलाहकार के हस्ताक्षर

दिनांक: 18/08/2021

विभागाध्यक्ष के हस्ताक्ष

सारांश

विकास शील देशों में खेती से जुड़े जलवायु परिवर्तन, कठिनाइयों को दूर करने और खाद्य सुरक्षा हासिल करने के लिए काफी बदलाव की जरूरत है। अधिकांशअनुमानोंसेसंकेत मिलता है किजलवायु परिवर्तन, विकासस्थिरता और आय उनक्षेत्रों में कृषि उत्पादन में गिरावट के लिए जिम्मेदार होने की अधिक संभावना है जहां पहले से ही गंभीर खाद्य असुरक्षा है। वैश्विक खाद्य सुरक्षा और जलवायु परिवर्तन लक्ष्यों को प्राप्त करनेके लिए, जलवायु स्मार्ट कृषिआवश्यक है।

भारतीय कपास एक प्रमुख नकदी फसल और फाइबर का एक प्रमुख स्रोत है। दुनिया के एकति हाई रेशे कपास हैं, जो कि वस्त्रों में सबसे अधिक इस्तेमाल किया जानेवाला प्राकृतिक फाइबर है। इसकी बहुमुखी प्रतिभा के परिणाम स्वरूप, कपास का उपयोग विभिन्न प्रकार के कपड़ा उत्पादों में किया जाता है।भारत में कपास की खेती का क्षेत्र 12.5 मिलियन हेक्टेयर से लेकर 13.0 मिलियन हेक्टेयर तकहै, जो दुनिया के कपास उगाने वाले क्षेत्र का लगभग 41% है। भारत दुनिया भर में कपास उत्पादन का लग भग 26% हिस्सा है।भारत दुनिया का तीसरा सब से बड़ा कपास निर्यातक है, जो केवल संयुक्त राज्य अमेरि का और ब्राजील से पीछे है।भारत दुनिया का सबसे बड़ा कपास उत्पादक होने के साथ-साथ दुनिया के सबसे महत्वपूर्ण निर्या तक देशों में से एक है।

कपास किसानों को अक्सर अपनी फसल की लाभ प्रदता का अनुमान लगाने में कठिनाई होती है।अधिकांश किसान अपनी उपजके लिए उचित भुगतानप्राप्तकरनाचाहतेहैं, लेकिन विपणन कर्मियों की कमी, बाजारदक्षता और विपणन बुनिया दीढांचे की कमी उन्हें ऐसा करने से रोकती है। पूर्ववर्तीदृष्टिकोण कपास उत्पादन के साथ-साथ कपास विपणन प्रणाली के महत्व को प्रदर्शित करते हैं।

उपरोक्तकारकों को ध्यान में रखते हुए, कपास की लागत और रिटर्न की गणना करने के लिए, आंध्रप्रदेश के कृष्णा जिले में कपास के क्षेत्र, उत्पादन और उत्पादकता में वृद्धि केपैटर्न का विश्लेषण करने के उद्देश्यों के साथ अध्ययन के लिए कपास परवर्तमान शोध पर विचार किया गयाहै। कपास किसानों के विपणन पैटर्न की जांच करने और कपास के उत्पादन और विपणन में बाधा ओंकी पहचान करने के लिए।

अध्ययनने कपास उत्पादकों की कई सामान्य विशेषताओं का खुलासा किया।कुल उत्तरदाताओं में मध्यम आयु वर्ग के उत्तरदाताओं की संख्या अधिक पाई गई। मतदान करने वालों में से 40 प्रतिशत ने मिडिल स्कूल की पढ़ाई पूरी करली है, जब कि 38.6 प्रतिशत निरक्षर हैं। 1 हेक्टेयर से कम भूमि वाले खेत काफी अधिक सामान्य हैं, जिसमें 34.6% कि सान ऐसा

करते हैं। १से २ हेक्टेयर के खेतों में २९.३% उत्तरदाताओं द्वारा खेती की जाती है, जब कि बड़े खेतों में केवल 13.3% उत्तरदाताओं द्वारा खेती की जाती है।

वर्ष 2010-11 से 2019-20 तक कृष्णा जिले में कपास उत्पादन में मामूली गिरावट दर्ज की गई। हालांकि कृष्णा जिले में उत्पादन और उत्पादकता दोनों में वृद्धि हुई, कपास उत्पादन में वृद्धि पर्याप्त नहीं थी।आंध्रप्रदेश कपास क्षेत्र की वृद्धि कोगैर-महत्वपूर्ण माना गया। कपास की खेती की लागत अन्य प्रकार के कृषि की तुल नामें सीमांत खेतों पर मामूली अधिक थी। उच्च उत्पादन व्यय के कारण, किसानों का शुद्ध लाभ कम है।

कुल लागत के प्रतिशत के रूप में, किराए पर लिया गया श्रम (32.06%) सब से महंगा है, इसके बाद खाद और उर्वरक (8.89%), मशीनरी श्रम (8.73%), और कीटनाशक (8.27 प्रतिशत) हैं। कपास की खेती की कुल लागत रु. 98472.21/हेक्टेयर । क्रमशः रु.69923.06 हेक्टेयर और रु.28549./हेक्टेयर की गणना की गई, परिचालन लागत और ओवर हेड लागत, कुल खेती लागत का क्रमशः ७१ प्रतिशत और २८ प्रतिशत थी। प्रति हेक्टेयर सकल राज स्व150115.06 रुपये था। प्रति हेक्टेयर कुल शुद्ध रिटर्न रु. 51642.85 रु. कपास का उत्पादनरु. 3014.14 प्रति क्विंटल ।अनुसंधान क्षेत्र में कपास की उपजऔ सतन 32.67 क्विंटल प्रति हेक्टेयर आंकी गईथी। उत्पादक को सबसे अधिक राशि उचित बाजार अर्थात विनिय मित बाजार के माध्यम से प्राप्त होती है।नती जतन, पहला चैनल (किसान --- भारतीय कपास निगम (सीसी आई) --- उपभोक्ता (कपड़ा मिल)) आकर्षक पाया गया, जिस में निर्माता कोरु। 5061 प्रति क्विंटल ।पहले चैनल से किसान को 96.4 प्रतिशत का शुद्ध मूल्य मिला, और तीसरे चैनल के माध्यम से उसने 91.7 प्रतिशत (किसान---कमीशन एजेंट–जिनिंग मिल्स) का शुद्ध मूल्य अर्जित किया। चैनल -1 में फैला हुआ मूल्य सभी चैनलों में सबसे कम है क्यों कि कोई बि चौलिया नहीं लगा था ।चैनल 2 में बिचौ लियों की संख्या (किसान --- ग्राम व्यापारी --- खुदराविक्रेता --- उपभोक्ता (कपड़ामिल)) में वृद्धि हुई, इस लिए की मत फैल गई।

सबसे महत्वपूर्ण उत्पादकता बाधा के रूप में, कीट और रोग क्षति देखी गई (रैंक 1)। बड़े पैमाने पर किसानों ने अक्सर संकेत दिया कि कीट और रोग, श्रमकी कमी के साथ,

उत्पादन की प्रमुख बाधा एं थीं ।मध्यम आकार के खेतों ने वित्त को सफलता के लिए सब सेबड़ी बाधा बताया। अधिकांश किसानों ने अपने कृषि सर्वे क्षणों में फसल के मौसम (रैंक -1) के दौरान कम बाजार मूल्य की सूचना दी। भंडारण सुविधाओं की कमीने बड़े उत्पादकों के लिए एक बड़ी विपणन चुनौ तीपेश की।

CHAPTER-I

INTRODUCTION

The Indian economy is agrarian, and agriculture is its cornerstone, serving as the backbone of the rural livelihood security system. It provides a living for approximately 58 percent of the Indian people. Agriculture has been and continues to be the lifeline of the Indian economy, as economic security is largely dependent on agricultural and allied sectors. Agriculture and related sectors contributed 17.8 percent of India's gross value added (GVA) at current prices in FY20, with the food processing industry accounting for the lion's share. Agriculture, forestry, and fisheries were anticipated to generate Rs. 19.48 lakh crore (US$ 276.37 billion) in gross value added in FY20. Flourishing Agricultural output in India is the primary source of food security for the country's enormous population. Agriculture contributes approximately 15% of total export revenues. The agricultural sector offers raw materials for a variety of sectors, including textiles, sugar, flour mills, jute, apparel, and so on.

1.1. Problem Justification:

Cotton is one of India's largest fibre and cash crops. It plays an important part in the country's agriculture and industry. Cotton, which is one third of the total fibres produced worldwide, is the natural fibre most utilised in textiles. The annual production of cotton in the world changed from 25694(000’metric tons) in 2018-2019, to 25923 (000’metric tons) for the season 2019-2020. After the United States and Brazil, India is the world's third largest cotton exporter.

Table 1.1: Top five Countries in Extent of Cotton Production in the World

Country	Area (in 000'hectares)	
	2018-19	**2019-2020**
India	**12600**	**12700**
USA	4130	4177
China	3367	3300
Pakistan	2325	2631
Brazil	1618	1662
World total	32963	33624

Source: International Cotton Advisory Committee (ICAC) Publication, 2020

Table1.2: Top Countries in Cotton Production and Productivity in the world

(Production in 000' Metric tonnes and Productivity in Kilograms of lint per Hectare)

2019-2020		**2109-2020**	
Country	**Production**	**Country**	**Yield**
India	**6000**	Israel	2009
China	5800	Australia	1889
USA	4377	Russian Federation	1759
Brazil	2755	China	1758
Pakistan	1350	Brazil	1658
World Total	25923	**India**	**472**

Source: International Cotton Advisory Committee (ICAC) Publication, 2020.

The only country that has commercially grown all four varieties of cotton is India. The cotton cultivation area in India, accounts for approximately 41 percent of the world's cotton farming area, ranging from 12.5 million hectares to 13.0 million hectares.

Table1.3: Area, Production and Consumption of Cotton in India in Comparison to World

Crop Year 2020-21 (P)*	**World**	**India**
Area (Million Hectares)	31.36	12.96
Production (Million MT)	24.09	6.30
Consumption (Million MT)	24.09	5.61

Source: Cotton Corporation of India

India is one of the world's top cotton producers, accounting for around 26% of global cotton output. India has become one of the world's top cotton consumers, accounting for around 23% of global cotton consumption. Cotton output in MY (marketing Year) 2021/2022 is expected to be 29 million 480 lb. bales over an area of 12.9 million hectares, according to USDA FAS (United States Department of Agriculture Foreign Agricultural Service).

The Committee on Cotton Production and Consumption (COCPC) anticipates 360 lakh bales of cotton production for the current season (October 2020 to September 2021), which is somewhat lower than the 2019-2020 projection of 365 lakh bales. Cotton exports in the current season are expected to be 70 lakh bales, with textile mill usage at 288 lakh bales, according to the committee. The closing stock is expected to reach around 119 lakh bales.

In terms of area and output, Andhra Pradesh contributes 12.6% of Indian production of cotton, and 14%. Cotton is produced as a kharif plant on the eastern tracts of Andhra which have light red and black soils. Cotton is mostly grown as a Rain fed Crop. The cropped area is 46,797ha for cotton in Andhra Pradesh district in Kharif (2020). In 2018-19 cotton crop Production was 14.91 lakh bales and it was increased to 25.08 lakh bales in 2019-2020 due to increase in the area of cotton crop production in Andhra Pradesh. The per hectare of yield of cotton was also increased from 408 kg / ha in 2018-2019 to 648 kg/ ha in 2019-2020. The table given below

shows the Area, Production and Productivity of cotton in Andhra Pradesh from 2015-16 to 2019-2020

Table 1.4: Area, Production and Productivity of Cotton in Andhra Pradesh

(Area in lakh ha, Production in lakh bale and Productivity in kg/ha)

S. No.	Year	Area	Production	Productivity
1.	2015-16	6.66	18.17	464
2.	2016-17	4.72	15.64	563
3.	2017-18	6.46	20.88	549
4.	2018-19	6.2	14.91	408
5.	2019-2020	6.56	25.08	648

Source: Agricultural Statistics at a Glance – Andhra Pradesh.

Krishna district is located in the East Coastal Plains and Hill (Agro-climatic Region) is primarily made up of black and red loamy soils. Paddy, cotton, chillies, black gram, and other appropriate crops are produced in the area. The district was chosen for the study because it is one of the state's key or major cotton growing areas. Cotton, an important cash crop produced abundantly in the region, was also purposefully chosen. As cotton is a commercial crop, a judgement on investment owing to intensive cultivation of capital is required. Farmers often face issues in determining profitability for cotton cultivation and productivity at the time of disposal at marketing price level. Farmers always want to acquire a fair price for their produce, but they are unable to do so because to a lack of better marketing functionaries, market efficiency, and marketing systems.

Generally, farmers are more concerned with production and pay little attention to other aspects of marketing. As a result, the producers' share of the consumer rupee is low. A Good Marketing System is advantageous to Farmers as well as Consumers. Any marketing or production process that is involved with issues caused by social,

economic, and institutional elements must be identified, and corrective actions must be proposed to ensure the smooth flow of goods via the marketing channel.The preceding perspectives demonstrate the significance of cotton production as well as the cotton marketing system. The establishment of a marketing system is as crucial as boosting production. Taking into account the aforementioned factors, the current research on has been considered for the study.

1.2. Objectives:

1. To analyse the pattern of Growth in Area, Production and Productivity of Cotton in Krishna district of Andhra Pradesh.

2. To work out the Cost and Returns of Cotton farmers in the study area.

3. To examine the Marketing pattern of cotton farmers in the study area

4. To identify the constraints in Production and Marketing of Cotton and Suggest remedial measures to overcome them.

1.3. Plan of the thesis: The study is presented as follows**.**

Introduction (**Chapter 1)** shows the importance of the research, problems and Objectives. **Chapter 2** examines and presents the available and pertinent literature in detail**. Chapter 3** presents the materials and techniques for sampling, data gathering, and analytical equipment and assessment methodologies and also the general profile of the research field. The results and discussions are addressed in **Chapter 4** on the essential features of cotton production and marketing. **Chapter 5** concludes summaries and ideas on the improvement of cotton production and Marketing.

CHAPTER-II

REVIEW OF LITERATURE

2.1. To analyse the pattern of Growth in Area, Production and Productivity of Cotton.

Goudra.V.G. *et al.* (2011) investigated the growth rate scenario of the chilli (Capsicum annum L.) in north Karnataka. For the study, the compound growth rate technique was used. In terms of area, Belgaum (4.85), Gulbarga (0.81), and Raichur (0.40) districts were significant at the 10% level of significance, whereas at the 10% level of significance, the districts of Belgaum (5.49), Bijapur (1.11), and Haveri (0.79) were significant in terms of production. Bidar (1.74) and Raichur (0.21) districts were significant at the 10% level of significance in terms of productivity. Northern Karnataka has seen positive compound growth rates for area (13.76), production (13.88), and productivity (12.20).

Acharya S.P *et al*. (2012) investigated the growth, production, and productivity of major crops in Karnataka. The compound growth function was used to calculate the growth rate. Secondary data was collected over a 26-year period, from 1982-1983 to 2007-08. The area under oilseeds and commercial crops increased in a negative and insignificant manner. The production of cereals, pulses, vegetables, and fruits increased significantly. The production of oilseeds and commercial crops increased only marginally. Crop productivity increased significantly in the case of cereals, pulses, and fruits. Oilseed productivity increased in a moderately positive manner. Commercial crop productivity increased insignificantly, while vegetable productivity increased insignificantly and negatively.

Pavithra, B.S. and Hunnal.L.B. (2013) investigated the pattern of growth in cotton area, production, and productivity. The study lasted from 1997-1998 to 2009-10. Except for Mysore, where a positive growth rate was observed (non-significant),

there was negative growth recorded for areas under cotton cultivation in all districts studied. Cotton production growth rates were positive in some districts and negative in others. However, yield growth was found to be non-significant in all four districts.

Agarwal.P.K *et al.* (2014) investigated trends in the area, production, and productivity of the Madhya Pradesh soybean crop. Secondary data were used to investigate the growth performance, instability, and decomposition approach in area, production, and productivity of the soybean crop from 1996-97 to 2012-13. The tools used for analysis are compound growth trend, instability indices, and decompose analysis. During the study period, the area, production, and productivity all showed a positive and significant growth trend.

Boyal V.K *et al.* (2015) investigated the growth and instability in the area, production, and productivity of fenugreek in Rajasthan. The compound growth rates and instability were calculated for periods I (1991-92 to 2000-01), II (2001-02 to 2010-11), and overall. Positive and significant growth rates in terms of area and production were observed in the Kota and Jhunjhunu districts. Negative growth rates of production were discovered in the Sikar district during the period.

Sharma, Amod (2015) investigated the growth and variability in area, production, and yield of cotton as a non-food crop in the country. Secondary data from 1949-50 to 2011-2012 has been examined. For analyzing compound growth rate and variability, tools such as the exponential function and co-efficient of variation are used. During the study period, there was moderate to high significant growth in the area, production, and yield of cotton. It also concludes that there are significant fluctuations in the growth of cotton area, production, and yield during the study period.

More S.S *et al.* (2017) examined the performance of cotton in Gujarat: a long-term critical analysis. Cotton's long-term performance was studied from 1970-1971 to 2011-2012. Cotton performance was determined by calculating growth and instability. The compound growth rate was calculated by fitting a nonlinear model to data on area,

production, and productivity. The results showed that cotton area and production were significantly reduced during the first subperiod (1970-1971 to 1989-1990). Cotton crop performed far better during the second subperiod (1991-1992 to 2011-2012), with high growth in area, production, and productivity and a relatively low level of instabilitiy in its area.

Shruthi.G *et al.* (2017) investigated the area, production, and productivity of the groundnut crop in Telangana. Secondary data was gathered from various websites and the Directorate of Economics and Statistics. The findings revealed that the compound growth rate of area and groundnut production in India has been declining, while productivity has been increasing over the years. During 2013-14, the annual average groundnut crop production was 220 thousand tonnes, and the annual average yield per hectare was 1751 kg/ha.

Durgesh Sagar *et al.* (2019) investigated the growth of area, production, and yield of okra in Chhattisgarh, India. For the analysis, the compound growth rate technique was used. In terms of area, production, and productivity, most districts in Chhattisgarh experienced negative growth.

Malik DP & Devi. M (2020) studied the diffusion and economics of Bt Cotton Cultivation in Haryana. The findings reveal that the area and production of cotton in Haryana divulged a compound growth rate (CGR) of 2.24 and-0.10 percent per annum, respectively, during the time period 2005-2019. Cotton production in Haryana has performed poorly over the last four years of research. Cotton production and yields increased at a negative rate in Fatehabad, Hisar, and Sirsa districts. For area and production, it was positive in the Bhiwani and Jind districts. Cotton production was reduced to 9.95 lakh bales in 2015-16 due to a whitefly outbreak.

Ramesh *et al.* (2020) conducted studies on the growth in area, production and productivity of cotton in selected districts of Karnataka. For his research, he used secondary data from 1970 to 2016. Production and productivity have shown a

significant increase in growth rate in the three districts studied, while area under cultivation has decreased by 5.59 percent in Raichur district. Cotton cultivation has increased significantly in the remaining two districts (Dharward and Ballari).

2.2. Cost and Returns of Cotton Farmers

KNS Banafar, Suklu Ram Salam (2008) investigated An Economic Analysis of Sweet Potato Crop Production and Marketing in the Bastar District of Chhattisgarh. The study looked at the cost and returns of sweet potatoes, as well as the price spread and constraints in sweet potato production and marketing. With increasing farm size, the cost of production per quintal of sweet potato crop has decreased. Sweet potato yielded 94.94 quintals per hectare (Average). On average, the cost of production per quintal came to Rs. 170.1 1. As the size of the farm grows, so does its productivity and input-output ratio.

OB Adeniji and AJ Jirgi (2010) investigated the cost and returns of cotton production in Katsina state, Nigeria. Data was gathered from farmers via interview schedules. Fertilizer and other inputs such as chemicals and seed accounted for 18% of the total variable cost of cotton production. Cotton production was discovered to be profitable, as evidenced by the average net income (Rs.20526. 30). The total production cost was (Rs .45796), while the total revenue was (Rs, 66216.66). The average net return demonstrated that small-scale cotton farming is profitable.

Deepak Hegde *et al.* (2013) An Economic analysis of black gram in Gulbarga District of Karnataka. The cost of cultivation for black gram was estimated to be Rs. 27671 and increased as the size of the farm holding increased. Operational costs accounted for a significant portion of total farm costs across all categories. Large farmers have higher operating costs because they hire more human labour and tractor services, as well as spend more money on manures, fertilizers, and pesticides.

Radikha E. and Kumari R.V. (2015) conducted research on the Economic Analysis of the Cotton Marketing Chain in Andhra Pradesh. The average total cost of converting kapas to lint and lint to yarn was calculated to be Rs. 4631 and Rs. 17202

per quintal of kapas, respectively. The study found that in Adilabad district, the average total cost of cultivation and net returns of Bt cotton were higher (Rs.69607 and Rs.36781 per ha, respectively) than in Guntur district (RS.63793 and Rs21901 per ha respectively).

Murthy *et al.* (2015) looked into the economics of cotton production in North Karnataka. The averages and percentages were used in the tabular presentation. In comparison to the investment made by small and marginal farmers, medium farmers incurred a higher total cost. In comparison to small farmers (Rs.33318.69/acre) and marginal farmers (Rs.31371.91/acre), medium farmers' gross returns per acre were high (Rs.36103.38/acre). Cotton was found to be profitable in the research area. Among different types of farmers, the benefit-cost ratio ranges from 1.58 to 1.72.

Kambal BT *et al.* (2016) conducted research on the economics of cotton production and marketing in Maharashtra's Western Maharashtra region. The costs were Rs. 68505.21, 72159.98, and 70039.81 for small, medium, and large farmers, respectively. Farmers of all types paid an average of Rs.70471.44 per hectare. The overall benefit-cost ratio was 1.06; however, when the B: C ratio was calculated for different types of farmers, it was discovered that the B: C ratio was highest for medium farmers. The large size group had the highest cost and profit. Local traders handle 98 percent of the cotton produced in the villages (Intermediary).

Nitish Kumar Banjare (2016) conducted an economic analysis of the production and marketing of major spices in Chhattisgarh's Raigarh district. For the crop year 2014-2015, data is collected from farmers through personal interviews using a well-planned schedule and questionnaire. The total cost of cultivation per hectare for chilli, ginger, and coriander was calculated to be Rs.93724.87, Rs.115520.47, and Rs.37037.72, respectively. On the sample farms, the input–output ratios of chillies, ginger, and coriander were 1:2.53, 1:3.51, and 3.20, respectively.

OP Sonvanee and H Pathak (2016) conducted studies on an economic analysis of rapeseed-mustard crop production and marketing in Bastar Plateau of

Chattisgarh, India. The primary data was gathered from 52 randomly selected farmers using a personal interview method and a well-planned schedule and questionnaire. The average rapeseed-mustard cultivation cost and input-output ratio were calculated as Rs. 11030.14/ha and 1: 1.23, respectively. The average costs were Rs. 11026.84, Rs. 11529.45, Rs. 18121.71, Rs. 19231.26, Rs. 25823.47, and Rs. 18405.81 per hectare.

Pachpute S.S *et al.* (2017) investigated the cost and returns of soybean in Maharashtra's Marathwada region. For the year 2015-16 data was collected from soybean farmers using a pretested schedule and a personal interview method. The data was analysed using the cost concepts of Cost-A, Cost-B, and Cost-C. Soy bean yielded a gross return of Rs 56869.51 per hectare and a net profit of Rs 15137.46. Soyabean had a 1.36 output-to-input ratio.

2.3. Marketing Pattern of Cotton farmers

Patnaik K. (1985) investigated the Economic performance of groundnut marketing channels: A case study of the Rayalaseema region of Andhra Pradesh. According to the research, producers' share is higher in some marketing channels, i.e., farmers will benefit if they sell directly through cooperative units, but the farmer will not benefit from price movements if he sells through this channel. It has been discovered that the marketing costs are lower as the channel is smaller.

Surya Prakash *et al.* (1991) conducted research on A Comparative Study of Price Spread of Selected Agricultural Commodities in Karnataka. It was discovered that there was no single channel for marketing agricultural commodities. Cotton Growers benefit from the highest share of the consumer's price when they sell their cotton through cooperative marketing societies. The commission paid to commission agents and cooperative marketing societies ranged from 2.71 to 3.12 per quintal. The profit as a percentage of the purchase price of a village merchant was 13 percent, while it ranged from 2.86 to 3.31 percent for traders**.**

Dupdal R (2008) investigated Cotton Production and Marketing in Karnataka: A Case Study. To collect primary data, three stages of random sampling were used.

The study also revealed a significant variation in the prices received by various intermediaries between various agencies. Among the three types of marketing channels investigated in the study, farmers received a higher price in channel-I, which includes the Producer- ginning mill, than in the other channels. The price spread was greatest in channel-I, i.e., Producer -Ginning, indicating greater marketing efficiency. As a result, mill owners were able to purchase cotton from farmers at a reasonable price through this channel.

Madhushekar. BR (2009), Studied on marketing behavior of chilli growers in Guntur district of Andhra Pradesh. The information was gathered using a personal interview method and a structured interview schedule, and it was analyzed using appropriate statistical methods. The majority of chilli growers had a medium planning orientation, used a low number of information sources, added medium value, and sold their produce without grading. Farmers of all sizes, including small, large, and marginal, had poor marketing habits. In the study, the most important components of marketing behavior were planning orientation and attention to detail.

Jagan Mohan Reddy. M (2009) investigated the marketing behavior of cotton farmers in the Warangal district. The data was collected using a personal interview method and a structured interview schedule, and it was analyzed using appropriate statistical methods. Farmers use Tempo vans to transport their produce and sell it in market yards for immediate payment. Correlation analysis of independent variables with cotton farmer marketing behaviour revealed that experience in cotton cultivation, social interaction, education, economic status extension contact, Agricultural Inputs Acquisition Pattern and was all positively and significantly correlated with cotton farmer marketing behavior.

Gaurav Joshi (2011) investigated brinjal marketed surplus and price spread in Western Uttar Pradesh. Personal interviews with respondents were used to collect primary data. The marketed surplus of medium-sized farms is slightly higher than that of marginal, large, and small farms. Their relative proportions were 94.84 percent, 94.51 percent, 94.49 percent, and 94.48 percent of total production, respectively. In

channels with a low number of intermediaries, the producer's share of the consumer rupee is high. The marketing costs incurred by wholesalers in various channels were estimated to be 5.01 percent, 6.39 percent, and 7.88 percent of the consumer price, respectively, with corresponding net margins of 9.68 percent, 9.61 percent, and 10.23 percent of the consumer price.

Rajur B. C. , Patil B. L. (2015)examined Price Spread, Marketing Costs and margins of Chilli in Karnataka state.Farmers' marketing costs differed marginally across districts and across the board. Farmers in Raichur district paid a higher per quintal marketing cost (Rs 112.65) than those in Bijapur (110.02) and Gulbarga (103.80). The retailer's share was the largest component of the total marketing margin.

Srivastava S.C *et al.* (2015) conducted study in the Madhya Pradesh district of Khargone with the goals of identifying marketing channels, examining price spreads and marketing efficiency, and identifying constraints in cotton marketing. Currently, two major marketing channels can be found in the study area. The first channel producer sells his product to the market yard commission agent, who then sells it to the miller. The second channel merchant sells it to a village merchant in the village.

Shelke, R. D. *et al.* (2016) investigated Marketing cost, margin, and price spread in Bt cotton. In the sale of Bt Cotton, two marketing channels were observed: producer-village merchant-ginner-consumer (channel-I) and producer-ginning-consumer (channel-II). The per quintal marketing cost in channel I for grade II was Rs. 1050.70, followed by Rs. 1048.56 for grade I. The producers' share of the consumer rupee was highest in channel - 76.55 percent in grade III, 75.60 percent in grade II (75.60 percent), and 74.81 percent in Grade I. (74.81 percent)

Srikala M *et al.* (2016) investigated the "Cost of Cultivation and Price Spread of Chillies in Guntur District of Andhra Pradesh." According to the price spread analysis for the chosen channel, the producer received 65.45 percent of the consumer’s rupee. The retailer's and wholesaler's market shares were 9.85 and 8.21 percent, respectively.

Neha Lakra *et al.* (2018) conducted research on the Economics of Colacasia Marketing Patterns in Chhattisgarh's Bastar Plateau. They investigated the economics of the Colocasia Marketing pattern. The average Marketed surplus of colocasia was 60.51qtls/farm. The average yield was found to be 101.68 quintals per hectare. Large farms yielded the most, averaging 115.30 quintals per hectare across all farms. For colocasia, the producer's share of consumer rupee was higher in channel-II (66.32%) than in channel-I (56.97%). Channel-I had the most intermediateries, followed by channel-II. As a result, the producer's share in consumer rupee was comparatively lower in channel-I and higher in channel-II, implying that a large marketing channel reduced the producer's share in consumer rupee.

Reddy J.R, *et al.* (2019) studied An Economic Analysis of Price Spread, Producer's Share in Consumer's Rupee and Marketing Efficiency of Cotton in Warangal District of Telangana. The market functionaries from whom information was collected and analyzed were chosen using a multistage sampling technique. Data from three different marketing channels were gathered using well-structured questionnaires. Producer - Consumer (Channel I), Trader-Retailer-Consumer (Channel II), and Wholesaler/Commission agent (Channel III). With an increase in the number of intermediaries, the marketing cost and marketing margin increased.

2.4. Constraints in production and marketing of Cotton

Basavaraja H. *et al.* (1992) conducted research on the economic analysis of yield gaps and constraints in cotton in the Dharward district. Because of the inefficient use of inputs, there is an achievable yield gap in the study area. Inputs, particularly plant nutrients and labour, were identified as the most significant constraints in lowering the achievable yield. The steps that should be taken to close the yield gap are as follows. Extension activities will be stepped up in tandem with a more liberal credit policy.

Gaddi G.M *et al.* (2002) investigated Yield gaps, constraints, and potential in cotton production in Northern Karnataka - An Economic Analysis. More than 70% of

farmers stated that the presence of pests and diseases such as bollworm and whitefly reduced cotton yield potential; thus, farmers should receive proper IPM training. More than 40% of the sample farmers expressed dissatisfaction with the germination quality and cost of seed quality, as well as the cost of fertilizers and plant protection chemicals. As a result, there is a need for plant production technology validation.

Visawadia H.R *et al.* (2006) done a comparative analysis of Bt cotton and hybrid cotton in saurashtra region of Gujarat state. The main constraint is the scarcity of high-quality Bt cotton seeds. Cotton production is also constrained by a lack of capital resources and credit availability from institutional sources, as well as a high cost of credit. The production constraints are the high incidence of sucking pest in Bt Cotton and the scarcity of genuine plant protection chemicals

Gopalakrishnan. N *et al.* (2007) studied theProblems and prospects of cotton in different zones of India. The zone comprises states of Punjab, Haryana, and Rajasthan. In the North Zone, average yield levels remain stable at 400 to 500 kg lint/ha. Under ideal irrigation and management conditions, the potential yield is around 800 kg lint/ha. The development of high-yielding Desi hybrids with improved fiber quality must be prioritized. The development of biotic and biotic stress tolerant genotypes, additional research on fine-tuning IPM, cost-effective Integrated Nutrient Management techniques for varieties, and Bt cotton hybrids all hold a lot of promise.

Ramasundaram. P *et al.* (2007) investigated Bt cotton performance and constraints in central India. Growers reported high seed prices, high risks, poor refuge management, wilt incidence, high rates of discontinuance, and poor monitoring as major constraints. Transgenic variety development is one of the most important ways to reduce crop costs in the resource-poor conditions of rain-fed Central India.

Rai D. P , Bhupendra Singh (2010) investigated the extent of knowledge and constraints faced by cotton growers in the Barwani district of Madhya Pradesh, India. A survey of 120 farmers from four villages was carried out. The majority of farmers fit into the medium socioeconomic profile (53.33 percent) According to the findings,

there is a positive relationship between education levels, land holding size, knowledge of production technology, and annual income and negative association were found between age and type of family.

Kiresur V.R. (2011) investigated the socioeconomic impact of Bt cotton in Karnataka. Bt has a yield of 24 q/ha, a 31 percent higher yield, and a 151 higher net return than non-Bt. The most important factors limiting Bt technology adoption have been identified as a lack of quality seeds in sufficient quantity. Resistance to Spodoptera and the pink bollworm is being researched**.**

Godara A. K. (2012) investigated the socioeconomic impact and problems associated with Bt cotton production in Haryana. The majority of respondents believed that Bt Cotton reduces insecticide use and thus health hazard incidences, increases household income, and employment. Repeated sowing is necessitated by a high rate of seedling mortality caused by rain or high temperatures during germination. Major issues were perceived to be a lack of coordination among service, supply, and marketing agencies/organizations.

Yadav S *et al.* (2018) studied Perceived constraints in production of Bt cotton by the growers in Haryana. A study was done to know the constraints in cotton production. It is known that majority of the farmer's crop was failed due to unfavorable weather condition and high cost of the seed; Other major constraints include lack of proper demonstration for the Bt cotton production, financial problems. Other major constraints of the farmer were low price of the cotton at the time of crop harvesting.

CHAPTER-III

MATERIALS AND METHODOLOGY

Methodology is an important part of research analysis. A suitable Method is required in order to achieve the study's objectives. In this chapter, the details of the sampling procedure, the purpose and source of data, statistical and analytical instruments and techniques used in the research are discussed briefly. The study employs both primary and secondary data. The method used in the analysis is discussed further below in the subheadings.

1. Study Area Selection
2. Design of the Sampling
3. Technique of Investigation
4. Table and Analysis
5. Analysis instruments and methodologies

The current study on “An Economic Analysis on Cotton Production and Marketing in Krishna District of Andhra Pradesh” was completed in 2020 - 2021.

The following subsections describe the study's detailed methodological frame work.

3.1. Selection of Study area:

The study was conducted in Andhra Pradesh's Krishna district. Cotton is one of the district's largest crops. Mylavaram, GKonduru, Nandigama, Kanchikacherla, Akonduru, Nuzivid, and Penaganchiprolru are the main growing areas of cotton in the district. The study in these locations has therefore been done. The investigation was conducted using the Random Sampling method**.**

3.2. Design of the Sampling:

The following step was to choose responses from the whole list of farmers from the communities chosen, as well as their holdings size. All of the selected divisions will be prepared, as well as the state of cotton cultivating area and production. One

division has been chosen because it has a larger area under cotton production and a more diverse crop mix. The blocks / Mandals in the division with the most cotton and diverse agriculture were chosen. Depending on the number of respondents, one or more villages (Mylavaram and GKonduru) are chosen from these blocks. A sample of 15% of the 500 families in the selected hamlet was taken using probability proportional to size sampling, with 10% of respondents from each farm category included in the sample. A list of farmers in the specified villages was created based on their size group.

Categories of the farmers studied are

(1) Marginal :(Below1.0ha)

(2) Small : (1.0-2.0ha)

(3) Medium: (2.0-4.0ha)

(4) Large : (Above 4.0ha)

3.3. Technique of investigation

The schedules were created based on the data needed for the study, and pre-testing was also performed. Appendix-1 contains information about the schedule that was employed.

Data on costs and returns, price spreads, and constraints in cotton production and marketing were gathered using a survey method and direct interviews with farmers. Secondary data was acquired from Andhra Pradesh statistical reports, websites of the Andhra Pradesh Department of Agriculture, and so on. The raw data collected was compiled and processed in such a way that the results of the analysis were utilized to research the objectives. The data was tallied before being uploaded to Excel for analysis. To calculate the growth rate of cotton area, production, and productivity in the study region (Krishna district) as well as the state, 10 years of data (2010-2011 to 2020-2021) were obtained from the Andhra Pradesh Agricultural statistics records.

To assess marketing costs, margins and price spreads information was gathered in three phases, namely from farmers, traders, and wholesalers...

3.4. Table and Analysis

The raw data gathered was summarized and evaluated in such a way that the end product presented in the table was relevant to the study's aims. The data was initially transferred village by village on separate sheets. The corresponding master tables were created to benefit various objective analyses. The data was organized in a certain way to serve as a foundation for further research, making interpretation of the results easier.

3.5. Analysis instruments and Methodologies:

3.5.1. Compound Growth Rate:

To Compute the CGR the following formula will be used

$$Y = aB^t$$

$$\text{Log } Y = \text{Log } a + t \text{ Log } B$$

Where,

Y = Area/Production/Productivity

A = Constant

B = Regression coefficient

t = time in year

Compound Growth Rate (%) = (Antilog B-1)100

3.5.2. Farm Business Analysis:

It covers a detailed analysis of the cotton crop's costs and returns, as well as the farm. The many measures employed in the analysis are listed below.

a. Farm business Measures

Gross Income = Value of total output

Net Income = Gross income - Cost C2

Farm business income = Gross Income - Cost A1/Cost A2

Family labour income = Gross Income - Cost B2

Farm investment Income = Farm business income - Imputed value of the Family Labour

Benefit cost ratio = Net returns/Total cost of Cultivation

Input – Output ratio = Gross Income/ Total Cost

b. Cost of Cultivation:

To work out the cost of cultivation a standard method was used which includes Cost A, Cost B, Cost C.

c. Cost Concepts:

The cost Concepts were used to study the costs and returns of the sampled farmers. The detailed cost concepts used are given below.

Cost A_1- It includes the following items

Wages of hired human labour

Wages of Permanent Labour

Wages of Contract labour

Wages of hired bullock labour

Imputed value of owned bullock labour

Charges of hired machinery

Imputed value of owned machinery

Cost of seeds

Cost of manures and fertilizers

Cost of plant protection chemicals

Irrigation charges

Interest on working capital

Depreciation

Land revenue, Cess, and other tax

Miscellaneous costs

Cost A_2 --Cost A_1+Rent paid for leased in land, if any

Cost B_1-- Cost A_1or A_2 + Interest on amount of Owned invested in the business excluding the Land value

Cost B_2-- Cost B_1+Rental value of owned land less land revenue + rent paid for leased in land

Cost C_1 -- Cost B_1 + Imputed value of Family labour

Cost C_2 -- Cost B_2 + Imputed value of Family Labour

3.5.3. Price spread:

It comprises Marketing costs and margins which actually determines the percentage of the farmer in the price which is charged by the end user.

Price spread Formula is

P=(C-M/C) 100

Where,

P= the share of the producer in consumer rupee

C= Price charged by the final consumer

M= Marketing prices and Margins.

3.5.4. Marketing channels, Marketing costs and Margins:

Marketing Channels are the networks of intermediaries that transport farm commodities from producers to consumers.

Marketing Costs are the costs incurred in moving a commodity from the producer to the consumer, and they include packing costs, transportation costs, weighment charges, loading and unloading charges, transportation losses, spoilage losses, taxes and cess.

The **marketing margin** is the difference between the price paid and received by a certain market intermediary in the marketing of a commodity, such as a wholesaler or retailer.

3.5.5. Marketing efficiency

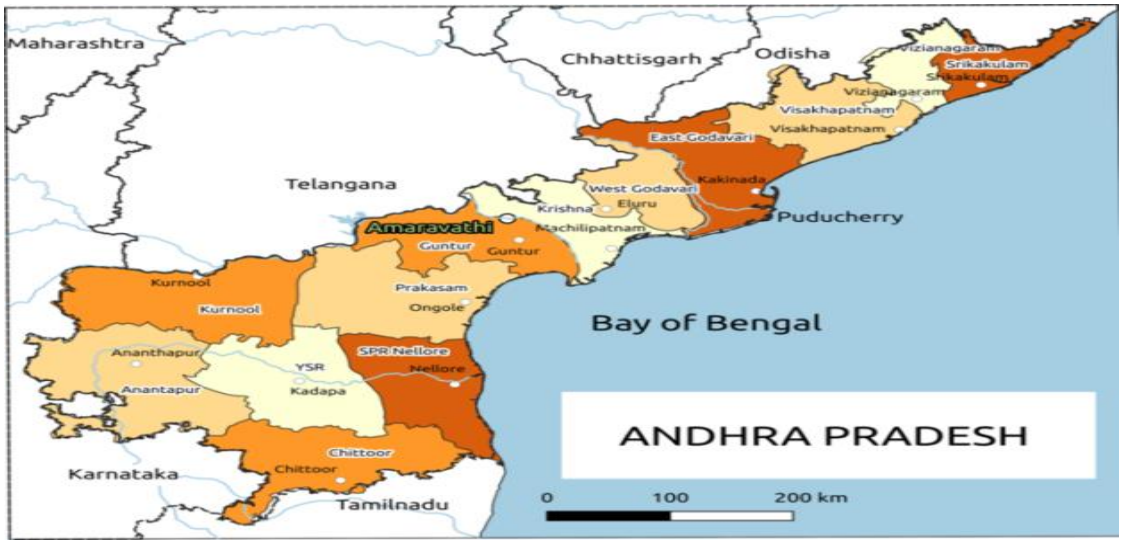
It is the ratio of satisfaction (output) to the cost of resources used in the marketing (Marketing Inputs).

3.6. General Profile of the Research area:

The strength of each farm depends on agro-climate conditions of the regions. As a result; a judgment on the region's agro-climatic characteristics is required.

This Chapter discusses the background information on the study's topic. During the years 2020-2021, the research was carried out in the Krishna district of Andhra Pradesh.

Andhra Pradesh is bounded on the north by Telangana, Chhattisgarh, and Odisha, on the east by the Bay of Bengal, on the south by Tamil Nadu, and on the west by Karnataka. The state is located between latitudes 12°41′and 19°07′ N and longitudes 77° and 84°40′ E. The state is located at an elevation of 11m (36ft) above sea level. AP has a total forest cover of 36.88 lakh hectares. (22.63 percent of the total geographical area). In AP, crop net sown area is 58.84 lakh hectares. The total irrigated area is 38.13 lakh hectares from all sources. It consists of coastal districts and stretches for approximately 972 kilometers along the Bay of Bengal. The state's climate is generally hot and humid.



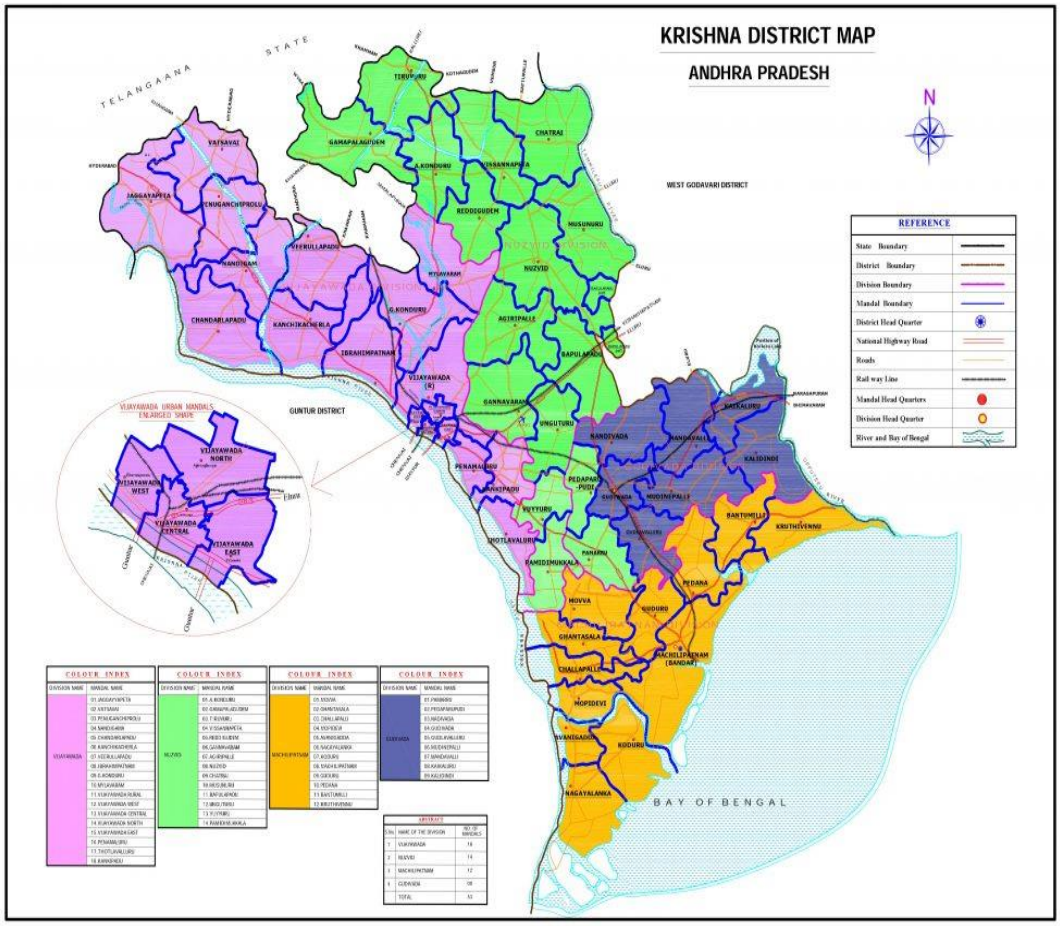
Map-1: Map of Andhra Pradesh

Krishna District

Krishna District takes its name from the holy river Krishna, India's third largest river. The Krishna River flows from Mahabaleswar (Maharashtra) to the Bay of Bengal at Hamsaladevi Village in the district. Krishna district is regarded as the nucleus of Telugu culture and is the birthplace of the well-known Indian classical dance genre – Kuchipudi. The Telugu dialect spoken in Krishna is often regarded as the mainstream version. Krishna district's administrative headquarters is Machilipatnam. Vijayawada is the district's largest city (third in the state) and a commercial centre.

The main occupation of the inhabitants in our district is agriculture. The district has a more tropical climate. Kolleru Lake, one of India's most ecologically significant wetlands, is located in the district. Krishna district is home to a number of notable people from many walks of life. The study was conducted in Mylavaram and Gkonduru area of the district.

Krishna is also known for its Bandar Laddu, Bandar Halwa, Chilakalapudi Bangaram (Imitation Jewellery), Kondapalli Toys, Nuzvid mangoes, and Pedana Kalamkari (Block printed cotton textiles). The Rs. 3.57 crore Raksam Barrage in Vijayawada across the Krishna River was built in 1957. It serves agriculture in the districts of Krishna, Guntur, and West Godavari.



Map 2: Map of Krishna district

3.6.1. Location:

The district is located around 15° 43' N and 17° 10' N latitude, and 80° 0' and 81° 33' E longitude. The Krishna District is located on the state's eastern coast, bordering West Godavari district in the east, the Bay of Bengal in the south, Guntur and

Surayapet district of Telangana in the west, and Khamam district of Telangana in the north.

3.6.2. Area and Population Distribution:

The district covers an area of 8,727 square kilometers and is divided into upland and delta areas. The district is made up of 50 Mandals divided into four Revenue Divisions: Bandar, Vijayawada, Gudivada, and Nuzvid. The district has a population of 4, 51,798 people (as of the 2001 census) of which 2,26,7375 are males and 2,25,0023 are females. There are 59.18 percent who live in rural areas and 40.81 percent who live in urban areas. The rural population is slightly larger than the urban population. The district's population density is 518 people per square mile (per sq km). The Schedule cast and Schedule tribe populations account for 19.28 percent and 2.93 percent of the overall population, respectively. The district's average literacy rate is 73.74 percent. The district population accounts for 5.34 percent of the total population. The district's demographic characteristics are detailed further below.

Table3.1: Demographic features of Krishna district

S. No.	Particulars	Krishna district
1.	Total Population (in No.)	4,51,7398
	a. Male	2,26,7375
	b. Female	2,25,0023
	C. Total	4,51,7398
	d. Urban	1,843,660
	e. Rural	2,673,738
2.	Percentage of Urban to Total Population (%)	40.81%
3.	Percentage of Rural to Total Population (%)	59.18%
4.	Population density per sq.km	518
5.	Percentage of District Population to state population	5.34%
6.	Decennial Growth rate percentage (2001-2011)	7.87%
7.	No. of Literates (in No.)	3,009,718
	a. Male	1,598,959
	b. Female	1,410,759
8.	Average Literacy %	73.74%

9.	Urban Literacy Rate (%)	44.92%
10.	Rural Literacy Rate (%)	55.08%
11.	Schedule Cast population as percentage to Total Population	19.28% (871063)
	a. Male	4,35,412
	b. Female	4,35,651
	C. Total	8,71,063
12.	Schedule Tribes population as percentage to Total Population	2.93% (132464)
	a. Male	66734
	b. Female	65730
	C. Total	1,32,464
13.	Agricultural Labor (in No.)	813,137
14.	Total workers (in No.)	2,048,880
15.	Sex Ratio (per 1000)	992
16.	Child Sex ratio	935
17.	Area in sq.km	8727
18.	Average Rainfall	1028.1mm

3.6.3. Soil and Topography

In the Krishna district of Andhra Pradesh, three types of soils predominate: black cotton, sandy clay loams, and red loams. The deltaic alluvium soils are the most fertile in the state, having been refreshed on a regular basis by the silt brought down by the river. These soils are more recent in origin and contain more plant nutrients. These soils are abundant in the Krishna and Godavari deltas.

Table 3.2: Different types of Soils in Krishna District of Andhra Pradesh

S. No.	Types of soils	Percentage
1.	Black Cotton	57.6
2.	Sandy clay loams	22.3
3.	Red loams	19.4

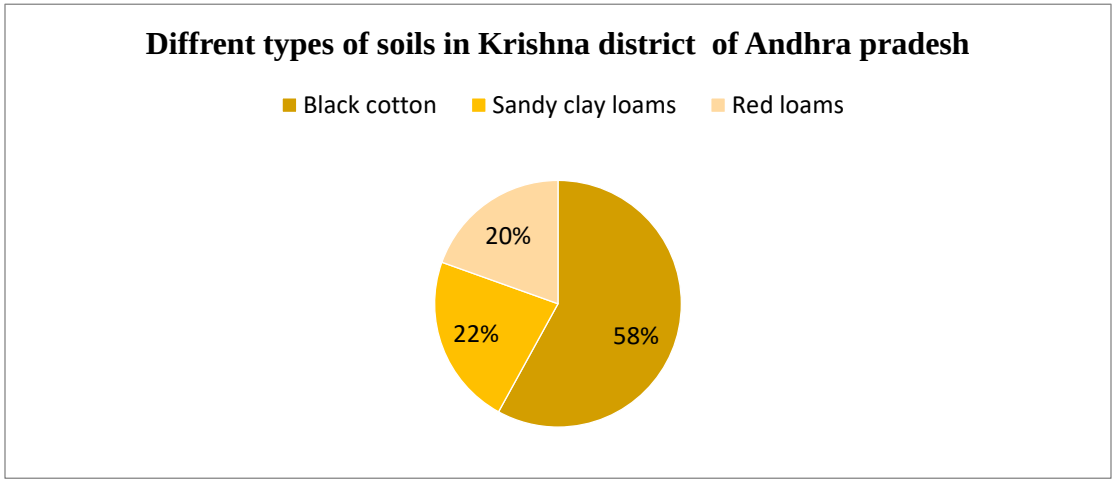


Fig.3.1. Graph showing different types of soils in Krishna district of AP

3.6.4. Land Utilization Pattern (2019-2020):

The total geographical area of the district is 873 (000'ha), of which 8.70 percent is covered by forest. The Net and Gross cropped area of the district is about 49.70 percent and 77.3 percent of the total geographical area respectively.8.59 percent of the total geographical area is Fallow. Cropping intensity of the district is 154.7 percent

Table 3.3: The land utilization pattern in the Krishna district of Andhra Pradesh

S.NO	Particulars	Area(000'ha)	Percentage of the Total area
1.	Total Geographical area	873	100
2.	Area under forest	76	8.70
3.	Barren and uncultivable land	37	4.23
4.	Land under NON –agriculture use	155	17.7
5.	Permanent pasture and grazing land	11	1.2
6.	Cultivable waste Land	21	2.4
7.	Fallow land	75	8.59
8.	Net cropped area	434	49.7
9.	Gross Cropped area	675	77.3
10	Cropping Intensity		154.7

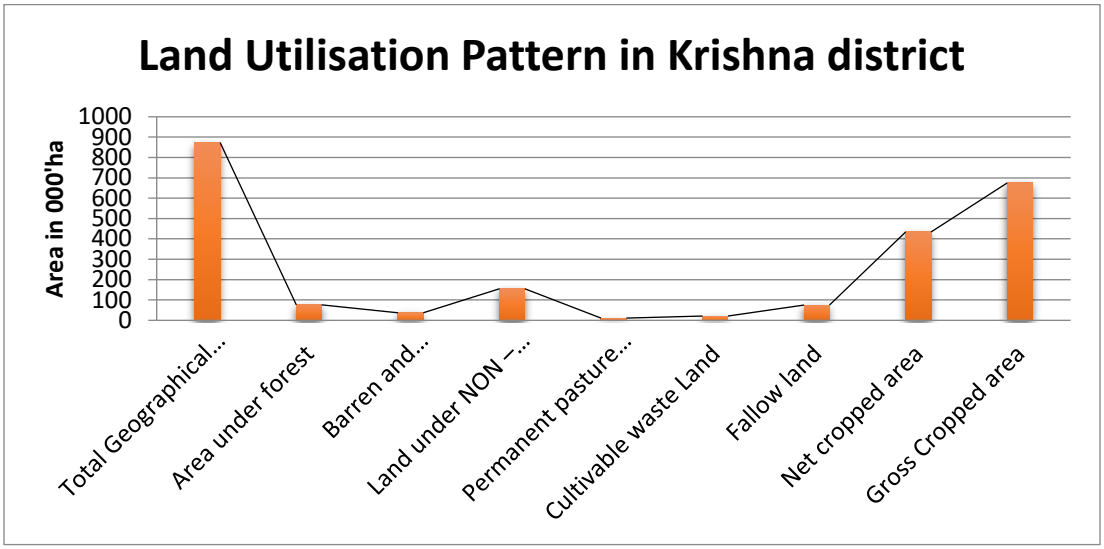


Fig.3.2. Graph showing the Land Utilization Pattern in Krishna District

3.6.5. Availability of Resources:

Mining and minerals:

Major minerals available in the district are Chromite, Iron ore, Diamonds, Limestons, Mica, Sulphur

Agriculture:

Krishna is one of Andhra Pradesh's most important coastal districts, growing a variety of crops all year. Agronomists regard it as a crop museum. Agriculture is the most popular occupation in the district. According to the 2001 census, agriculture employs 40.07 percent of the total working population. The district's abundant paddy is exported to other districts and states. Maize, Jowar, Cotton, Sugarcane, Groundnut, Pulses, Chillies, and, to a lesser extent, Tobacco are also grown.

Horticulture:

Mango, guava, oil palm, coconut, cashew, lemon, and other key horticultural crops are farmed. Cucumber, gaurds, bhendi, brinjal, tomato, cabbage, cauliflower, and green vegetables are also cultivated in the region.

3.6.6. Irrigation and water Resources:

The district's main rivers are the Krishna (1,280 km long), Muniyeru (Muneru), Tammileru, and Budameru. In this district, the Krishna River empties into the Bay of Bengal at HamsalaDivi and Nachugunta. Jayanthi, Kattaleru, Ippalavagu, Upputeru, Telleru, Ballaleru, and Nadime are some of the tiny hillstreams in the district. In the uplands, tanks are the principal source of irrigation. It also benefits from NagarjunaSagar's water. The delta land is irrigated by canals of the Krishna River.

The irrigation sources of the Krishna district, as shown in the table, indicate that the district's agriculture is primarily rain-fed. Canal water (72.9 percent) is the primary source of irrigation.

Table 3.4: Sources of Irrigation in Krishna district

S.NO	Source of Irrigation	Area in lakh ha	%(Percentage)
1.	Canals	2.51	72.9
2.	Tanks	0.38	11.04
3.	Well	0.30	8.72
4.	Others	3.44	100

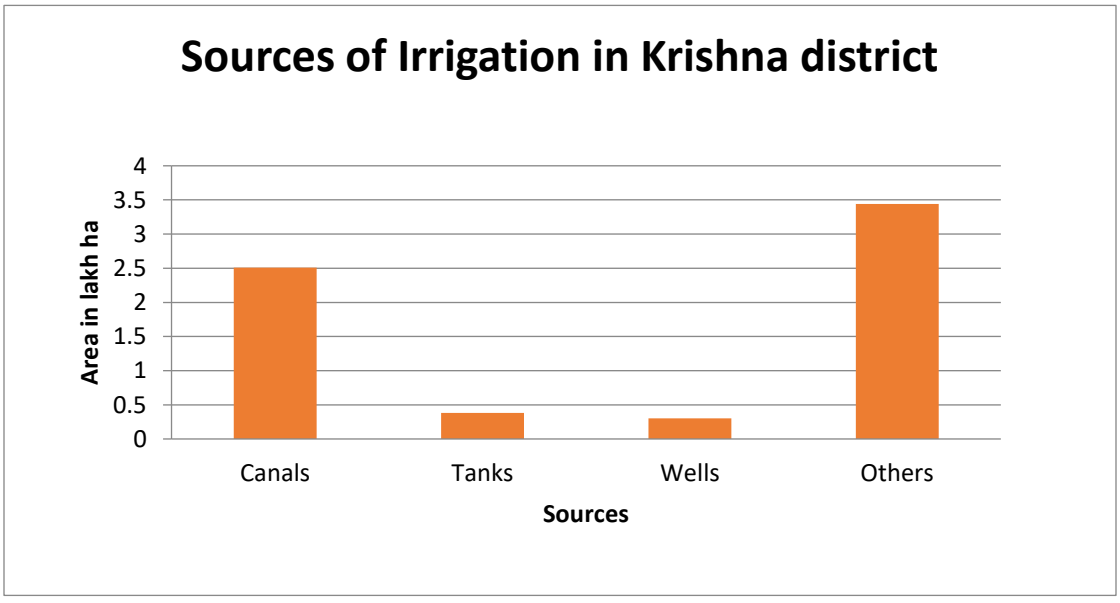


Fig.3.3. Graph showing different sources of irrigation in Krishna district

3.6.7. Cropping pattern of Krishna District:

Paddy is the major crop grown in the district. Other major crops grown in this district include Cotton, Chilli, and Maize. Data regarding area, Production and Productivity of the crops Grown in the district (2019-2020) are given below.

Table 3.5: Cropping pattern of Krishna district

S. No.	Crop	Area(000'ha)	Production (000'tonnes)	Productivity (kg/ha)
Kharif crop				
1.	Paddy	244	1418	5816
2.	Maize	4	21	5282
3.	Black gram	2	3	1264
4.	Groundnut	1	4	4150
5.	Chilli	13	97	7469
6.	Cotton	48	222(000' bales)	778
Rabi crop				
1.	Paddy	71	474	6655
2.	Maize	22	128	5906
3.	Green gram	4	4	1058
4.	Gram	4	8	2185
5.	Sesamum	1	--	162
6.	Groundnut	1	3	4139

CHAPTER-IV

RESULTS AND DISCUSSION

This chapter discusses cotton production performance in the Krishna district and Andhra Pradesh, cotton costs and returns, cotton marketing trends, and cotton production and marketing constraints. The study's findings revealed a plethora of relevant information about production and marketing performance, as well as constraints in the sample houses regarding cotton cultivation.

4.1. Typical characteristics of the sample household

4.1.1. Respondents distribution according to the age

The distribution of respondents' ages may indicate the number of years or scope of time during which they engage in agricultural pursuits. According to the following table, the middle age group accounted for the highest percentage of respondents (42.6%), followed by the young age group (34.6 percent**)**

Table.4.1. Farmer's distribution according to the age

S. No.	Categories	Number of Respondents	Percentage
1.	Young (18 to 35 years)	26	34.6
2.	Middle (36 to 58 years)	32	42.6
3.	Old (59 to 66 years)	17	22.6
	Total	**75**	**100**

As a result, a higher proportion of respondents in the middle age group had been discovered among the total respondents**.**

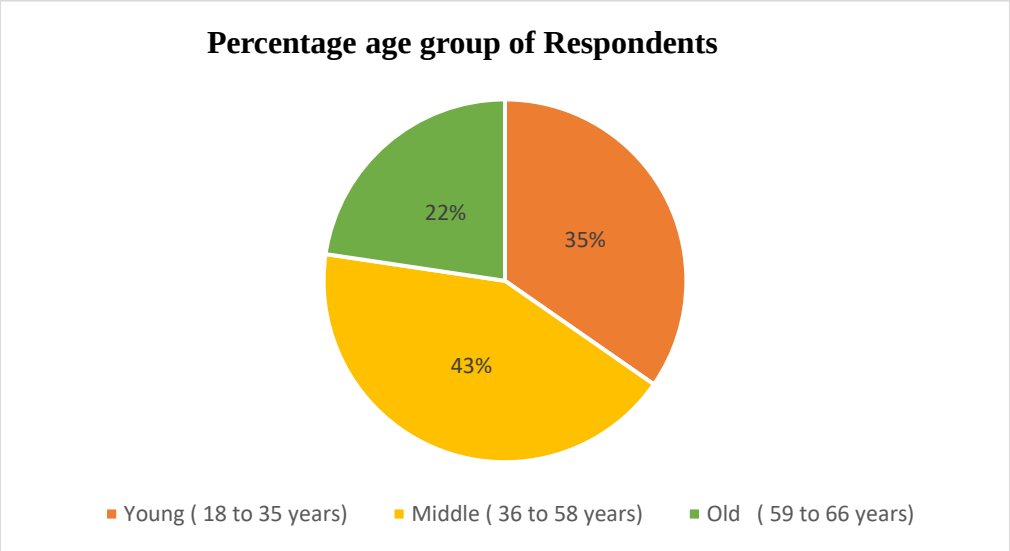


Fig .4.1. Graph showing Percentage age group of Respondents

4.1.2. Respondents distribution according to education level

According to the survey, education is measured by the number of years a respondent has spent in formal school. It is seen in the table below that 40 percent of respondents have completed middle school, followed by 38.6 percent of persons who are illiterate.

Table4. 2. Distribution of the farmers according to the Education level

S. No.	Categories	Number of Respondents	Percentage
1.	Illiterate	29	38.6
2.	Up to middle	30	40
3.	Higher secondary	16	21.3
	Total	75	100

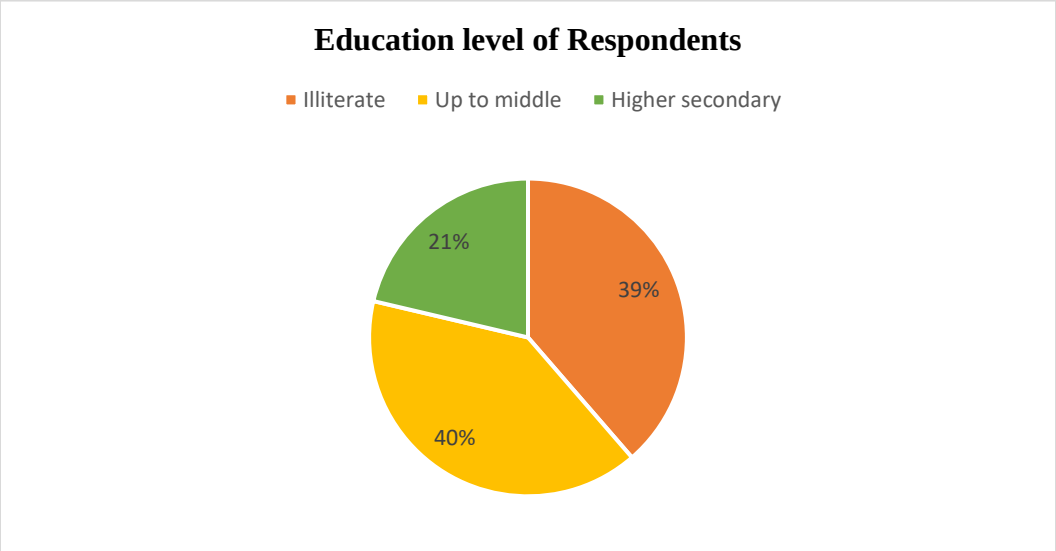


Fig .4.2. Graph depicting Educational of Respondents

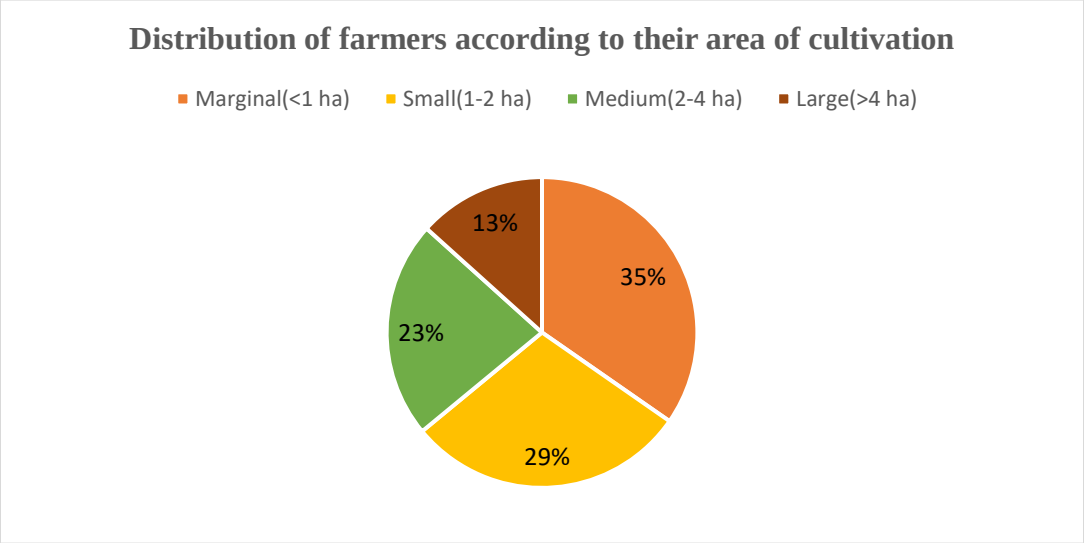
4.1.3. Respondents distribution according to their area of cultivation

According to the survey on cultivation area, 34.6 percent of farmers cultivate less than 1ha of land. 29.3 percent of farmers cultivate crops on 1 to 2 hectares and 22.6 percent of farmers cultivate crops on 4 hectaresor more among the responders,just 13.3% are large farmers.

Table.4.3. Distribution of the farmers according to their area of cultivation

S. No.	Category	Number	Percent
1.	Marginal (<1 ha)	26	34.6
2.	Small (1-2 ha)	22	29.3
3.	Medium (2-4 ha)	17	22.6
4.	Large (>4 ha)	10	13.3
	Total	**75**	**100**

Fig .4.3. Distribution of farmers according to their area of cultivation



4.2. Growth in Area, Production and Productivity of Cotton

The compound growth rate approach was used to analyse the growth rate in area, production, and productivity of cotton. The pace of growth was examined from 2010-11 to 2019-2020.

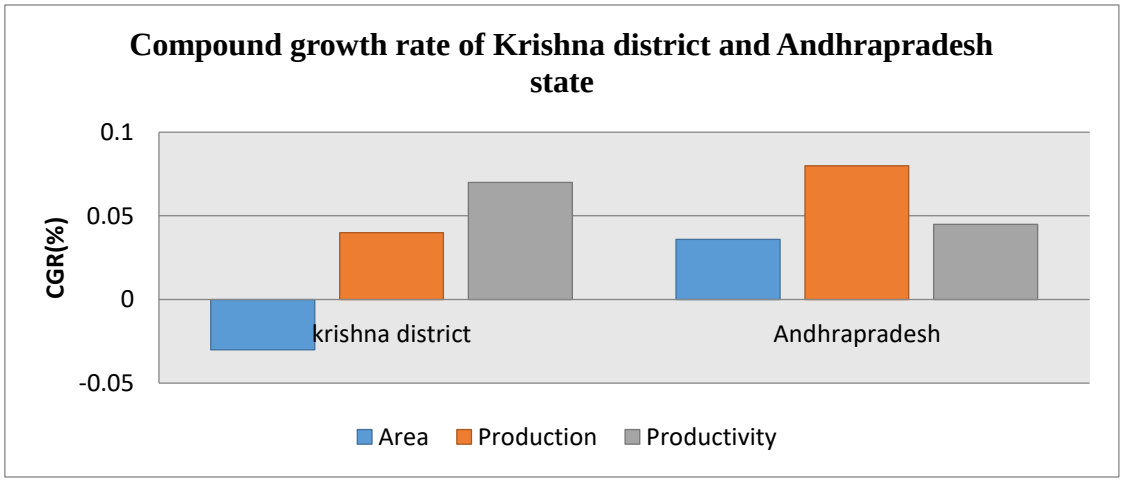
Table.4.4.CGR in Area, Production and Productivity of cotton in Krishna district and Andhra Pradesh (2010-11 to 2019-2020)

S. No.	Items	Krishna district	Andhra Pradesh
1.	Area	-0.03* (0.05)	0.036NS (0.15)
2.	Production	0.04NS (0.18)	0.08* (0.05)
3.	Productivity	0.07** (0.01)	0.045* (0.05)

- Brackets show **p-value**
- ** denote 5% level of significance
- * denote 10% level of significance
- NS denote non-significant

There was a modest drop in the area of cotton production (2010-11 to 2019-2020) in Krishna district since the CGR was negative, according to the study.Cotton area increase in Andhra Pradesh was determined to be Non-Significant.A positive CGR was recorded for both production and productivity in this area, indicating that production and productivity had grown**,** but the growth in cotton production was non-significant in Krishna district.

Fig.4.4. Graph depicting the CGR of Cotton in Krishna district and Andhra Pradesh



4.3. COST AND RETURNS IN CULTIVATION OF COTTON

Raw resources are transformed into output throughout the manufacturing process. In agricultural production, inputs such as seeds, fertiliser, manures, plant protection chemicals, and water are transformed into grains. Fixed costs/overhead costs and variable costs/operating costs/labor costs are the two major categories of costs involved in this manufacturing process. These labour costs vary with the level of production and include both labour costs and material costs such as seed, fertiliser, manures, plant protection chemicals, bullock labour, human labour, and machine

labour, whereas overhead costs include depreciation on machinery, rental values of land, and so on.

Different Costs utilised in the Process of Production are studied to have a better understanding of the cost of cotton cultivation. The results of this analysis are presented in the table below.

According to the table, the total cost of cotton cultivation was Rs. 98472.21/ha. The Variable Cost and Fixed Cost were determined to be Rs.69923.06/ha and Rs.28549.07/ha, respectively, representing 71 percent and 28.99 percent of the Total Cost of Cultivation.It was also found that the cost of cotton cultivation for marginal, small, medium and large farmers was Rs.99191.59, Rs.98246.54, Rs.98321.34 and Rs.98129.37, respectively. For Marginal, Small and Medium farmers, variable costs account for 71.85 percent, 71.14 percent, 71.73 percent and 69.29 percent correspondingly. Marginal, small, medium and big farmers, respectively, spend 28.14 percent, 28.85 percent, 28.26 percent and 30.70 percent on overhead costs.

Table .4.5. Cost of cultivation of Cotton

Cost of cultivation of cotton (Rs. /hectare)

Particulars	**Farm Size Group**				**Overall**
	Marginal	**Small**	**Medium**	**Large**	
A. Operational Costs					
1.Human Labour	32057.99 (32.31)	31531.9 (32.09)	32252.92 (32.79)	30465.33 (31.04)	31577.03 (32.06)
a. Hired Labour	29094.26 (29.33)	28995.45 (29.51)	29266.66 (29.76)	29509.09 (30.07)	29216.36 (29.66)
b. Owned Labour	2963.73 (2.98)	2536.21 (2.58)	2986.26 (3.03)	956.24 (0.97)	2360.61 (2.39)
2.Bullock Labour	6466.66 (0.65)	5631.81 (5.73)	5413.33 (5.50)	5063.63 (5.16)	5643.85 (5.73)
3.Machine Labour	8563.21 (8.63)	8356.26 (8.50)	8625.94 (8.77)	8854.36 (9.02)	8599.94 (8.73)
4.Seeds	5943.70 (5.99)	5842.27 (5.94)	5706.67 (5.80)	5690.91 (5.79)	5795.88 (5.88)

5.Manures &Fertilizers	8764.81 (8.83)	8819.31 (8.97)	8914.52 (9.06)	8536.32 (8.69)	8758.74 (8.89)
6.Insecticides	8053.33 (8.11)	8345.90 (8.49)	8200.00 (8.34)	7986.37 (8.13)	8146.40 (8.27)
7.Irrigation Charges	75.44 (0.07)	39.54 (0.04)	85.66(0.08)	82.72 (0.08)	70.84 (0.07)
8.Intrest on Working Capital (IOWC)@4% Per annum	1344.71 (1.35)	1326.19 (1.34)	1330.14 (1.35)	1320.41 (1.34)	1330.36 (1.35)
Total Operational costs	71269.85 (71.85)	69893.18 (71.14)	70529.18 (71.73)	68000.05 (69.29)	69923.06 (71.00)
B. Fixed costs					
1.Depreciation	527.51(0.5 3)	838.52(0.8 5)	1037.27 (1.05)	1439.29 (1.46)	960.64 (0.97)
2.Land Revenue	274.44(0.2 7)	279.36(0.2 8)	294.65(0.2 9)	297.26 (0.30)	286.42 (0.29)
3.Rental Value of Own Land	24606.4 (24.80)	24683.30 (25.12)	23960.47 (24.36)	25680.74 (26.17)	24732.72 (25.11)
4.Intrest on Fixed Capital (IOFC)@ 10%	2513.39 (2.53)	2552.18 (2.59)	2499.77 (2.54)	2712.03 (2.76)	2569.34 (2.60)
Total Fixed Costs	27921.74 (28.14)	28353.36 (28.85)	27792.16 (28.26)	30129.03 (30.70)	28549.07 (28.99)
Total Costs	99191.59 (100.00)	98246.54 (100.00)	98321.34 (100.00)	98129.37 (100.00)	98472.21 (100.00)

In parentheses, the proportion of the total cost is shown.

It was also discovered that the overall cost of cotton cultivation for marginal farms was somewhat greater than that of the remaining categories of farms due to high input use and purchasing of inputs from local marketplaces.

The table clearly demonstrates that Hired Human Labor (32.06 percent) comprises the largest proportion of overall cost among the variable costs, followed by Manures and Fertilizers (8.89 percent), Machinery Labour (8.73 percent), and Insecticides (8.27 percent). Seeds, owned human labour, bullock labour, and irrigation expenses are less prominent among operational expenditures.The cost of family labour reduced as farm size increased, but the cost of machine labour increased. Mechanization compensated

for a reduction in human work on large lands. In addition, small farms used more family workers than large farms.

Cost of Cultivation in terms of Cost Concepts:

The following table presents the results of an evaluation of the various cost concepts used in cotton analysis.

Table.4.6. Cost of cultivation in terms of cost concepts

Items	Marginal	Small	Medium	Large	Over all
Cost A1	69108.07	68474.61	68874.84	68780.36	68809.47
Cost A2	69108.07	68474.61	68874.84	68780.36	68809.47
Cost B1	71621.46	71026.79	71374.58	71492.39	71378.80
Cost B2	96227.86	95710.09	95335.05	97173.13	96111.53
Cost C1	74585.19	73563.00	74360.84	72448.63	73739.41
Cost C2	99191.59	98246.54	98321.34	98129.37	98472.21
Gross Returns	149285.50	149776	145530.75	155868	150115.06

The overall cost for cost A1 and A2 is Rs.68809.47 per hectare, as shown in the table. Cost B1 and B2 were respectively Rs.71378.80 and Rs.96111.53. cost C1 and C2 costs per hectare are anticipated to be Rs.73739.41 and Rs.98472.21, respectively. Cotton costs per hectare on various farms revealed erratic patterns.

B:C ratio in terms of Cost Concepts:

Different farm groups of sample farms have been analyzed for cost benefit ratios and given in the following table

Table.4.7. B:C ratio in terms of Cost Concepts

B:C ratio over	Marginal	Small	Medium	Large	Overall
Cost A1	2.16	2.18	2.11	2.26	2.17
Cost A2	2.16	2.18	2.11	2.26	2.17
Cost B1	2.08	2.10	2.03	2.18	2.09

Cost B2	1.55	1.56	1.52	1.60	1.55
Cost C1	2.00	2.03	1.95	2.15	2.03
CostC2	1.50	1.52	1.48	1.58	1.52

The benefit-cost ratio provides an estimate of the return on each rupee invested in cotton cultivation. It was computed using Cost A1, Cost A2, Cost B1, Cost B2, Cost C1, and Cost C2. The entire B: C ratio changes between 2.17 and 1.52 from Cost A1 to Cost C2. Based on various costs, it ranged from 1.5 to 2.16 for marginal farms, 1.52 to 2.18 for small farms, 1.48 to 2.11 for medium farms, and 1.58 to 2.26 for large farms.

Returns from Cotton Cultivation:

Cotton average gross profits were computed using the market price of Rs.4593.75. The total gross return from cotton was calculated to be Rs.150115.06. The total farm business earnings, family labour income, and farm investment income were computed to be Rs.81305.59, Rs.54003.53, and Rs.78944.98. It is concluded that as farm size increases, so does the net return**.** The average cotton yield per hectare was 32.67 quintal.

The table below shows the productivity, cost of cultivation and cost of production of cotton for different types of farmers.

Table .4.8. Yield and Income from Cotton Cultivation:

Yield and Income	**Marginal**	**Small**	**Medium**	**Large**	**Overall**
Cost of Cultivation (Rs. /ha)	99191.59	98246.54	98321.34	98129.37	98472.21
Yield(q/ha)	32.81	32.56	31.81	33.52	32.67
Price (Rs. /q)	4550	4600	4575	4650	4593.75
Gross Returns (Rs. /ha)	149285.5	149776	145530.75	155868	150115.06
Net Returns (Rs. /ha)	50093.91	51529.46	47209.41	57738.63	51642.85
Farm Business Income (Rs./ha)	80177.43	81301.39	76655.91	87087.64	81305.59

Family Labour Income (Rs. /ha)	53057.64	54065.91	50195.70	58694.87	54003.53
Farm Investment Income (Rs. /ha)	77213.70	78765.18	73669.65	86131.40	78944.98
Cost of Production (Rs. /q)	3023.21	3017.39	3090.89	2927.48	3014.14

Returns over different costs on sample farms:

For specific farm types, returns on various costs were also measured and concluded in the table

Table: 4.9. Returns over different costs (Rs. /hectare)

Net Returns Over	**Marginal**	**Small**	**Medium**	**Large**	**Overall**
Cost A1	80177.43	81301.39	76655.91	87087.64	81305.59
Cost A2	80177.43	81301.39	76655.91	87087.64	81305.59
Cost B1	77664.04	78749.21	74156.17	84375.61	78736.25
Cost B2	53057.64	54065.91	50195.70	58694.87	54003.53
Cost C1	74700.31	76213.00	71169.91	83419.37	76375.64
Cost C2	50093.91	51529.46	47209.41	57738.63	51642.85

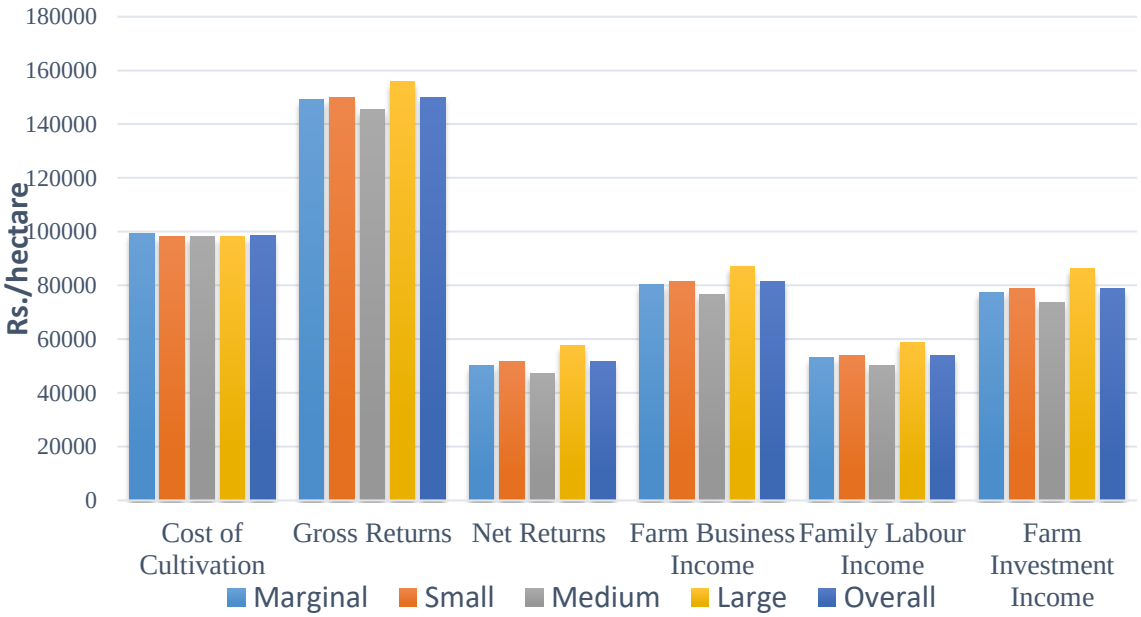


Fig.4.5. Graph depicting costs and returns of cotton in the study area of Different Farmers

4.4. MARKETING PATTERNOF COTTON

Cotton marketing is a specialised activity that includes handling, packing, moving cotton bales, grading, quality testing, and payment issues. Cotton marketing differs from other agricultural crop marketing in that the product must pass through more middlemen before reaching the final customer. Marketing channel refers to the process through which a product flows from the producer to the end user.

A) Table .4.10. Disposal pattern of Cotton among Different Functionaries:

S.NO	Marketing Functionaries	Percentage sale to total produce
1.	Village Traders	12
2.	Cotton Corporation of India (CCI)	63
3.	Agent of the Mill owner	25
4.	Total	100

Cotton marketing in Krishna district is dominated by regulated marketing officials, as seen in the table. Cotton is mostly sold in this area through two channels: regulated markets or to village traders or merchants. As a result, it is apparent that the majority of small, marginal, and poor farmers sell their produce in the village to the traders / merchants who live there. Farmers employ this marketing trend due of restricted supply and higher transportation costs for sale.

12% of farmers sell their produce through this channel, i.e., village traders. Furthermore, some farmers in this area sell their produce to mill owners' Commission agents. This channel is used by 25% (one-fourth) of the farmers to sell their produce. The sale of produce to the Cotton Corporation of India gets the lion's share, with 63 percent of farmers selling their produce to CCI in the Regulated marketplaces.

As a result, village merchants and commission agents play an important role in the collection and marketing of cotton, especially from small farmers in rural areas.

B) Marketing Channels of Cotton

Four Channels of Cotton Marketing were identified in the study area. They are

Channel 1: Farmer---Cotton Corporation of India (CCI) ---Consumer (textile mills)

Channel 2: Farmer---Village traders ---Retailer ---Consumer (textile mills)

Channel 3: Farmer--- Commission Agent --- Ginning Mills.

Channel 4: Farmer---Village traders---Regulated markets (CCI) --- Consumer (textile mills).

C) Marketing Costs and Margins

It comprises all market charges from assembly in village farms to the final customer. Cotton marketing involves a number of intermediaries operating through various channels. Marketing costs and margins for various channels are detailed below.

Marketing Costs and Margins in Channel 1:

Through this method, the farmer sells his or her produce to Cotton Corporation of India in regulated marketplaces. It is apparent that farmers sold their cotton at Rs. 5255 per quintal. The farmer obtained a net price of Rs. 5061 per quintal. i.e., after removing Marketing expenses. The farmer benefits from a high price because there are no additional intermediaries or commission expenses involved in this channel.

Table.4.11. Marketing Costs and Margins in Channel 1

S. No.	**Particulars**	**Rs. /Quintal**
1.	Price the Producer received (Net)	5061
Expenses incurred by the Producer		
a.	Transportation	95
b.	Loading and Unloading charges	59
c.	Cost of Gunny bags	35
d.	Weighment Charges	5
e.	Total cost Incurred by the producer	194
2.	Selling price of the Producer or CCI purchasing price	5255

Marketing costs and Margins in channel -2

The produce travels through this channel via village traders, retailers, and lastly to the customer (Textile mills). This channel is mostly used by marginal and small farmers to sell their produce. The farmer received a net price of Rs.4246 per quintal of cotton. In this channel, the Village traders make more money. Because there are more intermediaries in this channel, the farmer eventually receives lower prices**.**

Table.4.12. Marketing costs and Margins in channel -2

S. No.	Particulars	Rs. /Quintal
1.	Price received by the producer	4440
2.	Marketing cost to the producer	194
3.	Net amount the producer received	4246
4.	Village traders /Merchant marketing cost	150
5.	Village trader Margin	350
6.	Retailer purchase price	4940
7.	Retailer marketing cost	70
8.	Retailer Margin	250
9.	Consumer purchase price	5260

Marketing Cost and Margins of Channel -3

In this channel, the farmer sells his produce to the ginning mills in the presence of a Commission agent. After deducting the costs and margins, the commission pays the money to the farmer. The farmer earns a net price of Rs. 4814 per quintal of cotton. Because just one intermediary was involved in this channel, the farmer will receive a favorable price. The commission agent's margin was Rs. 157.

Table.4.13. Marketing Cost and Margins of Channel -3

S. No.	Particulars	Rs. /Quintal
1.	Producer sale price	5008
2.	Producer Marketing cost	194
3.	Net price received by the producer	4814
4.	Commission agents marketing cost	100
5.	Commission agents Margin (3%)	157
6.	Agent sale price or mill purchase price	5265

Marketing Costs and margins in channel -4

The Producer sells his produce through this channel to local traders or merchants. Traders pool their output in the hamlet and sell it to the Cotton Corporation of India at MSP in the regulated market. Because there are more intermediaries in this channel, the farmer receives a lower price. In this channel, the village dealer earns higher margins. The producer obtained a net price of Rs.4695 per quintal of cotton

Table.4.14. Marketing Costs and margins in channel -4

S.NO	**Particulars**	**Rs. /Quintal**
1.	Net Price the producer receives	4695
2. Marketing Cost of the Producer		
a.	Loading and unloading charges	90
b.	Cost of gunny bags	60
c.	Weighment charges	5
d.	Total expenses incurred by producer	155
3.	Producer selling price	4850
4.Expenses incurred by the trader		
a.	Loading and unloading charge	22
b.	Transportation cost	30
c.	Market fee (1%)	52
d.	Storage fee	26
f.	Total cost incurred by trader	130
5.	Trader selling price or CCI purchasing price	5255
6.	Traders Margin	275

According to the data analysis above, the farmer received greater remunerative pricing in channel -1 (Producer —- CCI —-consumer) since there are less middlemen present, i.e. the farmer sells the producer straight to Cotton Corporation of India in the regulated market. Because more intermediaries are involved in both channels 2

(produce –Trader –retailer—consumer) and 4 (producer—trader—CCI—Consumer), farmers receive lower prices in these channels than in channel 1. These channels are mostly used by small and marginal farmers to market their produce

Price Spread

It represents the gap between a customer's price and the producer's price. The price spread of cotton among different marketing channels in Krishna district is mentioned below. The price spread in channel -1 is lower than the price spread in the other channels because no intermediary was involved. The price spread in channel -2 was greater because the product passed through a greater number of intermediaries.

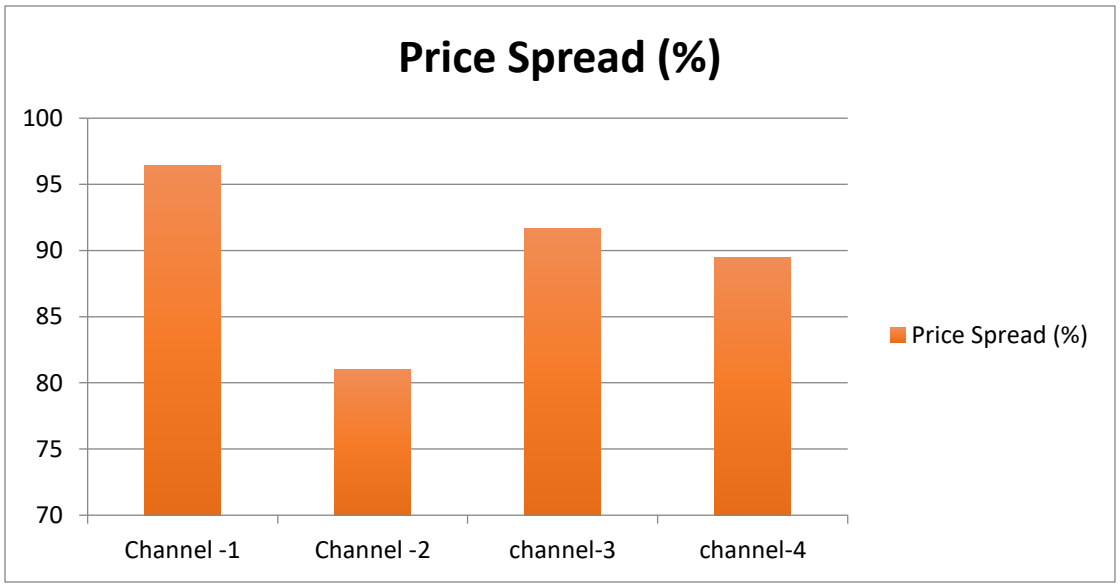
Table.4.15. Price spread among different channels of cotton Marketing

S. No.	Particulars	Channel -1	Channel-2	Channel-3	Channel-4
Marketing Cost					
1.	Producers	3.6	3.6	3.6	2.9
2.	Village traders/Agent	--	2.8	1.8	2.4
3.	Retailer	--	1.3	--	--
Marketing Margins					
1.	Village trader/Agent	---	6.6	2.9	5.2
2.	Retailer	---	4.7	--	--
	Total cost +Margin	3.6	19.0	8.3	10.5
Producers share in consumer’s Rupee		96.4	81.0	91.7	89.5
	Consumer Rupee	100	100	100	100
	Price Spread (%)	96.4	81	91.7	89.5
	Marketing Efficiency	27.08	5.18	11.6	9.3

The data presented in the above **Table represents** Marketing costs involved in cotton marketing process, Marketing Margins of different functionaries in percentage of the Consumer rupee. The total marketing cost involved was more in Channel -2 i.e., 19 percent of amount received by the farmer. Marketing cost and margin was lowest in channel -1, hence the producer got more remunerative price in that channel.

The producers share in consumer rupee on an average was found to be 89.65 percent. It varies among different channels of Marketing. It was found lowest in channel -2 i.e. (81 percent), because of the high marketing Costs and margins in this channel (Producer—village trader—retailer—consumer).

Fig.4.6. Graph depicting the price spread among different marketing channels



4.5. Constraints in Cotton Production and Marketing and suggestions to overcome

The analysis of the constraints and the suggestions were based on the opinions of the farmers in the survey. In this case, interpretations of the results are based on farmer response. The table shows that farmers of different sizes used varied quantities of inputs in the production of cotton per unit area. Thus, varying levels of yield-attributing inputs and managerial efficiency may have contributed to differences in yields among the various size groups.

Resources, flaws, abiotic and biotic stresses are among the barriers to the sustainable development of the cotton crop.As a result of the survey, farmers' opinions

on the factors affecting the adoption of various enhanced technologies and practices were acquired and presented in the table.

Table.4.16. Constraints in Cotton Production

S.No.	Constraints	Number of Respondents					Rank
	PRODUCTION CONSTRAINTS	Marginal (n = 26)	Small (n=22)	Medium (n =17)	Large (n=10)	Overall (n=75)	
1.	Unavailability of labour in time	21	20	14	7	62	2
2.	Damage due to pest and disease	22	19	15	8	64	1
3.	Lack of Technological knowledge	24	21	11	4	60	3
4.	Costly improved Technology	15	16	9	5	45	6
5.	Poor Irrigation	9	8	5	4	26	8
6.	Financial problems	19	15	15	3	52	4
7.	Unavailability of input in time	16	12	13	6	47	5
8.	Less agronomic practices	14	13	11	3	41	7

Table.4.17. Constraints in Cotton marketing

S.No.	Constraints	Number of Respondents					Rank
	MARKETING CONSTRAINTS	Marginal (n=26)	Small (n=22)	Medium (n=17)	Large (n=10)	Overall (n=75)	
1.	Low price at the time of harvesting	23	19	15	5	62	1
2.	Lack of Marketing Intelligence	25	18	13	4	60	2
3.	Lack of storage facilities	19	18	15	7	59	3

4.	High transportation cost	20	15	13	6	54	4

Farmers' constraints can be classified into two groups. Production and marketing are both given equal priority. The most significant production constraint was identified as pest and disease damage (Rank 1), followed by labour shortages (Rank -2), a lack of technological expertise (Rank -3), and financial difficulties. (Rank -4)

In general, the large farmers reported that damage due to pests and diseases, as well as a lack of available manpower, were the significant production restrictions, while marginal farmers cited low technical expertise and pest and damage as the main production constraints. Finance was cited as the main barrier to performance for medium farms.

Low market prices at harvest time (Rank-1) were reported by the majority of farmers. Poor marketing intelligence (Rank -2) and storage facilities (Rank -3) were also cited by farmers as important marketing constraints. Major marketing limitation for large farmers was lack of storage facilities, while the main marketing constraint for most marginal farmers was lack of marketing information.

CHAPTER-V

SUMMARY AND CONCLUSIONS

SUMMARY

Cotton is a significant commercial crop with national importance due to its enormous economic impact on India. The country's green revolution was sparked by a breakthrough in producing enhanced cotton production technologies. The study was done on "**An Economic Analysis of Production and Marketing of Cotton in Krishna district of Andhra Pradesh**."The goal of the research was to examine the facts regarding cotton production and determine ways to enhance cotton crop area, production, and productivity in this region. Farmers who are interested in this business should be aware of several forms of financial information about it, such as total cost, operational cost, gross and net returns.

Besides costs and returns, Pricing has always been a major factor in economic planning, and it continues to be so today. The market intermediaries play a key part in price creation, which has a large impact on the selling revenues obtained by the producer sellers. Different channels of cotton marketing should be studied in order to determine the varied costs borne by farmers and intermediaries. The following objectives were considered in the preceding context:

Objectives:

1. To analyze the pattern of Growth in Area, Production and Productivity of Cotton in Krishna district of Andhra Pradesh.

2. To work out the Cost and Returns of Cotton farmers in the study area.

3. To examine the Marketing pattern of cotton farmers in the study area

4. To identify the constraints in Production and Marketing of Cotton and Suggest remedial measures to overcome them.

An important cotton-growing area in Andhra Pradesh, Krishna district was chosen as the study area because of its climate and soils (black cotton loamy) that are more

conducive to the growth of cotton. Blocks, villages and respondents were selected by random sampling. This technique selects 75 respondents from the total sample size. Marketing costs margins were determined through a three-stage sampling process. In each channel, 10 members were chosen at random from a list of cotton marketers in Krishna district.

By using interview schedules and observation, we collected all of the primary data from the participants. Official records and publications of the Department of Agriculture were used to gather secondary data for this study. During the 2020-2021 academic years, the research was carried out.

CONCLUSION:

- According to the Research, the middle age group accounted for the highest percentage of respondents (42.6%), followed by the young age group (34.6 percent**)**
- The survey on cultivation area reveals, 34.6 percent of farmers cultivate less than 1ha of land. 29.3 percent of farmers cultivate crops on 1 to 2 hectares and 22.6 percent of farmers cultivate crops on 4 hectares or more among the responders, just 13.3% are large farmers.
- There was a modest drop in the area of cotton production (2010-11 to 2019-2020) in Krishna district since the CGR was negative, according to the study.
- A positive CGR was recorded for both production and productivity in this area, indicating that production and productivity had grown**.**
- We found that the cost of cotton cultivation in marginal farms was slightly higher than in other farm categories due to the high input utilisation and local market purchase of inputs. Farmer’s net returns are low because of high production costs.
- The study revealed that the overall cost of cotton cultivation per hectare was Rs. 98472.21/hectare.

- It was computed that the Variable Cost and Fixed Cost were Rs.69923.06/ha and Rs.28549.07/ha correspondingly, constituting 71% of the Total Cost and 28% of the Total Cost of Cultivation.
- Among the variable costs, hired human labour (32.06 percent) accounts for the biggest percentage of overall cost, followed by manures and fertilisers (8.89 percent), machinery labour (8.73 percent), and insecticides (8.27 percent).
- From marginal to large farms, the use of family labour decreased, whilst the use of paid human labour and machine labour increased.
- The total net returns per hectare were Rs. 51642.85. Cotton was produced at a cost of Rs.3014.14 per quintal. The overall Gross Revenue per acre was Rs.150115.06.
- Cotton yield was determined to be 32.67 quintal per hectare on average in the research area.
- The entire B: C ratio changes between 2.17 and 1.52 from Cost A1 to Cost C2.
- It is noteworthy that the production per hectare declined as farm size increased. The benefit-cost ratio was highest for large farmers.
- Four Marketing channels were observed in the study area as following

  Channel 1: Farmer---Cotton Corporation of India (CCI) ---Consumer

  Channel 2: Farmer---Village traders ---Retailer ---Consumer (Textile mills)

  Channel 3: Farmer--- Commission Agent --- Ginning Mills.

  Channel 4: Farmer--Village traders---Regulated markets (CCI) --consumer

- It is concluded that the highest amount was received by the producer via the fair market, i.e., the regulated market. As a result, the 1st channel was considered remunerative, with the producer receiving Rs. 5061 per quintal.
- In the first channel, the farmer obtained a net price of 96.4 percent, whereas in channel three, the farmer received a net price of 91.7 percent.

- The price spread in channel -1 is the lowest of all channels because there was no intermediary engaged. As the number of intermediaries increased, the price spread in channel 2 was more.
- The most significant production constraint was identified as pest and disease damage (Rank 1)
- In general, the large farmers reported that damage due to pests and diseases, as well as a lack of available manpower, were the significant production restrictions
- Finance was cited as the main barrier to performance for medium farms.
- Low market prices at harvest time (Rank-1) were reported by the majority of farmers.
- Major marketing limitation for large farmers was lack of storage facilities.

SUGGESTIONS:

1. The use of recommended varieties, fertilizer, and insecticides/fungicides should be encouraged.
2. Pest management should be done in an integrated manner. Pest control that is biological might also help to lower input expenses.
3. Farmers should be encouraged to engage in contract farming in order to avoid the danger of deflation of price and oversupply in the market.
4. Costs associated with plant protection are on the surge while profit margins are shrinking. In order to reduce their financial load and reduce waste outflows, farmers, in particular small farms, should be subjected to technology advances such as IPM.
5. Agricultural development social services such as education, training and other extension operations have a strong economic and welfare basis for the existence. As long as these activities are ineffective and do not lead to increased productivity, they are considered to be sterile and wasteful of resources that could otherwise be used for productive purposes. Thus, it is necessary to place a strong emphasis on boosting agricultural productivity in both the educational and extension contexts.

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Source: Cotton Advisory Board; Cotton Corporation of India

Source: https://www.statista.com/statistics/263055/cotton-production-worldwide-by-Top-Countries / (2019-2020)

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APPENDIX-I

DEPARTMENT OF AGRICULTURAL ECONOMICS

INDIRA GANDHI KRISHI VISHVAVIDHALAY

RAIPUR (CHHATTISGARH)

AN ECONOMIC ANALYSIS OF PRODUCTION AND MARKETING OF COTTON IN KRISHNA DISTRICT OF ANDHRAPRADESH

TENTU SUPRIYA

House Hold Schedule

A. General information

1. Name of farmer ----------

2. Age (year) ---------- 3. Caste (Gen./SC/ST/OBC) ----------

4. Village ---------- 5. Post ----------

6. Tehsil ---------- 7. Distance from market (km) ----------

8. Date of interview ----------9. Education ----------

B. Details of the family

S. No	Name of family member	Relation To head	Sex M/F	Age	EduCation	Employment			Income		
						Farm	Off farm	Non-farm	Farm	Off farm	Non-farm

* 1= illiterate, 2 = Primary, 3 = High school, 4 = Graduate, 5= Post Graduate

C. Details of land holding

S.no	Particular	Area	Agriculture		Source of irrigation	Soil Type	Land quality
			Irrig.	UnIrrig.			
1							
2							
3							
4							
5							

- 1= Poor, 2= Average, 3= Good, 4=Very good

Cropping pattern

S. No	season	Area	Variety		Area	Production (quintal)	Value (Rs.)
			Tradition	Modern			
	Rabi						
1							
2							
3							
	Kharif						
1							
2							
3							
	Zaid						
1							
2							
3							
	Total cropped area						

Farm Structure and equipment

S.No	Items	No.	Year of Construction	Present value (Rs.)	Expenditure on Annual Repair (Rs.)
1	Farm building				
	a. Pacca				
	b.SemiPacca				
	c. Kutcha				
2	Irrigation structure and equipment				
3	Implements and machinery				
4	Dairy equipment & tools				
5	Transport equipment				
	Total				

Source of Irrigation

S.No	Particular	Area (ha)	Irrigation charges (Rs).
1	Tank		
2	Canal		
3	Tube well		
4	Well		
5	Bore well		
6	Other		
	Total		

Cost of cultivation

Crop - - - - - - - - - - - - - - - - - - Variety -

Area - - - - - - - - - - - - - - - - - - - (Irrigated / unrrigated)

S.No	**Operation**	**Family human labour (days)**	**Hired human labour (days**	**Bullock power**	**Machine power**	**Total expenditure on particular operation**
1	Field preparation					
2	Sowing					
3	Application of manure					
4	Application of fertilizer					
5	Interculture					
6	Irrigation					
7	Plant protection					
8	Threshing & winnowing					
9	Transportation					
10	Miscellaneous					
11	Total					

M = Male, F= Female, T = Total O= Family labour, H= Hired labour, R= Rate per unit (Rs.)

Rate of male labour ----------Rs/day

Rate female labour ----------Rs/day

B) Input cost

S.No.	Input	Owned quantity	Purchased quantity	Sold quantity	Rate (Rs) / unit	Total value (Rs)
1	Seed					
	A					
	B					
2	FYM					
3	Fertilizers					
	A					
	B					
	C					
4	Plant protection chemicals					
	A					
	B					
	C					
Total						

C. Irrigation charges ----------

D. Interest on working capital ----------

E. Fixed cost

a) Rental value of land / leased in land (Rs.): -

b) Land revenue (Rs.): -

c) Interest on fixed capital: ----------

d) Depreciation: ----------

F) Disposal /Marketing pattern of vegetables

S.No	Cotton	Quantity produced	sold quantity	Sold to whom			Rate Rs/kg			Value (Rs)		
Total												

1----------, 2. ----------,3----------

G) Marketing cost

S.No	Particulars	Sold to*		
		1	2	3
1	Quantity of each month sold			
2	To whom sold			
3	Selling place			
4	Price (Rs. /qts)			
5	Distance from marketing place			
6	Means of transportation			
	a.Tractor			
	b.Truck			
	c. Bullock cart			
	d. Other (specify)			
7	Transportation cost (Rs. /Qts.)			
8	Octroi charges (Rs.			
9	Mandi fees (Rs.)			
10	Loading/unloading charges (Rs. /Qts.			
11	Commission charges (Rs.)			
12	Cleaning charges (Rs. /Qts.)			
13	Other expenses Rs.			
	Total			

1. Sale price of producer (Rs. /Qts.) ----------

2. Actual getting of price of producer (Rs. /Qts.) ----------

---------- 3. Total marketing charges (Rs. /Qts.) ----------

Constraints in production of cotton

1. Lack of latest technical know-How about the crop-Y/N

If No, why?

a. Government non-approach

b. Farmer's distrust

c. Any other specify

2. Lack of improved and high yielding varieties-Y/N

If yes, then?

a. Non availability of seed

b. Poor knowledge of technology

c. Old farmer practices

d. Any other specify

3. Lack of recommended package practices of the crop in the region-Y/N

If yes, why?

a. No such type of recommendation

b. Not frequent visit of extension workers

c. Not proper interest of farmer's

4. Lack of resources i.e., Money, equipment etc.-Y/N

If yes, then how you managing money?

a. From bank
b. From relatives

c. From trader's

5. Lack of irrigation water –Y/N If

Yes, then how you irrigate your crop?

a. With own irrigation

b. Crop depends on rains

6. Lack of labour –Y/N IF

Yes, then in which operation

a. Weeding/thinning

b. Any other specify

7. Lack of financing at reasonable rate of interest-Y/N

8. Any other

a.

b.

I. Constraints in marketing of crops:

1. Low demand of final product –Y/N

2. Low price paid to farmer's due to high marketing margin –Y/N

If yes, what should be done?

1)

2)

3. Lack of transportation facilities and road from village to market-Y/N

4. Whether you face problem because the quantity is small-Y/N

If yes, then

What steps you have taken to pool your produce?

1)

2)

3)

5. Lack of regulated market and cooperative market-Y/N

6. Whether you visit regulate market regularly-Y/N

If no give the reason for not going to the regulate markets

1)

2)

7. Lack of sufficient number of processing unit-Y/N

8. Lack of storage facilities in growing area-Y/N

9. Whether you like store your produce in storage to get high price? -Y/N

10. Lack of support price. Y/N

11. How to support price will affect the production of crop. Y/N

I. To cropping pattern change

II. short duration

III. any other

12. Lack of awareness about market news and intelligence-Y/N

13. What media do you have for marketing news?

1. Newspaper

2. Radio

3. Television

4. Other(specify)

14. How soon the news in disseminated or spread in producing area

I. within 2 days

II. within 4 days

III. within a week

A) Labour cost

S.No	**No. of operation**	**No. of operation**	**Family human labour (days)**	**Hired human labour (days)**	**Bullock power**	**Machine power**	**Total expenditure on particular operation**

1	Field preparation						
2	Sowing						
3	Application of manure						
4	Application of fertilizer						
5	Interculture						
6	Irrigation						
7	Plant protection						
8	Harvesting						
9	Threshing & winnowing						
10	Transportation						
11	Miscellaneous						
Total							

M = Male, F= Female, T = Total O= Family labour, H= Hired labour, R= Rate per unit (Rs.)

Rate of male labour ----------Rs/day

Rate female labour ----------Rs/day

APPENDIX -2

Area, Production and Productivity of Cotton in Krishna District of AP

S. No.	YEAR	in lakh ha(area)	in lakh bales (Production)	in kg/ha (Productivity)
1	2010-11	0.52	1.18	385
2	2011-12	0.6	1.23	348
3	2012-13	0.65	2.09	550
4	2013-14	0.59	2.25	644
5	2014-15	0.56	2.62	800
6	2015-16	0.53	2.01	647
7	2016-17	0.37	1.59	726
8	2017-18	0.48	1.96	688
9	2018-19	0.47	1.75	629
10	2019-2020	0.48	2.22	778

Area, Production and Productivity of Cotton in AP

		Area	Production	Productivity
S. No.	YEAR	in lakh ha	in lakh bales	in kg/ha
1	2010-11	3.81	8.55	381
2	2011-12	4.73	8.88	319
3	2012-13	5.89	15.43	445
4	2013-14	6.77	21.88	550
5	2014-15	8.21	27.51	570
6	2015-16	6.66	18.17	464
7	2016-17	4.72	15.64	563
8	2017-18	6.46	20.88	549
9	2018-19	6.2	14.91	408
10	2019-2020	6.56	25.08	648

RESUME

NAME : TENTU SUPRIYA

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MOTHER'S NAME : TENTU LEELA

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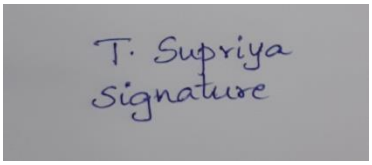
PERMANENT ADDRESS : D.NO 2-59\1, Crane nut Powder Street, IBM, Vijayawada, Krishna

District, Andhra Pradesh, pin-521456

Qualification	**Year**	**Division**	**GPA**	**School Board/ University**	**Major Subjects**
S.S.C.	2013	1st	9.8	Sri Chaitanya Techno School	---
B.Sc. (Ag.)	2019	1st	8.73 (OGPA)	ANGRAU, Andhra Pradesh	Agriculture
M.Sc. (Ag.)	-	-	Appearing	I.G.K.V., Raipur (C.G.)	Agricultural Economics
Title of Thesis in M.Sc.				An Economic analysis of Production and Marketing of Cotton in Krishna district of Andhra Pradesh	
Email:				supriyatentu@gmail.com	



INTERNATIONAL CONFERANCE ON
INNOVATIVE AND CURRENT ADVANCES IN AGRICULTURE AND ALLIED SCIENCES (ICAAAS-2021)

July 19–21, 2021 at Society Headquarter, Meerut (U.P.) India

SOCIETY FOR SCIENTIFIC DEVELOPMENT IN AGRICULTURE & TECHNOLOGY, MEERUT (U.P.) INDIA

Dr. S. P. Singh
Organizing Chairman

Ref. No: ICAAAS/21/FCI/2083
Dated : 17.07.2021

To,

Tentu Supriya, V.K. Choudhary and A.K. Koshta,
Department of Agricultural Economics, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh, India
Email : supriyatentu@gmail.com

Dear Sir/Madam

I thankfully acknowledge the receipt of your research papers entitled **"Analysis of Growth Rates and Constraints of cotton Production in Krishna District of Andhra Pradesh"** by Analysis of Growth Rates and Constraints of cotton Production in Krishna District of Andhra Pradesh**.**

Your paper under reference has been **Accepted** for publication by the editorial board of the **"Frontiers in Crop Improvement Journal",** it will be published in **Volume 9, 2021.**

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