CHAPTER-II

REVIEW OF LITERATURE
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2.1 RAW OF COTTON PRODUCTION:

H.E. Koedum (1969) concluded that a growing demand for cotton is paramount important to a healthy developments for the individual cotton growing countries. I.I.C Programme countries break cotton market into hundred of separate textile household uses comprises roughly one third of the cotton markets.

Industrial Uses:

Cotton like other textile fibers tales on aggressive infiltration of the non textile materials in the industrial markets. The ten most important cotton enduses in the industrial field (a) abrasive, (b) automobiles uses (c) bags and luggage, (d) belts, (e) cordages, (f) twine industrial threads, (g) medical supplies, (i) shoes, (j) tarpaulins, (k) tents, (l) camping equipment. Cotton has a numbers of important qualities, advantages or uses. In these industrial applications cotton ratios have good resistances to abrasion. Chemical cleaning praying, pilling packages and ream slipping.

Household Uses:

A growing population with rising income will need more and bigger homes requiring more textiles from hall to attic from kitchen to bathroom
(1) bedspread, (2) curtains, (3) draperies, (4) upholstery, (5) fabrics, (6) sheets and pillow cases, (7) towels and toweling, (8) table cloth and napkins, as matter of fact cotton consumption in absolute terms has considerably increased in sheets towards and table cloth, (1) absorbency, (2) bleach ability, (3) non irritability, (4) through wash ability.

**Apparel Uses:**

Major end uses for cotton in approach field which account for about 40% of total cotton consumption.

(a) blouses, (b) dresses, (c) night wears, (d) rain wear, (e) shirts, (f) sports coats, (g) jackets, (h) sports trousers, (j) slack and shirts, (k) underwear, (l) work clothing.

Singh et al. (1993) in their study, “Cotton development and export potential India”, reported that cotton area and production increased by 49 and 315 per cents, respectively during the previous four decades. They also suggested that this increase in cotton production was more on account of increased yield rather than an increase in cotton acreage.

Jha (1994) analysed growth rates in agriculture associated with new technology for the period 1972-73 to 1990-91. The investigator reported that the compound growth rate in agriculture was about 16.7 per cent in Period I (1972-73 to 1980-81) while in the second period (1981-82 to 1990-91) a reduction was observed.
Patel and Agarwal (1994) analysed growth performance of groundnut production in Saurashtra region of Gujarat using compound growth rates by fitting exponential function to the time series data on production and productivity for the period 1960-61 to 1988-89, where in the years 1960-61 to 1969-70 are referred to as Period I and the year 1970-71 to 1988-89 as Period II. The area, production and productivity of groundnut in the state of Gujarat had shown a negative growth during both the study periods. However, the rates of decline in area and production were more pronounced and statistically significant during the first period -2.23 and -3.42 per cent per annum respectively. In sum, while the results of compound growth rates of area, production and productivity of groundnut for the Gujarat state general revealed a negative trend in both the periods it was more pronounced in the first period.

A study on growth rates in potato production in India (Singh and r, 1994) showed that the annual compound growth rates of area, production and productivity of potato during the period 1970-71 to 1989-90 were 3.6, 6.7 and 2.99 per cents, respectively. Among the states, it was inbound that the compound growth rate of production was the highest (8.87%) in West Bengal followed by Assam and Uttar Pradesh.

Singh et al (1997) studied “Regional variation in agricultural performance in India” using secondary data for the period from 1960-61 to 1992-93. The data was analyzed by compound growth rate after fitting log-linear function. The result revealed that the national growth rate in cotton
increased to 3.20 per cent in Period II (1969-81) from 0.02 per cent in Period I (1966-68) and finally slid down to 2.47 per cent in Period III (1982-93) due to decrease in acreage growth.

In his study of the "Performance of Indian Agriculture", Sawant (1997) used time series data for the period 1967-68 to 1995-96. The data was analyzed by compound growth rate after fitting log-linear function. It was found that, of the two cash crops, namely, cotton and sugarcane, the former moved to high growth range with its compound growth rate of output exceeding 4 per cent during 1981-82 to 1994-95. This was mainly due to significant advances in its seed technology and resultant high growth in yield per hectare.

Gaddi et al. (1998) studied growth rates in area, production and Productivity of cotton for the major cotton producing countries for the period 1982-83 to 1996-97 and for the state of Karnataka for the period 1970-71 to 1996-97 using exponential function. The results showed that world cotton area declined at a rate of 0.33 per cent per annum due to improved productivity. Similar results were reported for the case of India, Karnataka state and some of the traditional cotton growing districts. Production of cotton registered significant growth in all the cases mainly due to substantial growth in productivity.

Dashora et al. (2000) studied the growth in production of important pulse crops in Rajasthan for a period of 26 years viz., 1967-68 to 1992-93 period was subdivided into two groups i.e., group (1967-68 to 1979-80)
and group 11 (1980-81 to 1992-93) for the study. The compound growth rates were worked out using the exponential equations. The study revealed that there was no significant increase in the aggregate pulse crop output in the overall period.

Singh and Chandra (2001) studied the growth trends in area, productivity and production of foodgrains in Madhya Pradesh during three phases viz., pre-green revolution era (1951-52 to 1965-66); green revolution era (1966-67 to 1975-76) and post green revolution era (1976-77 to 1998-99). Various types of growth function like linear, quadratic, exponential, compound growth and logarithmic functions were tried and the one with high coefficient of determination was used for various Variables and different phases. The results showed incr growth in foodgram production and productivity but decline in area. The growth rate for production did not differ significantly between and pre and post-green revolution period but, it declined significantly in area from 1.2 per cent to 0.009 per cent and growth rate of yield increased significantly between the pre and post green revolution period from 1.1 per cent to 3.09 per cent, indicating thus that further increase in foodgrain production would be possible by increasing mainly productivity.

Sastri and Sharma (1959) while examining the contribution of area and prodi to the increased rice output in the states of Andhra Pradesh, Madras (now Tamil Nadu) and West Bengal over the period 1949-50 to 1956-57, reported that the increase in rice production in the selected districts of these
three states was attributable to increases in productivity rather than area, while
in a few other districts the reverse was true.

Sastri (1960) studied the relative contribution of area and productivity
of the increased production of wheat during (1949-52 to 1954-57) in the
districts of Uttar Pradesh and Punjab. The results revealed that, in the first plan
period, the increase in wheat production in the two states occurred more
through extension of area than through higher per acre yields.

Upendra and Venkateswarlu (1996) made a comparative analysis of
growth and instability of groundnut in Andhra Pradesh and for the country as a
whole with respect to area, production and pro during the period from 1949-50
to 1990-91. The results of the normalized coefficient of variation around the
trend line indicated that the extent of fluctuations in area and productivity were
relatively high during the post-green revolution period (1966-67 to 1990-9)
the state as compared to the pre-green revolution (1949-50 to 1965-66). Similar
trend of instability was observed at the all India level.

Borthakur and Krishnamuthy (1997) studied sources of production
instability in rapeseed and mustard in Assam. The results revealed that change
in mean area alone contributed 89.75 per cent to the increased production while
the contribution of mean yield was 5.77 per cent. Therefore, the most important
sources of change in production variance of rapeseed and mustard were change
in area variance and change in mean area which contributed about 83.61 per
cent and 57.03 per cents respectively to the total increase in variance of production.

Tripathy and Mishra (1997) based on the investigation made on growth and instability of ragi production in Orissa, reported that 63 per cent of the increase in production of ragi was due to increase in mean area, 26.56 per cent from increase in mean yield and 9.84 per cent from increase in area-yield covariance. They concluded that mean area, mean yield and area-yield covariance were the most important sources of product instability of ragi in Orissa.

The extent of instability in area, production and productivity of sugarcane in India was examined by Chinnapa and Reddy (1999) using coefficient of variation; The results revealed that there was a variation in area to the tune of 22 36 per cent and 42 14 per cent in production during the previous six decades. The study remarked that the variation in area and production was due to shift in acreage from sugarcane to more remunerative crops besides unfavourable weather conditions, incidence of disease and pests.

Vatta and Aganwal (2000) estimated the growth and trends in the area, production and yield of the major agricultural crops of the Punjab state during the post-green revolution period, that is, 1970-71 to 1997-98. The compound growth rates were calculated for the three periods viz., Period I (1970-71 to 1983-84), Period 11 (1984-85 to 1997-98) and over all (1970-71 to 1997-98). The results showed that the total production of the major agricultural crops in
the state increased during the period 1970-71 to 1997-98. On the contrary, the total production of coarse cereals and pulses declined over the same period at the rate of —3.91 to —6.57 per cent, respectively. The change was attributed to all the three effects i.e., area effect (31.91% for coarse cereal and 4.90% for pulses), yield effect (44.90% for coarse cereals and 91.36% for pulses) and interaction effect (23.19% for coarse cereal and pulses .74%).

Mellor (1984) introduced the Markov chain model as a mechanistic model of behaviour in an agricultural setting. The concept of time-varying transition probabilities was introduced as a feasible alternative to the standard stationary assumptions. The results supported the view that the basic model was simple and it benefits from the introduction of explanatory variables influencing the transition probabilities. It was suggested that neglect of important variables could lead to undesirable consequences when the model was used for forecasting purpose.

Durham et al. (1987) analysed the changes in exporter market shares in the Kuwaiti poultry import market over the period 1 using three modeling procedures. The two traditional approaches, a first order constant transition probability Markov model and a set of market share equations were found to be of only limited use. As an alternative, a multinomial logic model of market share behaviour was estimated. The empirical results indicated that in addition to relative, price changes, domestic policy inducement for Britain and European Community exports were important in determining market share changes.
Wilson et al. (1990) studied importer loyalty in the international wheat market. The results indicated that in general the United States had relatively, strong importer loyalty compared to other exporters such as Canada and the European Community.

Gemtessa (1991) analysed the direction of trade using Markov chain model. The share of Ethiopian coffee exports to USA had drastically declined during 1979 to 1989. The loss in the export shares of Ethiopian to USA, France, USSR and other countries was directed to erstwhile West Germany. The study revealed that the Ethiopian coffee exports to Japan, France and Italy had moderately increased. But the share of Saudi Arabia remained stagnant. It was predicted that the market share of Ethiopian coffee exports to West Germany would increase to 32 per cent by 2000 AD, mainly because of Germans’ preference for Ethiopian mild coffee.

Veena (1992) analysed the changing direction of Indian coffee exports in terms of country shares over the period 1965-90 using Markov chain analysis. The projections indicated a declining trend in Indian coffee exports to the USA, Yugoslavia, Netherlands and other importing countries. The increased market share of the USSR in the 1970s and 1980s was then threatened by economic and political upheaval in the region.

Jeromi and Ramanathan (1993) noticed significant changes in the direction of pepper exports from India for the period 1975-90. It was observed that nearly 44 per cent of India’s pepper exports were directed to former USSR.
which constituted about 82 per cent of the total pepper imports of that country. On the other hand, India not only failed to increase its exports to USA in tandem with increased consumption in that Country but also could not sustain the quantity exported in the proceeding years. Instability in exports was low in case of former USSR, Italy and Canada and higher for Poland, USA and Czechoslovakia.

Jalajakshi (1994) highlighted the changing pattern of Indian shrimp export between IWO periods Period I covering 1970-80 and Period covering 1980-90. It was indicated that during Period I, India could not retain its previous market share in the EEC countries. Nearly, 90 per cent of India's share was diverted to Japan and seven percent to the United Kingdom (UK). However, in Period II, India could retain its previous market share in the EEC countries due to gradual acceptance of tropical shrimps in these countries.

Diana (1997) used non-stationary Markov chain analysis to explore the linkages between sector sector employment in Oregon, USA. Application of the technique to Oregon's forestry sector and national forest policy demonstrated that macroeconomic forces had statistically significant effects on employment while national forest policy, measured as timber sold or timber cut, did not. This result raised questions about forest policy impact analysis and assumptions inherent in national forest policy implementation.

Ajjan et al. (1998) analysed the direction of trade of senna and periwinkle in India using Markov chain analysis. The probability of Germany
and USA retaining their import shares of senna in the years to come were estimated to be 0.8258 and 0.8188 which clearly indicated that these two countries would retain their import share in the same position as in 1997. For periwinkle, France had a high retention of the export share (probability of 0.8826) while Germany and others had as low as 0.2644 and 0.0543, respectively which clearly indicated that chances of the import share of France was 88.26 per cent and in two cases there existed practically low or nil chance for the year 1996.

Murthy and Subramanyam (1999) measured the dynamics of changes in the exports of onion from India to different countries with the help of a Markov chain model. From one step transitional probabilities the model was extended to n-step for future forecasting. The results revealed that Malaysia, UAE and Singapore were having high probability of retention and would continue to be the major importers in future also. As revealed by the low values of retention, Saudi Arabia and others were concluded to be unstable importers of Indian onion. It was also summed up that in the next decade, Srilanka and Bangladesh are likely to increase their imports from India though it may come at the cost of United Arab Emirates.

Price analysis explains how and why prices behave in a particular manner. It also explains whether there is any consistency in the price behaviour of commodities over a period of time and space. It involves use of a large number of quantitative and econometric techniques. From the Stand point
policy formulation, price behaviour analysis is a continuous and never ending process because the objectives, instruments and consequences of price changes constantly move in seemingly unpredictable patterns. In inevitable conclusion that the prices of vegetables should be considered as important variable while analysing the behaviour of potato prices and for devising policy measures aimed at dealing with the fluctuations and thereby protect the interests of both the producers and consumers.

Singh et al. (1993) studied the behaviour of market arrivals and prices of potato in Punjab by making use of multiplicative model and harmonic analysis. It was concluded that, in spite of a rising trend in arrivals, prices of potato increased significantly. During post-harvest period (December-February) owing to excessive supply of potato in the market, prices ruled very low, whereas during the lean period (July-November) the indices of prices remained high and ranged widely. The study further revealed that cycles of three years and five years were found to be significant in the case of prices and production arrivals of potato respectively.

Min (1995) applied ARIMA models to forecast the changes in the number of pigs and farms in Korea by total and herd size. The ARIMA model for pig production was identified and estimated using quarterly data for 1985(1) to 1994(4). The forecasting period was 3-year horizon, from 1995(1) to 1997(4). The number of pig farms in the fourth quarter of 1997 was predicted to decrease by 39.81 per cent to 32,642 households, while the number of pigs were predicted to increase by 7.44 per cent.
Alebrahiem (1996) employed time series data of retail prices of eggs in Saudi Arabia between January 1990 and December 1994 and a model, which could be used to forecast future prices. Two methods were used; namely ARIMA model and multiple regression chfiisque to account for trend and seasonality followed by analysis of components of the regression error. Findings of the study indicate that the seasonality adjusted prices resulted from the first method could be modeled as an ARIMA (0,1,0), while the residuals of the regression could be represented as an AR(1) process. The results also showed that egg prices start to significantly decrease in and continue to fall until August, and then start to improve in September reaching the highest level in February. The regression model was used to forecast prices of the first nine months. The forecasted prices were very accurate percentage deviation from real values did not exceed 3 per cent. The study recommended erection of factories and manufacture of egg powder by utilizing the excess supply of eggs during the period April-August and resort to exports. An examination was made of the level of and variation in monthly wholesale prices of three main vegetables viz., potato, onion and tomato in the four metropolitan cities of India (Bombay (now Mumbai), Calcutta and Madras (now Chennai)), over a period of five years (1989-93) by Sharma and Sharma (1996). Among these three vegetables, tomato was found to be the most expensive one followed by onion and potato, in that order. Potato prices were less variable in relation to onion and tomato. There was no significant positive correlation between levels of exports and domestic prices of vegetables.
Upendra and Manohara Chary (1996) while analyzing market arrivals and prices of paddy in regulated agricultural markets pointed out that, in the three markets selected for the study, the maximum quantity of market arrivals of paddy were observed during the peak market period probably due to distress sale by farmers having no post-harvest withholding capacity. The trend values of arrivals of paddy exhibited significant increase over the years in the three agricultural markets i.e., Karimnagar, Jammikunta and Vemulawada in Andhra Pradesh over time as a result of increase in productivity and production of paddy. The extent of variability in the market arrivals was found to be higher than in the prices of paddy in all markets selected for the study. In Jammikunta and Vemulawada agricultural markets, in particular, the price elasticities of market arrivals of paddy were not only positive but also more than unity indicating that price response was very high. On the contrary, in Karimnagar market the price elasticity of market arrivals was positive but less than unity showing that price response was poor. The positive price elasticity of market arrivals reflected the price consciousness of farmers. With a rise in the prices of agricultural products, farmers were tempted to dispose off more and retain less, resulting in higher quantity of arrivals in regulated markets over a period of time.

Mitrannavar and Gummagolmath (1998) analysed the seasonal indices of arrivals and prices of potato in regulated markets of north Karnataka. The long run trends in arrivals and prices of potato in Belgaum and Hubli markets
were analysed using three years moving r method. The study concluded that
arrivals were highest in the months of November in both the markets indicating
 glut during harvesting season. However, prices did not decrease during glut
season as 'the majority of the traders purchased potato at that time in Belgaum
while there was a negative relationship between arrivals and
prices in Hubli market.

Srivastava et al (1998) used ARIMA for forecasting sugarcane
productivity based on the time series data of fifty years (1940-41 to 1989-90)
In Bihar The major phases involved - model building are identification of the
order of model, estimation of the parameters, and diagnostic checking for
adequacy of the model. ARIMA models are characterized by the order (p, d, cij
where 'd' denotes the degree of different and it is assumed that depth of
original data it is stationary. The constant 'p' and 'q' denote the orders of the
autoregressive and moving average operators, respectively of appropriately
differenced series. Their findings, therefore, ascertained that the time series
data on sugarcane productivity for the state of Bihar was described by an
ARIMA (0,1,1) model. Forecasts of sugarcane at origin 't' for the state of Bihar
were computed with the help of equation Zt(1)=Zt -0.85at (1 step ahead
forecast) and Zt=Zt(L- 1), L step ahead forecast (1..> 1).

During the study on trends and seasonality in market arrivals and prices
of groundnut for three districts of Karnataka over the period 1965- 66 to 1990-
9 1, Mundinamani et al. (1999), contended that as far as trend monthly
seasonal indices were concerned, a continuous upward movement and a higher monthly seasonal indices immediately after harvest for arrivals were observed in all markets under the study. It was concluded that in the hinterlands of some markets, the crop was raised mainly under rainfed condition, which resulted in wide fluctuations in arrivals and prices. In this study orthogonal regression analysis and seasonal indices were employed to examine the trends as well as seasonal movements of arrivals and prices.

The agricultural scenario in Tamil Nadu ARIMA models were built by Balanagammal et al. (2000) for the data related to the culturable area, production and productivity of chosen crops over the period 1956-57 to 1994-95 and to forecast over the next five years, i.e., 1995-96 to 1999-2000 considering 1994-95 as the base year. With regard to production, finger millet and groundnut showed decreasing level of production with a decrease in the area of cultivation whereas for sorghum, greengram and redgram the culturable area decreased though production level increased. With regard to productivity of the crops, maize, blackgram, greengram and cotton showed a decreasing trend during the forecasting period while other crops such as rice, sorghum, pearl millet, finger millet, redgram, sugarcane and groundnut showed a mildly increasing trend. It was revealed that nearly all the crops covered by the study did not show higher increasing trends in the area of cultivation and production. From their study it was inferred that the pact of green revolution could be revitalized.
Molla and Atteri (2000) analyzed the price behaviour of potato and onion in Delhi wholesale market for the years 1998-99 using multiplicative scheme. They concluded that trend and seasonality were significant in both time series of arrivals and prices of the commodities. Also, arrival fluctuation played an important role in causing high fluctuation in prices of potato and onion.

Ansari and Ahmed (2000) applied AR modeling or time series analysis of ‘world tea prices and industrialized countries’ export prices. The results of the estimated ARIMA equations implied that the information on the current period’s tea price was sufficient to forecast the next period’s, and the industrialized countries’ export prices could be forecast from information on the prices of the previous two periods. They concluded, from the fitted ARIMA model that auto-regressive processes generate both price series and there is no influence of external factors.

Sadequul Islam (2001) made a time series analysis of jute prices in Bangladesh for the period 1966-90. To compare and compute relative prices of raw jute he used not only prices of jute but also prices of agricultural raw materials and prices of exports of industrialized countries. In order to examine whether the absolute or relative prices of jute were stationary or non-stationary, unit root tests suggested by Dickey Fuller were adopted. Also, a non parametric test provided by Cochran measure the persistence of fluctuations in jute prices, prices of agricultural raw materials and prices of exports of industrialized countries were employed. The empirical evidence of the study showed that jute
prices were more volatile than those of agricultural raw materials during the study period. However, the volatility of jute prices relative to prices of export of industrialized countries was lower than that of prices of agricultural raw materials relative to prices of industrialized countries' exports which suggested that movements in the case of the former were relatively more synchronous. The study further suggested that the degree of persistence was lower for jute prices compared to that for the prices of agricultural raw materials and prices of industrialized countries' exports. In a nutshell, the study suggested that for a country like Bangladesh, there was need for long-term shifts in the allocation of resources away from jute production.

Dinakar (1990) assessed the extent of price integration between the markets by using coefficient of variation technique. He noticed that there was poor integration between the village markets and secondary markets as demonstrated by significant differences in the coefficient of variation of prices.

Arya (1991) analysed the spatial integration of four markets in Gujarat using zero order price series correlation analysis. She noticed high correlations in the price movements between the markets and concluded that the markets under consideration were integrated in terms of price movements.

Singh et al (1999) analysed the trend in arrivals and prices of vegetables (tomato and lady's finger) in Pune regulated market during the period from 1978-79 to 1996-97. The coefficients of variations of arrivals (56% to 80%) and prices (40% to 80%) of tomato were higher than the variations in arrivals (27%
to 60%) and prices (49% to 75%) of lady's finger. The compound growth rate of arrivals (2.11%) and prices (1.02%) of both vegetables re- during the same period an of both vegetables showed increasing trend indicating good integration of Pune regulated market for vegetables.

Adkar et al. (1999) reported that coefficients of variation of arrivals (22% to 79%) an prices (30% to 55%) of cabbage in Pune regulated market from 1978-79 to 1996-97 were found to be higher. Similar trend in arrivals (31% to 69%) and prices (24% to 54%) was observed in cauliflower. The compound growth rates of arrivals and prices (2.20%) of the cole crops were, significant in the same period. The seasonal indices of prices and arrivals of both these vegetables were inversely related and prices of both showed an increasing trend indicating good market integration for these vegetables.

2.2 COTTON PRODUCTION:

ICMF News (1970) reported that cotton production in India’s has not kept pace with the growth in cotton mill capacity cotton production with not only mean more cotton for our cotton mill but also more for exports. There will also be an increase the output of cotton seed which in turn will make available more cattle feed for the domestic consumption and exports and more than cotton seed oil to supplement the supply of edible facts in country.

Tyagi and Saxena's (1974) study reveals that production of cotton was decreasing in Uttar Pradesh due to decrease in area, despite the hike in the cotton productivity. The improvement in the cotton productivity is attributable
to the introduction of high yielding varieties and adoption of improved package of practices.

Pereira (1976) analyzed growth rates of crop production in Karnataka during the period 1955-56 to 1972-73. Three types of growth functions were used namely linear, geometric and quadratic separately for the three sub period. The analysis concluded that over the aggregate period with the exception of sorghum, caster, cotton and tobacco, the rest of the crops recorded growth rates in their increase. The negative growth in the case of sorghum, caster, cotton and tobacco was due to soil problems and diseases. In case of productivity, it was observed that the “Green Revolution” period was more recoverable for most of the crops in the state due to the improved technical packages evolved during this period. However, the study revealed that the growth rates of area under groundnut during the green revolution period was marginally decelerating at 0.61 percent but productivity was increasing at the rate of 1.81%.

Gaddi et al (1988) studied production and productivity of cotton for the major cotton producing countries and the state of Karnataka. In India for the period from 1982-83 to 1966-97 in the farmer case and from 1970-71 to 1996-97 in the later using exponential function. The results showed that world cotton area declined at 0.33 percent per annum due to the improvement in productivity. Similar results were reported at all India level, Karnataka state and some of the traditional cotton growing districts. Production of cotton registered significant growth in all the cases mainly due to the substantial
growth in productivity. This study considered only period growth analysis that made it increase by taking sub periods.

Girima Aboma Ariti (2002) studied the growth and instability of cotton production in Karnataka. He observed that production of cotton increased by 2.54 percent per annum (for the period 1970-71 to 1986-87) and the second period (1987-88 to 1998-99) respectively. He also observed that there was significant expansion of cotton production in the district of Mysore, Belgaum, Bellary, Shimoga, Chitradurga, Dharwad and Haveri during the entire study period. Similar trend was noticed in the first period of the study except Chitradurga district and Haveri district. In the second period all the districts showed significant increases in cotton production except Bellary district. The area and cotton for the state as a whole showed a growth rate of 1.32 per cent per annum during the entire period as against 0.93 per cent annum in the first period and 0.96% in the second period. Generally the creation of irrigation facilities and attractive prices stimulated the area under cotton in the state while sudden fall in the prices due to increased supply of cotton, increases in costs of cultivation due to higher pest incidences and high wage rates discouraged the area under cotton. The continues cultivation without adding sufficient nutrients to the soil, the loss of hybrid vigour of cotton varieties both reduced the yarn characters of the cotton of such areas and as such the prices received for such cotton was low. The resultant lowering profits also resulted in the contraction of cotton area.
Glenn C. Klingman (1957) cotton is deeply rooted in our modern living and in the economic health of our country. Cotton furnishes more than half of all the fiber used by cotton brings in nearly twice as much income as the next most highly cultivated crop. The seed provides both human livestock feed.

Narasimha Reddy (1986) observed, that in the case of DCH 32 variety cotton cultivation, the cost of production per quintal of cotton was Rs. 504.73 for small farmers in Raichur district and the net returns was Rs. 100.90. In the case of large farmers, the cost and net returns were Rs. 458.71 and Rs. 129.54 respectively. Thus returns were diminishing for the medium and large farmers due to high of cost of cotton cultivation. In the case of laxmi variety, which was cultivated under rain fed conditions, the net returns were negative, commission agents. Village merchants and co-operative marketing societies were the three channels available for the farmer for the marketing of his cotton produce. The cost of marketing was Rs. 27.58 per quintal. Both Laxmi and DCH 32 verities incurred the same cost of marketing.

Kunnal (2001) while studying the impact of technical change in Karnataka, observed that the incremental contribution of high yielding varieties to the total production was 121 percent over local varieties in which the new technology component accounted for 21.72 per cent and the input uses levels contributed for the remaining 99.28 per cent. Among the different input used, seed accounted for the highest contribution (24.38%) followed by farm yard manure (21.21%) and working capital (19.77%).
N.L. Innes (1977) studied to the maximum use of land one of the most striking features of Indian agriculture. In certain irrigated areas three to four crop may be grown in rotation in one year most of the Indian cotton growers under rain fed conditions. Only about 40 per cent of upland cotton is irrigated. Among important rain fed tracts. There is considerable variation in yearly rainfall and rainfall during the cotton season. There are six zones in Irrigated of states and upland cotton are growth both as summer and winter crop. Summer crop (cotton) is sown in February/March and winter cotton in August/October. Crop duration is about 165 days for upland varieties and 180 days short duration upland varieties and 180 days short duration upland varieties lastly 135 to 145 days are now available for cultivation in period from January to June. Farmers encouraged to treat their seed with mercurid seed with a paste of low dung and earth to make “mechanized” sowing easier. Tractor equipment is not available to the majority of farmers. Most of the cultivation are done by implements drawn by oxen or buffalo and sowing is either by hand the simple expedient is either by hand the simple expedient of dropping seed down a pipe attach to ridge or drill.

ICMF Reporters (1980) by subsidy on improved seeds pesticides and equipments and operational cost aerial spraying and allocation of additional quality of fertilizers. Central government launched controlled sponsored scheme for maximizing production of cotton to supplement the efforts of state government operational of the central government scheme have been on the following lines.
1. Intensive cultivation

   a. Plant protection in irrigated and assured rain fall area.

   b. Mass plant protection.

   c. Aerial spraying of pesticides

2. Production of nuclease and function seed.

3. Organization of mass protection campaign.


5. Organization of varietals demonstration plots.

Ramaswamy (1970) analyzed the fluctuations in area, production and productivity in cotton in India for period 1950-51 to 1968-69 and concluded that the period of the first plan and the earlier years of the second plan saw rapid increase in area under cotton. Thus cotton production during these period was largely area oriented due to the lack of high yielding varieties.

Govinda and Ranganathan (1993) studied the cost of cultivation, gross return and net returns and benefit cost ratio for cotton under different densities of planting and different fertilizers level. They concluded that towards the estimating the cost of cultivation. Additional cost of fertilizers alone added to the actual cost of cultivation during the experimental stage and they observed that it increased seed cotton yield by 3.4 quintal per hectare and net return of Rs. 2680 was obtained that it increased seed cotton yield by 3.4 quintal per hectare and net return of Rs 2880 was obtained under high plant density
compared to the normal population. Plant density gave more yield and net return highest level of fertilizer application

Veerapur (1999) in a study on the economics of integrated pest management technology (IPM) in cotton production in Raichur district of Karnataka, observed that the total cost of cultivation per hectar in IPM farmers was less by 21 percent than no IPM farmer’s mainly due to savings in cast of plant protection chemicals. He also observed that the per hectare net returns in the case of IPM farmers (Rs29783) was significantly higher than non IPM farmers (Rs16803). It was mainly due to increase in the yield on IPM farmers on one hand and decrease in the total cost of cultivation on the other.

2.3 ECONOMICS OF COTTON PRODUCTION:

Avatar Singh (1961) Concluded conditions obtaining in northern India Particularity those income parts of Karnataka and Punjab are favorable for the production of cotton. The climate is fairly suitable. The summers are warm and long. The sowing time of American cotton has been so adjusted by cultivator that the monsoon occur at time when the plant is young and good for its vegetable growth. The rainfall is scanty during picking time. The deal alluvial soil of the plants are productive and suit cotton crop very well.

2.4 COST OF PRODUCTION IN COTTON:

Data on the cost of production of cotton in the country are rather meager; Efforts have been made from time to time to determine the income and
expenditure of cultivator and numbers of years. Experience of farming first authentic in formatting on the cost of production of field crops was collected from seven tenant holding on Govt. estate. The first serious efforts were made by the Imperial council of agricultural research to inquire in to the cost production crop in the sugarcane and cotton growing tracts of India.

**Seed Cotton Yield Per plant**

The seed cotton yield per plant did not differ significantly due to nitrogen level split proportion and interactions. However, the seed cotton yield per plant was maximum with treatment receiving 225 kg nitrogen per hectare (103.148g) followed by treatment receiving 150 kg nitrogen per hectare (88.50g). Among the split proportion recorded higher seed cotton yield per with seed cotton yield per plant recorded with (103.10gh) while recorded 89.9 used cotton yield per plant respectively.

**Seed Cotton Yield per Hectare**

Data on yield of seed cotton per hectare as influenced by level and split proportion of nitrogen are presented significant differences in the seed. Cotton seed yield per hectare were observed due to the nitrogen levels. The maximum seed cotton yield was obtained with treatment receiving 225 kg nitrogen; hectare 1996 and it was significantly higher than the seed cotton yield obtained with treatment receiving 300 kg nitrogen. But there was no significant difference between treatment receiving 225 kg nitrogen per hectare and treatment receiving 150 kg nitrogen per hectare which recorded 1865 kg
hectare seed cotton also there were no significant difference in yield of seed cotton per hectare due to split proportion and recorded the maximum seed cotton yield (1942 kg per hectare). The lowest seed cotton yield was obtained with (19.82 kg per hectare).

2.5 CROPPING PATTERN:

Sharma (1972) studied the change on cropping pattern on non mechanized; portly mechanized and completely mechanized farmers. They used cross section data for the analysis and data were collected by multistage random sampling procedure. The study pointed out that there was little difference in the normative cropping pattern and intensive of cropping on completely mechanized farms and portly mechanized small and medium size farms. However, the cropping pattern showed variation on portly mechanized long farmers. The analysis of the existing and optimum cropping pattern for all the synthetic from showed that the farmer was doninat4ed by Deshi cotton. The study also reveals that the normative shifts in cropping pattern in all situations indicated that less paying cropping such as hybrid cotton. Deshi cotton an pulsed in Khariff and desigram. Deshi wheat gram mixture and barley in Rabi season were eliminated from optimum crop mix of portly and completely mechanized farms. The area under these croOs in the existing situation was directed to American cotton sugarcane and groundnut in kariff maximum cotton in Rabi in optimum crop plan.
Desai (1963) in this study pertaining to economics of cropping pattern gave more emphasis to the productivity aspects. In this opinion the grass income from agriculture in Gujarat could be raises by 39 per cent by increasing the area under crops which had higher productivity.

Praduman (1990) the study result indicates that the success attained in food production in India following the "Green Revolution" is not without cost. Area under paddy and wheat has continuously increased in many states at the cost of course cereals millets pulsed and cotton this created influenced in cropping pattern. They suggested that to remedy for the situation the elements of "Green Revolution" strategy to be reexamined that set right.

Muttaian (1963) while examining the rational of the exiting cropping pattern in cotton track of India studied the factors which determined the extent of shift in cotton courage in the gross cropped area. The shift of land from cotton in favour of groundnut was attributed to the higher prices pervading for groundnut.

Rai (1981) in his study of new technology for mastered production, found that prices was the main determinant of the increase in the area under mastered crop. Favourable weather and technological improvement also contributed to the shift in the cropping pattern.

Sikka and Vaidhy (1985) in their study on cropping pattern found that changes in cropping pattern in Himachal Pradesh during the period 1967 to 1979-80. Were in favourable of wheat maize and apples and the cropping

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intensity in the state was increasing at a compound growth rate of 8.20 per cent annum. That increased was due to extension of irrigation facilities and improvement in technology.

2.6 MIXED CROPPING SYSTEM:

Chilli and cotton are the important commercial cash crops of the region. These crops are generally grown as mixed crop under rainfed conditions and under irrigated conditions they are grown as entire or sole crops. In tradition truck or north Karnataka inter cropping cotton with Chilli is a well established and remunerative cropping system followed on a large scale occupying an area of 60,000 hectares in Dharwad and Haveri district.

Kanitkar and Patil (1958) reported that in Haveri district cotton was mixed crop with chilli or groundnut and cotton yields are higher in chilli than in groundnut mixture. But was less in both the mixtures than an entire crop by about 10 to 30 percent. However, total returns from both the component crops in mixed cropping were higher. The mixed cropping of chilli and cotton was taken as a safeguards against failure of chilli crop due to leaf curl decease.

Raghumurthy (1974) observed reduction in chilli yield from 359 kg per hectare to 179 kg per hectare when chilli was inter cropped with Hampi cotton under irrigated condition. Cotton growth was more suppressed when it was inter cropped with hybrid bajra, because of its vigorous growth nature compared to onion or chilli. More suppressed. Growth of chilli when it was inter cropped with Varalaxmi cotton compared to hybrid or Bagya.
Kumaraswami (1957) studied the performance of various intercrop ex groundnut, soyabean, fodder cowpea, greengram, blackgram, chilli+onion. He reported that seed cotton yield was reduced in all the treatment except in cotton+chilli, which recorded higher seed cotton plant and more number of bolls per plant, further he observed increased plant hight of cotton when it was inter cropped with groundnut, an experiment on inter cropping cotton and chilli with pulses was conducted during kharif season of 1980 at Dharwad. All inter crops reduced the growth and yield of chilli and cotton crops. The least yield reduction of chilli and cotton crop were noticed when green gram was inter cropped. Intercrops significantly reduced all the above growth parameters. All the intercrops significantly reduced number of chilli fruits per plant of cotton were affected only when chowpea.

Basavanneppa (1994) studied the effect of cotton genotypes and planting time of cotton chilli mixed cropping system. Highest seed cotton yield was obtained in sole cotton followed by 2 diable of early planted intercropped cotton DDH₂ in early planted chilli on the other hand dry chilli yields were higher with sole chilli followed by inter cropper of one or two dibble of early planted Jayadhar cotton is early planted chilli early planted sole chilli and cotton recorded significantly higher growth and yield parameters.

2.7 CHEMICAL METHOD:

Use of chemical has become an effective method of weed control in the recent years. It is a alternative to traditional methods in developing countries.
Herbicides, report from reducing the number of labours required for weeding. But also help to maintain a weed free environment during the early period and also at time of excess soil moisture where methods of cotton weed control becomes impracticable. The cost of hand weeding was increasing steadily while the cost of chemical weed control has been stable. Herbicides can be reduce labour requirement twenty fold in short cycle crops and up to 35 line in long cycles crops. The chemical methods of controlling weed consist o the following types of herbicides treatment in relation to the time of treatment to the crop. They are pre-sowing pre emergence. Post emergence and integrated methods.

New flushes of weed emerging after germination either after rain or after first irrigation can be effectively controlled by following directed spray of post emergence herbicides. Most of the these herbicides are non selective and conduct and applied on foliage of weed which inibit photo synthetic process of the plant tissue by removing elections from the election transport chain from feridoxin. The literature pertaining to the effect of time and levels of application of post emergent herbicides on weed control efficiency studies is very much limited.

Irrigated weed management is defined as the use of all feasible control methods including economical results. The populations of weeds are kept under or at threshold limit so that there is no economic loss. The controls of few flushes of weed which emerge at later state are not controlled. To attain season
long weed control integration of chemical and mechanical methods hold a great promise. In recent years concentrated weed management practices. There were quicker generation of weed after 30 days. This showed the lack or residual effect of the pre-emergence herbicide and the necessitates hand weeding or being to control weeds throughout the crop growing period.

2.8 TECHNOLOGICAL CHANGE IN COTTON CULTIVATION:

Technological change in cotton cultivation has been taking place at fast rate in recent years. Technological change means changing the input mix in orders to increase the output with the some resource or to get the output with the some resource or to get the some output with a few resources. In other words technological change in implies higher level of output at the same cost or the same levels of output a lower cost. Generally technological change in cotton cultivation in defined interims of either a productivity index. A cotton production function and the cotton cultivation indicate are deduced either from an explicitly defined cotton cultivation function or from a distribution theory when cotton cultivation function is implicit.

R.M. Solow (1951) started technological change in a catch all expressing for any kind of shift in cotton cultivation function. Assuming constant returns in scales homogenous input and competitive equiliintium. He defined that any increase in output-not defined by increase in capital and labour is the result of technological change.
T.W. Schalts (1961) attempt to define the technological improvement as a superior resource that will produce for the economy a higher rate of return relative to its cost them with the established inputs employed in cotton production.

S. Bisaliah (1984) defined technological change in an output shift in the cotton cultivation function or a downward shift in unit cost function. Production are more output with no change in the physical volume of input encompasses most of the efficiency dimensions implied in the concepts of technological change. An increase in technological deficiency refers to reduction in the level of each and every input required to produce one unit of output.

V. G. Panse (1966) studied to that technological change in agriculture consist adoption of farming techniques developed through research. Which in its work is calculated to be bring about diversification and increase of cotton production and greater economies return to the farmers use of fertilizers, pesticide improved seed and improved implements are the examines of such techniques introduction of irrigation in new area is another very important technology in new area is another very important technological change in although its being practical as part of tradition agricultural for a long time.

Richard. G. (1955) says that the development and diffusion of a new technology package using yield seed varieties once called the “Green Revolution” is referred to the new technology.
Ghosh (1986) concluded that when technology of cotton cultivation is mainly in defined with a vector of inputs any change in the technology of cotton cultivation can be interpreted as partial or inputs by a better quality of technology advanced inputs. New aggression technology comprises high yield varieties seed irrigation tractor threshers' insecticides and pesticides fertilizers.

2.9 COTTON GROWING PROBLEMS:

B.G. Christidas (1955) study to the cotton breeding aims at the production of new varieties. Which under certain conditions would give a higher yield and a better quality than existing types. One first becomes familiar with immaner of their inheritenance. They being in mind requirement on one hand and by investigation or practical experience. The breeder will decide upon the most desirable cotton type he will try to obtain. It is usually suffer and speedier to proceed and waste of much time and expenses.

Acclimalization: Very often it is unnecessary and fulfill to attempt the production of new verities by breeding. The introduction of new cotton types constitutes the easiest and rapid method of improvement it is usually resorted to before any kind of proper breeding work is initiated. The total number of varieties grown in the cotton producing countries of the world runs well into number of hundreds if not into thousand. According to the varieties to be introduced for soil and climate conditions in the respective countries providing insect pest and disease.
2.10 : BREEDING METHOD :

In raising new verities of cotton and indeed of any crop. Selection is by farmer the most important breeding methods applied from time immemorial. Recently a new ingenious method has been developed. This method is also tried with other crop including cotton. All cotton under cultivation has so far been obtained.

1. Method of Pollination : Cotton is considered to be self fertilizers plant through cross fertilizers not in frequently occur. The extent of natural cross pollination in cotton has been studied by a number of workers in the India. The date of flowering natural hybrids sometimes amounts to only a small part of one percent frequently.

2. Technique : Recording to technique of selfing several methods are now in use. In account given by the empire cotton growing corporation these method are (a) tie the an opened flower buds by mean of either string wire wool rubber bund, (b) keep the petals closed with a quick drying gum, (c) stitch the buds with needle and threads, (d) apply flower netting or basing.

3. The Breeding Plot : New cotton strains obtained in any away should be grown under close observation before farming an opinion about their practical value. At the same time steps should be taken to increase the amount of seed available from each new strain. Also for securing their fertility the breeding plot which various breeding plants in different way. The breeders plots are field strain to be planted and amount of seed available
from each. All strains grown on the breeding plots must have been shown
one. They are selection from either local seeds.

2.11 COTTON MARKETING:

S.B.P. Rao (1989) in Indian cotton is growing over an area of nearly
eight million hectare and during the last five years. The production on an
average workers out to over 10 million bales. Marketing of cotton in is country
posses special problems.

(1) because of nature of commodity,

(2) the fibre quality difference of these varieties grown by million of
farmers spread all over the country complicate the marketing procedure.

(3) the phenomenal increase in cotton production with no corresponding
increase in marketing facilities cotton marketing act already on the state
books in country.

Jacob Osbornware (1958) cotton marketing may be reffered to as
system of two parts. (a) spot trading and features, (2) trading buying and selling
cotton with several other great agricultural commodities. The cotton marketing
system is in reality on merchants and other dealing in spot cotton a means of
lowering their risks of losses due to changes in cotton values. The sales of
cotton contracts on the features exchanges to the extent that such as sales
offsets in qualities actual cotton brought by merchants in the spot market at
fixed prices. The have not sold at fixed prices. The purchase of cotton contracts
on the feature exchange to the extent that such purchase offset in quality actual
cotton sold by merchant in the spot market at fixed prices. Which they have not
brought at fixed prices.

S.B.P. Rao (1987) studied to the regulated markets may be asked to
provide a adequate covered sheds in the yield for the kapas. Brought for sale
seed cotton does not remain in the open as the helps in the ginners over long
period. A waiting the ginning process in case the marketers collected by the
market committee is not adequate to meet these needs. The market should be
provided with funds by way of loan to provide the much need covered shed.
Full information recording the gin will have to be spread. The state Govt.
arrange visits of gin owners from other areas. To see for themselves such
models units. If India has study in the export market. Either in raw cotton or
pressed cotton. The cotton farmers must be encouraged to pick cotton clean
kapas without mixing stained and other foreign matter to the market. It is well
known that grading of kapas sales patches a higher to producers. The help the
market to introduce grading they should be provided with required instrument
for guide assessment of graders on an out rights grand basis of at least to
workers units one seats instrument for guide assessment of graders on an
outright grand basis of at least workers units one seats instrument will coast
approximately Rs. 80.000 to Rs. 90.000 which are also readily available in
India trained graders with have appointed to handle this programmers
efficiently.
Industrial Abroad (1956) concluded the cotton textiles exported promotion council has recently brought out a report on Cyprus market for cotton textiles. According to report on Cyprus market for cotton textiles, According to report Cyprus potential market for Indian textile large clothing industry predominantly develop for the purpose of exports. It was always supplied on imported raw materials such as yarn for knitting and garments and sewing heads for stitching imports restriction is bore minimum and cotton duties very from 6% to 36% developing on the process embroiders fabric abreact the highest duty.

S.B.Rao (1989) studied to the Indian farmers invariability disposes of this produce as 'kapas' and only under exceptional circumstances. He prepares sell it was lint the bigger farmers sometimes the role of cotton village merchants the growers are estimated to dispose of about 60% of their produce in village site itself and the remaining 40% in various types of markets. It is reported that over 30 produced is sold to ginners while only 15% of total production goes to the regulated market. The village money lender advance money at exorbitant interest small farmers. The village merchants make output right purchase of all small harvest of the in habits. The wage paid in kind to the labours harvesting cotton.

2.12 MARKETING COST OF COTTON:

Most of the studies on marketing of agricultural products have been drawn pointed attend to the wide margin of profit intercepted by different
market functionaries working in collusion and always trying to exploits the producers sellers in various markets through unfair practices, unauthorized deductions from agree prices. Qualities weightment prolonged delays in payments and even conversion of higher grade production in lower grade products with a view to reducing prices have been noted by different researchers. As a consequence the price spread including profit margins and marketing cost incurred at various stages has been found to be very high particularly in the case of perishable products like vegetables. Small farmers with their small surplus offered for sale have been virtually neglected. In the absence of proper and adequate market intelligence communicated at frequent intervals.

Madalagi (1956) studied the marketing costs and margins of village trades in 'Bidi' tobacco of Nippani. Transport Costs contributed very little to the total marketing costs were cash distant and commission charges. Deductions in cash and kind farmed 35 to 40 percent of the wholesale prices. During the periods of excess production village traders earned very high price margins.

Levana (1966) studied marketing of agricultural produce in Eastern Uttarpradesh during 1963-64 in five districts. The study revealed the existence of high price spread due to multiplicity of charges by various marketing functionaries and their unscrupulous practices to solve this problem. They suggested the establishment of co-operative marketing societies.
Mehata (1963) conducted a study of cotton marketing at Katakpur market in Bhantind district. The study revealed that the cotton producers were able to get 96.5 percent of retail price. While they sold their output through the co-operative marketing societies contrasted when only 91 per cent. When the produce was marketing through odhatias.

Pavaskar (1990) evaluated the performance of the present marketing system for raw cotton on the basis of marketing cost in Gadag in Dharwad District. They found that the farmers shares in the final price of raw cotton was a high as go percent and the rest was accounted for marketing costs. The gross return to the cotton merchants overaged only 3.4% of the aggregate sale and the existing system of marketing of cotton was were efficient them that its articles considered.

Natarajan (1973) in his study an economic analysis of cotton marketing during 1971-72 indicated that 38.45 per cent of the cotton produced by the sample farmers was through the co-operative marketing societies and 31.34 per cent though the commission agents. The sale village merchants farmed only 16.52 per cent of that total cotton produced by the sample farmers. The analysis revealed that co-operative societies were the most popular and effective channels for selling cotton in area. The producers shares in the mill owners rupees was 85.93 per cent. When sold through co-operative marketing societies and 84.5 per cent and village merchants respectively. It was the lowest in the case of channels involving village merchants and commission agents.
Satish (1985) study on the marketing of cotton in Karnataka found that majority of the farmers disposed off their produce at regulated markets. However majority of the small farmers marketed their commodities through traditional channels owing to the small quantities produced by them and their lack of organization and holding capacity. This inturn resulted in lower producers shares and led to increased profit realized by various market intermediators.

Ramaswamy (1970) undertook the study of profit margins in the marketing of cotton in Gadag market in Karnataka. He found that the sale of cotton after its processing could increase the price made available to the producers to the extent of Rs. 25.80 per cent candy (360 kgs) as the outright minimum. He therefore suggested that processing units should be established in the vicinity of markets to enable the farmers to contest the cotton into lint before it actual sale.

Singh (1974) studied the comparative efficiency of different market channels, intern of quantity, of wheat marketing costs incurred and profit margins obtained by the co-operative and private wholesale traders in Rajastan during 1969-74. Inspite of higher marketing costs, It was revealed that farmers preferred to sell their produce through private traders partly because of latters courteous behaviours. In both channels the producers share in the retail price was found to be more or less the same, but the share of the retailer was found to be a little higher, compared to that of the cooperative society due to the lower marketing costs incurred by the farmers.
Reddy (1985) in his study found that the entire cotton produce was sold within the village to brokers/traders even though there were other marketing channels available. In general, small farmers received lower prices for their produce than the large farmer, as the output of small farmers was very small in quantity.
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