The present chapter divided into two parts; the first part explains the status of the agricultural in the tribal areas of Telangana State and the second part deals with reviews of the available literature. In this chapter, a review of the selective and useful studies related to the research problem has been attempted and also explains the agricultural panorama in the tribal areas of Telangana State.

**Part I**

**Status of Tribal Agriculture in Telangana State**

Agriculture is the most primitive occupation of the tribal people. Though the people had changed their cultivation pattern from traveler’s cultivation to settled cultivation, some of the practices have remained unchanged among many groups of farmers. The unchanged practices may be due to the fact that they find the practices more sustainable. It is painful when somebody says the tribals are backward or primitive. It not only affects the sentiments of the clientele group but also equally affect the organizations working in those areas for their development. Hence, the technology should be transferred to them without affecting their sentiment. A number of appropriate technologies are generated by them and have become sustainable under their farming system.

The present part of the chapter focuses attention to the practices of the resource tribal farmers that makes use of low-cost renewable inputs, family and community labour for solving the food crises through their traditional wisdom which need documentation to make the future agriculture a sustainable one.
Besides, the effort has been made to gather necessary explanation on some of the practices followed by them. A few regular types of research have been done to see whether their practices are based on any scientific basis; much other research work is yet to be started.

**Status of Agriculture in Telangana**

Sustainable growth of agriculture plays a pivotal role in the economy of the State and the better performance of this sector is vital for inclusive growth embodying three thrust areas viz: promote of inclusive growth, enhancing the rural income and sustainable food security.

About 55.49% of the State’s population is depended, on some form or the other and on-farm activity for livelihoods.

The share of the agriculture sector to the Gross State Value Added (GSVA) in 2014-15 is 8.6% at current prices. Other important crops grown are Maize, Jowar, Red gram, Green gram, Bengal gram, Groundnut, Soya bean, Mango, Cotton, Chilies, Sugarcane etc., and agriculture has been one of the important sources of income for the State's economy. During 2014-15, production of total food grains was recorded as 72.18 lakh tonnes. Of the total food grains, production of cereals and millets was 69.55 lakh tonnes, pulses 2.63 lakh tonnes. Production of oilseeds was 7.22 lakh tonnes, Chilies 2.53 lakh tonnes, Turmeric 2.16 lakh tonnes etc.

**Land Utilization**

The total geographical area of the State is 112.08 lakh hectares, forest cover is occupied 25.40 lakh hectares, constitute 22.66% of the land. About
39.05% area is used for cultivation (43.77 lakh hectares), 12.50% is current fallow lands (14.01 lakh hectares), 7.90% of land is left for non-agricultural uses (8.85 lakh hectares), 5.42% is barren and uncultivable (6.07 lakh hectares) and 7.18% falls under other falls (8.05 lakh hectares). The remaining 5.29% of the land (5.93 lakh hectares) is used for culturable waste, permanent pastures, and other grazing lands, and land under miscellaneous tree crops and groves are not included in the net area sown.

**Land Holding and Area Operated**

As per the Agricultural Census, 2010-11, the number of holdings in the State accounted for 55.54 lakh and the area held by these holdings was 61.97 lakh hectares. The average size of the holdings in the State is 1.12 hectares, which is highly uneconomical to operate. In the State, 62.0% of the holdings are marginal (less than 1 hectare) and the percentage of small holdings (1 to 2 hectares) is 23.9%. Thus, marginal and small holdings constitute about 85.9% of total agricultural holdings in the State, making agriculture a subsistence source of livelihood for the majority of the population. Distribution of land holdings and area operated as per size classes is given in the graph.

**Area and Production of Food Grains**

Area and production of food grains from 2009-10 to 2014-15 in the State are shown in the following charts. It can be observed that the area sown is higher with 34.44 lakh hectares in 2010-11 with the production of 92.60 lakh tonnes, whereas the area sown was lowest in 2009-10 with 26.49 lakh hectares with a production of 51.90 lakh tonnes.
**Production of certain Principal food crops**

Production of food grains under certain principal crops like Rice, Maize, Jowar, Turmeric, Chilies, Bengal gram etc., from 2012-13 to 2014-15 is shown in the graph given.

**Crop Productivity**

The average productivity (average yield in kilograms per hectare of land) of principal crops during the year 2014-15 are 3,211 Kgs., in respect of Rice, 1,054 kgs., for Jowar, 3,338 Kgs., for Maize, 3,456 Kgs., for Chilies etc. The productivity of Ragi is almost stable from 2009-10 to 2014-15, whereas productivity of Soya bean, except in 2009-10 remains stable. In the case of Palm Oil, there are fluctuations from 2009-10 to 2013-14. The productivity of chilies is highest in Khammam whereas productivity of turmeric is highest in Adilabad, the productivity of cotton remains more or less at the same level across the districts.

**Cropping Intensity**

The cropping intensity (the ratio of gross cropped area to net cropped area) is one of the indicators for assessing the efficiency of the agriculture sector. The cropping intensity for the year 2014-15 is decreased to 1.21 from 1.27 in 2013-14. The cropping intensity is highest in Nizamabad district with 1.55 and lowest in Adilabad district with 1.08.¹
Part II

Review of Literature

Here an attempt has been made to review the existing literature on different aspects undertaken for the study which subsequently shall be used to select and formulate the research topic and check the validity of the study in the present pattern of agricultural land use.

There was a lot of work done by various geographers on land use in the world, mostly in the 20th century. The beginning of land use studies and survey may trace to the regional survey where it is a purely general academic interest. In this part of the chapter, an attempt has been made to review the available literature on the subject. This provides an opportunity for the investigator to acquire fairly comprehensive knowledge in the field work.

Production cost plays an important role in the decision-making process of the farmers. In general, at a given level of prices, a farmer can increase farm income in two ways, either by increasing the production or by reducing the cost of production. A few select studies on these lines are presented below:

Sahu, B.N. (1970)\(^2\) reported that tribal agriculture was rightly classified as subsistence sector of the tribal economy and according to the study primitive method of farming, low cropping intensity, high labor-intensive farming, and static cropping pattern were the key characteristics of tribal agriculture in India.

Singh, I.P. (1970)\(^3\) observed that the tribal economy was predominantly agriculture. The study indicated that 88% of the tribal population was engaged in agriculture. It was also observed that agriculture in the tribal areas was
mostly practiced on the primitive lines of shifting cultivation, with lack of irrigation facilities, primitive techniques of cultivation, the small size of cultivated holding and lack of diversification of occupation.

Murthy, T.V.R.S. (1977)\textsuperscript{4} revealed that the majority of respondents were aware of the Girijan development agency’s programme and its objectives. Among the objectives, loan for agriculture inputs and milch animals were known to most of the respondents.

Parthasarathy \textit{et al.} (1981-1982)\textsuperscript{5} concluded that most of the tribals were interested in improved animals because of the high cost of acquisition and maintenance. The tribals are interested in acquiring farm asset only because of the high percentage of subsidy amount provided by a tribal development agency. Parthasarathy \textit{et al.} Observed that the impact of the Integrated Tribal Development Agency (ITDA) was more in the villages with easy access and meager in the interior villages both in income and expenditure side. Further, the tribals were under the impression that the entire assistance provided by the ITDA was fully subsidized and were blissfully ignorant of the loan component either, provided by banks of Trichur because of the absence of persistent efforts towards the collection of loan component.

Sharma (1981)\textsuperscript{6} in the study “planning for dispersed tribals” opined that the general programmes of development particularly the integrated rural development programmewas limited to economic development only. But in case of tribal communities, it was necessary to add supplemental programmes for social services to the integrated rural development programme itself so that
the scheme for tribal development becomes realistic and also suggested that the financial support should be adequate and uniform.

Narayana (1985)\textsuperscript{7} suggested that the welfare programmes of the government, effective implementation of land reform such as the distribution of lands to landless and rural credit, popular participation and awareness among targeted groups had considerable effect, for the improvement of the socio-economic conditions of the tribals.

Pant, S.P. and Baghel, A.S. (1987)\textsuperscript{8} have presented their findings related to information gaps and programmes with special reference to agriculture. It records the present knowledge situation of the tribals with respect to key technological opportunities, assesses the magnitude of the information gap, and probes into attitudes to development in general and this ability to accept change. A questionnaire is prepared to record the opinions of tribal farmers. The findings reveal that a cautious approach was done to bring awareness in increasing productivity but came to poverty, lack of knowledge on subsidies, there is a low production rate.

Rao (1987)\textsuperscript{9} found that the contribution of minor forest produces in the household income was very high and varied from 73.68 to 82.20\% respectively in Telangana and Rayalaseema tribal areas.

Ingle \textit{et al.} (1988)\textsuperscript{10} observed that illiteracy was quite large in tribals (58\%) and a greater number of the tribals have less than 2 hectares of land. More than half of the respondents had less than Rs.5000/- income per annum.
Kanani, P.R. et al. (1992)\textsuperscript{11} studied that the tribal population of Gujarat is 14\% of the total population in the state with about 72\% concentrated in 8 districts. The economy of the tribal farmers is mainly based on agriculture and other subsidiary occupation such as woodcutting, handicrafts, cottage industries, etc. The training needs of tribal farmers in relation to maize crops in Dohab taluka in Panchmahals district, where extensive cultivation is practiced. It is observed that the tribal farmers give maximum priority to fertilizers, plant production measures and institutional credits. Many respondents suggest training them in their own villages. Education, size of holding an annual income was significantly related to training needs, while age and social participation were not significantly related to training needs.

Annaraja, P., and Thiagarajan (1993)\textsuperscript{12} observed that the people of India include a very large number of primitive tribes who subsist on hunting, fishing by the simple form of agriculture. The constitution of India prescribes certain safeguards to uplift the tribals. For extending financial assistance for STs to get the right education from the primary stage, central and state government has designed many programmes. The purpose of the investigation was to find out the effect of psycho-socio factors on the academic achievement of the ST adolescents. Regarding personality factors, ST adolescents are better in temperament, independence, and adjustment than on STs. With regard to academic achievements, non-STs are better than STs.

Rao, Y.V.K. and Bathaian, D. (1993)\textsuperscript{13} described that many tribal farmers in India are now adopting permanent agriculture. Data for 1987-88
were calculated from 103 cultivators in Hukmpet mandal, Vishakhapatnam
district in Andhra Pradesh. The average irrigated area in tribal areas was 72% and
increased with farm size. Small farms had a higher percentage of the
average cultivated area to the total area, higher cropping intensity, and a higher
percentage of expenditure on social ceremonies than large farms.

Jairath, M.S. (1994) investigated the effect of the wholesale market on
agricultural and economic development in tribal areas of Madhya Pradesh,
identified constraints and problems faced in agricultural marketing. The
wholesale market when examined is popularly acknowledged as the soybean
market of tribals. The market receives oilseeds, pulses, and minor forest
produce. Wholesale price is more stable for soybean than for pulses. The
growth of market-oriented crop production tribal areas has led to the
development in the economy. The cropping pattern has shifted from cereals
and pulses to oilseeds and other crops. The tribal farmers face many problems
at rural assembly centers due to lack of basic facilities.

Daftardar, S.Y. and Savant, N.K. (1995) found that the environmentally
friendly improved management of fertilizers in rainfed transplanted rice was
agronomically efficient and economically attractive. The overall response of
the participating tribal farmers to this management was favorable and
encouraging and indicated its adaptability. Therefore, it has the potential to
enhance the productivity of millions of small paddy fields of resource-poor
farmers in rainfed low land ecosystems.
Rao, P.P. and Rao, V.G.K (1996)\textsuperscript{16} conducted a study to find out the extent of adoption of rice production technology by the tribal farmers in high attitude and tribal zone of Andhra Pradesh during 1992-93. The characteristics of the farmers were examined against 22 variables identified in the research literature. The results show that the majority of the respondents chose rice production technology to a medium extent. The rational analysis had shown that the extent of adoption was found to be positively and significantly associated with age, farming experience, training received, and socio-economic status, cropping intensity, aspiration, economic motivation, innovativeness, information source utilization, and its credibility.

Sharma, M.L. et al., (2001)\textsuperscript{17} revealed that the eastern part of the largest province in India, Madhya Pradesh is known for its ethnic values and varying culture. The density of the STs is about 40\% in different areas of the region. They are still far away from the modern world. They depend on traditional agro practices until today. The finding of the study shows that about 40\% of the respondents were illiterate; they belonged to a family with 5-10 members. Even though agriculture is the main occupation, some of them engage in collecting forest produce and animal husbandry. The study also revealed that traditional varieties occupied more than 60\% of cultivated land. Now a day the farmers are very particular in the selection of seed to storage of produce. For selecting healthy seeds and to control weed they use soil solution. Mahua cake is used as bio-fertilizers for seed generation test. By spray of kerosene or soil solution
and usage of herbs, plants control rice caseworm. Cow dung and rice husk are used to make storage bins and as an insect repellent, neem leaves are used.

Rao, A.B.S and Reddy, M.S (2002) had conducted an interview of 150 tribal farmers in Andhra Pradesh to determine their information need in regard to rice production technology. Majority of the respondents belonged to the group with medium to high information needs. Psychological and economic factors were found to be positively related to the level of information need.

Sharma, R. et al. (2002) examined the income and expenditure patterns and their influence on rice production, among the tribals in Chhattisgarh. Data were collected through interviews with 120 tribal farmers. About 41% of the respondents belong to the medium income group, followed by 37% in the low-income group. Agriculture (42.16%), agricultural labour (31.4%) and liquor selling (5.03%) are the major sources of earning of the tribals. 68.9% of the total income of tribals is spent for domestic use and only 4.92% is spent on production inputs. It is concluded the low input is the main reason for low rice production.

Sinha, A.K. et al. (2004) analyzed the existing cropping pattern and the possibilities for enhancing the productive potential of tribal farms in Ranchi district, Jharkhand. Analysis data for the year 2000-01 has collected from a sample of 120 tribal farmers. Linear programming was used to develop optimum plans for each size group of selected farms. The result indicated that 20% of the existing area under rice cultivation (71.25% of the total cropped area) needs to be allocated to vegetables and pulses in order to maximize profit.
Through the reallocation of resources, cropping intensity on the sample farms can be increased up to 184%. Through the optimization of resources use, under the condition of improved technology and unrestricted capital, net farm income can be increased by up to 275%. However, greater potential exists on irrigated farms than on un-irrigated ones. Also, there exists great scope to utilize surplus human labour, which can go up to about 82% more of the existing employees on the sample farms.

Kumar, R. K.N. et al. (2004)\textsuperscript{21} concluded that the farmers are not using modern equipment and machinery, spending more towards fertilizer application that too more of area fertilizer (only for paddy crop) than the recommended levels, employing excess of hired labour for land preparation, sowings, weeding and fertilizer application to the crop etc, which escalated the cost of cultivation of selected crops (especially for paddy dry, maize and ragi). Seed treatment practice is being neglected for all crops results in a huge adverse after on production. Tribal farmers are selling their produce to the local village traders and there is no involvement of the procurement agency in purchasing the farmers produce. It is disappointing to note that the majority of the small farmer is totally unaware of the MSP offered to the selected crops. The open market prices for paddy, maize, \textit{ragi}, and \textit{saw} were higher than MSP, mainly due to lack of glut in the market, excessive domestic retention and lack of arrivals from neighboring producing areas. Storage practices and disposal pattern followed by the farmers, paddy, and \textit{ragi} were stored mainly for meeting family consumption requirements and maize and the same were meant
for payment of labour wages in the kind component. They were unaware of the
crop insurance facility.

Purushothaman, S. (2005)\(^2\) identified alternate land-use and
management strategies to strengthen the livelihood base of poor marginal
farmers in the dry forest peripheries of India. The survival of tribal community
has deliberately affected by land alienation, soil degradation, and wild animals
attacks. Benefit-cost analyses and stakeholder discussions reveal that millet-
based dry farming with the adoption of soil conservation or growing perennials
on field bunds are economically efficient relative to current practices and enjoy
stakeholder acceptance. Some other economically superior alternate land-uses
are not acceptable locally, indicating the care with which tribal development
policies need to be made.

Ramrao, W.Y. et al. (2005)\(^3\) carried out a study to find out a sustainable
mixed farming model that is economically viable and that integrates different
components like crops, livestock, poultry and ducks on a 3.5-acre land holding.
Different viable models, viz. (1) arable, (2) crop + 2 bullocks + 3 cows, (3)
crop + 2 bullocks + 3 buffaloes, (4) crops+ 2 bullocks + 1 cow + 2 buffaloes,
(5) crop + 2 bullocks + 1cow + 2 buffaloes + 15 goats and (6) crop + 2 bullocks
+ 1cow + 2 buffaloes + 15 goats + 20 poultry + 20 ducks, were taken as sample
study package for a land holding of 3.5 acres. The model having crop + 2
bullocks + 1cow + 2 buffalos + 15 goats + 20 poultry + 20 ducks along with
crop cultivation was the best, with a net income of Rs.58456 per year against
Rs. 18300 per year from arable farming (crop farming) alone. The model had a cost-return ratio of 1: 2.25 and employment generation of 571 days.

Patil, J. (2006) had conducted a study on poverty alleviation among tribals through horticulture, that these tribals grow only one crop of rice during raining season. Due to irregular rainfall, one has to go semi-starvation due to the low yield of rice. There is widespread poverty among the tribals of this area. Lack of employment is the main reason for their poverty. It has been seen that if horticultural crops like *sapotas* and vegetables introduce in their lands it generates gainful employment. It is necessary to introduce horticultural crops in accordance with the agro-climatic condition in tribal areas.

Devendra Thakur and D. N. Thakur (2009) stated tribal agriculture is closely associated with animal husbandry because it is primary primitive in nature. The authors tried to associate tribal agriculture with animal husbandry. The study starts with land and the tribes and further deals with tribal agriculture and allied sectors. Shifting cultivation is a significant part of tribal agriculture. It has, therefore, been included in their work. Endeavours have been made to introduce new agricultural technology in the tribal areas. Further, the authors extended the relation of tribal agriculture with animal husbandry.

Sah, D.C. (2009) stated that the new strategy of economic development has laid great emphasis on land augmenting technological changes in agriculture and also identifying the factors that determine the process of agricultural technological changes. Over the years, in Indian
agriculture, synergetic use of irrigation, seeds, and fertilizer has been the strategy of enhancing agricultural yield. Of these, the use of fertilizers has increased tremendously during the last fifty years - from just 0.1 million tonnes to 17 million tonnes. But this growth has been seen in irrigated areas only. The non-irrigated areas, particularly in the tribal regions, have not contributed much to this. The author is diagnostic in nature and focuses on economic forces affecting the cultivators’ adoption and diffusion process of fertilizer use and analysis of dynamics of fertilizer use in the southwestern tribal belt of Madhya Pradesh. Analyzing growth in fertilizer use at the micro level, the book tries to focus on why fertilizers in the remote tribal areas are being used so inefficiently. In the process, the study documents experiences of farmers who were unable to use fertilizers on all crops were infrequent users and used fertilizers continuously at about 40% of its potential. Understanding fertilizer use this way assumes significance for, it recognizes that it is farm condition rather the farmer’s condition that constrains technology transfer in difficult areas like remote tribal areas.

Kaviraj et al. (2010) stated that there were 8.6% tribal people in the total population of the country as per the 2001 census who was known as the oldest ethnic group because of their distinct socio-cultural patterns. In India, prior to the Constitution, the tribes were variously termed as Aboriginals, Adivasis, Forest Tribes, Hill Tribes, Primitive Tribes, etc. The tribes In India live in the different climatic zones and their livelihood systems, traditions and
customs vary from one tribe to another, even though they live in close harmony with nature and ecology. In fact, the condition of tribal in post-independent India has worsened. They are predominantly rural living, mostly in forests and mountains. The distinctness of the tribal situation necessitated a separate policy and administration frame to administer development in their areas. Though the welfare and development of tribal have been given a very high priority from the beginning of the first five-year plan, still it remains the most backward ethnic group in our country.

Cynthia Lai et al. (2012) observed that the tribal villages within the district of Kendujhar, Odisha State, India struggle with farming on marginal lands with an increasingly detrimental effect on agricultural productivity. Research has been focused on the implementation of conserving agriculture (CA) practices, specifically: minimum tillage and intercropping in such villages. Results provide a comparative economic and gender labor analyses of selected CA practices, future implications, and insight for agribusiness, farmers, and policymakers.

Subah Singh Yadav and Satyaveer Singh (2012) observed that the dynamics of Agricultural Marketing, being multi-dimensional, look into primarily the developmental policies as the focal theme of India’s planning process: the process of driving the various segments of social structures to the path of progress. Based largely on the parameters of agricultural marketing and social development, there has been adequate recognition of the fact that certain variables of economic deprivation, especially in tribal belts, have not changed
meaningfully in all these years despite our efforts, zeal, initiatives and resource layout.

Sivaraj, N. et al. (2012) examined an indigenous cost-effective innovation development and used for bird scare by the Gond tribal community living in Adilabad district of Telangana State and recorded innovative traditional practices related to agriculture prevailing among the tribal communities in the Adilabad district, Telangana State.

Panda, R.K., et.al., (2011) found that the Judicious management of the terraced lowlands and adjacent medium-sloping lands of the Eastern Ghat Region in India was addressed through a case study, for developing sustainable agriculture package as a resource for the poor tribal farmers. Quantification of available water resources during the period 2004–2007 revealed that average base flow and surface flow (as a percentage of total rainfall) at a level of 37.2 and 34.7% respectively. Economic resource conservation options for farmers, such as the management of paddy field riser bunds through the construction of semi-mechanical runoff disposal devices supplemented with a Eulaliopsisbinata vegetative barrier, helped in reducing runoff and soil loss by 10.6% and 1.45 5 per hectare respectively. When the proposed techniques are compared with the farmer's practices, significant differences are observed in redeemed yield.

Ashalatha, K.V. et.al., (2012) observed that the tribal population in the State of Andhra Pradesh, and in the country as a whole was the most deprived and vulnerable community that faces severe economic exclusion. Although
certain constitutional safeguards were provided, no significant economic, social and political mobility had taken place across this community. “A Case Study of Andhra Pradesh”, delineated the situation of the Scheduled Tribes regarding various policies of the state during the successive plan periods and its impact on their socio-economic mobility. Politically, this community remains a state. It was also discussed the implications of the new act Forest Right Act, 2006, on the livelihood security of the tribal communities and whether this act will finally lead to the inclusion of these people into the mainstream.

They mentioned that the impact of climate change studies in many aspects in a different location in the country and it is concluded that there is a high impact on agriculture compare to any other sector in the country. If it observed that there is a huge impact on the yield of rainfed crops due to high-level drought. The farmer’s perception of the impact of a climate change groom rainfed condition such as yield reduction and reduction in net revenue. The farmers already act to changes in the climatic changes both by adopting the technological coping mechanism on the positive side and negatively through shifting to another profession. It is concluded that the small-medium grain farmers were highly vulnerable to climate change and to a larger extent, the small and medium grain farmers adapted copy mechanism for climate change compare to large farmers. They suggest that as the impact of climate changes intensifying day by day it should be addressed through policy perspective at the earliest to award short-term effects such as yield and income lost and long-term effect such as quitting agriculture profession by the rainfed farmers.
Climate is one of the main determinants of agriculture production. Throughout the world, there is significant concern about the effect of climate change and its variability on agriculture production. Researchers and administrators are concerned with the potential damages and benefits that may arise in the future from climate change impact on agriculture since this will affect domestic and international policies trading pattern resource used and food security. Climate change is any change in climate over time that is attributed directly or indirectly human activity that alters the composition of the global atmosphere in addition to natural climate variability observed over comparable time periods (IPCC, 2007) since climatic factors served as direct inputs to agriculture any change in climatic factor is bound to have significant impact on crop yield and production. Studies have shown a significant effect of a change in the climatic factor on the average crop yield.

Nikulsinh, M. Chauhan (2011) investigated the role of tribal farm women in agriculture in Navsari district. Farm women's participation in pre-sowing and sowing operations which revealed that the highest respondents were engaged with sowing followed by stubble collection, clod crushing, maturing and seedbed preparation. In the case of intercultural operations, the participation of the farm women was highest in weeding followed by gap filling, application of fertilizer, bird scaring, irrigation, bonding and hoeing with hand. In harvesting and post-harvesting operations, the highest participation was observed in nipping/picking and threshing followed by harvesting, winnowing, storage, making a threshing yard, bagging, packing and
marketing of agriculture products. In animal husbandry practices the frequency of participation of farm women was highest in cutting and bringing fodder followed by compost making, watering, feeding, milking to animals, cleaning of cattle shed and so on, Farmwomen took a self-decision for decoration of house (79.17%) and selection and preparation of food (70.83%) in case of home management. Farm management was dominated by husband decision and the majority of the farm management decision was taken by their husbands, animal husbandry management was completely dominated by women's self-decision. The relationship between independent variables like age, education, herd size, land holding, family size and number of children of the respondents and their participation in crop husbandry was observed positively significant. Whereas the negative relationship was observed in case of occupation, type of family and age at marriage.

Sanjay Kanti Das. (2012)\textsuperscript{34} identified various constraints in the empowerment of tribal women. They were social constraints, political constraints, economic constraints, technological constraints, and psychological constraints. The main reason for the poor empowerment of tribal women was the lack of knowledge about new technology and information. Further, they revealed that cognitive and infrastructural constraints were major constraints felt by the respondents.

Mahendra Dev, S. (2012)\textsuperscript{35} examined the roles and challenges of smallholding agriculture in India. It involves in agricultural growth cultivation patterns of smallholding agriculture and also shed light on the production
performance, linking with markets including value chain, thereof smallholders in enhancing food security, employment generation, differential policies and institutional support for smallholders and, challenges and future options for smallholding agriculture including information needs.

Junas Sabar (2017)\textsuperscript{36} in her article emphasizes the present situation of women in agriculture and suggests possible roadmaps to mainstream women in the development process. Woman’s contribution in any economy is inevitable. Their roles vary from region to region, work to work, state to state, and country to country. They solve the problem of food crisis through their traditional practice or traditional wisdom which makes their future sustainable agricultural practices. According to Swami Vivekananda “\textit{There is no chance for the welfare of the world unless the condition of women is improved}”. The poor tribal are practices own ideas and own traditionally agricultural wisdom though the people had changed their cultivation pattern from traveler’s cultivation to settled cultivation, some of the practices have remained unchanged among many groups of farmers. The poor tribal or valleys tribal are practiced own ideas through their cultivators’ land like a Jhoom cultivation, traveler cultivation, and mixed cultivation. The author identified that women agricultural labourers are practiced on their own cultivators’ land i.e. highest in sowing, weeding, picking, threshing, and transplanting.

\textbf{Gaps Identified in the Earlier Studies}
• No Serious research effort is made to study the relationship between
the size of land holdings and irrigation facilities and labour use.

• No empirical verification is made to explore the cost and returns in
agriculture of tribal families.

• The studies showing the impact of irrigations and investment on crop
production are scant.

In order to fill the gaps, the present study is initiated with the specific
objectives planned in the first chapter.

Conclusion

The review of literature, on the aspects of agricultural production
patterns, the majority of the studies concentrated on land use and changing
pattern of agriculture land use and cropping pattern, reveals that there is no
specific empirical study has been done based on primary data related to Tribal
Areas of ITDA, Eturunagaram, Warangal District of Telangana State.

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