

Local Knowledge and Agricultural Sustainability: A Case Study of Pradhan Tribe in Adilabad District

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Abstract: *For centuries, farmers have planned agricultural production and conserved natural resources by adopting indigenous knowledge. The development of indigenous knowledge systems, including management of natural environment, has been a matter of survival to the people who generated these systems. With the rapid environmental, social, economic and political changes occurring in many areas inhabited by indigenous people, comes the danger that the indigenous knowledge they possess will be overwhelmed and lost forever. In this backdrop, the study aims at understanding the importance of such farmers' knowledge and role in sustainable agriculture among the Pradhan Tribe in Adilabad District. The paper presents some empirical data from the Pradhan Tribe of Andhra Pradesh which highlights the community's indigenous agricultural knowledge and the changes over time. These custodians of indigenous knowledge and world view practices play a very important role in agricultural development. They have evolved and adopted several mechanisms for land, soil and crop management including natural pest control. The study was conducted in the year 2008 at different times. The Pradhans are still subsistence farmers, who primarily depend on agriculture. Subsistence economy and food security of the Pradhans depends mainly on cultivation in the fields and kitchen gardens. They cultivate pulses such as turichi dhar (red gram) and mungachi dhar; vegetables such as beans, tomato and pumpkin; and millets such as jowar, in the fields for consumption. The study concludes by recommending that indigenous knowledge and practices are useful for sustenance. Before such precious knowledge gets lost, it would be wise to protect and promote indigenous knowledge and wisdom widely for self sustenance in order to reduce poverty and hunger among indigenous people.*

Keywords: pradhan tribe, local agricultural knowledge, sustainable development, adilabad

1. Introduction

About 8 percent of the Indian population belongs to a category listed as "Scheduled Tribes" enumerated in the Schedule to Article 342 of the Constitution of India. Tribal people have been seen to be strongly associated with the forests, hills and remote areas, practicing a unique lifestyle, having a unique set of cultural and religious beliefs. Central Indian tribal homelands, comprising roughly 100 districts and running across the belly of the country, are home to roughly 55 million tribal people - more than 70 percent of India's tribal population. Notwithstanding the rich vegetation and good rainfall, this belt is home to one of the largest concentrations of rural poverty in the world.

The Eastern Ghats is one of the major natural resource bases of India and is the homeland of about more than 60 tribal communities with a population of over 11.5 million. The north-eastern Ghats, covering Andhra Pradesh, western and southern Orissa and Chhattisgarh, is the homeland of about 6.5 millions tribes, representing 45 ethnic communities from 3 racial and 4 linguistic groups. Most of these tribal groups (80%) live in inaccessible mountain valleys, hill tops and in plain forest areas with diverse lifestyles and eco-cultural practices, based on their belief in nature, world view and indigenous knowledge. For millennia, tribal communities have lived in forests and survived on hunting and gathering. The tribal economy is subsistence economy, which is mostly agro-forest-based. While agriculture and animal husbandry are the major economic basis for land-owning families, animal husbandry and collection of minor forest products, herbs and non-timber products are the major income sources for marginalized and landless families. However, with growing population and resource pressure, the region is now witnessing a rise in livelihoods based on settled farming.

Third world agriculture is characterized by fragile and difficult environments (Chambers *et al.*, 1989). According to the Brundtland Commission's categorization of agricultural systems (WCED, 1987), three systems are recognized: First, *Industrial Agriculture*, characterized by large farm units, high capitalization, high input-independent and often times, subsidies-supported; second, *Green Revolution Agriculture*, characterized by a mixture of small and large farms which exploit high-yielding varieties with complementary inputs; and third, *Low Resource or Resource-Poor Agriculture*, characterized by small farm units, fragile soils, rain dependency and minimum inputs. Indian tribal agriculture belongs to the third category.

Tribals in developing societies have evolved location-specific local knowledge gained through close interaction within natural and physical environments and cultural adaptation, which are now recognized to be more eco-friendly and sustainable. Up to the 1980s, these tribal farmers were considered laggards. These days however, the increasing attention and scientific research have made it possible to recognize such farmers as innovators based on their unique practices in the field of sustainable agriculture. To examine the importance of such farmers' knowledge and role in sustainable agriculture, the study was conducted in a purposively selected village of Pradhan Tribes in the Adilabad District, Andhra Pradesh, India.

Traditional Knowledge and Sustainable Development Concept

The adjectival word "indigenous" means "belonging to a place, native" (Oxford English Dictionary). Thus Indigenous Knowledge (IK) can be defined as a corpus of knowledge belonging to a particular geographical area. Native knowledge, traditional knowledge, cultural knowledge and civilization knowledge are synonymous terms. It is unique to

a given culture, society or a country. “It is seen to contrast with knowledge generated within the international system of universities, research institutions and private firms” (Indigenous Knowledge pages, 2005). According to Grenier (1998), IK is “unique, traditional and local knowledge existing within and developed around specific conditions of women and men indigenous to particular geographic area”. It is stated that “indigenous knowledge system is a cumulative body of knowledge and belief, handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment” (Kumaran, Dissanayake and Norbert, 2007, P. 2).

One of the salient features of IK is that it is a knowledge developed by tribal or rural communities living in a particular geographic location. These early tribal groups are generally referred to as aboriginal people. However, the term IK does not refer only to the knowledge of aboriginal people. Nakata (2002) states the notion that IK refers to indigenous people’s knowledge does not reflect the current usage of the term. According to him, “indigenous people’s knowledge could be considered a subset of what is more broadly referred to as ‘indigenous knowledge’” As any other knowledge system, IK is also not static and limited only to that particular area where it is originated. It can be observed that IK produced in one particular area or country has transmitted to other areas or countries through travellers and traders. Another important characteristic is that IK is passed down from generation to generation mostly by the word of mouth and to a lesser extent through writing. It is basically an oral tradition.

The backbone of a tribal subsistence-based economy is agriculture. On the basis of topography, agro-ecology and their racial and cultural backgrounds, tribals have adopted diverse (sometimes area and community specific) agricultural practices with their time tested indigenous knowledge and technologies, and have integrated several related world view (spiritual) practices. The community living in the study village possesses knowledge about agriculture, pest management, soil fertilization, multiple cropping pattern, food preparation and so forth. They recognize both natural and super natural forces and agencies shaping human destiny and seek to utilize them for their benefits according to their needs. The paper presents some empirical data from the Pradhan Tribe of Andhra Pradesh which highlights the community’s local agricultural knowledge. These are generated in the immediate context of the livelihood of the people; it is a dynamic entity that undergoes constant modification as the needs of the communities change.

Traditional Agricultural Knowledge

Interplay between biological variation and selection make crop and natural evolution similar to one another, but the two differ by virtue of the role of “conscious” selection by humans in crop evolution. Conscious selection implies knowledge systems about the crop and its environment, which are subsets of the more general traditional knowledge and indigenous knowledge (e.g., Ellen et al. 2000). While “traditional knowledge” and “indigenous knowledge” are not synonymous, they share many attributes, such as being unwritten, customary, pragmatic, experiential, and holistic.

The terms are frequently used in the same context to distinguish the knowledge of traditional and indigenous communities from other types of knowledge, such as the knowledge of scientific and industrial communities (Ellen et al. 2000). Indeed, the primary distinction between traditional and indigenous knowledge pertains to the holders rather than the knowledge *per se*. Traditional knowledge is a broader category that includes indigenous knowledge as a type of traditional knowledge held by indigenous communities (Mugabe 1999). While traditional knowledge has emerged in international discourse on new legal mechanisms (Wendland 2002), indigenous knowledge is a term long in use by anthropologists and other investigators of non-industrialized societies (Ellen et al. 2000), and because of this history, indigenous knowledge enjoys a more elaborated discussion and definition than the more inclusive term. While Kongolo (2001, 357) observes that “(t) traditional knowledge is rarely defined within the national, regional, and international frameworks,” indigenous knowledge has been extensively analyzed by ethnobotanists and others (e.g., Berlin 1992), so it behooves us to utilize the analysis of indigenous knowledge to grapple with traditional knowledge.

Traditional knowledge is associated with folk nomenclatures and taxonomies of plants (Berlin 1992) and the environment (Ellen et al. 2000) and in practical domains such as disease etiology (Berlin and Berlin 1996), and agricultural practices (Brush 1992). Distinguishing between indigenous knowledge and other knowledge systems has proven to be problematic (Agrawal 1995), but anthropologists and others have argued that a number of criteria can be used to differentiate the two forms. Indigenous knowledge’s characteristics include (1) localness, (2) oral transmission, (3) origin in practical experience, (4) emphasis on the empirical rather than theoretical, (5) repetitiveness, (6) changeability, (7) being widely shared, (8) fragmentary distribution, (9) orientation to practical performance, and (10) holism (Ellen and Harris 2000).

2. Study Area and People

Adilabad District is predominantly inhabited by eight different tribal groups with a total population of 4,16,511 spread over 650 villages, with Utnoor as the headquarters for Integrated Tribal Development Agency (ITDA). Table 1 shows the major tribal communities dwelling in the district.

Table 1: Tribal population in Adilabad District

Name of the Tribal Community	Population
Gonds	2,08,200
Lambadas	79,620
Kolams	27,157
Koyas	24,140
Pradhans	17,850
Mannes	10,934
Aandhs	6,532
Thotis	1,420

The total number of workers is 9,34,3365, constituting 44.93% of the total population as against the state average of 45.27%. Out of the total number of main workers, 34.09% are cultivators and 34.88% are agricultural labourers. The literate persons in Adilabad District are 5,78,226, forming

27.8% of the total population as against the state average of 37.8%.

The Pradhans

According to the Ethnologue (Gordon, 2005), the Pardhan People live in four states in India: Andhra Pradesh (Adilabad District), Madhya Pradesh (Seoni, Mandla, Chhindawara, Hoshangabad, Betul, Balaghat, and Jabalpur districts), Maharashtra (Bhandara, Garhchiroli, Nagpur, Wardha, and Yavatmal districts), and Chhattisgarh (Raipur and Bilaspur districts). The majority of the Pradhans are found today in the State of Maharashtra. However, the District of Adilabad in Andhra Pradesh is home to a substantial group of Pradhans. The Ethnologue (Gordon, 2005) classifies Pardhans as Dravidian, South-Central, Gondi-Kui, Gondi language. Other speech varieties listed in the Gondi group are northern Gondi, southern Gondi, Khirwar, Maria, Dandami Maria, Eastern Muria, Far Western Muria, Western Muria, and Nagarchal.

The Pradhans inhabit the areas of Adilabad District in Andhra Pradesh. The word Pardhan or Pradhan in Sanskrit means “chief minister” or “his agent”. Marathi is their native language. Pradhans or Pardhans are traditional bards to Gonds and recite mythologies, folk tales and songs of their Gods and Goddesses at various festivals, ceremonies and fairs for which they are paid in cash or kind. This patron-client relationship comes from generations. The Gonds call them “Patadi” meaning singer or genealogist. Their population according to the 1991 Census is 20,387. The Pradhan community is divided into four *Phratries* and they possess similar clans of Gonds and Kolams community. The four *Phratries* in the Pradhan Tribe are *Sath Deve* (seven deity group), *Saha Deve* (six deity group), *Pach Deve* (five deity group), and *Char Deve* (four deity group). Each *Phratry* is further divided into exogamous clans. Monogamy is highly preferred among the community though polygamy is in vogue. They follow the following six types of procedures for acquiring mates: marriage by negotiations (*Khaja Khobra*); marriage by capture (*Darun Taktma*); marriage by service (*Gharjavai*); marriage by intrusion (*Seewar Java*); marriage by love and elopement (*Darun parala* or *Darun parali*); and marriage by exchange (*Seelad choding*). Widow re-marriage is called “*Pat*” and the widow is to marry younger brother of her deceased husband. If there is no younger brother, she has to marry a man from the same clan of her deceased husband. Divorce is common among the Pardhans and is permitted by the village council, “*Panch*”. Inheritance of property is in male line only. If a man dies without male children, his property goes to the nearest kinsman in his male line, i.e., brothers or brother’s son.

Cross-cousin marriages are customarily celebrated. The economic conditions of Pardhans were linked with those of their Gond patrons in the past. Each Gond community retained one Pardhan family as a traditional bard. The bard is regarded as an emissary of the local deity, and brings blessings to the family he visits. However, the economic ties with the Gond community were gradually disrupted, and now they have become settled cultivators. Their staple food is jowar.

3. Methodology

The study was conducted in Jamni Village of Jainad Mandal. Jamni is located about 22 kilometers from Adilabad Headquarters on the way to Saathnala Project. It has an all weather motor able road. Adilabad is one such district where the maximum numbers of Pradhans live. The village selected is a representative village where more than 50% of the population is Pradhans. The method applied for the study was ethnographic approach, an important research tool. A schedule was prepared for collection of data on general information at the household level from the Pradhans inhabiting the village.

The schedule consisted of questions ranging from the family details to cultural practices of the people; the village political system, religious system, economic system, social system and interrelation with the outside world. After the general data, specific data regarding agricultural knowledge was gathered from interviews, focus group discussions and informal discussions with key informants in the village.

The total population of the village is 1,706, out of which 856 are males and 850 are females. In the village, 1,211 people belong to Scheduled Tribes (615 men and 595 women); and 14 people belong to Scheduled Castes (7 men and 7 women). The life of the Pradhans is sustained almost entirely by the tillage of the soil and thus agricultural activities are deeply embedded in their culture. Cooperation of supernatural forces is considered so essential for the success of agriculture that their energy apart from the one put into cultivation of crops is directed towards appeasing Gods through a complex of rituals. They believe that the fertility of seed grain is reinforced by the blessing of Gods and sprinkled blood of sacrificial animals.

Land and Agriculture Management Practices

Land is the basis for agriculture, the main economic activity of the community in the study village. They possess elaborate knowledge on the type of land needed for different types of crops to be grown. The farmers of these village classify agriculture land into three types namely *gairan/veerani/patar*, a light and rocky soil found on the flat hilltops; *bharak/gaargoti/chelkar*, a light soil reddish in colour but finer, found in the plains and in hilly country on the gentle slopes; and *Ryagard/Kanar*, a heavy black soil, popularly known as *Regar*. The main crops grown during the rainy season are jowar (*jawari*), maize (*makai*), red gram (*turi*), horse gram and cotton (*kapus*). Rice (*dhan*) is grown under assured irrigation facilities during the rainy season.

Cropping Pattern in the Village

The major crops grown in the village are *kapus* (cotton or *Gossypium spp.*), *jawari* (jowar or *Sorghum bicolor*), Soya bean (*Glycine max.L.*), *turi* (red gram or *Cajanus cajan*), *makai* (maize or *Zea mays*), *mung* (green gram or *Phaseolus vulgaris*), *udiad* (black gram or *Phaseolus mungo*) and *tir* (til or *Seasamum indicum*). Jowar is the staple food of the Pradhans and it is grown exclusively for household consumption. After meeting the household requirement, the remaining crop produce is sold in the market. On an average, their produce of jowar ranges from 6-10 quintals per year. The next important crop grown widely by every farmer is red gram. It is also grown for household

consumption and for sale in the market. Red gram is sown along with jowar as a mixed crop. Another crop that is considered the lifeline of the tribal farming is cotton. Cotton has been grown for the past three to four generations in the area. The rest of the village's cultivable land is used for growing *dhan* (rice or *Oryza sativa*), *Barbate*, *Harbara* (engal gram), *mote/kudatha*, *gavu* (wheat), *dane* (coriander), *rai/mouri* (mustard) and vegetables. Some part of the land is left fallow for cattle grazing. Almost every tribal farmer in the village cultivates cotton during *kharif* season. A large extent of cotton is cultivated under rainfed conditions. The next important crop grown is red gram, while jowar is mainly cultivated for subsistence by the farmers. Over the past five to ten years, Soya bean is being grown widely in the village.

About fifty years back the extent of area under different crops used to be as follows: Jowar mixed with red gram used to be grown in 40% of the cultivable area. Cotton used to be grown as a sole crop in about 25% of the area. Rice, green gram and black gram used to be grown in the remaining land. It is important to note that only 2% of the land was used for rice cultivation. Some area used to be left fallow for cattle grazing. It is evident that jowar was a preferred crop than cotton. Food security was the main consideration. Cotton was grown for the little cash it used to earn. Yields of all the crops were low and hence the acreage of jowar also might be higher. As the productivity increased with the usage of better varieties the cropping area under jowar must have come down. This was replaced by cotton.

However, over the years, there has been a considerable change in the cropping pattern. Now, the present cropping pattern centres around crops that fetch money in the market. Cotton with red gram as intercrop is grown in 50% of the total cultivable area. This is a substantial increase (about 100%) in the extent of area cultivated. Soya bean with green gram is grown in 40% of the total area and rest of the crops like jowar and til are grown in only 10% of the total area. It may be surmised from this cropping pattern that cotton has been occupying a prime place in the order of priority of crops among the Pradhans. It is also important to note that Soya bean has been recognised as another important cash crop by the Pradhans and its area of cropping has been on the rise. In fact, some farmers prefer Soya bean to cotton as the former is considered is less risky. At the same time, the area under jowar cultivation has been on the decline.

Jowar is one such crop that has been cultivated since many generations. It is the main staple crop of the community. Now, though cultivated on a less area, jowar still occupies an important place in the choice of crops by the community. In other words, it is considered auspicious as per the tradition to start the sowings in the new season with jowar crop. It is grown along with red gram, green gram or black gram. After every six to seven rows of jowar one row of any gram crop is sown. Presently, the jowar varieties sown are JK-22, Mahyco-9.

When compared to the earlier years, the yield of jowar has been on the decline due to introduction of cash crops such as bt cotton and Soya bean. The small and marginal farmers are still growing jowar without using fertilizers and pesticides. Jowar is sold @Rs.400 per quintal. In this area, cotton is

considered as “white gold” as it fetches much-needed cash. Earlier, it was grown as a single crop. Seeds were purchased from the traders in exchange for jowar from the nearby town, i.e., Adilabad. Fine mud and ash were applied to it before sowing, and it was sown behind the plough. However, the yield was very low, in the range of 1.5 to 2 quintals per acre.

Cultivation of cotton crop was started during the 1960s. At the same time, hybrids such as M-4 of Mahyco company were released and the farmers started using them. It was reported that at the same time, spraying of pesticides and application of fertilizers also started during that time. In 1995, Mahyco-1 variety of cotton was used for sowing. In 2004, they reported good yields in cotton to the extent of 5 quintals per acre. It was also reported that the cost of cultivation also started to rise with the increasing number of sprayings and pest attack. The major pests reported by them are boll worm. In 2005, it was reported that cotton yielded only 1 quintal per acre due to incessant rains. Now they spray pesticides on cotton crop at least 3 times. The pesticides used are monocrotophos and quinalphos. With increasing cost of cultivation and declining yields, the farmers are incurring losses and are landing in debt. Cotton is generally sold at Rs.2,000 per quintal.

Soya bean, which emerged as an important cash crop to the tribals, is being grown since 1993. It was introduced by the government agencies and the farmers were offered 30 kg of seed free of cost along with fertilizers such as DAP and Urea. In 2004, it fetched good yield to the extent of 10 quintals per acre. It was sold at Rs.1,000 per quintal. It was observed that Soya bean is preferred by the farmers because of its short duration, so that they can raise two crops in a year, and the pest infestation is very less compared to the cotton crop. In fact farmers, expressed willingness to replace cotton with Soya bean in future. Presently Soya bean is grown as a mixed crop along with red gram in 40% of the total cultivable area.

Red gram, like jowar, is another important crop for the Pradhans. It is cultivated for household and market purposes. Though red gram has been grown without using fertilizers and pesticides in the past, it has become unavoidable since 1995 due to the damage caused by the Lepidopteran Pests. Farmers have been spraying rogor, monocrotophos, endosulphan, etc., to control these pests. The sprayings are limited to one, or at the most, two. However, it is not as intensive as on cotton. Moreover, farmers spray pesticides on cotton after using it on the cotton crop. Leftovers are used for spraying.

Agricultural Implements

The Pradhans still use simple tools and implements that are easily available for various farm operations. These are either obtained from the market or made with help of local specialists such as carpenters and blacksmiths. Almost every family has its own collection of agricultural implements and does not depend very much upon others. The number of each type of implements however, varies from family to family according to the landholding size. The larger the landholding, more is the number of implements. The number of ploughs to be yoked to a pair of bullocks possessed by a family is the indication of the size of landholding of the

family. At present, it is also observed that some families use power levellers or hire for the preparatory tillage of their fields. Table 2 shows local agricultural implements used by farmers.

Table 2: Local Agricultural Implements used by Farmers

Local Names	English Names	Operation
<i>Kuradi</i>	Axe	Cutting trees
<i>Pawda</i>	Spade	Collecting soil
<i>Naagar</i>	Wooden plough	Tillage/ploughing
<i>Vakhar/Dawara/Dundi</i>	Its like plough (harrow)	Cleaning weeds after ploughing
<i>Sabbal/Kudal</i>	Crowbar	To dig up the earth
<i>Toapla</i>	Bamboo basket	Caring goods or grains
<i>Era</i>	Sickle	Reaping and sowing cotton
<i>Kurpi</i>	Small sickle	Weeding
<i>Sarata</i>	Made of hollow bamboo pipe	Sowing cotton
<i>Soup</i>	Bamboo mat	Threshing
<i>Bailgadi</i>	Bullock cart	Transportation
<i>Datya</i>		Seeding
<i>Tipan</i>	Sowing harrow	Seeding
<i>Tobni</i>	Digging stick	Seeding

The commonly-used implements are plough (*naagar*) used for ploughing the field, crowbar (*sabbal*) used for digging big areas of the field. Sickle (*era*) and hand-axe (*kuradi*), are utilized for cutting purpose. Spade (*pawda*) is used for gathering the waste. Large bamboo flat fan (*soup*) is used as winnowing fan. A large wooden forked flail is used for threshing. Bullock cart is used for carrying the agricultural produce. For storing the grains they use big bamboo containers (*dola*). All these are common implements which they manufacture themselves with the help of carpenters and blacksmiths. They use different kinds of timbers for manufacturing different implements. The year of the Pradhan calendar includes the following months.

Pradhans’ Months and Corresponding Months of the English Calendar

<i>Duradi/Durari</i>	(February-March)
<i>Chaita/Chait</i>	(March-April)
<i>Bhawe</i>	(April-May)
<i>Bur Bhawe</i>	(May-June)
<i>Akadi/Akari</i>	(June-July)
<i>Pora/Pola</i>	(July-August)
<i>Akurpok</i>	(August-September)
<i>Divali</i>	(September-October)
<i>Kart</i>	(October-November)
<i>Sati</i>	(November-December)
<i>Pus</i>	(December-January)
<i>Mahon</i>	(January-February)

The preparation of soil begins in February. On the piece of land where jowar and cotton are grown as main crops, harrowing is done first and the remnants of the old crops are removed from the field. Then small bushes and grass in the field are dug out with a *vakar*. Harrowing is done three times. Cotton sowing is done using *dusa/tisa* with the help of *sarata* (sowing implement) in the second or third week of June after receiving sufficient rains. Two pairs of bullocks are yoked to pull the *dusa* and three pairs are used in the case *tisa*. A man or woman sows the cotton seeds through *sarata*. Jowar is sown either in the last week of June or in the first week of July after cotton sowing has been

completed. A *tipan* is used for sowing jowar. *Tipan* is pulled by two pairs of bullocks. Weeding of cotton and jowar is generally done four to five times. Cotton harvest starts in October. Jowar is harvested from November. Cotton is plucked by the women in a week or in a fortnight. Thus, six to eight pluckings of cotton are done in the season. When jowar is ready for harvest, the plants are cut and kept in the fields for a week or so, for getting completely dry. Then the corns of jowar are taken to the threshing ground. Threshing is done with the help of bullocks or in some cases, the grains of jowar are taken out by the labourers by beating the corns with sticks. After winnowing, the produce is taken home.

Rituals Associated with Agricultural Activities in the Village Community

The main agricultural season begins in *Duradi/Durari* (February-March). The stubbles of the previous crops and dry grass are removed with a plough-like implement called *vakur*. Then by using the ordinary plough (*nagar*), the soil is ploughed deeply. Generally, men take up this work while women collect stubbles, rubbish, etc. During the months of *Chaita/Chait* (March-April) and *Bhawe* (April-May) ploughing continues. With the first showers in the month of *Bur Bhawe* (May-June), the feverish activity of sowing starts with grand religious rites. Ritual and sowing are two inseparable acts in the sense that the Pradhans believe that invoking divine power is a must to ensure good yields. Rites associated with sowing are an elaborate affair, which are described briefly here.

On the occasion of first sowing two rites are performed, namely, a sacrifice for the Mother Goddess and a sacrifice for the guardian deity of the village. The Mother Goddess whose sanctuary lies away from the village is offered a grey chicken, millets and seeds that are to be sown in the coming season. The priest of the village, along with a few villagers, carries them to the Goddess. Seeds of all kinds that are to be sown in the season are carried and offered to the deity. The prayer before the deity focuses on good yield without any harm to the farmers from the wild animals and snakes. After the prayer the fowl is sacrificed and cooked alongside millets. The cooked millets and fowl’s liver are offered to the altar. The seed grains offered to the deity are collected back and distributed among all the villagers in the evening. This entire ritual is known as *Beej/Wija*, which means seed.

On the same night, another ritual is performed, which is known as *Iddri/Widri*, at the sacred posts of the village guardian deity. A heap of millets is offered to the Mother Earth in an act that is interpreted as cleansing the Mother Earth that became unclean with the fire and ashes of the last crop. The seed grain is in turn distributed among the villagers. In the evening, after this ceremony at the village guardian, six villagers are selected to perform the crucial rights of the night. These six men collect the millet offered by the headman and grind using the stone mill. The millets are cooked at the headman’s house and taken to the village deity along with an egg-laying hen. There the hen is sacrificed and cooked. After offering the liver and meat to the deity along with the millet, it is brought back and eaten by them under a *mahua* tree. The same night, the selected six men collect the seed grains of millet and jowar offered during the *Iddri/Widri* ritual at the sacred post and make as many parcels as the number of households, using a small

amount of the seed grain and place the parcel in the roof of each household with great secrecy. The parcel of seeds are collected by the each household the next morning and mixed with the seed that is to be sown in the field. This is treated sacredly as they believe that it brings good yields.

Mohtir/Mohtur, the actual first sowing rite, is carried out the next morning. It is done on a community basis. All the men along with their wives, children and other household members go to the nearest fields soon after sunrise. There the cooked millets along with the liver of the sacrificed fowl are offered at the altar made with a heap of millets. The entire family prays together seeking God's help in good fortune. They all eat the cooked millets and liver and start sowing. The head of the family takes a handful of seeds and prays facing the east. Then he throws the seed on the cleared ground. All the members follow this act. Then the men and women cover the seed with tree branches in order to keep off birds. The basket of seed is then packed and taken home.

Immediately after having a ceremonial breakfast, all the men and women move into the fields for actual sowing. After offering sweetened cooked *dal* to the God and departed elders, they take up the task of ploughing. Their prayers are centred upon blessings for good crop and good luck. While the husband ploughs the field the wife follows the plough with seeds which are sown behind the plough. The act of ploughing and sowing is to be done by the husband and wife and not by brother and sister. The act of ploughing is seen as a sexual act and the cooperation of brother and sister amounts to incest. The first sowings are always of jowar crop. The next crop to be sown is cotton.

By the middle of *Sati* (November-December), millets are ready for harvest. The millet is reaped by both men and women. The rite of reaping precedes the actual reaping operation. The rite involves cutting of five ears of jowar and tying them to the threshing pole. A chicken may be sacrificed or cooked food is offered to the Mother Earth and the clan deities for their blessings and help. After all the ears of jowar are reaped, the farmer sacrifices a fowl and drags the bleeding carcass of the fowl around the threshing floor. Then the liver is roasted and offered to the god and the meat is cooked. The threshing of jowar is accompanied with appropriate rite of praying the gods, particularly, Lakshmi for grain, cattle, earth. Only in case of jowar the rite of threshing floor is performed. In this, the heap of threshed jowar is decorated with implements and offered with sugar and *dal*.

By the end of *Sati* (November-December), even cotton crop gets ready for picking. Cotton is picked and taken to the village and packed in bags or baskets ready for marketing. Traditionally, the farmers maintained their crop varieties by keeping household seed stocks and by obtaining seed through inter-generational and intra- and intercommunity exchanges. But now, some of these customary networks have either been disrupted or no longer exist in the community.

Besides crop cultivation the Pradhans maintain home (*saand*) or kitchen gardens (*vangoda*). The Pradhans manage a simple and small farm in homesteads, where various vegetables, such as *tamate* (tomato) *mirchi* (chilli), *vaange*

(brinjal), *valache senga* (bean), *bendi* (ladies finger), *karle* (bitter guard), *makai* (maize) and *kakdi* (cucumber) are grown. Waste drainage water from the kitchen is used to start seedlings. Ashes and sweepings from the household and domestic animals' manure are normally spread in the garden. The waste water, ash and animal bedding make the soil around the homestead fertile. It is not surprising that a kitchen garden, though small in total area, is an important part of the overall production system and has successfully been used as an entry point into the enhanced productivity of the farming system. Vegetables grown by the Pradhans in their kitchen garden are *mirchi* (chilli or *Capsicum anum/solanum sp.*), *tamate* (tomato or *Lycopersicon esculentum*), *vange* (brinjal), *dhodke* (ridge gourd), *bendi* (lady finger /*hibiscus esculentus*), *valache senga* (beans or *Dolicus lab lab*), *kaddu* (bottle gourd), *toandrya* (*Coccinia sp.*), *karle* (bitter gourd), *kakdi* (cucumbers), *poapai* (*Carica papaya/papaya*), *nimbu* (lemon), *kohare*, *varka*, *valkat*, *gavaracha shenga*, *katwal*, *barbate* and *dane*.

In the study village, most people have vegetable kitchen gardens, where they grow vegetables and fruits, where the size of the garden is very small in size - less than half an acre. These vegetables are used for household consumption and also some of them sold in the market. Generally they grow in the rainy and winter season. The vegetables, which are grown in the garden, are usually sufficient for household consumption. The Pradhans collect dung (*kaath*) and carry it to their farms. In the first place, the farmers pile up the dung, household garbage and ashes together. When the dung rots, they are the best fertilizers. According to informants, wet dung is more effective than the dry dung because of the fact that the rain makes the dung to drip on the land. As a matter of fact, many farmers smear wet dung on their land so that the land will be able to grow good grass and crops. For this matter, the farmers build cattle pens on different parts of their land. According to the villagers, using manure is good for yielding crops.

They also spend some amount of money on seeds and fertilizers. Seeds of all crops are purchased from the nearby town. Sometimes seeds of jowar and red gram are provided by the ITDA through the Agricultural Department on subsidy. Hence, investment on cotton seeds is very high when compared to other crops. Again, fertilizer usage is much more on cotton crop than any other crop. Though farmers apply fertilizers to jowar and red gram, it is done after meeting the requirement of the cotton crop. On cotton, the farmers never compromise on inputs. They prefer to purchase the best seeds and apply full doses of fertilizers. Almost the entire quantity of pesticides purchased is exclusively meant for cotton. There is minimal to no usage of pesticides on other crops. However, some of the farmers of the village say that they would compulsorily spray any pesticide on red gram and sometimes on jowar too. Nevertheless, this was contradicted by other small farmers assembled in the meeting. They said that they would never apply any pesticide on food crops like jowar and red gram. It can be surmised that usage of fertilizers and chemicals is largely confined to cotton by a majority of the farmers. However, the use of the pesticides on other crops is very limited. At the same time, a few farmers have been following input-intensive agriculture which includes usage of fertilizers and pesticides on all the crops. The Pradhans

generally do not mortgage standing crops but sometimes they mortgage cattle, ornaments and their household utensils - in times of financial difficulties - with moneylenders, on personal security. It may be noted that those respondents engaged in agriculture as the main economic activity, occupy a significant position in the tribe.

4. Conclusion

Agriculture has been the main source of livelihood of the Pradhan community in the village. Agriculture being practiced by the farmers of the village is still rooted in traditional notions of divine blessings for a good crop and the practice of appeasing rituals is still continued. Agriculture is not just an enterprise for livelihood but a socio-economic and cultural activity. While agriculture revolves around seasons, the socio-cultural life of the tribal farmers in the region revolves around agriculture. However, many beliefs and religious rituals are now giving way to rational thinking in the cultivation of the crops.

Perceptions about the use of pesticides and fertilizers vary between the rich and poor farmers. While rich farmers favour and practice use of pesticides and fertilizers on all the crops, the small farmers do not. This is because they believe that as long as the blessings of the village deity are with them, pests cannot cause any damage. However, the latent reason may be that these farmers do not want to increase the cost of cultivation by application of fertilizers and pesticides for a moderate increase in the yield.

In the village, crops such as jowar and other grams are produced for household consumption, whereas cotton is grown for market purpose. However, this has undergone significant changes over the years. The Pradhans who have been influenced by Government and NGO's Programmes and the non-tribal's way of cultivation of lands have accepted the use of improved seeds, fertilizers, and introduction of new cash crops. The most outstanding trend observed in the village is the shift from a primarily food based system of cropping to commercial cash crops. Adaptation of modern agricultural practices such as using fertilizers and other pesticides are becoming popular in the village. Seed and pesticide production have paved way into the deeper parts of this tribal land. It was observed in the study that while input-intensive (usage of pesticides and fertilizers) cultivation is rampant in cotton, other crops like jowar and grams are grown at sustenance levels. Most of the small farmers, who constitute the majority of the tribal farmers, do not use pesticides and fertilizers on other crops except cotton. Apart from economic reasons, cultural and religious norms deter them from using pesticides and fertilizers on other crops. Traders, who offer inputs such as seed, fertilizers and pesticides have donned the role of traditional moneylenders and have become an inseparable part of the tribal economy. Socio-cultural and religious norms are still associated, though weakly, with cultivation practices.

The study concludes by recommending that the local knowledge of cultivating of subsistence crops is useful for sustenance. It is important to recognize that indigenous/local knowledge supports the survival of cultural and biological diversity. Subsistence output supports the farmer and his

family in the form of daily food items and his domestic animals in the form of fodder derived from the by produce of the crops raised. Small farmers should give more importance to subsistence crops rather than cash crops. The cash crops require more money investments. Debts to banks and moneylenders substantially increase. The pressure to repay loans takes a high toll on the emotional and mental well being of the families. In the attention and attraction to cash crops, the farmers are losing the knowledge and importance of the subsistence crops. Before such precious knowledge gets lost, it would be wise to protect and promote indigenous knowledge and wisdom widely for self sustenance in order to reduce poverty and hunger among indigenous people. The practice of cultivation of a majority of the crops without using fertilizers and pesticides is a good sign because it is environmentally sustainable and subsistence based. However, the stiff competition among the private players and the absence of effective state machinery in the field of agriculture may prove to be disastrous to these farmers as they may be lured into using fertilizers and pesticides over a period. Hence, instead of encouraging the farmers to adopt input-intensive agriculture the state departments must advocate the cultivation of crops organically.

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