Climate Change, Millet and Ritual Relationship with the Magars of Argal, Baglung, Nepal[1]

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Abstract

This paper focuses on cultural analysis and how people are coping with new situation created by climate change in production of millet. Changes relating to climate change are observed; perceived and understood on a local level. This is an important area of study for anthropologists and it is interest of climate scientists as well. This paper is based on anthropological analysis on climate change effects on finger millet production in Argal VDC of Baglung district, West of Nepal. Millet is a staple food of people of Argal and most of Hill people of Nepal. Millet is not only staple food and associated with nutrition of people. It's also associated with rituals during production and as well as during consumption. Increasing temperature, changing rainfall patterns, extreme weather events are linked with climate change which has direct effect on life of all people but also millet production and ritual activities.

Keywords: Climate Change, the Magars, Agriculture, climate anthropology

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1. Introduction

Climate change (CC) is real, anthropogenic and global phenomena. People around the world are experiencing effects in various degrees not only scientist predicted. Climate change is considered as the major area of study of climatologists and environmental scientists or natural scientists who do not directly deal impact on social and cultural systems. At present this topic is becoming interesting and contributing field of social scientists as well as common people as public discourse. Anthropology is a social science which traditionally focused its study on the people depending for livelihood primarily on natural resources and living in marginal lands. Anthropologists see cultural developments in series of human history with even applying archeological perspectives. This perspective helps understand changes in human society through time.

Nepali agricultural system is changing towards modern, from subsistence to commercial market oriented farming system even in rural areas. Crop specialization, cash crops are in priority of the people. Previous norms and values are changing. These includes forbidden of selling fruits, individual family should be self sufficient with food production and consumption as a food security. Changes are due to various developments like transportation services, market system expanded up to village, flow of cash from various sources like remittance and working in governmental and non-governmental organizations, expansion of cooperatives, and development of various communication systems. These new changes have influenced the life of the peasants and farm dependent people. Cash crops which are considered as high value agricultural commodities got introduced into areas within 30 years ago. Such cash crops include potatoes, garlic, and onion. These crops are not only entering to the agricultural systems but also their food culture, which has great significance to food security as well. People started selling milk to Baglung Bazar by establishing co-operatives. These developments have contributed not only to the life of people but also to the changes in ecological systems.

2. Agricultural system of Nepal

Agriculture is main base of Nepalese economy. Nepal has 21 percent of its total land cultivable, 32 percent of which irrigated (Ghimire, 2008:41). Agriculture, including livestock, is the main source of livelihood for around three quarters of the population. The majority (over 50%) of farmers are small holders cultivating less than 0.5 ha (CBS, 2011).

The country is divided into three agro-ecological regions namely Mountain in the north, Hill in the middle, and Plain in the south. According to Pariyar (2005), the Mountain region is characterized by higher elevation (> 2500 M), lower temperatures and lower rainfall. Likewise, the Hill region is characterized by moderate elevation (500-2500 M), a sub-tropical to warm temperate climate, and higher annual rainfall. On the other hand, lower elevation (<500 M), sub-tropical to tropical climate and medium rainfall characterize the plain region (Pandey et. al. 2009: 58). Nepal's 65 percent of the total population is dependent on agriculture and only 20 percent total area of Nepal is cultivable. Tarai is the most fertile land and that covers 43 percent of the total cultivated land of Nepal, which is also known as breadbasket of Nepal. Agriculture lacks basic facilities like artificial irrigation and about 65 percent of the total cultivated land is irrigated by rain fed. However, according to Census data until 2001/2 only 44 percent land of the country have got some kind of irrigation. The traditional agricultural system is integrated with livestock keeping and cultivation of crops in which directly and indirectly benefited and that was environmentally sustainable too (CBS, 2012). Farming systems and crops vary widely depending upon altitude and climatic conditions. The agricultural sector contributed 40.22% to the Gross Domestic Product in 1995/96 (CBS, 1996). The majority of hill and mountain districts are not able to produce enough food to meet the local demand (NPC, 2011:13). Nepal's agricultural system has dominated by small-scale and marginal farming, which employs about 60% of the population. Terai region is considered as basket of food is also affected by the vagaries of monsoon rain (NPC, 2011:13).

Nepali farmers are mostly subsistence type. However, some practices of commercialization and modernization have come up. Improved seeds, chemical fertilizers, irrigation are major developmental components in agriculture that facilitate to increase productivity of crops, vegetables and fruits; and to raise food security of the people. Nepali farmers on the one side must produce more food items to support growing population and on the other they need to be careful about environmental degradation especially soil degradation. According to Census 2011 population growth rate is 1.35 % per annum (CBS, 2012:1). Nepal is experiencing low population growth rate compare to the census 2001. In order to reduce food insecurity Nepali famers should give priority on some specific crops such as Paddy, maize, millet which are most staple food of common Nepali people to meet their daily energy requirements. Nepal's agriculture system is equally diversified. Various types of cereals, pulses, oilseeds, and fruits are found here.

Nepal's agriculture production is also characterized by diversity in farming systems influenced by differences in agro-ecological topography. Farming systems and crops vary widely depending upon altitude and climatic conditions (Pandey et. al., 2009: 58). Rice, maize, wheat, millet and barley are the major food (grain) crops grown in Nepal. There are, not surprisingly, large differences in agricultural production and crops across the country. Nepal is highly heterogeneous in terms of elevation, climate, water catchments, and agro-ecological zones. These differences are critical in understanding current and future risks, and designing appropriate adaptation responses.

Agriculture in Nepal is largely monsoon-dependent and sowing times usually coincide with the advent of rainfall. The monsoon rains normally start around 10th of June and continue up to around 23rd of September. About 80% of the annual rainfall in the country occurs during this period. Overall rainfall compared to a normal year and that of the last two monsoons. On average rainfall was about 16% below normal. Only the weather stations at Simara, Janakpur, Jumla and Nepalgunj recorded normal monsoon precipitation. However, these so called normal recorded

precipitation levels can mostly be attributed to the heavy (Regmi, 2007:20).

Agricultural people shape their livelihood climate change is often understood in terms of deviations from a cognized normative calendar. Seasonal calendars are often used in ethnographic research as a way of eliciting and systematizing local knowledge of climate (2009:95).

3. Farming System and climatic condition

Farming systems and crop production in Nepal vary across the agro-ecological regions. Rice based cropping systems, with wheat or maize as a secondary crops, are predominant in the plain (Terai) and middle hills, whereas in the high mountains maize, millet, barley and buckwheat are cultivated. Tea, cardamom, ginger and coffee are the important cash crops of the middle hills (Pandey et. al, 2009:57). Nepal is vulnerable to several types of natural disasters such as: flood, earthquakes, drought, cold waves, landslides, hailstorms, disease epidemics, glacial lake outburst flood (GLOF), and fires. On top of that, various factors such as rapid population growth and improper land use have contributed to increased vulnerability of natural disasters and disease epidemics. Drought, floods and landslides are the most recurrent natural disasters that annually cause significant material and human loss (Regmi 2007:20).

Nepal's global Greenhouse Gas (GHG) emissions are negligible compared to those of developed countries. Nepal has less than 0.4% of the world's total population and is responsible for about 00.25% of annual GHG emissions. With on average annual increase in temperature of 0.06^0 c per year, Nepal is highly vulnerable to climate change. This is mainly due to its fragile ecological systems and rugged geographical structure with great elevations and steep slopes. For a country like Nepal, where a majority of the population depends on agriculture, even slight

changes in climatic condition can lead devastating consequences. Due to dependency on natural resources and climatic conditions, various aspects of agriculture have already been disrupted resulting in changed cropping patterns, variation in crop yield, greater pest problem owing to temperature change, etc. (Rai & Gurung, 2005).

During fiscal year 2005/06 food production in Nepal was adversely affected by drought with reported decreases in the average paddy and wheat production of 2.0 and 3.3% respectively. The long dry spell of 2005/06 winter particularly affected subsistence hill and mountain farmers in the Mid-and Far-Western regions. High crop losses resulted in adoption of negative cropping strategies and livelihoods of many subsistence farmers and landless populations were threatened (Regmi, 2007:20). It is possible that temperate regions that cover a small area could benefit from the rise in temperature, while the vast warm regions will be impacted negatively (NPC, 2011:14).

Nepal is a dominant country of subsistence farmers who are mostly marginal. The climate change is likely devastating consequences. It weakens the livelihood bases of poor people as they suffer from the losses of physical capital (damage to infrastructure), human capital (malnutrition and disease), social capital (forced migration), natural capital (degradation of soil and water) and financial capital (reduced income). As a result, farmers' capacity to adapt to climate shocks and stresses will diminish (NPC, 2011:14).

Agriculture, where traditional methods are widely used, is quite vulnerable to climate change. Higher temperatures eventually reduce yields of desirable crops and increase pest invasion. Changes in precipitation patterns increase the likelihood of short-run crop failures and long-term production declines (Bhattarai, 2012:21).

Much of the population is reliant on rain fed agriculture that is vulnerable to localized drought and more variable precipitation in

terms of forms, timing and intensity. With increased intensity of summer monsoon rain events, the risk of flash flooding, erosion and landslides will be increased. With warmer winters, particularly at the higher altitude, less precipitation may fall as snow, further accelerating erosion glacial retreat but also reducing soil moisture and accelerating erosion, and therefore impacting on winter crops.

Agriculture remains Nepal's principal economic activity, employing over 65 percent of the population. Only 20 percent of the total area is cultivable; another 20% is forest. Rice, wheat and Maize are the main cereal crops mostly produced in Terai region. The Terai constitute 43 % of total cultivated land. The majority of farmers are reliant on rainwater for irrigation, as the country lacks major facilities for artificial irrigation. On average, about 65% of total cultivated land is rain fed (GON/MOAC, 2011:3).

The rise of global temperature will also reduce the supply and increase the water demand due to more evaporation, and evapo-transpiration from plants. The resulting drought will cause water scarcity both for drinking and irrigation. Besides, the "too little water" and "too much water" scenarios collectively cause severe food insecurity. The concern is not only for reducing crop yield, but also for subsequent escalating food price (Bhattarai, 2012:18). A large proportion of the GDP in Nepal and the livelihoods of its people are in climate sensitive activities, notably agriculture.

4. Agriculture and impact of Climate Change in Nepal

Average rainfall is 1800 mm, with rainfall increasing from west to east. The North West corner receives the least rainfall, as it is the rain shadow or the Himalayas. Rainfall also varies with altitude. About 80% of the annual precipitation in the country falls between June and September under the influence of summer monsoon. The winter months, from December to February, are relatively dry with few spells of rain. The winter rain decreases in amount from northwest both southward and eastward (GON/MoAC, 2011:1).

However, due to Nepal's diverse topography and range of ecological zones, the overall impact of climate change on agriculture and ecosystems is likely to be highly variable depending on location.

Nepal has been frequently hit by climatic variability and natural disasters of hydro-meteorological origin. Floods, landslides, intense rains, hailstorms, droughts, cold and heat waves, pest and diseases are regular phenomenon in the country. Such climate related events have put fragile agricultural eco-systems at risk. Impacts of climate change and related extreme events on agriculture often lead to a situation of food insecurity affecting most the poor and marginalized peoples including women and children, with its ultimate repercussion on the nation's economic growth.

Climate change is an anthropogenic phenomenon. Climate change issue is multi-disciplinary. Anthropologists involve in conducting research on local effects and broader social, cultural, economic, and political issues (Crate and Nuttall, 2009: 9). From an anthropological perspective, climate change is ultimately about culture, for in its wake, more and more of the intimate human-environment relations, integral to world's cultural diversity, lose place. It needs to adopt systemic perspective in which any changes occurs in a place has effect in other places too. We need to analyze new development phenomena in different time and space context which is closely linked with food system of people.

Agriculture is a major economic, social and cultural activity and creates a wide range of ecosystem. Agriculture is directly associated with the food system needed to human and domesticated animals. Agriculture in its many different forms and locations remains highly sensitive to climate variation, the dominant sources of the overall inter-annual variability of production in many regions and a continuing source of disruption to ecosystem service. Climate change may affect food system in several ways ranging from direct effects on crops production (e.g. changes in rainfall

leading to drought or flooding warmer or cooler temperatures leading to change in length of growing season) to changes in markets, food prices and supply chain infrastructure (Gregory, Ingram & Brklacich, 2005).

5. Millet Production in Nepal

The major staple crops are maize, millet, wheat, barley and paddy in Nepal. These food items help to fulfill basic nutritional need of most of the poor people. According to Randi Haaland (2011) there is a not only similarity in technological aspect but also symbolic aspect of millet production in Africa and Indian Subcontinent. The existing millet culinary tradition in India was based on as a food preparation technology essentially similar to the African technology, namely, the so-called pot and porridge cuisine. Similarly, in Africa millet product particularly beer plays an extremely important role (Haaland, 2011:2). The dispersal of African crops across the Indian Ocean to the Indian sub-continent around 4000-3800 years ago is supported by archaeological material. They consisted of three types of millets: sorghum (*bicolor*), pearl millet (*Pennisetum glaucum*) finger millet (*Eleusine coracana*) and two types of pulses: cowpeas (*Vigna ungicalata*) and hyacinth beans (*Lablab purpureus*). As regards Nepal, so far no archaeological material exists. However, what one does find is the presence of African finger millets and sorghum cultivated today along the foothills of the Himalaya. We do not know when these crops spread north to Nepal; it is nevertheless evident that these crops were introduced sometime during ancient time (Haaland, 2011:23).

Millet as a crop is treated as impure from Brahmin and Chhetri caste people in Argal. They even heisted to eat it in public places and cooked by all family members. Some families eat millet much inside and give rice to dog outside as food to show their economic prosperity. Mostly people cultivate and use of marginal land to cultivate millet. Millet production is done by all ethnic/caste groups of Argal, Baglung but the Magars use millet in a more

elaborately/diversified way. Brahmins and Chhetris consider millet as impure food items. Despite their less priority as food item as their main dish but they produce much millet as cash crops. The Magars use millet as their common food and even they use in ritual occasion as well.

In the context of Nepal, the area under millet production has increased slightly compared to 2006 (1.33%). However, the national production of millet decreased by 2.1% compared to 2006. Compared to the trend production forecast, there's a negative gap of 8,880 metric tons or 3%. Millet contributes only 3.7% to the national cereal production, however it is a key crop in several Hill and Mountain districts including Mugu, Dolpa, Jumla, Baglung, Syangja, Rasuwa, Sindhupalanchowk, Sindhuli, Okhaldhunga and Khotang (Regmi, 2007:23).

Agriculture is the main source of food and livelihood all people of the world. IPCC (2007) has reported that production of rice, maize and wheat in the past few decades has declined in many parts of Asia due to increase water stress arising partly from increasing temperature, increasing frequency of EL Nino and reduction in the number of rainy days. Climate scientists believe that climate change not only affects agriculture but agriculture also contributes to greenhouse effect producing green house gases. Paddy field, the guts of livestock and the burning of vegetation, together, produce some 45% of global methane emissions. In the 1980s methane produced by agriculture contributed about 7% total global warming, nitrous oxide arising from nitrogen fertilizers contributes 10-25%, livestock waste, and the burning of vegetation. In the 1980s nitrous oxide produced by agriculture contributed 0.6-1.5% of the total global warming (Conway, 1992: 109).

The impact of climate change also varies on condition of agriculture. Mostly, it affects on agricultural practices on marginal land, rain fed irrigation, subsistence type and small farm size, and having no or little resilience mechanisms to combat against it.

The consequences of global temperature increase on agriculture are likely to be serious although they will vary from place to place and in ways that are still very uncertain. Weather pattern will shift. Warming will be greatest in high latitudes, at low latitudes although less in magnitude, will also have a negative effect on agriculture. Similarly, short-term extreme climatic events such as floods, droughts, hurricanes, and severe freezes may become more common, with especially serious consequences for more marginal farmers (Conway, 1992: 107). Agriculture is not only victim but also culprit of climate change in globe. More victims are those who are practicing their agriculture on ecologically fragile lands.

Climate change is also global phenomena, anthropologists are shifting their interest to study from local, small scale society to global large scale community. In Nepal millet is also taking its place as commercial food items, as well as gift items to the people who live in the city areas. *Dindo* as a tradition food item and making and drinking liquor, *kodoko raksi* is popular. Food is also cross-disciplinary research challenge.

In the context of Nepal, we need to grow millet expanding area of cultivation. However, scientists have suggesting rather focusing solely on increasing production, there is a huge potential for improving food security through optimizing food energy efficiency and water efficiency. Food energy efficiency is about our ability to minimize the loss of energy in food from harvesting through processing, to actual consumption and recycling. Today, nearly half of the food produced, and even more of the irrigation water, is wasted in some form through inefficient use (Nellemann, Christian and Kaltenborn, Bjorn Peter, 2009:9).

6. Millet as rain fed crop

Finger millet is the important food crop in hills, but it is neglected crop in Nepal (Baniya et. al. 1992 in Baniya, et. al. 2005:40). When we talk with people why people do not like to focus on

millet production or neglect it, they explain that due to its nature of preparation of field, transplantation of seeding, weeding, and plucking them. Millet thrashing, winnowing and storing grains involved a lot of time and is tedious job. These jobs are mostly women related due to gender division of the society. Until we do not develop new technology to save time during transplantation, weeding and harvesting it will be too costly to produce millet. Millet production follows same process of rice, but the market value, religious and ritual value is seen more of rice than millet. It has more contrast relationship with rice, such as millet is cultivated in dry land and rice in wet land, millet is cultivated in high altitude and rice in low altitude, rice is considered ritually pure and millet impure, millet can be grown in multi-crop system as well as mono-crop system, but rice cultivated in mono-crop system. Millet is cultivated during the summer and rainy season but also it is greatly affected due to variation in rainfall and changes in precipitation. All these factors are responsible also in reduction of food production, arrangement of labor, people are in situation of confusion. Argali people mostly depend on compost prepared with animal manure including dry leaves during winter and fodder during summer seasons. Therefore, they main produce organic food. It is not only costly and time consuming during production but demands tough labor during preparation of food as well. It needs sundry, husking, and grinding before consumption.

6.1 Use of millet crop

Millet is a staple food for average Nepalese people especially in hill region and Baglung district. People have spun social, economic and cultural meaning around it. Millet is considered ritually polluted grain and not used for religious purposes by the Hindu caste people. But the Magars of Argal use millet items for ritual as well as food items greatly. Ritual aspects of millet are strong or elaborated there. It is used on different occasions in different ways. It can be used as medicine to fight cold. It is used as winter food items to keep body warm. Bread, mush, *pitho* are the common food items made of millet. Beside these food items, the Magars prepare distilled liquor, *raksi* and fermented millet's beer or *jand*. Liquor

made of millet is used during ceremonial occasion. The Magars need millet's *raksi* for their ancestral worship and also Jimadhani worship. Magar women prepare liquor as gift item to their closed relatives such as father, brothers, father in-law, and son in-law and earn selling pocket money selling liquor.

In Argal, the Magars plant millet after worshiping *jimadhni deuta* i.e. god of land and water. A pig is sacrificed and some millet beer (*jand*) is necessary, which is collected particularly from widow nearby. Traditionally, no one was allowed to plant millet before this worship. The cost of sacrificial worship is shared by all households. Ritual use of millet can be observed during ancestral worship in Argal. They need 12 *pathi* (c. 48 KG) millet beer, which is prepared 3 months before the ritual starts. The beer is drunk during ritual and it is called *Nau dhara khane* (nine fountains/taps). This is like mother's milk, which is termed as *Das dhara* (ten fountains). When a mother wanted to explains her contribution to her children during childhood she with emphasis that I fed you ten fountains of my milk i.e. *Das dhara dudh khuwayera hurkaeko ho*.

The Argali Magars of Baglung prepare millet mush (*dindo*) during ancestor worship and dance around village carrying it, if you ask the reason they interpret/explain it as making laugh/happy to their ancestors. They also prepare millet beer is called *hachak* which is sprinkled during the ritual. This is prepared by sister's son during the night, women cannot touch, and no one can see it. It is done when all other people fall sleep. This beer is sprinkled using a copper pot which is called *Khagu*, which is shaped like vagina. It is important to note that the Magars practice matri-cross-cousin marriage. This might symbolize expression of blessing of women's power, they vaguely interpret that we are the product of that.

Millet is also associated with other symbolic aspects than only food and drink. Greetings during rituals are very important for Magars of Argal. They have a certain emphasis. The beer pot is in second position in such greeting. This type of greeting is usually done

during the marriage ceremony by the groom at bride's house and by the bride at groom's house. After this ritual greeting they start greetings to relatives from very old and highest in social position to respectable relatives of them. They start with saying, *Siristi Jadau* (I greet creation), *Ghampuse* (I greet beer pot, in which beer is prepared)Jadau, *Maini Khabo Jadau* (I greet the main pillar of the house), *Agni Jadau* (I greet fire place), *Sunai Sangar Rupai Duwara Jadau* (I greet golden entrance and the beautiful door).

Beer is very important gift to give as bride price during marriage ceremony. The beer or raksi has also role to bind people socially. In village any important decision can be made after drinking raksi or beer. The beer drinking during marriage is called *bhal bagai*, a kind of flood/plenty of beer or *raksi* to bride's parents/family, maternal uncle, other ritual brothers. Elopement is the main type of marriage, but acceptance of elopement is considered when bride's parents accept beer from groom family. In this context, the ritual greetings which include creation i.e. birth of girl, the beer pot which produces item of social relationship or it plays role of medium, main pillar, in which the house is built around, fire which destroys all evil and bad elements, and the entrance and the door which made possible to entry and the beer as a gift are linked as equally important for social cultural element for the Magars life.

Beside use of beer during rituals they use it for house building party in the past. The beer party occurred when someone starts building a house. Neighbors, relatives (who are nearby) and other village people come and work to build house as their skill and on their convenient time. The house builders prepare beer of up to c. 280 KG millet. The family is not able to prepare that much beer alone due to not only quantity of millet they own but also they lack pot/pottery to prepare and the time/human resources. They alone cannot manage all the work. Therefore, they ask their neighbors, relatives to prepare beer. The house builders provide beer as snacks in the afternoon. When the house is completed then a ritual is performed and a buffalo is sacrificed and eaten together with beer. This type of work is known as *Jharali*, free and voluntary labor.

These days' two important things are changed one is drinking raksi instead of *jand*, and building new house started on contract than *Jharali*, which was traditionally practiced. People say these changes have occurred due to two major factors: 1) plenty availability of food grains in village, 2) cost and obligation during house buildings. They say that it is not cheap to build house by *jharali* or with beer party. A lot of time and labor is needed to prepare huge amount of food. To build a house with *jharali* system takes shorter time but many people come on their convenient day and time and they work on their pleasure. It can take one week to build a small house. It is also somehow obligatory even for the people who do not have human resources at home. If anyone is unable to participate to work for house building they start saying that we built your house for free, this means the person is always socially obliged. In order to avoid this type of social obligation people who have been working abroad build house employing contractors, now other people are also following it.

Symbolically preparing beer (*jaad*) is like hatching eggs. The process is mainly women mix *marcha*, herbal medicine which is prepared mixing with millet flour) with millet flour and kept on a warm place called *otharo rakheko*. This term is also used to mean hatching eggs by hen. After starting smell the flour of millet is kept on *Gaito* or pot (jar) to prepare beer. Millet flour beer or *dhule jand* is prepared especially for beer, it is drank by male and female, during the summer season. It keeps body cool. Maize's beer is not healthy for those who have problem of uric acid. Taste of well made beer is or locally called *sapreko jand* is like drinking/sucking mother's milk. It has power/energy so people can work and male and female can drink.

6.2 Millet production in Argal VDC and rites and rituals

The Magars of Argal worship different gods and goddesses in order to protect their livestock and crops and associate it with fertility of human beings, livestock and crops. Some worshipping rituals are associated particularly with major crops like, maize,

millet and paddy. Their local gods and goddesses are eight, which are worshipped in different months but these worship run almost year round. Mai Pooja, Chaurasi mai, Baraha, Sidha, Deurali, Bhume, Deuti, and Jalthal. Bhume pooja is associated with maize, which is performed before sowing the maize. Jalthal pooja is associated with millet and performed pooja before plantation; and Siddha worship is associated with rice crop. On the day of worship people are not allowed to work on field with crop related activities. These worships and crop production are not matching these days due to changes in temperature and precipitation. The Argali people are not following the rules of worship, that means people need to wait millet plantation or sowing maize before worship, they should not harvest crops before worship. Before Bhume pooja, earlier people were not allowed to saw maize in their field in Baisakh, people were talking about *Khiyaro*, worship of Bhume god i.e. god of land and ritual sowing. Siddha god is worshipped before harvesting rice and wheat. Since crop production cycle has changed about 10 days advance in last two decades. People are not waiting those rituals. They perform ritual only certain days. But they are not very strict to follow by the common people, but in the past during panchayat period when the local functionaries were powerful at that time those who do not follow the rules were fined in cash. In this context we can observe the contradiction between ritual schedule and climate change in relation to crop cultivation in Argal.

7. Conclusions

Millet is a socially and culturally important crop but it is been under the focus of the researchers. Climate change has brought many changes in Nepali agricultural system. However, it is also contributing to GHG and on agricultural product. Millet is part of Nepali agricultural system and effected by climate change. The effect varies accordingly to the place where millet is grown and the technology is used. The Magars of Argal use millet as food, ritual and social items. Decrease of millet production is also associated with food insecurity of the area. The changes in millet production have been caused by several factors such as climate change, out

migration for employment, food availability in nearby areas, flow of cash. We can clearly see the contradiction between ritual practiced during plantation and harvesting crops due to time shift of transplantation of millet.

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