



Flora-based Indicators of Traditional Weather Prediction among the Sumi Tribe of Nagaland, Northeast India

Alino Sumi*

Martin Luther Christian University, Shillong, Meghalaya, India

***Corresponding Author:** Alino Sumi, Martin Luther Christian University, Shillong, Meghalaya, India.

Received: October 11, 2018; **Published:** November 08, 2018

Abstract

This study is an attempt to list and document the flora indicators of weather prediction among the Sumi Tribe of Nagaland, North-east India. The study was conducted in 4 (four) villages under Zunheboto district- Sukhalu, Shiyepu, Natha Old and Natha New. The information was collected through In-depth Interviews (IDIs) and Focus Group Discussions (FGDs) using convenient and snowball sampling. The informants were farmers, hunters, folk tellers, bards, both female and male above 40 (Forty) years of age. The study was carried out in 2016 - 2018. Acknowledging the fact that it was an exacting study, nevertheless, few important indicators were identified and reported, thereby, exhibiting a prevalent traditional practice of weather forecasting. During the process of this study, it was elucidated that despite the dependence of locals on the indigenous knowledge and their practice, IK is fast eroding as the wisdom holders are passing away before documenting their rich age-old traditions and practices.

Keywords: Traditional Weather Prediction; Flora; Indicators; Sumi; Nagaland

The Sumi Naga is one of the major tribes of Nagaland and is endowed with rich culture and tradition. They have sound knowledge of environment and its resources and have lived in close association with nature. The Sumi Nagas have been dependent on their environment for food, shelter, medicine, livelihood, etc. One such dependence worth mentioning is the locals' knowledge of weather prediction through the phenology of plants. It is found that during some changes in the atmospheric weather, a couple of hours before rainfall, plants undergo regeneration of a number of defensive chemicals and stress hormones and enzymes in different organs, along with production of anti-nutrients or simultaneous exudation [1].

A study by Muguti and Maposa [2], found out that in Zimbabwe, the phenology of fruit trees plays a significant role in determining weather pattern. Another study in Mizoram identified an indicator which is accurate even today-if peach or plum flowers from the basal region to the terminal of the tree in flowering season, it is predicted that there will be a good rain and higher production

than in other years [3]. In Botswana, a shrub plant- Brandy Bush/ Raisin bush bears fruit twice a year. Early fruiting (November-early December) indicates low rainfall and late fruiting (February or March) indicates a good season and no fruit at all indicates drought [4]. The Mao Nagas of Manipur also observed the flowering of wild cherry and understand that the warm season has begun, and it is time to plant crops such as pulses, cabbage, potatoes, etc [5]. It is vital to identify the indigenous weather forecasting indicators and acquire information on how they are used so as not to only improve food production in the area, but also be helpful to other people living under similar environmental conditions elsewhere [6]. Strategic decision making and planning such as when to plant and what crops to grow for a particular year are all effectively done using weather information derived from indigenous forecasts [6]. Tribal communities in many regions of the world rely on indigenous knowledge (IK) according to their own conditions and needs, not only of the fact that they are unaware of the modern methods of forecasting, but because they are emotionally and culturally rooted to their own traditions which have been practised for generations.

A study by Orlove., *et al.* [7] documented that farmers in Africa rely on historical patterns, weather observations and signs to formulate expectations on weather and climate. There is, thus, the need to promote and protect IK of weather prediction before the wisdom is completely lost. In addition, the dependence on the plant indicators for weather forecasting alludes to the prerequisite of preserving and protecting our environment and its valuable services and contributions.

Materials and Methods

The objective of this paper is to identify and document the IK with regard to plant indicators used by the Sumi tribe to predict weather phenomena. The information was gathered through primary source of data collection involving in-depth interviews (IDIs) and focus group discussions (FGDs). The informants- elders, farmers, folk tellers and hunters- were selected using convenient and snowball sampling. Questionnaires were developed to guide and assist the informants during the discussion. Audio recording was used so as to avoid missing out of data and also to help decipher the verbal expressions of the informants during their participation. The study was carried out in 2016 - 2018. Acknowledging the fact that it was an exacting study, nevertheless, few important indicators were identified and reported, thereby, exhibiting a prevalent traditional practice of weather forecasting.

Results and Discussion

1. **Bamboo flowering, *Akhawusu xhamunu***
If there is abundance of bamboo flowering, people understood that there will be a famine, which in local dialect is termed as 'pukumiye'.
2. **Dandelions (*Taraxum*), *Inaqhe xhamunu***
If dandelions remain shut in the morning, then people understood that rain is imminent.
3. **Bamboo shoots, *Akhawubo ti***
If the new bamboo shoots rise higher than the parent, then more rainfall is expected for the year. If the shoots stay lower than the parent, then less rainfall is expected.
4. **Plants' movement during rain-**
Amidst rainfall, if the leaves are still and do not move, it is understood that there will be continuous rainfall. However, if the leaves do not stand still but move along with the direction of rain, then it is understood that rain will conclude soon.

5. **Dropping of young fruits from trees-**
If young and immature fruits fall from the trees, it means dry and cold season is approaching.
6. **Mushrooms (*Agaricus bisporus*), *Aputi***
If mushrooms (both wild and edible) are found in abundance, it indicates rainfall.
7. **Flowers' smell-**
It was reported that the smell of flowers were an indicator of approaching rain/storm. Flowers gave out more odours before rain/storm.
8. **Peach tree (*Prunus persica*), *Yekithi***
If the common peach tree flowers, people believed that it is a sign of the end of winter and the beginning of warm days.

People start cultivating cabbage, cucumber, egg plant, spinach, ladies finger, gourd, etc.
9. **Pine cones, *Christmas subo***
If the scale of the pine cone is open and relaxed, it means there will be no rain. However, if the scale is closed and tight, then rainfall is imminent.
10. **Wild apples (*Malus sylvestris*), *Pukhoithi***
If wild apples are harvested in large numbers, it indicates an above-normal winter.
11. **Common bean (*Phaseolus vulgaris*), *Khetsuthi***
Common bean is another indicator of rainfall. Its abundance indicates less rainfall for the season.
12. **Lime tree (*Citrus limon*), *mushuthi***
If the undersides of the lime leaves are seen, then rain is expected soon.
13. **Wild strawberry (*Fragarica vesca*)-**
If wild strawberries are grown in abundance, then, it means that summer will be dry and there is possibility of drought.
14. **Pear (*Pyrus communis*), *Mhaspathi***
If leaves start to shed starting from the lower branches, then, above-normal winter is expected.
15. **Whitlow grass (*Draba verna*), *miyeti xhamunu***
If it grows in abundance, then it is an indication that summer will be dry and there is possibility of drought.

Another indication is- if the leaves of whitlow grass droops low, then it is predicted that rain is on its way.

Conclusion

The study carried out in 2016-2018 - was, no doubt, exacting and strenuous, however 15 (Fifteen) important indicators were identified and documented. These indicators have been aiding the Sumi Nagas in predicting the weather and they also depend on these indicators to plan their agricultural activities- what and when to plant. The Sumi Nagas have been relying on these indicators for a long time and is still used in present times. During the process of this study, it was elucidated that despite the dependence of locals on the IK and their practice, IK is fast eroding as the wisdom holders are passing away before documenting their rich age-old traditions and practices. Therefore, it is paramount to identify, list and document traditional wisdom relating to all arrays of a tribal community and its way of life.

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Volume 2 Issue 12 December 2018

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