



Indigenous Knowledge of Weather and Forecast Indicators of Tribal Farmers of Sidhi District of Madhya Pradesh

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ABSTRACT

The results of the study explained that correctness of the predictions of rainfall (rainy days) in Panchang in respective months of the years varied from 16.66 to 100.00 per cent. The findings also indicated that year wise percentage of correct predictions of five years (2007-11) varied from 75.58 to 91.95. The highest correct predictions were made in the year 2011 followed by 2010. The lowest correct predictions were made in the year 2008. Further, the results indicated that overall mean percentage of correct prediction of rainfall (days) in five years i.e., from 2007-11 is 80.77.

Key words : : Indigenous Knowledge, Weather Prediction.

Knowledge of the imminent rainfall season is important, especially in areas that substantially depend on rain-fed farming. Farmers in these areas are alerted by forthcoming rains, which prompt them to prepare their land, planting materials and farm equipment. This makes weather forecasting indispensable to farmers.

Man has not yet discovered a method of controlling weather and climate, however he has been able to devise means of minimizing some of their unfavorable effects by way of forecasting future weather occurrence.

Originally interpretation required expert knowledge of environmental objects. Prediction of the nature of the present or coming year is considered as traditional skill. Now days the people, irrespective of caste and creed have developed knowledge of facts pertaining to environment including climate and vegetational changes, animal behavioral changes for predicting the nature.

Indicators of weather prediction have been woven into villager's folk culture, as revealed in the local sayings. Such sayings show their knowledge and belief regarding the winds, clouds, stars, animal behaviour and their relationship with the good or bad prospects of crops have been documented.

MATERIAL AND METHODS

The documentary sources were used for studying indigenous weather prediction. Meteorological data reported by Programme Co-ordinator KVK Sidhi Dr. A. S. Baghel of respective tehsil were taken into account for analysis with Panchang which was published by Pandit "Ganesh Aapa Panchang" and "Rishikesh Panchang". Five years data were collected from 2007 to 2011, in meteorological data, standard rainy days were recorded. In Panchang also the predictions were made day basis which were quantified for the purpose of analysis. Percentage and average were worked out for comparing the data.

People watch the behaviour of animal, insect, plant, panchang and other components of nature very minutely and predict the mood of the nature to minimize the risk. Based on this observation of people few methods of predicting the nature is given here.

Plant as a forecaster of rain indicators

Plants and certain accurately forecast the certainty of wet and dry weather. In western countries, some fascinating facts were recorded for dandelions (*Taraxacum officinale*), clovers (*Trifolium repens*) and tulips (*Tulipa gesneriana*),

all of which fold their petals prior to the rain. *Pleorotus ostreatus*, a type of edible mushrooms (fungus) growing on stumps and tree trunks, expands prior to a rain and closes in dry weather. (Acharya, 2011)

Animal as a forecaster of rain indicators:

In traditional weather forecasting, the onset of the rainy season and upcoming rain is also indicated by the unusual behaviour of certain animals as outlined. Traditional indicators of an upcoming rain include: unusual chirping and bathing with sand of birds, native frogs croaking near swampy areas and hiding their egg masses, dragonflies flying low, female native crabs migrating from rivers to brackish water, spider spinning shorter and producing thicker webs, wasps hiding their honeycomb, etc. (Acharya, 2011)

Clouds as a forecaster of rain :

Based on cloud color, distance and movement farmers decide the occurrence of rain (1) presence of more dark colored clouds without wind and closure to the earth, indicates occurrence of rain within 2-3 hours (2) black/dark color clouds with fast movement and far from earth, indicate rain will not come (3) presence of red clouds in the western side with gaps, the rain will come within 5 to 6 hours. (Sivanarayana and Leela vani, 2011)

Stars as forecaster of rain:

(1) If there is a ring around moon, then rain will come. If ring is close to the moon, in far places rain will occur, if ring is distance to the moon, in nearer places rain will occur. (2) stars movement from north to south towards east bending, indicates occurrence of rains. Sivanarayana and Leela vani (2011)

Forecasting of frost:

Proverbs related to forecasting of rain (1) during mid july to mid august, when wind blows from east to west direction, farmers should sell their bullocks and purchase cows, as there is no sign of rain in coming months. (2) if wind blows very fast from north- east to south-west direction, the rain will be so heavy that the field will be submerged with water up to bund field. (3) if rainfall happens in month of chaitra (mid

april), then there will be no rain in coming six constellations (approximately 90 days). (4) when weather is cloudy on Friday and remains as such on Saturday, the weather will be sunny on Monday, if rainfall has not occurred on Sunday. (5) if a farmer is not able to manage a good nursery of paddy crop even in one bissa (0.0125) of land, then how he will be able to grow good paddy crop in one bigha (0.25 ha) or larger areas of land. (Singh and Dorjey, 2004)

M Chinlapianga (2011) documented different indigenous knowledge in relation to weather prediction. They are:

- 1) Winged termite, Phingphihlip (*Reticulitermes sp.*): when these insects come out of the soil in a group after a rainfall occurs, it is believed that rain will not come again for some time, If there was no rain in the previous day or week but the insects are coming out of the soil, rain is expected to come soon.
- 2) Corn field ant. Fanghmir (*Lasius alienus*): when there are a number of ants moving along a path carrying their food items with them, a heavy rain is expected on the same day, or within one or two days.
- 3) Dried ripen chilli (*Solanum frutescence*) and dried tobacco leaves (*Hmarcha rep*): If dried chillis become moist except during the rainy season, it indicates high humidity and imminent rain.

RESULTS AND DISCUSSION

Folklore and Prediction:

1. Winds:

- i) If the wind blows from north to east direction then rain will come.
- ii) Extreme heat during June month is an indication of heavy rains in rainy season.
- iii) If wind blows from east to west direction then less chances of rain.

2. Clouds:

- i) If thick dark clouds are seen at the last shuklapaksh indicates heavy rains.
- ii) Clouds of dark brown color cause heavy rains for a fortnight
- iii) Black dark color clouds with fast movement and far from the earth indicate rain will not come.

Table 1. Month Wise Prediction of Rainfall (Days) in Panchang.

Year/ Month	2007			2008			2009			2010			2011		
	P	A	CP	P	A	CP	P	A	CP	P	A	CP	P	A	CP
JAN	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-
FEB	7	4	57.1	-	-	-	4	-	-	3	-	-	3	2	66.6
MAR	-	2	-	3	-	-	2	3	-	2	-	-	-	-	-
APRIL	3	-	-	-	2	-	6	1	16.6	1	-	-	3	2	66.6
MAY	5	3	60	3	3	100	-	2	-	3	1	33.3	4	1	25
JUNE	8	13	-	12	9	75	10	5	50	8	4	50	12	18	-
JULY	14	12	85.7	16	20	-	18	15	83.3	7	20	-	18	20	-
AUG	16	18	-	19	19	100	3	9	-	18	16	-	15	18	-
SEP	18	19	-	15	8	53.3	13	12	92.3	20	15	88.8	19	19	100
OCT	13	-	-	10	-	-	6	2	33.3	18	6	50	6	-	-
NOV	5	-	-	5	4	80	3	1	33.3	2	-	-	7	-	-
DEC	2	-	-	3	-	-	-	2	-	-	-	-	-	-	-

P- Prediction of rainfall (days) from Panchang

A- Actual number of rainy days from Government Department

CP- Percentage of correct prediction

Table 2. Year Wise Prediction Of Rainfall (Days) In Panchang.

Sr No	Year	Total Number of Predictions	Actual Number of Rainy Days	Percentage of Correct Prediction
1	2007	91	71	78.02
2	2008	86	65	75.58
3	2009	65	52	77.61
4	2010	82	64	78.04
5	2011	87	80	91.95

Table 3. Overall Prediction of Rainfall (Days) For Five Years From 2007 -2011 in Panchang.

Total number of predictions	411
Actual number of rainy days	332
Overall mean percentage of correct prediction	80.77

3. Stars

i) If moon is shining clear at night in sawan month indicate no rain.

ii) Stars movement from north to south towards east bending, indicates occurrence of rain.

4: Animal behaviour

i) Ants running from down to up with their eggs indicates heavy rain.

ii) Termites and dragonfly flying near to ground is an indication of rain.

5: Vegetation

- i) Flower drop in Teas (*Butea monosperma*) plant indicates the onset of rain.
- ii) In particular year if the tamarind tree bears more fruits, that year may be drought year.
- iii) In particular year if the mango bears more fruits, in that year may be non-drought year and crop situation will be better.

PANCHANG :

There is a practice to go through Panchang before any auspicious activity like birth and death anniversaries, marriage, agricultural practices and construction activities etc. Either individual reads himself /herself or go to the professional persons (Brahmin) for getting the answers of their quarries. In the present study an attempt has been made to compare the data regarding rainfall (days) for five years i.e. from 2007-2011 available with governmental departments with the predictions made in Panchang for the same period.

The results from table 1 explained that the correctness of the predictions of respective months of the years varied from 16.66 to 100%.

1. Correct Predictions:

The cases where predicted rainfall days is equal to actual rainy days or no prediction and no rainfall were considered as correct predictions. From the data 2008 (May, August), 2011 (September) years predictions were 100.00 percent in respective months. Whereas 2007 (January), 2008 (January, February), 2009 (January), 2010 (December), 2011 (January, March December) years no prediction and no rainfall had resulted.

2. Prediction more than actual/ Predicted but no rain:

In the following years and respective months the number of predictions were more than actual, which include 2007 (February, May, July), 2008 (June, September), 2009 (April, June, July, September, October, November), 2010 (May, June, August, September, October), 2011 (February, April, May). In case of predicted but no rain, 2007 (April, October, November, December), 2008 (May, October December), 2009 (February), 2010 (February, March, April, November), 2011 (October, November).

3. Prediction less than actual/ not predicted but rain:

In the following years and respective months the number of predictions were less than the actual, which include 2007 (June, July, August, September), 2008 (July), 2009 (March, August) 2010 (July), 2011 (June, August). In case of no prediction but rain, 2007 (March), 2008 (April), 2009 (May, December), 2010 (January) years and respective months were recorded.

From table 2 it can be revealed that year wise percentage of correct prediction of five years (2007-2011) varied from 75.58 to 91.95. The highest correct prediction were made in the year 2011 followed by 2010. The lowest correct prediction was made in the year 2008.

It is evident from the table 3 overall mean percentage of correct prediction of rainfall (days) in five years i.e. from 2007-2011 is 80.77.

In to the results indicated that the correct predictions of rainfall (rainy days) in Panchang are very high i.e. 16.6 to 100, 75.58 to 91.95 and 80.77 % in Month wise, Year wise and Overall mean of five years (i.e. from 2007-2011) respectively. Therefore it seems to be an appropriate time for the scientific community to reevaluate its importance and scope for solving the problems and needs of rural people.

The present finding of the study was in conformity with the findings of Sivanarayana and Leela vani (2011) and Chinlapianga (2011)

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