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Short communication

Influence of weather on coconut yield at Bay Islands

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An average rainfall of 3000 mm characterizes the region of Bay islands, with a range from 2745 to 3277 mm under even distribution. The mean relative humidity is as high as 70 to 90 per cent both in the morning and evening and the temperature ranges from 23.2 to 30.7 ^{0}C. The soil types are highly suitable for plantation crops. Among the plantation crops of the bay islands, coconuts are the major crop and are grown in 24, 996 ha with the annual production of 87.2 million nuts (Rethinam *et.al*, 2001). The production of coconut depends mainly on weather parameters especially rainfall and temperature. Increase in coconut area was nominal during the last two decades in the Andaman and Nicobar islands, while the production which was 68.35 million nuts in 1981-'82 rose to 87.2 million nuts, recording an increase of 18.85 million nuts in 2000-'01(Singh, 2003). Sharma and Suryanarayana (2000) had reported that the coconut and areca nut were highly influenced by the weather and soil fertility status in these islands and the influence of weather on the coconut yield was cumulative (Prasada Roa, 1984; Jacob Mathew *et.al*, 1986). Hence, an attempt has been made to identify coconut - weather relationship in hot humid tropical islands through simple correlation studies.

Weather variables data such as rainfall, maximum and minimum temperatures, relative humidity both morning and evening and wind speed were collected for a period of 27 years (1975 to 2001) from the basic records of agro met station of Central Agricultural Research Institute, Port Blair and India Meteorological Department, Regional center, located at Port Blair. The coconut production data from 20 ha farm of Central Agricultural Research Institute, Port Blair were also collected from 1975 to 2001 and yearly average was worked out for the convenience of analysis. In order to assess the dependability, weather and crop data were subjected to coefficient of variation analysis and simple correlation studies.

Weather variables

The data on weather variables *viz*., rainfall, relative humidity (morning and evening), and maximum and minimum temperatures and wind speed for the period from 1975 to 2001 along with coconut annual yield data are shown in Table1. The CV of the above variables indicates high dependability of the data collected for analysis. The coefficient of variations for rainfall and coconut yield is 18 and 27 per

Table 1 : Weather variables and annual coconut yield (nuts/tree)

Year	Rainfall (mm) Total	Temperature ^{0}C		Relative humidity (%)		Wind speed Kmph	No of rainy days	Coconut yield (nuts/tree/year)
		annual Mean Max	annual Mean Min	annual Mean FN	annual MeanAN			
1975	2893.7	29.4	22.2	79	81	10.7	140	52
1976	2714.1	29.1	20.8	76	78	11.6	138	63
1977	2728.0	29.8	21.0	78	80	10.9	124	72
1978	2718.1	29.8	21.1	78	79	11.0	130	80
1979	1561.4	30.2	23.4	76	78	10.7	117	58
1980	3751.6	30.2	23.1	77	79	10.6	127	66
1981	3204.0	29.9	23.2	76	81	10.8	127	70
1982	2394.4	29.9	22.5	77	80	10.2	119	54
1983	3421.9	30.0	23.4	76	78	8.8	180	48
1984	3421.1	29.8	23.6	77	80	9.8	124	45
1985	2197.8	29.1	23.3	77	80	10.4	53	33
1986	2199.5	29.9	22.2	76	79	10.2	173	38
1987	2635.3	30.2	22.9	77	79	9.4	181	52
1988	3649.2	29.8	21.6	78	80	9.4	144	44
1989	2593.7	29.6	20.4	78	79	9.4	164	46
1990	2067.7	29.9	24.2	79	81	8.8	124	46
1991	3065.5	30.0	23.7	77	79	9.5	125	34
1992	2542.9	29.6	23.0	76	80	9.4	120	52
1993	3512.4	30.0	24.0	75	78	7.4	152	54
1994	2988.1	30.1	23.4	77	80	9.0	120	51
1995	3565.8	30.2	23.8	78	80	7.8	140	61
1996	3206.7	30.0	23.6	78	82	7.7	188	31
1997	2840.5	30.3	23.7	76	79	8.4	111	37
1998	2811.5	27.8	21.4	73	75	6.8	192	94
1999	2943.4	29.5	22.7	79	81	7.0	209	54
2000	2988.5	29.8	23.3	78	81	7.8	154	67
2001	3113.4	30.2	22.8	78	81	7.5	159	56
CV (%)	18	1.7	4.7	1.7	1.8	14.7	22.7	27

cent respectively.

Relationship between weather variables and coconut yield

The correlation between rainfall and coconut yield and between maximum temperature and coconut yield (Table2) were significant at 5 per cent level

Table 2 : Correlation coefficient between weather variables and coconut production

	Rainfall (mm)	T.Max (^{0}C)	T.Min (^{0}C)	Morning RH (%)	Evening (RH%)	Wind speed (kmp h^{-1})
Coconut production (nuts $tree^{-1}$ $year^{-1}$)	0.1286*	0.3531*	-0.6060**	0.1247	-0.0804	0.5563**

*Significant at 5 % level
**Significant at 1 % level

indicating their influence on coconut productivity. Wind speed and minimum temperature showed positive and negative correlation respectively at 1 percent level. Role of wind speed on coconut yield could be explained through its effect on pollination. Similar finding was also reported by (Vijay Kumar *et.al*, 1987).

Due to cumulative drought that occurred 15 to 16 months before opening of inflorescence and prevailed drought during 1985 led to abortion of spa dices.The particular year had lesser rainfall from January to April and this had cumulative impact production of nuts during 1985-1986. During the period from 1994 to 1997, there was a heavy rainfall. It is observed that heavy rainfall may interfere with pollination and also affect root oxygen need and thus affect the nut yield.

Two years prior to 1998 there was optimum rainfall with enough rainy days. There was also low wind speed. This might be the reason for enhanced production during 1998.

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