Agric. Res. J, Kerala, 1985, 23 (2) 193—195

CORRELATION OF YIELD OF PTB RICE VARIETIES WITH SOME WEATHER FACTORS

Weather plays a prominent role in the agriculture of a country particularly India. Not only the amount of rainfall received but also its spread over the season is also important in determining productivity. Numerous crop weather correlation studies have been reported on paddy from India and abroad. But very little information on this respect is available from Kerala state. Though paddy is grown as a rainfed crop in most parts of Kerala in the first crop season no systematic studies have been made yet to find the reliance of the crop on monsoon rainfall. Both too much rainfall and too little rainfall are detrimental to crop production. Number of moist days/week can be regarded as a rough indicator of the variability in rainfall distribution. It is not the aggregate rainfall but the amount of rainfall and its distribution in certain distinct phases of crop growth that is more important. The total life span of the rice plant can roughly be divided into five distinct phases, viz., nursery stage, early tillering and late tillering stages, reproductive phase and ripening phase. It is interesting to know whether sufficient quantity of rainfall has been received during all these distinct stages of crop growth and whether the excess or deficit rainfall received during a period has a detrimental effect on crop growth and yield. Such a preliminary analysis can do ail the ground work for an elaborate investigation.

The data on grain yield of two varieties of paddy viz., PTB 1 and PTB 5 and those on daily weather parameters were collected from the Regional Agricultural Research Station, Pattambi for a period of 24 years from 1 949 to 1973 (excluding the year 1972 due to certain abnormalities). The crops were grown on the same site under more or less uniform cultural and management conditions apart from the vagaries of weather. The quantity of rainfall and number of rainy days received during the week which is X weeks after sowing were correlated with the total quantity of grain yield for the two varieties of rice and the zero order correlation coefficients are given below.

A significant negative correlation was observed between rainfall during the 8th week after sowing and grain yield of PTB 1 variety. Rainfall during the first week had a weak positive response for both the varieties. For PTB 1 number of rainy days during the 7th week had a signficant correlation with grain yield.

As a further step in the analysis the total amount of rainfall and number of rainy days during the different phases of crop growth were correlated with crop yield. The correlation coefficients so obtained are given in Table 2.

For PTB 5 variety there was significant negative correlation between rainfall at early tillering phase and yield. Number of rainy days during the ripening phase of crop growth was found to be significantly and negatively correlated in the case of PTB 1 but for the other variety the correlation coefficient was negative though nonsignificant.

Table 1

Correlation coefficients between weekly weather parameters and yield of rice

No.of weeks after sowing	Correlationcoefficientsof grain yield with Rainfall		No. of rainy days	
	PTB 1	PTB 5	PTB 1	PTB 5
1	0.3432	0.2362	0,1870	0.0218
2	0.2559	0.2528	0 0528	0.1101
3	—0.0624	0.0582	0.0718	0.1951
4	—0.0677	—0.2984	0.0184	0.1287
5	-0.0769	—0.3430	0,1495	0.3818
6	-0.0279	—0.1050	0.1306	-0.1472
7	—0.1967	0.0244	0.4688*	0.0416
8	-0.4675*	-0.3886	-0.2839	—0.1069
9	0.1141	0.1461	0.1679	0.0968
10	0.0296	0.2812	—0.1524	0.1588
11	—0.2538	—0.4024*	0.2918	0.0630
12	—0.1844	—0.1260	-0,4587*	—0.2580

n -24

* indicates significance at 5% level of probability

Table 2

Correlation coefficients of amount of rainfall and number of rainy days during different growth phases of rice crop with yield of paddy.

Growth phases	Correlation coefficients			
	Rainfall		No, of rainy days	
	PTB 1	PTB 5	PTB 1	PTB 5
Nursery	0 0559	0.2188	0.0986	0.1970
Early tillering	-0.1320	—0.4920*	0.1763	—0.1176
Late tillering	—0.1999	-0.0604	0.0638	0.1417
Reproductive	—0 2023	-0.0031	0.1817	0.0705
Ripening	—0.1844	-0.1260	—0.4317*	—0.2691

Thus it is evident that sufficient quantity of rainfall had been received during the different crop growth phases at Pattambi and an excess amount of rainfall during the early tillering phase would cause a decline in the grain yield of PTB 5. For PTB 1 an excess amount of rainfall during the 8th week produced detrimental effects. A larger number of moist days during the ripening period of PTB 1 variety was found to exert a depressing effect on grain production.

സംഗ്രഹം

വർഷപാതത്തിന്റെ അളവ്, മഴ ദിവസങ്ങളുടെ എണ്ണം എന്നിവയ്ക്ക് നെൽവിളവിൽ ചെലുത്താൻ കഴിയുന്ന സ്വാധീനത്തെക്കുറിച്ച് പരിശോധിക്കുന്നതിന് പട്ടാമ്പി നെല്ലു ഗവേഷണ കേന്ദ്രത്തിൽ നിന്നും ശേഖരിച്ച ഇരുപത്തി നാലു വർഷത്തെ ratrnmsmgoo പഠന വിധേയമാക്കിയപ്പോഴാം വിത്തിറക്കിക്കഴിഞ്ഞു വരുന്ന എട്ടാമത് ആഴ്ചയിലെ വർഷപാതവും പി. ടി. ബി. firm" എന്ന ഇനം വിത്തിന്റെ വിളവുമായി ഋണസഹബന്ധം നിരീക്ഷിക്കുകയുണ്ടായി. അതേ ഇനം തന്നെ ഏഴാമത് ആഴ്ച യിലെ മഴ ദിവസങ്ങളുടെ എണ്ണവുമായി ധനസഹബന്ധം കാഴ്ചവെച്ചു. പി. ടി. ബി. അഞ്ച് എന്ന ഇനം നെല്ലിൽ ചിനപ്പുപൊട്ടാൻ തുടങ്ങുന്ന കാലഘട്ടത്തിലെ മഴ ദുഷ്ഫലമാണ് പ്രദാനം ചെയ്യുക എന്ന് കണ്ടു. പൊതുവെ പട്ടാമ്പിയിൽ മഴയുടെ ദൗർലഭ്യത്തേക്കാം അതിന്റെ ആധിക്യവും അസമിത വിതരണവുമാണ് നെൽവിളവിനെ പ്രതികൂലമായി ബാധിക്കുന്നത്.

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