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EFFECT OF DIFFERENT DATES OF SOWING AND GENOTYPES ON YIELD PERFORMANCE OF MAIZE UNDER MID HILLS OF MIZORAM

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Mizoram, a mountainous region occupies an area of 2.109 mha and lies between 92° 15" to 93° 29" E longitude and 21° 58" to 24° 35" N latitude. It has a sub tropical and humid climate, which favours the growth of a large number of agri-horticultural crops. The farmers mainly practice "Jhum cultivation" (Shifting cultivation). Out of the total geographical area only 19.4% area is utilized for cultivation of various crops in this state and maize is the second most important crop next to rice, occupying an area of 8260 ha with a low production of 16499 MT

(Anonymous, 1998) The major production constraints are unfavourable climatic conditions, low and non judicious use of plant nutrients, steep slopes leading to high soil erosion, soil acidity and associated problems. Non adoption of modern technologies (Patiram et al. 1994 and Sharma and Singh, 1998). Planting season of the crop has a greater influence on yield parameters and to control the epidemic of numerous disease and insect pests under field conditions (Lakra and Saharan, 1990) An experiment was, therefore, conducted to study the effect of different dates of sowing on yield parameters of maize in the context of concern climate of Mizoram.

A field experiment was conducted during kharif 1998 under upland conditions at ICAR Research Complex for NEH Region, Mizoram Centre, Kolasib. Initial soil sample was collected, processed and analyzed for textural components (Jackson, 1973), organic carbon (Walkley and Black, 1934) and other chemical constituents (Jackson, 1973). The experiment was laid out in three replications in a randomized block design having 4 main treatment and 5 sub-treatments (Table 1). Farmyard manure (FYM) @ 10t/ha was applied well in advance of sowing of crop. A uniform dose of 100-80-60 kg N, P_2O_5 and K_20/ha was followed. Nitrogen was applied in the form of urea in three split doses (Half at basal, ¼ at crown root initiation and ¼ at tasseling stage). Entire doses of P and K were applied in the form of single super phosphate and muriate of potash. Seeds were dibbled at 45 x 30 cm spacing and other inter-cultivation practices were followed. The crop was harvested at 110 days after sowing.

The soils are sandy loam in texture and belongs to Haplaquents, acidic in nature (pH 5,4), non-saline (EC 0.23 dS/m), medium in organic carbon (0.69%), low in available N (238 kg/ha), low in available P_2O_5 (12.6 kg/ha) and medium in available K_20 (284 kg/ha). Low fertility status is due to leaching and erosion of soil nutrients due to excess rainfall, undulating

topography and steep slopes, slower rate of decomposition of organic matter and mineralization processes at higher altitudes (Singh and Datta, 1988 and Patiram et al. 1994). The kernel yield and other yield attributes varied with the date of sowing (Table 1). Highest kernel yield (36.33 q/ha) was recorded with D_2 i.e. sowing on 17th April followed by D_1 (32.52 q/ha), D_3 (24.32 q/ha) and D_4 (10.95 q/ha). The yield attributes like number of cobs/plant, number of rows/cob, number of kernels/row, test weight and dry cob yield/plant were also followed the same trend as like in kernel yield. Maximum plant height (203.1 cm) was recorded in D_3, whereas stover yield/plant was observed in D_1. The kernel yield was significantly varied between D_1 & D_3; D_1 & D_4; D_2 & D_3; D_2 & D_4 and D_3 & D_4. The second date of sowing (17th April) was most effective to produce highest yields of maize due to favourable climatic conditions such as optimum temperature (28.7°C) accompanied with highest rainfall (1139.6 mm) during the crop growth season.

The highest kernel yield (39.48 q/ha) was recorded in (Ganga-5 followed by Navjyot (34.65 q/ha), while it was lowest in RCMI-I (17.58 q/ha). The kernel yield and other yield parameters were non-significantly varied between the genotypes. In line with the kernel yield other yield attributes were also significantly higher in Ganga-5 as compared to other genotypes. Among the genotypes, highest stover yield/plant (170.6g) and plant height (196.7cm) were recorded in Navjyot. The interaction effect between dates of sowing and genotypes on plant growth parameters was found to be non significant.

The results showed that first fortnight of April was the best sowing season for maize to obtain highest yields under mid hill conditions of Mizoram. The composite varieties Ganga-5 and Navjyot showed better performance, which were found to be more suitable under the agro-climatic conditions of Mizoram.

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Table 1. Effect of dates of sowing and genotypes on yield parameters of maize

Treatment	Plnt height (cm)	No. of cobs/ plant	No. of rows/ cob	No. of kernels/ row	100 kernel weight (g)	Dry cob yield/plan (g)	Stover yield/plant (g)	Kernel yield (q/ha)
Dates of sowing								
DI- 2nd April	177.8	1.31	12.37	32.37	23.40	131.20	144.13	32.52
D2- 17th April	187.7	1.44	12.98	33.84	25.07	158.27	103.60	36.33
D3- 2nd May	203.1	1.13	11.74	30.40	22.27	91.73	81.73	24.32
D4- 17th May	170.6	1.01	11.12	26.63	21.80	65.73	55.53	10.95
CD (P = *0.05)*	10.9	0.18	0.76	3.39	1.31	23.78	22.48	7.61
Genotypes								
Gi- RCMI-1	178.7	1.06	10.84	26.43	23.83	90.33	68.17	17.58
G2- RCM 1-3	179.5	1.09	11.02	30.09	24.83	97.75	67.08	20.01
G3- RCM 1-2	174.6	1.05	12.57	31.87	24.58	74.83	61.67	18.44
G4- Navjyot	196.7	1.44	12.73	30.91	25.58	129.83	170.58	34.65
G5- Ganga-5	194.6	1.49	13.10	34.74	26.83	165.92	113.75	39.48
CD (P = 0.05)	12.3	0.22	0.85	3.79	1.47	26.59	24.58	8.51
CD (P = 0.05)	24.6	0.34	1.71	7.57	2.93	53.17	49. i6	17.03
Interaction (DxG)								