

"Physiological Studies of Certain Varieties of Wheat"

Submitted to Gujarat Agricultural University,
1978

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In the present investigation six wheat varieties viz. "H.D.M. 1593, Junagadh-1, R.R.21, Triple Dwarf and N.P. 824" were included to study their yield potential as well as the various yield contributing characters viz. morphological and physiological as well as nutrient contents of plant parts, at 30, 60 and 90 days of growth under alluvial sandy loam soil (Goradu) conditions during two consecutive years. The findings of the study are summarized as follows :

The variety H.D.M. 1593 gave the maximum grain yield (4357 kg/ha) followed by Triple Dwarf and Junagadh-1. Harvest index, number of grains per spike, tillers, net assimilation rate, leaf area ratio, relative growth rate, relative leaf growth rate etc. were positively associated with grain yield.

The variety H.D.M. 1593 showed the highest harvest index (0.486), indicating that it possessed more efficiency for converting the biological yield into economic yield. H.D.M. 1593 produced maximum number of grains per spike (62.5). There was positive association between grain yield and number of grains per spike, indicating that the grain yield can be enhanced by increasing the number of grains per spike. The varieties H.D.M. 1553 and R.R. 21 bolder grains than that in the rest of the varieties. It was noticed that by increasing

test weight in most of the varieties, the grain yield can be increased. The grain yield was independent of plant height. The number of tillers per plant had substantial contribution in grain production in H.D.M. 1593, Triple Dwarf and N.P. 824. Increased growth of roots during early stage of growth enhanced grain production. Comparatively high rate of growth after 60 days in H.D.M. 1593 and Triple Dwarf resulted into increased grain production.

The variety H.D.M. 1593 had maximum NAR value. NAR favoured high grain production. The association of LAR and RGR with grain yield was also high, indicating positive contribution by LAR and RGR to grain production.

The comparatively high accumulation of phosphorus in roots during 0 to 60 days of growth resulted into increased production of grain in dwarf variety H.D.M. 1593 and more straw in tall variety N.P. 824.

The high uptake of phosphorus by stem at 90 days of growth resulted into increased production of grain in dwarf varieties H.D.M. 1593 and Triple Dwarf, while more straw in N.P. 824 and Junagadh-1.

Thus the findings revealed that the high grain yield of dwarf varieties H.D.M. 1593 and Triple Dwarf was due to high harvest index, more grains per spike, more number of tillers, high rate of growth, more leaves, more NAR, higher uptake of nitrogen during 30 to 90 days of growth and also high P_2O_5 accumulation during 0 to 60 days of growth. In tall varieties like N. P. 824, higher tiller number, more leaves, high nitrogen content in roots at 60 days of growth and high accumulation of P_2O_5 during 0 to 60 days of growth resulted into decrease in production of grain and increase in production of straw.