

ing physiogenetical constitution of these seeds.

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PHOTOPERIODIC TREATMENT AND NITROGEN UPTAKE IN WHEAT

DIFFERENTIAL varieties response of wheat,^{10,12} barley,^{7,8} corn¹¹ and cotton^{5,6} to mineral nutrients is known. Correlations between growth and development of wheat and its photo-requirement reported elsewhere^{1,2,3,4} may prove useful in elucidating the problem of varietal response. With this in view, the effect of photoperiodic treatment on nitro-

TABLE I.

The ratio of N-content of stem and N-contents of leaf under different light treatments

Time days from sowing	Photoperiodic treatment		
	SD	ND	LD
51	0.70
58	0.71
65	0.42	0.43	0.72
72	0.22	0.42	0.99
79	0.33	0.44	1.30
86	0.38	0.38	1.34
93	0.51	0.47	1.90
100	0.39	0.74	1.89
107	0.34	0.67	2.37
114	0.76	0.98	1.64
121	0.71	0.99	..
128
135	1.85	1.24	..
Vegetative period (days)	109	99	78

gen uptake has been studied and the results throw some light on the varietal response of wheat.

Percentage Nitrogen content of leaves decreases rapidly with successive samples under normal day (ND) and is finally lower than those under longday (LD) and shortday (SD) treatments. It remains high in SD, probably because rapid utilization is hindered by low carbon assimilation. Table I shows interesting differences in nitrogen distribution in stem and leaf.

The ratio in SD and ND treatments increases suddenly at the time of flowering (anthesis) and is maintained at a high level. In the LD treatment, it is high from the very beginning. This increase in stem nitrogen shows that stem growth has reached its maximum at flowering and that a large portion of this increased stem N is ultimately translocated to the ear and utilised in grain formation. This is proved by the increased ear nitrogen corresponding to a decreased stem nitrogen. As the nitrogen of the ear is ultimately derived from the leaf, the leaf N decreases more rapidly than that of the stem and thus a high-level ratio is maintained.

Wheat varieties of different flowering classes have different inherent growth patterns, and when placed under different vernalization and photoperiodic treatments, the pattern changes with alteration in flowering time. An early rise in stem N under LD treatment, has greater significance as a similar early rise in stem N of early varieties is also observed.

A new orientation to concept of mineral nutrition in plants is given by Gregory⁹ in his "Internal Starvation" stage which marks the maximum in nutrient uptake rate and cessation of exponential growth in leaf area and dry weight increase. It supervenes even under high level nutrition and appears to bear some relation to onset reproductive phase.

Our findings support this view. The nitrogen uptake and distribution in wheat under different light treatments can be made to resemble that occurring in early and late varieties. A suggestion is made that the regulatory mechanism which puts an early check on tiller production and leaf dry weight increase in LD plants and in early flowering varieties also controls the nitro-