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# Response of some spring cultivars of wheat (*Triticum aestivum* L.) to temperature, soil moisture level, and copper

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**Response of some spring cultivars of wheat (*Triticum aestivum* L.) to temperature, soil moisture level, and copper**

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1979.**

The response to temperature and soil moisture of the yield of two spring wheat cultivars, Mexipak and Runar, was investigated under greenhouse conditions at Aas (Lat. 60°N) in Norway. At Mbeya (Lat. 8°54'S) the response to soil moisture and copper application of the yield of four spring wheat cultivars, Leopard, Mamba, Korongo and Trophy was investigated, also under greenhouse conditions. The soil moisture levels were maintained, between 68% - 83% and 49% of the soils' field capacity, by weighing periodically, for high and low moisture levels respectively. The temperatures tested were 12, 15, 18, 21 and 24°C. in the first experiment, higher yield was obtained at the high soil moisture level. High soil moisture level combined with low temperatures especially during maturation favoured grain yield. The higher yield was a result of increased grain numbers and weight of individual grains. Straw yield was also favoured by high soil moisture level and low temperatures especially following heading. Prior to heading temperature yield was mainly a result of taller plants and more tillers, produced at the high soil moisture level and low temperature than at the low soil moisture level and high temperature. In the second experiment both straw and grain yield were more favoured by the high soil moisture level which ranged between 65% - 85% of the soil's field capacity than at the low soil moisture level which ranged between 25% - 55% of the soil's field capacity. This was true for all the four cultivars used. Use of copper resulted in increased grain and straw yield in all the cultivars. No significant differences were apparent between the copper treatments. There was a tendency of higher yields being realized where copper was applied as a seed-dressing or in solution to the soil during tillering. Use of copper was particularly beneficial in increasing yield where a high soil moisture level was maintained. The higher grain yield was mainly due to the production of more kernels as a result of a higher percentage of seed setting and high individual grain weights. The higher straw yield was a result of greater filler numbers and taller plants. The straw yields were especially high where copper was used and a high soil moisture level was maintained. Low yields would be expected, in practice, where copper is deficient and low soil moisture levels are prevalent particularly following heading. Low soil moisture levels then result in reduced % seed setting and hence fewer grains. This appears to be aggravated by inadequacy of copper in the soil. Cultivars adapted to more humid and cooler conditions were more adversely affected by low soil moisture levels.