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# Effect of Physiological, Food Quality Parameters and Heavy Metals under Wastewater and Ground Water Condition in Maize and Wheat Crops in Various Growth Stages

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**Abstract—***In recent years, water shortage and environmental hazards of wastewater have promoted the development of wastewater reuse in irrigation of agricultural lands in many regions of the world. Keeping this view in mind, an experiment was conducted in Indian Agricultural Research Institute, New Delhi where Maize cultivar HQPM-1 and Wheat cultivar HD-2967 were sown in the fields of Water Technology Centre under ground water and wastewater condition with different level of nitrogen and under different land configuration such as raised bed and flat bed. Physiological parameters such as photosynthesis related traits, SPAD chlorophyll, proline were recorded at various growth stage of the crop under waste water and ground water conditions. SPAD chlorophyll, proline and RWC values were higher in vegetative growth stage under wastewater treatment and increased under increased fertilizer doses. Promoting effect of fertilizers on chlorophyll content may be due to this fact that nitrogen is a constituent of chlorophyll. There were no significant differences recorded in raised bed and flat bed. Food quality parameters such as sugar, starch and protein were also recorded in different growth stages under ground water and wastewater treatments. Under wastewater treatment, sugar content was higher than control treatment and increased when fertilizer doses increases. Starch and protein content were higher in grain under wastewater treatment. Heavy metal such as Cd, Cr, Cu, Fe, Ni, Pb and Zn were studied in different level of nitrogen under ground and wastewater treatments. Wastewater treatment showed higher concentration of heavy metal in maize and wheat crops. All the heavy metal are in permissible limit.*

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