

## **Effect of mulching, row direction and spacing on microclimate and wheat yield at Ludhiana**

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### **ABSTRACT**

The field experiments were conducted in *rabi* seasons of 2014-15 and 2015-16 at research farm, Ludhiana, Punjab. Wheat variety (WH 1105) was sown in two row directions *viz.*, east-west (E-W) and north-south (N-S) with three row spacing as  $S_1$  (15 cm),  $S_2$  (22.5 cm) and  $S_3$  (30 cm), and two mulching levels *viz.*,  $M_0$  (No mulch) and  $M_1$  (mulch at the rate of 5t ha<sup>-1</sup>). PAR interception, canopy temperature, soil temperature and soil moisture were recorded periodically during the crop season in all the treatments. The results revealed that the intercepted photosynthetically active radiation (PAR) was 4-5 per cent higher in E-W than N-S row direction which contributed 1.67 q ha<sup>-1</sup> higher grain yield. Better utilization of solar radiation was observed in 15.0 cm row spacing and the canopy temperature was 0.5°C higher in unmulched crop as compared to mulched crop during both years. Straw mulching @ 5t ha<sup>-1</sup> improved soil moisture and regulated soil temperature. Mean soil temperature was higher (1.0 °C) under mulched crop as compared to unmulched crop. The soil moisture was 4-5 per cent higher under mulched crop as compared to unmulched crop which ultimately resulted in higher soil temperature during early growth stages. Significantly higher grain yield was recorded in mulched crop as compared to unmulched.

**Keyword:** Wheat, rice straw mulch; soil temperature; soil moisture; photosynthetically active radiation; canopy temperature