



EFFECT OF PLANTING TECHNIQUES AND CUTTING PRACTICES ON MICROMETEOROLOGICAL PARAMETER OF DUAL PURPOSE BARLEY (*HORDEUM VULGARE L.*) IN PUNJAB

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Abstract: A field experiment was carried out during the *rabi* season of 2014-15 at Students Research Farm Punjab Agricultural University, Ludhiana, Punjab with sowing of var. PL 807 on dated Nov.5, 2014 of barley crop grown in sandy loam soil, the experiment was laid out in randomized block design (RBD) with 9 treatments have three planting techniques viz. unidirectional (UD), bidirectional (BD), broadcast (BC) and three cutting practices viz. uncut (UN_c), cut at 50 DAS (C_{50 DAS}) and cut at 60 DAS (C_{60 DAS}) with four replications. The planting techniques hence optimum soil temperature is considered to be key factor during emergence and it sustain early seedling development. The minimum soil temperature ranges between 17.5 °C to 20.7 °C and maximum temperature between 26.8 °C to 28.7 °C in bidirectional than other planting techniques. In periodical morning soil temperature was higher in BD, but afternoon soil temperature was low in BD than BC and UD planting. The canopy temperature and photosynthetically active radiation (PAR) in BD and UN_c was significantly higher than BC, UD planting and cutting practices at 50 and 60 DAS of barley.

Key words: Planting techniques, Cutting practices, Soil temperature, Canopy temperature, PAR, Barley.

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Barley (*Hordeum vulgare L.*) is the fourth most important cereal crop of the world after wheat, rice and maize. Its grains contain 8 to 10 percent protein and 74 per cent carbohydrates besides the minerals and vitamin B-complex and thus forms a staple food, cattle feed, malt for manufacturing of beer and other liquor products (Singh et al., 2009). Its straw is also used for making hay and silage. Due to its very hardy nature, barley can be successfully cultivated under adverse agro-climatic conditions. Barley is usually preferred crop by farmers over wheat under constrained environment (Mishra and Kumar, 2002).

The solar radiation that falls between crop rows remains unutilized and within rows over-crowded plants suffers from mutual shading. To get the maximum photosynthetic efficiency from all the leaves of a plant a uniform distribution and proper orientation of plants over a cropped area is needed for greater light interception throughout the crop profile. The orientation and spacing of rows also affect photosynthetic efficiency and canopy temperature through increased interception of solar radiation within the crop canopy. It should be possible to reduce soil temperature and advective currents through increasing light interception by the crop and orienting the crop rows across the wind direction, but wind direction does not remain constant.

However, bidirectional planting should be the alternative. Under Punjab condition, the germination to maturity of barley hastened due to gradual rise in ambient temperature under delayed planting. Hence, it becomes imperative to have knowledge of microclimate exact a particular crop-growing environment and their impact on yield of crop. Therefore, an experiment was planned to determine the micrometeorological parameter of dual purpose barley (*Hordeum vulgare L.*) as influenced by planting techniques and cutting practices.

MATERIALS AND METHODS

Study Area

The present investigation entitled, "Effect of planting techniques and cutting practices on micrometeorological parameter of dual purpose barley (*Hordeum vulgare L.*) in Punjab" was conducted during the *rabi* season of 2014-15 at Punjab Agricultural University, Ludhiana, Punjab with sowing of var. PL 807 on dated November 5, 2014 of barley crop grown in sandy loam soil, the experiment was laid out in randomized block design with 9 treatments have three planting techniques viz. unidirectional (UD), bidirectional (BD), broadcast (BC) and three cutting practices viz. uncut (UN_c), cut at 50 DAS (C_{50 DAS}) and cut at 60 DAS (C_{60 DAS}) with four replications. The fertilizer application a uniform basal dose of 62.5 kg N ha⁻¹, 30 kg