Solar Radiation Utilization and Temperature Changes on the Furrow at Different Plant Type of Wheat (*Triticum asstivum* L.)

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In now days, the importance of this crop is increasing due to the confidence that wheat produced in Korea is good for health care. According to changing the goal of wheat breeding as higher yield to higher quality after 90's, although the plant type have also been changed the creeping to the stand erect, the cultivation method, that is planting space, have not been changed.

The objective of this study was to identify solar radiation utilization and temperature changes on the furrow at different plant type of wheat, and to know the optimum planting space for yield.

Three commercial wheat cultivars (stand erect-Tapdongmil, middle-Urimil, creeping - Gumgangmil) were planted

The time to 80% coverage stage was early with increasing the plant density and the creeping type was earliest. The transmission rate was lowest at average 39.2% in the creeping type and was highest at average 75.8% in the stand erect type. the that rate was decreasing with growing. At heading stage, that rate was low up to 1.4% in 10cm for the creeping type but the trend did not changed. and the correlation ship between the coverage rate and the transmission rate was significant at 5% level as r=-0.8624, and the coefficient of determination was R2=0.7438. In plant type, increasing the plant density, the effective tiller rate was higher, leaves areas was increased with being lower the plant density in the stand erect and the middle type, but not different in the creeping type. In the lower plant density, the increasing of leaves area was due to being longer the length of the flag and the first leaf. During growing crop plans, temperature on the furrow is changed by the canopy. the change patterns of temperature on the furrow according to plant types at winter season were different that the non-plant ground was lowest and the creeping type was highest, casing in reduction the sun cold air flow and sun on the non-plant was more free than that in the plot planted. Increasing plant density lowered the amount of cold air flowing on the furrow, resulting in a keeping temperature on the furrow.

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Table 1 Coverage rate at plant types and plant densities

Plant type	Plant density (cm)	Coverage rate(%)					
		Feb.23	April 1	April 11	April 24	May 2	May 26
Stand Erect	10x5	40	75	85	95	100	100
	20x5	30	40	55	75	85	98
	30x5	15	30	40	55	70	80
Middle	10x5	55	80	90	95	100	100
	20x5	50	55	70	80	85	98
	30x5	20	45	50	60	70	90
Creeping	10x5	55	80	90	100	100	100
	20x5	60	65	75	85	90	98
	30x5	20	40	50	60	75	90

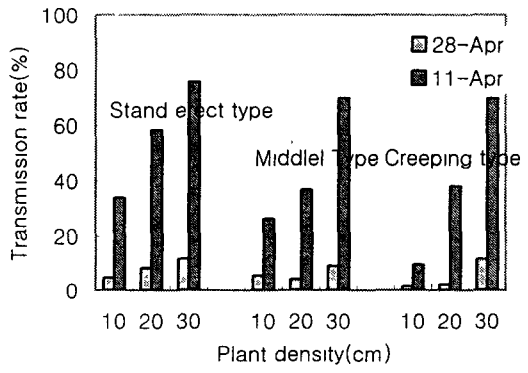

Fig 1. Transmission rate at plant types and plant densities

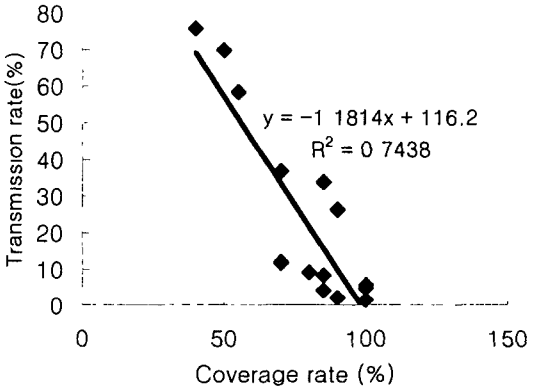

Fig 2. Correlation between coverage rate and transmission rate

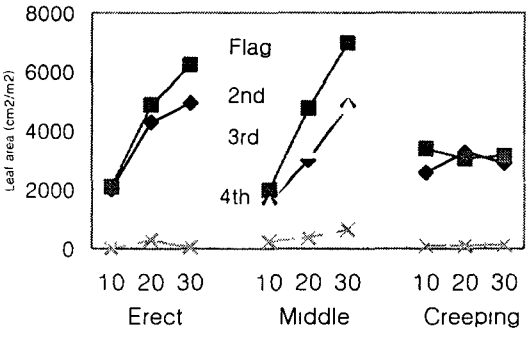

Fig 3. Leaf area rate at plant types and plant densities

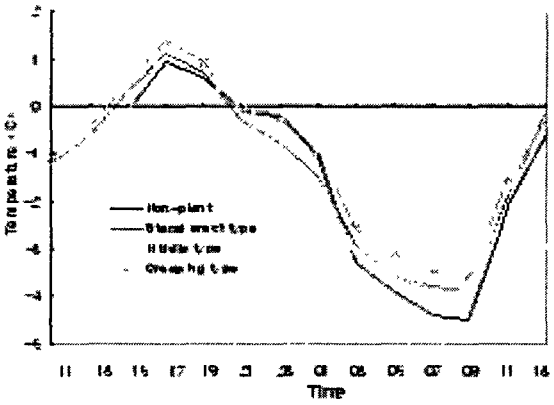

Fig 4. Change of temperature in the furrow according to plant types