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**Theme 2.** Grassland production and utilization

**Sub-theme 2.7.** Seed production, storage, availability and quality

## Effect of different seeding rate on seed production of the rye variety “Gogu” in Korea

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### Introduction

The rye (*Secale cereale* L.) has been used as an excellent green manure crop and good forage crop in Korea. The rye is usually recommended as a winter crop for forage and green manure after either maize or rice in Korea (Heo *et al.*, 2009). But most of its seeds are being imported from foreign countries because the seed productions have difficulty with late-maturing and the heavy raining season in the ripening stage in Korea. Therefore, a new rye variety “Gogu” with an early-maturing and high performance was bred by National Institute of Crop Science (NICS), Suwon, Korea in 2004. This study was carried out to determine the effect of seeding rate on the seed yield and agronomic characteristics of the rye variety “Gogu” in the north eastern area, Youngwol, Korea.

### Materials and Methods

The rye variety “Gogu” was sown with narrow drill seeding (25 by 5 cm) in randomized block design on October 8, 2013. The seeding rate was three levels (30, 50 and 70 kg per ha) to see the effect of seeding rate on the early plant growth at the 12<sup>th</sup> day after planting (October 20, 2013), agronomic characteristics at heading stage (April 25-26, 2014) and seed yield at ripening stage (June 23, 2014), respectively.

### Results and Discussion

The emergence date of all rye treatments were on Oct. 20, 2013 and emergence rate was over 90 percent on all treatments. Regrowth after overwintering was started on Feb. 25, 2014. There was no damage in all treatments except for a bit of lodging before sampling.

The heading date of rye was on April 26, 2014. The heading date had no difference among seeding rate treatments. The number of tillers and panicle number per ha were slightly increased by high seeding rate ( $P < 0.05$ ). Although Kim and Chae (1991) reported that the fresh and dry weights of rye were increased as seeding rate increased in paddy and dry matter yield per plant was decreased by high seeding rate in this study. The percentage of fertile grain had no difference among different seeding rate. Also, the weights of 1,000 seeds were slightly decreased by high seeding rate. However, the seed yield per ha was increased by high seeding rate ( $P < 0.05$ ).

Also, Chungcheongnam-Do Agricultural Research & Extension Services (1988) reported that the optimum seeding rate was 60kg/ha for rye seed production.

**Table 1:** Agronomic characteristics and seed yield of rye variety “Gogu” by seeding rate.

Seeding rate (kg/ha)	Tiller number (no./ha)	Panicle number (no./ha)	Fertile grain (%)	Weight of 1,000 seeds (g)	Seed yield (kg/ha)
30	9,076,000 <sup>ns</sup>	6,306,667 <sup>b</sup>	87.9 <sup>ns</sup>	26.2 <sup>ns</sup>	4,056 <sup>b</sup>
50	12,534,000 <sup>ns</sup>	7,046,667 <sup>b</sup>	86.7 <sup>ns</sup>	25.2 <sup>ns</sup>	4,945 <sup>a</sup>
70	13,210,667 <sup>ns</sup>	8,753,333 <sup>a</sup>	87.8 <sup>ns</sup>	24.7 <sup>ns</sup>	5,548 <sup>a</sup>

<sup>a</sup> and <sup>b</sup>: Means with different letters within a column are significantly different at the 5% level.

### Conclusion

The experiment indicated that although dry matter yield per plant and weight of 1,000 seeds decreased with increasing seeding rate, and seed yield increased with increasing tiller number and panicle number per ha by the increasing seeding

rate. It is concluded that rye seeding rate of 50-70kg/ha was the most effective way to show the highest seed yield in Korea.

### **References**

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