**Introduction**

- Tall fescue is a common turf grass in northern China, and is widely used in lawn and low-maintenance area for soil and water stabilization.
- Previous research has found that potassium (K) has a very important role in the growth of turf grass (Christians et al., 1979; and Jiang, 2009; Zhang et al., 2008).
- However, K effect on early spring green-up of tall fescue turf is not well documented.

**Objectives**

- In this experiment, the effect of different levels of K fertilization on the early growth and green-up of tall fescue is studied.
- Treatment effect on tall fescue plant height, leaf length, chlorophyll content, alive shoot number, leaf number and green leaf biomass is investigated.

**Materials and Methods**

- **Experimental Field:**
  - The experimental field is outside of the north gate of Northwest A&F University’s North Campus. It is located at the top side of the Wei river plain, north of Qinling Mountains (N34°21', E108°10'; Altitude:458m).

- **Materials:**
  - Tall fescue (*Festuca arundinacea* Schreb.), a cool-season turf grass, was planted in 2006 in a multi-species mixed stand. Except the first mowing before winter, no additional maintenance was applied.

- **The Design of Experiments:**
  - The trial used monopotassium phosphate (containing K₂O 34%) as the source of potassium, with sequential applications of K fertilizer at the rate of 0, 4, 8, 12, and 16 g K₂O/m² (Table 1). Field experiment was designed as a completely randomized block with 4 replications. There is total 20 plots with each 1m² (1m × 1m).

- **The tall fescue began to turn green in early March. Fertilization was initially applied on March 3, 2010 followed by a proper irrigation. After 7 days, three random samples were taken within each 10x10cm quadrant for each plot. Five sequential K fertilizations were made at 10 days apart. Data were collected at seven days after each K fertilization.**

**Results**

- **Figure 3. Chlorophyll Content Measurement**
- **Figure 4. Treatment Effects on tall fescue (April 30, 2010).**

**Conclusions**

- Potassium fertilizer can significantly promote the growth of tall fescue and enhance the green color after winter. The plant height and leaf length were the highest in the treatment of 16g/m². Higher rates of potassium fertilizer resulted in higher number of alive stem with the best rate was 16g/m². Higher rates of potassium fertilizer also increased the chlorophyll content. However, when potassium fertilizer rate exceeded 8g/m², there was no additional chlorophyll content increasing.

- Collectively, our results suggested that application of K fertilizer following spring green-up increases tall fescue growth. The ideal K rate is 8g K₂O /m², which provides the best color and shoot density yet avoids excessive stimulation of shoot growth during the spring.

**References**


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