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Gi-jun Choi

National Institute of Animal Science, South Korea

Young-chul Lim

National Institute of Animal Science, South Korea

Byung-ryul Sung

National Institute of Animal Science, South Korea

Ki-yong Kim

National Institute of Animal Science, South Korea

Jong-kyung Lee

National Institute of Animal Science, South Korea

See next page for additional authors

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Presenter Information

Gi-jun Choi, Young-chul Lim, Byung-ryul Sung, Ki-yong Kim, Jong-kyung Lee, Keun-bal Lim, Hyung-soo Park, Sung Seo, and Hee-chung Ji

Growth characteristics and productivity of a new Cold-Tolerant Italian Ryegrass (*Lolium multiflorum* L.) variety Kowinearly in Northern part of South Korea

¹Gi Jun Choi, ¹Young Chul Lim, ¹Byung Ryul Sung, ¹Ki-Yong Kim, ¹Jong Kyung Lee, ¹Keun Bal Lim,

²Hyung Soo Park, ¹Sung Seo and ¹Hee Chung Ji

¹National Institute of Animal Science, RDA, Cheonan, 330-801, Korea; ²National Institute Subtropical Agriculture, RDA, Jeju, Korea

Key words: Italian ryegrass, cold-tolerance, new variety, Kowinearly

Introduction Italian ryegrass (*Lolium multiflorum* L.) has good productivity and high feed value of forage but its cultivation has been confined to southern part of South Korea because of its poor cold tolerance. Thus, in South Korea, improvement of cold tolerance in Italian ryegrass is very important to increase the productivity and to expand the cultivation area of Italian ryegrass. A cold-tolerant variety Hwasan 101, bred in Korea (Choi et al., 2000), was difficult to be used in cropping after rice harvest in northern part of South Korea because of its late-heading (on about May 20). Therefore, it needs to breed an early-maturing and cold tolerant variety of Italian ryegrass in South Korea.

Materials and methods This study was conducted in the Grassland and Forages Division, National Institute of Animal Science, RDA, Korea during 2003-2006. Italian ryegrass Hwasan 101, Florida 80 and Kowinearly were sown in narrow strips in plots 2 m wide by 3 m long in a randomized block design on Sept. 25-30 in Suwon and on Sept. 20-25 in Yonchun, respectively. Winter field survival was checked in early spring. Herbage was harvested at heading stage for evaluating on dry matter productivity.

Results and discussion Italian ryegrass Kowinearly was a diploid variety with green leaf color and had growth habit of semi-prostrate in autumn and semi-erect type in spring. In Yonchun (Northern part of South Korea), winter field survival of Kowinearly was 85% while Florida 80 was only 43%. Dry matter yield of Kowinearly in Yonchun was 31% more than that of Florida 80 (ie. 7,364 kg ha⁻¹). In Suwon, Kowinearly headed on May 7, being 2 days later than that of Florida 80; but in Yonchun Kowinearly headed on 12 May, which was 1 day earlier. These results indicated that Kowinearly had a good cold-tolerance and started growth earlier than Florida 80 in spring after wintering.

Table 1 Differences in dry matter yield and winter field survival between two Italian ryegrass varieties Kowinearly and Florida in Yonchun of Korea, during 2003 - 2006.

Variety	Winter field survival (%)					Dry matter yield (kg ha ⁻¹)				
	2003	2004	2005	2006	Mean	2003	2004	2005	2006	Mean
Kowinearly	93	90	93	85	90	13,125 ^{a*}	13,701 ^a	5,513 ^a	6,309 ^a	9,662
Florida 80	85	90	57	43	69	11,950 ^a	11,676 ^b	2,263 ^b	3,565 ^b	7,364

* means within a column followed by a same letter indicate non-significant difference at P=5%.

Conclusions Italian ryegrass variety Kowinearly was an early-maturing and cold-tolerant variety that can be recommended for cropping after rice harvest in northern part of South Korea.