Study on Optimum Forage Cropping System at Reclaimed Tideland of Central Provinces in Korea

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Key words: Forage crops, Cropping system, Reclaimed tideland

Introduction Until recently the reclaimed tidelands in Korea have been mainly used as rice paddy. Most studies related to the reclaimed tidelands have also focused on the rice cultivation. However, due to the recent changes in agricultural and environmental situations, there is a need to explore the feasibility of other crops, such as horticulture and forage crops on reclaimed tidelands(Lee and Ahn, 2003). The objective of this study is to select a all-year-round optimum forage cropping system in the reclaimed tidelands of central regions of Korea.

Materials and methods The experimental field was on Daeho reclaimed tideland(37° N, 126.4° E) which is located in Danjin-Gun, Chungnam, Korea. The dike construction for reclamation was completely in 1986. This trial was to study on cropping system which were consisted of Sorghum×Sudangrass hybrid(S)+Barley(B), Sorghum×Sudangrass hybrid+Italian ryegrass(IRG), Japanese millet(M)+Italian ryegrass, Whole crop rice(R)+Barley and Whole crop rice+Italian ryegrass. S and M were used as summer crops. B and IRG were used as winter crops. The experiment was carried out on a saline silt loam soil with the pH of 7.35 and the content of total nitrogen, organic matter and available phosphate were 0.46 g/kg, 8.2 g/kg and 76 mg/kg, respectively. Each plot size was 15 ㎡ and three replicate with randomized complete block design.

Results In cropping systems, R+I had the highest(50,807kg/ha and 15,065kg/ha, respectively). while S+B had the lowest(17,247kg/ha and 5,209kg/ha, respectively). In summer crops, Sorghum of S+B had the highest crude protein(CP) content(12.9%), while Sorghum of S+I had the highest total digestible nutrient(TDN) content(66.0%). In winter crops, Italian ryegrass of S+I had the highest CP and TDN contents. In cropping systems, R+B had the highest CP yield(1,214kg/ha), while R+I had the highest TDN yield(9550kg/ha).

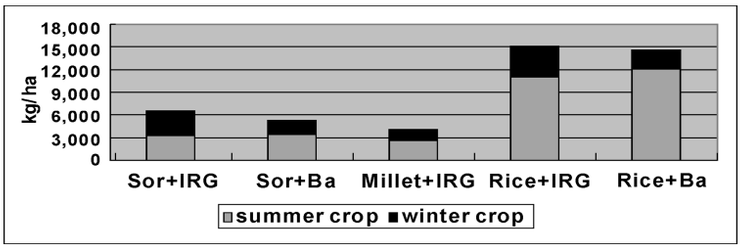

Figure 1 *Dry matter yield of cropping systems at reclaimed tideland('04-'06).*

Table 2 *Crude protein, NDF, ADF and TDN percentage of cropping systems at reclaimed tideland.*

Cropping system	Summer crop(%)				Winter crop(%)			
	CP	NDF	ADF	TDN	CP	NDF	ADF	TDN
S+B	12.9	69.8	31.9	63.7	10.1	62.2	28.7	66.2
S+I	12.1	57.4	29.1	65.9	11.3	52.4	26.6	67.9
M+I	11.6	69.4	31.0	64.4	11.8	51.5	25.6	68.7
R+B	8.5	62.2	32.0	63.6	7.3	61.2	27.8	66.9
R+I	6.3	65.5	32.5	63.2	6.9	55.9	31.6	63.9

*) summer crop: '04-'05, winter crop '05

Conclusions Whole crop rice had the highest dry matter yields among in summer crops and Italian ryegrass had the highest dry matter yield in winter crops. In cropping systems wholecrop rice+Italian ryegrass had the highest dry matter yield, while Whole crop rice+Barley had the highest crude protein yield and whole crop rice+Italian ryegrass had the highest TDN yield.

Reference

Lee S.H. and Y. Ahn. 2006. Situation and prospect of reclaimed tideland in Korea. *The Soc. of Agric. Research on reclaimed Lands*(1):20~31.