

## 밀, 호밀, 보리의 사초 영양 비교 연구

권병선

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### Study on Nutrient Quality among Wheat, Barley and Rye for Forage

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#### 연구 목적

남부 지방에서 밀, 호밀, 보리의 사초 영양을 비교 검토코자 시험하였다.

#### 재료 및 방법

- 가. 공시품종 : 밀 - Urimil, Geurumil  
호밀 - Paldanghomil, Chilbohomil  
보리 - Olbori, Gangbori
- 나. 파종기 : 10월 20일, 파종량 : 15 kg/10a
- 다. 시비량(kg/10a) : N-P<sub>2</sub>O<sub>5</sub>-K<sub>2</sub>O = 12-10-8
- 라. 시험구배치법 : 분할구배치 3반복
- 마. 수량조사 및 영양분석 : 성적 참조

#### 결과 및 고찰

To select the most suitable crop and variety of forage for nutrient quality at the southern part of Korea, the crops of wheat, barley and rye were grown from Oct. 1999 to June 2000. Paldanghomil variety of rye crop was shown to have the highest chemical components in comparison to other varieties of crops used in this experiment.

It showed relatively high content of crude protein and *in vitro* dry matter digestibility (IVDMD) and low content of NDF, ADF, cellulose and lignin. Therefore, it was concluded that Paldanghomil of rye crop was the most suitable variety with high weight and high nutrient quality for forage in the southern part of Korea. The heritabilities of all nutrient quality characters were estimated to be high.

Table 1. Genotypic variances( $\sigma^2G$ ), environmental variances ( $\sigma^2E$ ), heritability( $h^2$ ) and analysis of variance in IVDMD and DDMW of crops.

Characters	$\sigma^2G$	$\sigma^2E$	$h^2$	Variance	
				Variety	Error
IVDMD(%)	5.17	0.86	84.29	6.070**	0.891
DDMW(%)	201.33	78.78	70.74	680.43**	78.780

Table 2. The chemical components of varieties in wheat, barley and rye.

Crop	Variety	Chemical components of dry matter weight(%)					
		CP	NDF	ADF	Hemicellulose (NDF-ADF)	Cellulose	Lignin
Wheat	Urimil	18.32	30.46	19.49	10.97	16.47	2.92
	Geurumil	17.54	32.16	20.21	11.95	17.35	2.98
Barley	Olbori	14.26	33.61	21.10	12.51	18.15	3.13
	Gangbori	14.13	34.54	22.24	12.30	18.50	3.24
Rye	Paldanghomil	19.55	28.16	17.44	9.72	15.63	2.31
	Chilbohomil	18.33	29.36	18.46	9.90	16.26	2.62

Table 3. Genotypic variances ( $\sigma^2G$ ), environmental variances ( $\sigma^2E$ ), heritability( $h^2$ ), and of analysis of variance in chemical components crop.

Nutrient	$\sigma^2G$	$\sigma^2E$	$h^2$	Variance	
				Variety	Error
CP	8.92	1.21	89.14	32.58**	1.30
NDF	5.72	0.71	87.51	21.62**	0.812
ADF	5.13	0.37	91.73	17.89**	0.341
Hemicellulose (NDF-ADF)	4.17	0.01	98.14	4.13**	0.003
Cellulose	5.47	0.34	92.16	18.88**	0.343
Lignin	0.08	0.01	91.73	0.30**	0.006

\*\* : significance at 1%

\* : significance at 5%

Table 4. The *in vitro* dry matter yield digestibility and digestible dry matter weight of varieties in wheat, barley and rye.

Crop	Variety	IVDMD(%)	DDMW(g/plant)
Wheat	Urimil	72.11	771.2
	Geurumil	71.04	764.8
Barley	Olbori	70.24	728.4
	Gangbori	70.13	721.2
Rye	Paldanghomil	74.30	834.0
	Chilbohomil	73.27	790.1