1. 窒素 施用量 및 栽培樣式이 大麥의 生育 및 收量에 미치는 影響.

忠南 農村振興院 李喜德* 李主烈 . 宋南顯 .
檀國大學校 農科大學 蔡濟天 . 曺章煥 . 金鳳九

Effect of Nitrogen Fertilization and Seeding Method in the Growth and Grain Yield in Barley.

Chungnam Provincial Rural Development H.D. Lee, J.Y.Lee and N.H.Song
College of Agriculture, Dankook Univ. J.C. Chae, C.H.Cho and B.K.Kim

實驗目的 :

本 實驗은 大麥 4 品種 강보리. 水原 18号, 富興 흑보리를 供試하여 두 水準의 窒素施肥量과 네 水準의 栽培樣式을 달리하여 各 品種들의 生理生態的 特性이 收量에 미치는 影響을 究明하고자 實施하였다.

材料 및 方法 .

- 材料 : 강보리. 水原 18号. 富興 . 흑보리 . (4 品種)
- 播種方法 : 慣行栽培 : 60cm × 18cm
  狹幅播 : 40 × 18 cm
  細條播 : 20 × 5 cm
  點播 : 10 × 10 cm
- 施肥水準 : 普肥 : 11 - 9 - 6
  多肥 : 16.5 - 9 - 6 ($N-P_2O_5-K_2O$) kg/10a
- 播種日 : 1985년 10월 19일 .

結果 및 考察

1. 出穗 및 成熟期는 品種 및 栽培樣式間에 相異한 反應을 보였으며 密植할수록 빨라지는 傾向이었다.
2. 乾物重 및 窒素收收量은 越冬中에 減少하였다가 生育再生期부터는 急速히 增加하였는데 栽培樣式別로는 點播 및 細條播 栽培에서 높은 標準區에서 낮았다
3. LAI는 栽培樣式別로 細條播에서 높고 慣行栽培에서 낮았으며 施肥量別로는 標準區보다 增肥區에서 높았다. 品種別로는 강보리. 富興 . 水原 18号 . 흑보리 順이었다
4. 窒素收收量과 LAI 그리고 乾物重과 LAI와는 高度의 正의 相關을 보였다.
5. 1穗粒數 . ㎡當穗數 . 千粒重 및 容積重에 있어서 品種 및 栽培樣式間에 相異한 反應을 보였으며 또한 品種×栽培樣式의 相互作用에 있어서도 1穗粒數를 除外한 他 形質 모두 有意性이 認定되었다.
6. 10a當 種實收量에 있어서 강보리가 收量이 가장 높았고 點播 및 細條播 栽培의 增肥區에서 가장 收量이 높았고 富興이 가장 적었다.
7. 강보리 및 흑보리는 LAI과 收量間에는 正의 相關을 보였으며 또한 出穗 및 成熟期는 稈長 및 1穗粒數와는 正의 相關을 그리고 ㎡當 穗數, 1000粒重, 容積重 및 收量과는 負의 相關을 보였다.

Table 4. Heading dates, maturing dates and grain filling period of four barley varieties.

Varieties	Seeding methods	Fertilizer levels(kg/10a) 11-8-7/N-P-K Heading date	Maturing date	Grain filling periods	16.5-8-7/N-P-K Heading date	Maturing date	Grain filling periods
Suwon 18	60×18	May 10	June 10	31	May 10	June 8	30
	40×18	May 9	June 9	32	May 9	June 9	31
	20× 5	May 8	June 8	32	May 9	June 7	30
	10×10	May 9	June 6	29	May 10	June 5	27
Buheung	60×18	May 9	June 9	32	May 10	June 8	30
	40×18	May 10	June 7	29	May 10	June 9	31
	20× 5	May 8	June 8	32	May 9	June 7	30
	10×10	May 8	June 5	27	May 9	June 4	27
Kangbori	60×18	May 5	June 5	32	May 5	June 4	31
	40×18	May 4	June 3	31	May 4	June 3	31
	20× 5	May 3	June 2	31	May 2	June 2	32
	10×10	May 4	May 29	26	May 6	June 1	27
Olbori	60×18	May 1	May 31	31	May 1	June 2	33
	40×18	Apr 30	May 31	32	May 1	June 3	34
	20× 5	Apr 28	May 26	29	Apr 30	May 29	30
	10×10	Apr 28	May 28	29	Apr 28	May 27	30
	60×18	May 6	June 6	31	May 7	June 6	31
	40×18	May 6	June 4	30	May 6	June 6	31
	20× 5	May 4	June 4	32	May 5	June 4	31
	10×10	May 5	June 1	28	May 6	June 2	28

Table 5. Mean squares for heading and maturing dates measured on four barley varieties grown at four different cultivations at two fertilizer levels.

Source of variation	Degree of freedom	Mean squares Heading date	Maturing date
Replications(R)	2	9.3*	11.3
Variety(V)	3	498.0**	2315.0**
R × V	6	1.1	11.2
Nitrogen (N)	1	0.01	31.5
V × N	3	0.18	29.5*
Seeding method (S)	3	7.1**	168.1**
V × S	9	2.0	10.2**
S × N	3	0.2	11.0
V × N × S	9	0.3	16.0
Error	56	0.96	9.5

*, ** Indicates significance at 0.05 at 0.01 levels, respectively.

Table 6. Changes of grain yield(kg/10a) of barley varieties in accordance with different cultivations and nitrogen levels.

Varieties	Seeding methods	Nitrogen Standard	Heavy
Kangbori	60 × 18 cm	453	457
	40 × 18	529	598
	20 × 5	695	629
	10 × 10	681	719
	mean	569	601
Suwon 18	60 × 18	457	404
	40 × 18	477	509
	20 × 5	497	526
	10 × 10	567	594
	mean	499	508
Buheung	60 × 18	437	368
	40 × 18	495	396
	20 × 5	384	378
	10 × 10	523	431
	mean	460	391
Olbori	60 × 18	429	466
	40 × 18	461	497
	20 × 5	558	581
	10 × 10	613	642
	mean	515	547

Table 7. Mean squares for grain yield per 10a measured on four barley varieties grown at four different seeding methods and nitrogen levels.

Source of variation	Degree of freedom	Mean square
Replication	2	1568
Variety	3	104868**
R × V	6	415
Nitrogen	1	36
V × N	3	13984**
Seeding method(S)	3	108287**
V × S	9	9699**
S × N	3	1525
V × N × S	9	1773
Error	56	1673

** Indicates significance at 0.01 level respectively

Table 8. Changes of grain yield components of barley varieties in accordance with different seeding methods and nitrogen levels.

Varieties	Nitrogen level	Seeding methods	Number of Kernel/spike	Number of Spikes/㎡	1,000 kernel weight	Test weight
Kangbori	Standard	60 × 18 cm	60.7	386	33.5	677
		40 × 18	57.7	520	33.7	684
		20 × 5	57.7	635	32.7	685
		10 × 10	58.0	607	32.4	702
		mean	58.5	542	33.1	687
	Heavy	60 × 18	61.3	119	32.4	664
		40 × 18	59.3	525	33.5	672
		20 × 5	56.3	704	32.5	668
		10 × 10	55.7	678	31.5	713
		mean	58.2	584	32.5	679
Varieties mean			58.2	563	32.9	683
Suwon 18	Standard	60 × 18	55.3	421	31.9	661
		40 × 18	49.3	477	30.4	696
		20 × 5	49.3	695	30.2	684
		10 × 10	47.3	718	29.5	676
		mean	50.3	578	30.5	679
	Heavy	60 × 18	50.7	419	30.9	670
		40 × 18	53.3	521	30.1	672
		20 × 5	51.7	700	29.0	675
		10 × 10	49.0	851	28.4	670
		mean	53.2	623	29.6	672
Varieties mean			51.8	600	30.0	675
Buheung	Standard	60 × 18cm	53.7	395	32.8	656
		40 × 18	53.3	506	33.0	677
		20 × 5	46.3	699	29.5	673
		10 × 10	44.7	815	28.0	651
		mean	49.5	604	30.3	657
	Heavy	60 × 18	58.3	350	32.5	653
		40 × 18	55.7	502	31.1	674
		20 × 5	48.7	723	30.3	651
		10 × 10	48.0	774	29.6	658
		mean	52.2	590	30.6	660
Varieties mean			50.8	597	30.7	664
Olbori	Standard	60 × 18	52.3	456	35.9	697
		40 × 18	48.0	575	37.4	696
		20 × 5	42.7	882	36.9	694
		10 × 10	41.3	882	36.5	713
		mean	46.1	699	36.7	700
	Heavy	60 × 18	50.0	505	35.6	691
		40 × 18	45.7	619	36.9	696
		20 × 5	43.7	[illegible]	36.1	692
		10 × 10	41.3	1023	34.9	718
		mean	45.2	747	35.9	699
Varieties mean			45.8	713	36.3	700

Table 9. Mean squares for number of kernels per spike, number of spiks per ㎡, 1,000 Kernel weight and test weight measured on four barley varieties grown at the four different seeding methods and nitroger evels.

Source of variation	Degree of freedom	Number of kernel/spike	Number of spike/㎡	1,000 kernel weight	Test weight
Replications(R)	2	0.07	12422	2.0	1117**
Variety(V)	3	653**	153432	188**	5486**
R × V	6	5.4	8499	1.6	85
Nitrogen(N)	1	27.1	38681	9.3	713
V × N	3	23.1	10398	0.6	62
Seeding methods	3	330**	775206	22.8**	1233**
V × S	9	17.7	19213	4.7**	593*
S × N	3	2.4	5225	0.2	256
V × N × S	9	3.8	2345	1.1	159
Error	56	13.1	4444	1.5	227

*, ** Indicates significance at .05 and . 01 levels, respectively.