P095

Changes of Yield and Rice Quality on Cultivation method and Cultivation time in Rice

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Object

To establish appropriate cultural practice for high-quality rice production by investigation of factor affecting rice quality according to cultivation method and time in rice.

Materials and Method

- o Test cultivar : Samcheonbyeo, Kwanganbyeo, Nampyeungbyeo
- o Cultivation method : transplanting, flooded paddy surface
- o Cultivation time : single cropping, double cropping
- o Seeding date : 15 May, 15 June
- o Transplanting date : 30 May, 20 June
- o N - P_2O_5 - K_2O(kg/10a) : 11 - 4.5 - 5.7
- o Test period : 2002 ~ 2003
- o Location : Iksan

Results

- o In the direct seeding on flooded paddy surface of the medium-late - maturing cultivar, heading date in double cropping was over definite term of safety heading date in Iksan area.

- o Yield was no significant between transplanting cultivation and flooded paddy surface cultivation in the single cropping, but in the double cropping, yield of the transplanting was higher than that of the direct seeding on flooded paddy surface.

- o Head rice yield in the transplanting was higher than that in the direct seeding on flooded paddy surface.

- o Optimum cultivation method and time in rice according to yield and rice quality was transplanting of doubling cropping in early ripening cultivar, and was transplanting of doubling cropping in mid and medium-late - maturing cultivar.

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Table 1. Seedling stand number, heading stage and growth as cultivation method and time by ecotype in rice.

division			seedling stand number	heading stage	SPAD value of heading stage leaf				leaf area index
					flag	1st	2rd	3th	
single cropping	transplanting	Samcheon	-	7. 31	39.9	40.7	39.0	37.2	3.1
		Kwangan	-	8. 9	38.2	40.6	41.8	39.8	4.8
		Namphyoeung	-	8. 18	32.7	36.8	36.0	35.1	4.8
	flooded paddy surface	Samcheon	141	7. 31	39.6	39.1	38.2	34.1	3.8
		Kwangan	143	8. 12	35.6	40.4	40.3	39.2	5.3
		Namphyoeung	138	8. 19	34.4	38.1	34.2	32.5	5.1
double cropping	transplanting	Samcheon	-	8. 21	39.4	43.2	42.1	39.2	3.3
		Kwangan	-	8. 23	40.7	42.7	41.0	40.5	4.6
		Namphyoeung	-	8. 30	34.7	38.7	40.1	39.7	4.8
	flooded paddy surface	Samcheon	166	8. 24	40.3	47.6	47.1	46.2	3.5
		Kwangan	174	8. 29	40.2	43.5	43.1	41.7	4.8
		Namphyoeung	167	9. 4	34.4	36.2	38.0	37.0	5.4

Table 2. The yield component and yield as cultivation method and time by ecotype in rice.

division			grain number	ripened grain (%)	brown rice thousand seed weight(g)	rice yield (kg/10a)	head rice yield (kg/10a)
single cropping	transplanting	Samcheon	84	63.2	21.4	493 bcd[1)]	449 [1)]d
		Kwangan	81	76.1	22.7	449 ef	429 f
		Namphyoeung	89	82.8	21.3	534 a	515 a
	flooded paddy surface	Samcheon	86	72.5	20.9	487 bcd	441 de
		Kwangan	79	81.3	22.1	439 ef	417 g
		Namphyoeung	82	83.4	21.1	523 ab	504 b
double cropping	transplanting	Samcheon	89	66.8	21.8	503 abc	570 c
		Kwangan	81	68.9	23.7	435 ef	414 g
		Namphyeung	87	78.7	22.2	499 abc	479 c
	flooded paddy surface	Samcheon	81	67.8	21.6	469 cde	437 ef
		Kwangan	77	69.4	23.2	428 f	407 g
		Namphyoeung	83	73.5	21.2	460 def	438 def

[1)] DMRT(0.05)

Table 3. The chemical components and rice quality characteristics of brown rice as cultivation time and method in rice

division	single cropping						double cropping					
	transplanting			flooded paddy surface			transplanting			flooded paddy surface		
	S	K	N	S	K	N	S	K	N	S	K	N
fatty acid	14.7	15.4	17.4	14.9	16.3	17.0	15.1	15.6	16.7	15.5	17.5	16.0
protein	6.5	6.8	5.6	6.0	6.4	5.8	6.9	5.7	5.3	5.6	5.8	5.6
amylose	17.7	18.3	18.9	17.9	18.6	18.7	18.1	18.7	18.8	18.7	18.8	18.7
quality value	62.4	67.6	74.3	63.6	71.8	70.7	55.6	70.2	68.5	62.0	72.8	67.0

S : Samcheonbyeo, K : Kwanganbyeo, N : Namphyoengbyeo