

벼 기계이앙 실비생략에 따른 생육 및 미질영향

신상옥\* · 황정동 · 박성태  
영남농업연구소

Evaluation of a proper nitrogen splitting method in machine transplanting rice

Sang-Ouk Shin\*, Jeong-Dong Whang, and Seong-Tae Park  
Yeongnam Agricultural Research Institute

연구목적

벼 기계이앙재배시 질소분시방법에 따른 생육, 수량 및 미질 등에 미치는 영향을 검토

재료 및 방법

- 시험기간 : 2000 ~ 2001년( 2년간)
- 시험토양 : 식양질(덕평통)
- 공시품종 : 수진벼
- 이앙기 : 5월25일(30일묘)
- 시비량(kg/10a : N-P2O5-K2O) : 11-4.5-5.7
- 질소분시방법(기비(%)-분얼비(%)-수비(%)-실비(%)) : 50-20-20-10, 50-30-20-0, 50-20-30-0, 40-30-20-10 및 40-30-30-0

결과 및 고찰

1. 출수기 건물중의 기관별 분포비율은 분시방법간 비슷하여 기관구조 측면에서는 차이가 없었다.
2. 이삭에 있어 1차 지경의 퇴화는 모든 처리에서 없었으며 2차지경 및 영화퇴화율은 수비30% 분시구에서 약간 낮았다.
3. 분시방법간 출수기는 차이가 없었으며 간장도 80~88cm로 비슷하였다. m<sup>2</sup>당 평균수수는 294~402개로 비슷하고 수당립수,와 평균등숙비율 및 현미천립중도 비슷하여 쌀수량도 502~601kg/10로 차이가 없었다.
4. 백미의 정상립비율은 76.3~79.6%로 비슷하였으며 아밀로즈 및 단백질함량은 각각 18.9~19.2% 및 7.1~7.2%로 비슷하였다.

Table 1. Dry matter production and distribution of dry matter of panicle initiation stage and heading stage as affected by nitrogen split application method in 2001.

Split application(%) (Basal-Tillering-Panic le initiation - Ripening)	Panicle initiation stage				Heading stage				C G R	R G R	N A R	
	DW (g /m <sup>2</sup> )	Ratio of DW(%)		LAI	DW (g /m <sup>2</sup> )	Ratio of DW(%)						LAI
		LS +Stem	LB			LS +Stem	LB	PN				
50-20-20-10	482	64.6	35.4	3.2	1,180	61.6	25.3	13.1	4.7	21.2	0.30	5.4
50-30-20-0	502	65.0	35.0	3.3	1,157	62.5	25.0	12.5	4.2	19.8	0.28	5.3
50-20-30-0	426	64.9	35.1	3.2	1,205	61.0	24.7	14.3	4.7	23.6	0.35	6.1
40-30-20-10	462	63.7	36.3	2.9	1,074	61.8	25.3	12.8	4.4	18.5	0.28	5.2
40-30-30-0	497	65.0	35.0	3.2	1,063	60.4	25.4	14.2	4.2	17.1	0.25	4.7

\* DW : Dry matter Weight, LS : Leaf Sheath, LB : Leaf Blade, LAI : Leaf Area Index  
CGR(g/m<sup>2</sup>/day), RGR(g/g/day), NAR(g/m<sup>2</sup>/day)

\*Corresponding author: Tel : 055-350-1204 E-mail : Shinso32@rda.go.kr

Table 2 Rachis branch characteristics as affected by nitrogen split application method in 2001.

Split application(%) (Basal-Tillering-Panicle initiation - Ripening)	1st Rachis branch		2nd Rachis branch				No. of spikelet			
	DF	DT	DF	DT	EX	Ratio of DT(%)	DF	DT	EX	Ratio of DT(%)
50-20-20-10	11.8	0	43.0	8.9	34.1	16.8	138	0.6	137	0.5
50-30-20-0	10.8	0	37.2	5.5	31.7	14.7	132	0.5	131	0.4
50-20-30-0	10.8	0	37.6	4.6	33.0	10.8	139	0.3	138	0.2
40-30-20-10	11.2	0	41.3	6.6	34.7	16.2	132	0.6	131	0.5
40-30-30-0	11.0	0	39.0	5.4	33.7	13.3	136	0.2	136	0.2

DF : Differentiation, DT : Deterioration, EX : Existence

Table.3 Heading date, growth characteristics and milled rice yield as affected by nitrogen split application method.

Year	Split application(%) (Basal-Tillering-Panicle initiation - Ripening)	Heading date	Culm length (cm)	Panicle (no. /m <sup>2</sup> )	Spikelet (no. /pani.)	Ripened grain (%)	1000 grain weight (g)	Milled rice (kg /10a)
'00	50-20-20-10	Aug.16	87	393	95	74.0	22.8	514
	50-30-20-0	Aug.16	87	384	94	73.5	22.4	502
	50-20-30-0	Aug.16	87	351	93	72.9	22.4	504
	40-30-20-10	Aug.16	88	402	98	74.2	22.7	518
	40-30-30-0	Aug.16	87	382	94	73.6	22.2	508
'01	50-20-20-10	Aug.16	82	303	112	79.9	21.0	576
	50-30-20-0	Aug.16	83	304	110	82.4	21.1	583
	50-20-30-0	Aug.16	80	301	109	83.1	21.4	600
	40-30-20-10	Aug.16	82	294	116	83.4	21.4	563
	40-30-30-0	Aug.16	83	303	116	82.7	21.0	601
'00	C.V.(%)	-----						2.6
	L.S.D.(5%)	-----						ns
'01	C.V.(%)	-----						3.1
	L.S.D.(5%)	-----						ns

Table 4. Grain quality of milled rice and Toyo taste value as affected nitrogen split application method in 2001.

Split application(%) (Basal-Tillering-Panicle initiation - Ripening)	Grain quality of milled rice(%)					Toyo taste value
	Perfect	Floury	Broken	Damaged	Cracking	
50 - 20 - 20 - 10	76.3	2.9	3.2	16.7	0.9	69.1
50 - 30 - 20 - 0	79.6	3.4	2.8	13.4	0.8	69.8
50 - 20 - 30 - 0	78.9	4.8	3.1	12.2	0.8	69.7
40 - 30 - 20 - 10	77.3	2.9	2.6	16.7	0.6	67.9
40 - 30 - 30 - 0	79.5	3.6	2.2	13.8	0.7	70.5

Table 5 . Grain component of milled rice as affected by nitrogen split application method.

Split application(%) (Basal-Tillering-Panicle initiation - Ripening)	Amylose (%)	Protein (%)	Mg (mg/100a)	K (mg/100a)	Mg/K
50 - 20 - 20 - 10	19.1	7.2	22.0	93.5	0.8
50 - 30 - 20 - 0	19.2	7.1	22.2	97.2	0.7
50 - 20 - 30 - 0	19.0	7.2	22.5	98.0	0.7
40 - 30 - 20 - 10	18.9	7.2	22.7	96.2	0.8
40 - 30 - 30 - 0	18.9	7.1	21.8	95.4	0.7