벼 요철골 담수직파 조간골거리에 따른 입모 및 생육특성

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Seedling Establishment and Growth Traits as Affected by furrow Distance between Row in Corrugated furrow Water Seeded Rice

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< 실험목적 >

벼 요철골 담수직파시 조간골거리에 따른 입모, 도복관련 형질 및 생육특성 변화를 구명하여 요철골타기 제작에 기초자료로 활용하고자 함

< 재료 및 방법 >

동해벼를 공시하여 사양토에서 요철골을 조간거리 15cm, 20cm, 25cm, 30cm, 파폭 및 깊이는 다같이 4cm, 8cm로 만든후 담수하여 5월15일에 10a당 4.5kg을 파종하였고, 대비로 담수표면산파구를 두었다. 시비량은 질소, 인산, 가리를 성분량으로 다같이 10a당 각각 11-10-11kg씩 사용하였다. 질소는 요소로서 기비30%, 3엽기20%, 5엽기30%, 수비20%로 분시하였고 인산은 용성인비를 전량기비로, 가리는 염화가리로 기비80%, 수비20%로 시비하였다. 시험구 배치는 Strip배치 3반복으로 하였다.

< 결과 및 고찰 >

1. 처리간 출아기는 별차이가 없었고, 요철골담수직파시 ㎡당 입모수는 120 - 161개로 담수표면산파보다는 적었으나 안전입모수 확보에는 문제가 없었다.

2. 부묘율은 담수표면산파 8.4%에 비하여 요철골담수직파는 1.5-4.4%로 낮았고, 특히 조간골거리 20cm, 25cm에서 부묘가 적었다.

3. 골내 입모율은 75-80%이었는데 조간골거리가 좁을수록 높았으며, 줄기매몰심은 담수 표면산파 2.8mm에 비하여 요철골 담수직파는 26mm전후로 깊어져 10cm이상 토심에 뿌리 분포율이 높았으나, 조간골거리간에는 별차이가 없었다.

4. 도복관련형질중 지상부 길이, 지상부 생체중등은 처리간 별차이가 없었으나, 요철골직파는 담수표면직파보다 좌절중이 커서 도복지수가 낮았고, 요철골직파 조간골거리간에는 조간 골거리가 넓을수록 도복지수가 낮아지는 경향이었다.

5. 조간골거리를 25cm로 한 요철골담수직파는 ㎡당 수수증가 및 영화수가 많아 쌀수량이 572kg/10a으로 가장 높았다.

Table. Seedling stand and ratio of seedling within corrugated furrow as affected furrow distances between row in water broadcasting under corrugated furrow soil

Direct seeding method	Furrow distances (cm)	Days to emergence	Seedling stand (no/㎡)	Floating seedling (%)	Seedling within furrow (%)
Water broad.	15	12a	157b	4.4b	79.7a
under corrugated	20	13a	159b	2.5cd	78.4a
furrow soil	25	13a	120c	1.5d	78.0a
	30	13a	161b	3.4bc	75.1b
Water soil surf.broad.	-	13a	188a	8.4a	-

※ Within columms, means followed by the same letter are not significantly different at p = 0.05 according to DMRT

Table. Comparision of plant characters associated with lodging among furrow distances between row in corrugated furrow water seeded rice

Direct seeding method	Furrow distances (cm)	Depth of buried culm base (mm)	Plant height (cm)	Fresh weight (g/tiller)	Panicle weight (g)	Breaking strength (g)	Lodging index	Field lodging (0-9)
Water broad.	15	26.1a	90.5a	8.61a	1.98c	577c	135b	1
under corrugated	20	26.2a	87.1a	9.40a	2.46ab	627b	131b	0
furrow soi l	25	25.8a	90.0a	9.20a	2.12bc	622c	133b	0
	30	25.9a	90.2a	9.93a	2.56a	737a	122b	0
Water soil surf.broad.	-	2.8b	87.5a	9.24a	2.25abc	513d	158a	3

※ Within columms, means followed by the same letter are not significantly different at p = 0.05 according to DMRT

Table. Comparision of vertical root distribution among furrow distances between row in corrugated furrow water seeded rice, and between water soil surface broadcasting and those

Direct seeding method	Furrow distances (cm)	Root distribution in soil depths(%)			
		0-5	5-10	10-15	over 15cm
Water broad.	15	61.2b	20.9b	12.7b	6.2b
under corrugated	20	62.3b	20.7b	12.6a	4.4b
furrow soil	25	61.5b	24.7a	11.2a	2.6c
	30	62.8b	21.7b	11.8a	3.7b
Water soil surf.broad.	-	65.0a	21.4b	9.4b	4.2b

※ Within columms, means followed by the same letter are not significantly different at P = 0.05 according to DMRT

Table. Agronomic traits and yield components as affected by furrow distances between row in corrugated furrow water seeded rice

Direct seeding method	Furrow distances (cm)	Heading date	Culm length (cm)	Panicle length (cm)	Panicle number (no/㎡)	Spikelet no Panicle	Spikelet no ㎡ (x100)	1000 grain weight (g)	Field grain ratio (%)
Water broad	15	Aug.17	72	18.3	443	78	346	21.6	91.3
under corrug.	20	Aug.17	74	18.2	443	75	332	22.1	92.3
furrow soil	25	Aug.17	75	18.4	469	79	371	20.9	89.2
	30	Aug.18	72	18.8	404	87	352	21.5	89.3
Water soil surf.broad.	-	Aug.17	72	18.1	448	80	358	21.5	91.1

Table. Biological yield, harvest index and milled rice yield as affected by furrow distances between row in corrugated furrow water seeded rice

Direct seeding method	Furrow distances (cm)	Biological yield (kg/10a)	Harvest index	Milled rice yield (kg/10a)	Yield index
Water broad.	15	1814c	37.5c	518d	95
under corrugated	20	1911ab	38.5ab	563ab	103
furrow soil	25	1934a	38.7a	572a	105
	30	1863c	37.7bc	536cd	98
Water soil surf.broad.	-	1920a	37.6bc	547bc	100

※ Within columms, means followed by the same letter are not significantly different at p = 0.05 according to DMRT