

P12. 담수직파시 벼 펠렛종자에 적합한 전처리제 선발

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Selection of Suitable Pre-treatment Materials of Pelleted Rice Seed in Direct Wet Seeding

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실험목적

담수직파재배에서 펠렛종자의 다양한 이용성 개발을 위해 범사에 전처리제로서 GA₃, CaO₂, 농약, 비료를 단일 및 종합처리 하여 만든 펠렛종자의 초기 생육특성을 조사하여 가능성 있는 전처리제를 선발하고자 함.

재료 및 방법

○ 실험재료

- 펠렛종자

- 실험품종 : 동안벼 · 펠렛성형재료 : 연곡통 식양토의 붉은색 산흙
- 접착제 : 아라비아고무 10% 수용액
- 펠렛제조기 : 회전롤러식 압축성형 펠렛기(전남대학교 농공학과 고안, 제작)

- 전처리 재료

- 발아촉진제 : GA₃ 100ppm 수용액, CaO₂
- 농약 및 비료 : prochloraz유제 25%(PC), carpropamid 40%+imidacloprid 21%+fludioxonil 2%(CIF) 및 Complex fertilizer

○ 실험방법

- GA₃ 100ppm 수용액에 24시간 침지후 풍건시킨 종자(DSG)
- CaO₂를 종자와 1 : 1(V/V) 코팅한 종자(DSCa)
- PC 처리는 물 20 l 당 10ml 약량에서 24시간 종자를 침지
- CIF 처리는 종자 1kg당 10g를 습분의 coating하여 상온에서 건조, 방제가는 포장시험
- 복합비료를 펠렛당 N-P-K=8.4-5.6-6.1과 84.6-56.4-61.1mg를 첨가
- 각각의 전처리제와 전처리제 조합에 따른 초기생육특성조사

실험결과

- 같은 전처리 조건에서 펠렛종자가 마른종자에 비해 발아 및 입모가 양호
- 전처리제로서 가능한 선발재료는 prochloraz유제 25%(PC), carpropamid 40%+imidacloprid 21%+fludioxonil 2%(CIF) 이었다.

Table 1. Germination and establishment percentage of pellet seed after GA₃ CaO₂ treatment in direct wet seeding.

Seed treatment [†]	Germination (%)		Establishment (%)	
	Non pellet seed	Pellet seed	Non pellet seed	Pellet seed
DS	60 ab	83 a	43 a	77 a
DSG	50 b	52 b	43 a	50 b
DSCa	72 a	75 a	58 a	62 ab
DSCaG	67 a	70 a	53 a	58 b

[†]DS: dry seed.
 DSG: seed soaking in GA₃ solution.
 DSCa: seed coating CaO₂.
 DSCaG: seed coating CaO₂ after soaking in GA₃ solution.
 Means followed by the same letter in a column are not significantly different at the 5% level by DMRT.

Table 2. Required times of 50% germination and 50% emergence of pellet seed after GA₃ and CaO₂ treatment in direct wet seeding.

Seed treatment [†]	Germination date (Day)		Emergence date (Day)	
	Non pellet seed	Pellet seed	Non pellet seed	Pellet seed
DS	4.7	4.3	8.2	6.6
DSG	4.1	6.8	7.3	7.0
DSCa	3.5	4.5	9.6	8.2
DSCaG	4.0	4.0	5.9	8.6

[†]The same as table 1.

Table 3. Germination and establishment percentage of pellet seed after fungicide and insecticide treatment in direct wet seeding.

Seed treatment [†]	Germination (%)		Establishment (%)	
	Non pellet seed	Pellet seed	Non pellet seed	Pellet seed
DS	56.7 c	81.7 ab	51.7 cd	76.7 a
PC	73.3 ab	85.0 a	60.0 bcd	70.0 ab
CIF	53.3 c	80.0 ab	31.7 e	66.7 abc
CIFPC	68.3 bc	85.0 a	46.7 d	73.3 ab

[†]DS: dry seed,
 PC: seed disinfectant with prochloraz,
 CIF: Seed disinfectant with carpropamid 40%+imidacloprid 21%+fludioxonil 2%,
 CIFPC: seed coating CIF after PC.
 Means followed by the same letter in a column are not significantly different at the 5% level by DMRT.

Table 4. Percentage of damaged hill and no. of died rice water weevil of pellet seed after fungicide and insecticide treatment in direct wet seeding in field.

Pelleted seeds [†]	Rice water weevil	No. of died rice water
	damaged hill (%)	weevil/10 hills
Control	69	0.0
PSCIFPC	33	0.7

[†]Control: pregerminated seed, PSCIFPC: pellet seed using seed coating CIF after PC.
 Evaluate date: 33 days after seeding.

Table 5. Germination and establishment percentage of pellet seed after fertilizer treatment in direct wet seeding.

	N-P-K	Germination	Establishment
	(mg/pelleted seed)	(%)	(%)
Complex fertilizer	8.4-5.6-6.1	30	7
	84.6-56.4-61.1	0	0

Table 6. Germination and establishment percentage of complex pellet seed as plant hormone, fungicide and insecticide treatment in direct wet seeding.

Pellet seed [†]	Germination(%)		Establishment(%)	
	Non fertilizer	Complex fertilizer	Non fertilizer	Complex fertilizer
PSPC	85	0	70	0
PSGFC	80	30	62	27
PSCaPC	63	20	58	10
PSCaGFC	78	20	66	13
PSCIF	80	10	67	0
PSGFCIF	87	7	63	0
PSCIFPC	85	27	73	20
PSGFCIFPC	47	13	23	3
PSCaCIF	30	7	27	0
PSCaGFCIF	53	13	40	7
PSCaCIFPC	40	23	20	10
PSCaGFCIFPC	57	13	43	10

[†]PSPC: pellet seed after PC,
 PSGFC: pellet seed after treatment simultaneously of GA₃ and PC,
 PSCaPC: pellet seed coating CaO₂ after PC,
 PSCaGFC: pellet seed coating CaO₂ after treatment simultaneously of GA₃ and PC,
 PSCIF: pellet seed coating CIF,
 PSGFCIF: pellet seed coating CIF after treatment of GA₃,
 PSCIFPC: pellet seed coating CIF after PC,
 PSGFCIFPC: pellet seed coating CIF after treatment simultaneously of GA₃ and PC,
 PSCaCIF: pellet seed coating CaO₂ after coating CIF,
 PSCaGFCIF: pellet seed coating CaO₂ and CIF after treatment of GA₃,
 PSCaCIFPC: pellet seed coating CaO₂ and CIF after PC,
 PSCaGFCIFPC: pellet seed coating CaO₂ and CIF after treatment simultaneously of GA₃ and PC.