110. 벼 登熟期의 生長調節制 處理가 種實 및 穗發芽에 미치는 影響

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Effects of plant growth regulator treatments at ripening stage on seed and viviparous germination in Rice

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實驗目的

벼 登熟期의 不良한 氣象環境으로 予見치 못한 災害中의 하나인 穗發芽 現象을 考察하여 보고 生長調節制를 處理한때의 어떠한 反応을 나타내는지를 檢討 하였다.

材料 및 方法

品種間 穗發芽性을 알기 爲하여 登熟期間中 잦은 降雨가 지속 되었던 '85年度 江原道 春川에서 主栽品種 15品種을 對象으로 穗發芽率을 調査 하였고, 대백벼와 대성벼를 供試하여 出穗後 20, 30, 40日에 NAA와 CMH는 各各 1, 10, 100 ppm 그리고 Reglone은 0.2 0.4 0.6 %를 噴霧 處理하였다.

實驗結果 및 考察

1. 圃場條件下에서 穗發芽性은 자포니카型中 出穗가 빠른 早生種들이 높았고 中晩生種과 統一型 品種들은 穗發芽가 되지 않았다.

2. 生長調節制 處理反応에서 供試한 두品種 共히 NAA, CMH 및 Reglone 모두 穗發芽 抑制現象을 보였는데 그中 NAA와 CMH는 100ppm, Reglone은 0.4~0.6 % 處理 濃度에서 가장 效果的 이었다.

3. 生長調節制가 處理된 種實의 發芽率은 NAA와 CHH處理區는 無處理와 差異없이 良好하였으나 Reglone 處理區는 發芽率이 낮았다.

4. 登熟率은 NAA와 CMH는 無處理와 差異 없었으나 Reglone 處理區는 낮았다.

5. 種實 外觀은 NAA 만이 無處理와 비슷 하였으며 CMH와 Reglone은 濃度가 높아짐에 따라 茶褐色을 띄는 程이 많았다.

6. 搗精特性은 보면 NAA 만이 無處理와 비슷 하였고 CMH와 Reglone은 出穗後 20~30日에 處理한 모든 完全米 比率이 낮았다.

Table. 1 Comparison of viviparous germination among varieties

Variety	Heading date	Viviparous germination	Variety	Heading date	Viviparous germination
Sobaekbyeo	July 21	4.3 %	Cheonmubyeo	Aug. 2	0.2 %
Chilkbyeo	" 24	9.3	Bakyangbyeo	" 3	0
Daesangbyeo	" 25	11.5	Taebaekbyeo	" 4	0
Yeongyangbyeo	" 25	3.2	Garyebyeo	" 5	0
Seolakbyeo	" 26	5.5	Samgangbyeo	" 8	0
Bukwangbyeo	" 30	4.5	Pungsanbyeo	" 8	0
Kwanakbyeo	Aug. 1	8.0	Baegkwangbyeo	" 15	0
Bukambyeo	" 1	8.6	Suwonbyeo	" 17	0

Table 2. Effect of growth regulator treatments on the viviparous germination in rice plant

(unit : %)

Treatment	Taebaekbyeo			Daesangbyeo		
	20DAH	30DAH	40DAH	20DAH	30DAH	40DAH
1. Non treatment	47.9^{a}	62.0^{a}	82.5^{a}	62.5^{a}	80.6^{a}	88.3^{a}
2. NAA 1ppm	7.6^{e}	8.6^{g}	9.1^{gh}	8.2^{g}	9.6^{gh}	10.4^{g}
3. " 10 "	3.9^{ij}	4.9^{ij}	5.0^{ij}	5.5^{ghi}	6.3^{ghi}	6.4^{ghi}
4. " 100 "	2.7^{jkl}	3.1^{jkl}	3.0^{ij}	4.3^{hij}	4.7^{ghij}	3.9^{ghij}
5. CMH 1 "	7.9^{e}	8.8^{g}	9.4^{g}	8.6^{g}	9.8^{g}	9.7^{g}
6. " 10 "	3.8^{ij}	5.5^{ij}	5.6^{ghi}	6.0^{ghi}	6.0^{ghi}	6.2^{ghi}
7. " 100 "	3.2^{ijk}	3.2^{jkl}	3.7^{ij}	5.2^{ghi}	5.8^{ghij}	4.1^{ghij}
8. Reglone 0.2 %	3.3^{ijk}	4.2^{ijk}	4.8^{ij}	5.2^{ghij}	5.3^{ghij}	6.0^{ghi}
9. " 0.4 %	2.3^{kl}	2.8^{klm}	4.2^{ij}	3.9^{ij}	4.4^{hij}	3.8^{ghij}
10. " 0.6 %	1.9^{l}	1.0^{n}	3.6^{ij}	2.4^{ij}	2.7^{ij}	2.6^{ij}
C.V (%)	4.82	6.04	11.27	6.53	10.02	13.59

Table 3. Effect of growth regulator treatments on the rice seed germination

(unit : %)

Variety	Treatment	Test I			Test II		
		20DAH	30DAH	40DAH	20DAH	30DAH	40DAH
Taebaekbyeo	1. Non treatment	92	95	95	94	96	95
	2. NAA 1ppm	60	84	93	85	82	91
	3. " 10 "	58	82	92	82	80	92
	4. " 100 "	57	81	92	83	82	90
	5. CMH 1 "	59	83	93	82	84	92
	6. " 10 "	58	82	92	80	82	91
	7. " 100 "	56	80	91	59	81	90
	8. Reglone 0.2 %	10	28	38	40	76	80
	9. " 0.4 %	0	18	27	45	75	80
	10. " 0.6 %	2	12	23	45	70	86
Daesangbyeo	1. Non treatment	70	92	100	72	89	100
	2. NAA 1ppm	69	90	95	70	91	98
	3. " 10 "	67	90	94	71	90	99
	4. " 100 "	66	89	92	70	91	95
	5. CMH 1 "	68	89	94	70	90	94
	6. " 10 "	67	98	92	68	93	92
	7. " 100 "	66	88	92	69	88	93
	8. Reglone 0.2 %	22	42	56	62	80	90
	9. " 0.4 %	15	36	52	60	80	90
	10. " 0.6 %	10	25	33	52	75	89

* Note Test I : germination test after one month
Test II : germination test after six month

Table 4. Effect of growth regulator treatments on the ripening ratio in rice plant

(unit : %)

Treatment	Taebaek byeo			Daesang byeo		
	20DAH	30DAH	40DAH	20DAH	30DAH	40DAH
1. Non treatment	78.5	78.5	78.5	82.1	82.1	82.1
2. NAA 1ppm	77.4	78.2	79.7	81.0	82.3	81.9
3. " 10 "	77.1	77.0	78.7	80.1	82.1	82.4
4. " 100 "	78.3	77.3	77.9	79.4	81.4	81.9
5. CMH 1 "	76.3	76.7	77.1	80.9	79.7	82.0
6. " 10 "	75.3	75.6	76.4	80.1	78.8	81.0
7. " 100 "	72.0	73.2	75.3	78.9	79.3	81.0
8. Reglone 0.2 %	66.7	70.3	76.7	72.2	75.3	80.0
9. " 0.4 %	63.7	66.4	75.8	69.4	72.0	81.4
10. " 0.6 %	57.6	60.2	72.0	61.0	70.9	80.1

Table 5. Effect of growth regulator treatments on the variation of seed color

Treatment	Taebaekbyeo			Daesangbyeo		
	20DAH	30DAH	40DAH	20DAH	30DAH	40DAH
1. Non treatment	◕	●	○	●	●	○
2. NAA 1ppm	●	●	○	●	●	○
3. " 10 "	●	●	○	●	●	○
4. " 100 "	◕	◕	◕	●	●	●
5. CMH 1 "	●	●	●	●	●	●
6. " 10 "	●	●	●	●	●	●
7. " 100 "	●	●	●	●	●	●
8. Reglone 0.2 %	●	●	●	●	●	●
9. " 0.4 %	●	●	●	●	●	●
10. " 0.6 %	●	●	●	●	●	●

○ : Light brown ● : Brown ● : Dark brown

Table 6. Effect of growth regulator treatments on the milling quality of rice grain

(unit : %)

Variety	Treatment	20day tre. after heading			30 day tre. after heading			40day tre. after heading		
		P	B	I	P	B	I	P	B	I
Taebaekbyeo	Non treatment	77.0	5.5	17.5	77.0	5.5	17.5	77.0	5.5	17.5
	NAA 1ppm	78.0	5.5	16.5	78.5	5.0	16.5	78.0	5.5	16.5
	" 10	77.0	6.0	17.0	78.0	5.5	16.5	78.5	6.0	15.5
	" 100	77.5	6.5	16.0	78.0	5.5	16.5	77.5	5.0	17.5
	CMH 1	76.5	6.0	17.5	77.0	6.0	17.0	77.5	6.0	17.0
	" 10	73.0	6.5	20.5	76.0	6.5	16.5	76.0	6.5	17.5
	" 100	69.0	6.5	24.5	72.5	6.5	21.0	77.0	7.0	16.0
	Reglone 0.2%	65.0	9.5	25.5	72.0	13.5	14.5	77.0	10.0	13.0
	" 0.4%	62.5	11.0	26.5	70.0	14.0	16.0	77.0	11.5	11.5
	" 0.6%	55.0	13.5	31.5	65.5	17.5	17.0	76.0	11.5	12.5
Daesangbyeo	Non treatment	84.0	5.0	11.0	84.0	5.0	11.0	84.0	5.0	11.0
	NAA 1ppm	83.5	5.0	11.5	83.5	6.0	10.5	84.0	5.5	10.0
	" 10	83.0	5.0	12.0	83.5	5.5	11.0	83.5	6.0	10.5
	" 100	83.5	5.0	11.5	83.0	6.0	11.0	83.0	6.0	11.0
	CMH 1	82.5	5.5	12.0	83.5	5.0	11.5	84.0	6.0	10.0
	" 10	80.0	5.5	14.5	82.0	5.5	12.5	83.5	6.0	10.5
	" 100	77.5	6.0	16.5	81.0	6.0	13.0	83.0	6.5	10.5
	Reglone 0.2%	70.5	8.0	22.0	78.5	6.5	15.0	82.0	7.0	11.0
	" 0.4%	65.0	10.0	25.0	75.0	6.5	18.0	80.0	8.0	12.0
	" 0.6%	60.5	13.5	25.0	73.5	7.5	19.0	79.0	9.5	11.0

P:Perfect rice B:Broken rice I:Imperfect rice