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植物生長調整劑의 農業的 利用에 關한 硏究

I. 水稻 機械移秧苗의 倒長抑制 効果

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Agricultural Use of the Plant Growth Regulators.

I. Controlling the Overgrowth of Rice Seedling for Mechanical Transplanting.

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◦ 實驗目的

南部地域은 麥類 및 特殊作物栽培로 二毛作이 盛行하는데, 機械移秧을 擴大普及하는데 있어서 가장 큰 問題点이 高溫期에 育苗되기 때문에 倒長으로 인한 缺株의 發生인데 水稻 倒伏軽減劑로 開發中인 몇가지 植物生長調整劑를 利用하여 草長短縮 및 健苗育成의 効果를 究明하고자 함.

◦ 材料 및 方法

嶺南作物試驗場 温冷調節温室에서 自然光으로 晝夜 25°C 조건하에서 種子処理와 土壤処理로 檢定하였다.

1. 種子処理

一般系인 洛東버를 供試하여 uniconazole · pachlobutrazol · flurprimido · inabenfide 의 水溶液 (3, 10, 30 ppm) 에 種子를 24時間 浸漬後 곰팡이에 3日間 浸種시켜 催芽된 種子를 機械移秧 成苗苗드에 播種하여 経時的으로 苗生育을 調査

2. 土壤処理

催芽된 種子를 (洛東버) 20cm × 15cm 4각苗드에 18g씩 播種하여 10a당 成分量으로 uniconazole 0.2, 0.4, 0.8, 1.6g pachlobutrazol 3, 6, 12, 24g을 播種前 土壤混和, 1.5葉期, 2.5葉期에 処理하여 苗生育을 調査.

◦ 實驗結果 및 考察

1. 種子処理에서 inabenfide 를 제외한 3種의 生長調整劑는 倒長抑制 効果가 있었는데 供試藥劑中 uniconazole이 가장 効果가 큰反面, 乾物重比率은 無処理에 比하여 初期에는 다소 높았으나 後期에는 낮은 경향이었고, 苗充実度는 uniconazole 과 pachlobutrazol 의 処理에서 약간 높았다.
2. 種子処理에서 草長短縮効果를 葉鞘와 葉身으로 区分하여 보면 uniconazole 処理는 初期에는 葉身에 比하여 葉鞘의 短縮이 컸으나 後期에는 葉身의 短縮程度가 컸으며, pachlobutrazol 과 flurprimido 는 葉鞘의 短縮率이 높았다.
3. 土壤処理에서는 두 藥剤 모두 処理時期가 빠를수록 草長短縮効果가 높았으며, uniconazole이 pachlobutrazol 보다 活性이 強하였다.
4. 移秧当時 無処理에 比하여 約 20% 程度 草長을 短縮시키는데 적정농도는 種子処理의 경우 uniconazole 3 ppm · flurprimido 10 ppm · pachlobutrazol 50~100 ppm, 土壤処理에서는 10a당 成分量으로 uniconazole 1.0g · pachlobutrazol 4.5g 정도로 推定된다.

Table . Seedling growth at 30 days after seeding as affected by seed soaking treatment of plant growth regulators.

Chemicals	Conc. (ppm)	P.H[1] (cm)	L.N[2]	L.S.L.[3] (cm)	L.B.L.[4] (cm)	D.W.R[5] (%)	H.S[6]
Un. control	-	22.7	4.2	7.5	15.2	25.1	1.93
Uniconazole	3	18.1	4.7	6.3	11.8	24.8	1.97
	10	12.1	4.9	4.1	8.0	22.8	2.29
	30	10.7	5.0	3.2	6.7	22.3	2.60
Pachlobutrazol	3	22.4	4.6	7.9	14.5	22.8	2.01
	10	20.4	4.7	7.4	13.0	22.9	1.97
	30	19.7	4.9	6.9	12.8	22.5	2.23
Flurprimido	3	21.5	4.5	7.6	13.9	22.8	1.76
	10	17.4	4.7	6.4	11.0	23.8	1.72
	30	15.5	4.9	5.3	10.2	22.1	1.95
Inabenfide	3	22.9	4.3	7.7	15.2	23.0	1.91
	10	22.7	4.2	7.6	15.1	24.9	1.99
	30	22.7	4.3	7.6	15.1	24.8	1.89

1) Plant height 2) Leaf number 3) 4th leaf sheath length 4) 4th blade length 5) Dry weight ratio 6) Healthy score(dry weight(mg)/plant height(cm)

Table . Effect of uniconazole by soil treatment on overgrowth of rice seedling at 40 days after seeding.

Application time	Rate (g a.i./10a)	Shortening rate(%) P.H.[1]	L.S.L.[2]	L.B.L.[3]	L.N[4]	D.W.R[5]	H.S[6]
Just before seeding	0.2	4	5	0	5.7	20.3	1.78
	0.4	7	20	0	6.0	19.7	2.11
	0.8	15	37	7	5.8	19.5	2.35
	1.6	36	46	20	6.2	20.0	3.78
1.5 leaf stage	0.2	2	1	0	6.2	19.8	1.77
	0.4	9	25	0	6.1	21.9	2.11
	0.8	14	32	5	6.0	20.7	2.22
	1.6	32	40	15	5.9	18.3	2.42
2.5 leaf stage	0.8	1	15	0	5.8	20.1	1.61
	1.6	10	25	0	5.8	20.5	1.98
Untreated control		0	0	0	6.0	23.0	2.34

1) Plant height 2) Leaf sheath length 3) Leaf blade length 4) Leaf number 5) Dry weight rate 6) Healthy score(dry weight(mg)/plant height(cm)

Table . Shortening effect of plant height by seed soaking treatment of uniconazole.

unit:%

Item \ DAS[1] / Conc.(ppm)	10			20			30		
	3	10	30	3	10	30	3	10	30
Plant height	30	57	65	33	55	61	20	47	53
Leaf sheath length	45	68	74	34	59	62	16	45	65
Leaf blade length	19	58	54	33	50	61	22	48	57

1) Days after seeding

Table . Shortening effect of plant height by seed soaking treatment of pachlobutrazol.

unit:%

Item \ DAS[1] / Conc.(ppm)	10			20			30		
	3	10	30	3	10	30	3	10	30
Plant height	16	24	36	11	19	29	1	10	12
Leaf sheath length	11	23	36	13	14	24	0	1	8
Leaf blade length	25	30	39	14	26	38	5	14	16

1) Days after seeding

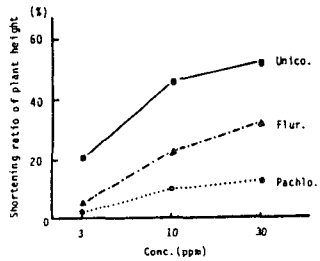

Fig. Responses of plant height at 30 days after seeding by seed soaking treatment of several plant growth regulators.

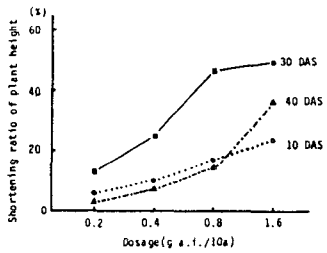

Fig. Changes in plant height by soil incorporation treatment of uniconazole in various dosage levels.

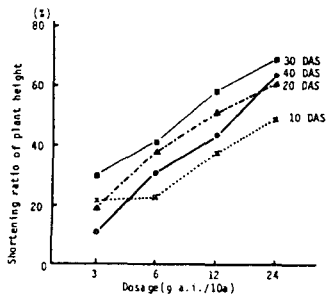

Fig. Changes in plant height by soil incorporations treatment of pachlobutrazol in various dosage levels.