

구약감자의 수량향상을 위한 재배법 연구

충청남도농촌진흥원

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Study of culture practice for yield improvement in elephant food(Amorphallus konjac. K)

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출현기간 지연으로 생육기간이 짧고 재배중 발병으로 수량이 낮으므로 출현 촉진과 재배법 개선으로 수량상 향상에 기여코자함.

"재료 및 방법 "

- 0 공시품종 : 홍천, 일본, 금산, 중국, 제천 수집종
- 0 재식밀도 : 50 x 15cm
- 0 파 종 기 : 4월 20일
- 0 시비량(kg/10a) : N-P₂O₅ - K₂O - Compost = 15 - 10 - 15- 1,000
- 0 우량품종 선발
- 0 절단방법 : 10g , 25g , 35g , 2절, 4절
- 0 파종방법 : 토중재장(직파, PE 멀칭, PE터널) 30°C (직파, PE 멀칭, PE터널)
육아재배(PE 멀칭, PE 터널)
- 0 차광재료 : 대조구 30%, 50%, 70%
- 0 피복재료 : 대조구, 투명비닐, 흑색비닐

" 결과 및 고찰 "

1. 제천 수집종이 작구수가 3.6개로 가장 많아 번식용으로 적당하며 일본 수집종이 수량성이 가장 높았으며
2. 절단에서는 4절단구에서 종자 소요량을 줄일 수 있고 10a당 847 kg 으로 수량이 높았다.
3. 파종방법은 관행직파보다 PE 멀칭과 PE 터널이 7일 내외, 육아재배 PE 멀칭 PE 터널에서는 출현이 20일 빨랐고
4. 차광재료에서 50-70% 차광이 무처리보다 수량이 19-35% 증수 되었으며
5. 발병정도는 백색 흑색 무피복순이었으나 7월 장마후 백색, 흑색비닐제거에서 발병이 현저히 적었다.

Table 1. Selection of excellent variety from 5 different cultivar of elephant food.(Amorphophallus konjac.K)

Cultivar	Days of budding	Ratio of budding (%)	Plant height (cm)	Stem diameter (cm)	Number of stem	No. of bulblet (no./plant)	Yield (kg/10a)	Index
Geumzan	6.25	85	40	1.3	2.5	2.8	1,040	100
Jecneon	6.23	79	52	1.2	3.8	3.6	1,253	120
Hongcheon	6.24	40	38	1.2	2.8	2.8	860	82
Chisa	6.22	80	43	1.3	1.9	2.3	966	94
Japan	6.20	90	60	1.4	1.9	2.6	1,375	132
L. S. D (0.05%)	-	25	47	0.19	0.21	0.17	280.0	-

* planting date : April. 20

Table 2. The effect of seed tuber size on growth and yield of elephant food.(Amorphophallus konjac.K)

Treatment	Desanded amount of seed tuber (kg/10a)	Date of budding	Ratio of budding (%)	Number of stem (no)	Plant height (cm)	No. of tuber	Yield (kg/10a)	Ind-A
Non cutting tuber (10g)	150	July. 10	82	1.3	29	1.5	841	100
Two split tuber (20g)	150	" 8	90	1.5	22	1.8	775	92
Four split tuber (40g)	150	" 8	86	2.0	24	2.2	847	101
Complete tuber(25g)	300	" 11	82	2.2	28	2.4	1,110	132
Complete tuber(35g)	525	" 11	80	2.3	36	2.5	1,640	195

C.V (%)

18.3

L.S.D (5%)

336

Table 3. The effect of the methods of cultivation on growth and yields of elephant food (Amorphophallus konjac. K)

Sowing date	Treatment	Days of budding	Ratio of budding (%)	Emergence (no./m ²)	Plant height	Stem diameter	No. of stem	Days to harvest (D-H)	Harvesting date	No of bulblet	Yield kg/10a	Index
April. 5	Storage in soil(direct sowing)	Jan. 16	88(8)	12.8	33	1.3	1.4	2	Oct. 7	4.3	827	118
	"(PE Film mulching)	Jan. 12	94	12.6	27	1.0	1.6	1	Oct. 7	3.6	1235	159
	"(PE " tunnel)	Jan. 7	95	12.8	30	1.0	1.6	1	Oct. 7	3.2	916	118
	30°C (direct sowing)	Jan. 14	93	12.6	26	1.0	1.9	2	Oct. 7	3.3	582	77
	"(PE Film mulching)	Jan. 6	88	11.8	23	0.9	2.1	2	Oct. 7	2.3	954	122
	"(PE " tunnel)	Jan. 6	83	11.2	25	1.2	2.0	3	Oct. 7	3.3	873	112
April. 20	Storage in soil(direct sowing)	Jan. 17	94	12.6	25	1.1	1.8	2	Oct. 7	3.2	448	57
	"(PE Film mulching)	Jan. 20	81	11.0	20	1.0	2.0	2	Oct. 7	2.1	276	36
	"(PE " tunnel)	Jan. 25	90	12.0	25	1.0	1.7	3	Oct. 7	2.3	533	69
	30°C (direct sowing)	Jan. 14	94	11.0	22	1.0	1.9	4	Oct. 7	2.6	524	67
	"(PE Film mulching)	Jan. 13	80	10.8	22	1.0	2.0	2	Oct. 7	2.6	629	81
	"(PE " tunnel)	Jan. 8	92	12.4	24	0.9	2.1	2	Oct. 7	3.0	847	109
broad bed(PE " mulching)	"(PE " tunnel)	May. 26	78	11.4	16	0.7	1.9	1	Oct. 7	1.8	613	76
	"(PE " tunnel)	May. 26	86	10.6	25	0.9	2.1	2	Oct. 7	2.7	803	103
broad bed(PE " mulching)	"(PE " tunnel)	May. 27	84	11.4	22	0.9	2.0	1	Oct. 7	3.0	845	108

C.V (%)

Main plot

22.7

L.S.D (5%)

Main plot

24.6

Difference

between sub plots at same main plots

257.2

Difference

between main plots at same sub plots

729.0

Table 4. Selection of optimum shading condition elephant food.(Amorphophallus konjac. K)

Treatment	Photosynthesis capacity (μmole·m ⁻² ·hr ⁻¹)	Leaf area (cm ² /plant)	Chlorophyll content (mg/cm ²)	Dry weight (g/plant)	Yield (kg/10a)
Control	118	1.220	4.78	10.74	583
30% shading	143	1.231	5.24	10.21	609
50% shading	126	1.306	5.36	11.01	698
70% shading	106	1.433	5.71	10.51	791
L.S.D (5%)	-	-	0.451	0.154	98.12

* Date surveyed was Aug. 20.

Table 5. The ratio of infected plant by rotting bacteria disease (Erwinia carotovora) in each growing stages.

Treatment	Ratio of infected plant (%)							
	Jul. 20	Jul. 30	Aug. 10	Aug. 20	Aug. 30	Sep. 10	Sep. 20	Sep. 30
Control	0	5	15	25	20	40	40	40
Black vinyl mulching	0	20	35	40	45	36	36	36
Transparent vinyl mulching	0	5	15	20	30	35	35	35
Remove of black mulching (Aug. 1)	0	12	17	28	28	39	39	39
Remove of Transparent mulching (Aug. 1)	0	5	6	13	15	15	20	20

* Planting date was Apr. 20

Table 6. The correlation coefficient factors and yield of elephant food(Amorphophallus konjac. K)

Factor	Plant height	Number of stem	Number of bulblet	Yield
Days of budding	0.719*	0.091	0.192	0.192*
Days of budding	0.719*	0.091	0.192	0.192*
Plant height	-	0.606	0.812*	0.812*
Number of stem	-	-	0.276	0.276
Number of bulblet	-	-	-	0.192
Yield	-	-	-	-

* Significant at 5% level.