

A42 Inheritance of Photo-period Insensitivity in Hybrids between Japonica Varieties of Rice

NYAES : Jong-Rae Kang, Ho-Young Kim, Sang-Jong Lim

벼 자포니카 품종간 잡종의 광둔감성 유전
영남농업시험장 : 강종래, 김호영, 임상종

Objective

Breeding of short growth duration and early maturing varieties by study of photo-period insensitivity gene

Materials and Methods

Materials

- F₂ seeds of six crosses through the japonica varieties
- Their parents :
87-9, Sangjubyeo, YR15840, Jouiku414, Milyang110, Keumobyeo 1, Daesanbyeo

Methods

- About 300 F₂ plants of each cross and the respective parents(ca. 60 plants for each parents)was grown in a paddy field under tropical and temperate zone
- Heading date : for each plant when the first developing panicle emerged from the leaf sheath of the flag leaf
- Comparing on the distribution of heading date of F₂ and parents

Conclusions

- The strength of photo-period insensitivity on parents showed as fellow :
87-9>Sangjubyeo>YR15840>Jouiku414>Milyang110>Keumobyeo1>Daesanbyeo
- In F₂ population, most of crosses with insensitivity × sensitivity are showed recessive on the aspect of photo-period insensitivity except one cross (Milyang110×Sangjubyeo), that is showed dominant
- The ratio of 9:7 (complementary gene) observed with 50~95% probability at one cross (Milyang110 × Sangjubyeo), while two of the other crosses showed monogenic segregation (87-9 × Sangjubyeo, YR15840 × 87-9)
- For breeding a photo-insensitivity variety, Sangjubyeo be expected as a useful parent among the 7 parents
- Keumdbyeo 1 and Daesanbyeo segregate on heading date under tropical zone

연락처 전화 : 0527-350-1164, E-mail : kangjr@nyaes.go.kr

Table 1 . Heading date of female, male and F₂ generation

Cross	The average of heading date			The number of testing plants		
	Famale	Male	F ₂	Female	Male	F ₂
YR19958	46.99	51.16	49.99	65	69	366
YR19960	51.31	51.16	50.76	74	69	367
YR19963	51.31	68.85	58.35	74	79	363
YR20138	69.76	68.85	66.88	70	79	376
YR20146	62.33	67.76	61.90	69	70	348
YR20142	62.33	51.50	51.10	69	72	378

Table 2 . The difference of heading date in between tropical and temperate zone on the parents

Parents	The heading date on tem.(A)	The heading date on trop.(B)	Difference(A-B)
87-9	85	70	18
Sangjubyeo	88	69	19
YR15840	86	62	24
Jouiku414	80	47	33
Milyang110	94	51	43
Keumobyeol	96	51	45
Daesanbyeo	105	51	54

Table 3 . The heredity of photo-insensitivity character for F₂

The coombination	Evaluation
87-9 / Sangjubyeo	recessive
YR15850 / 87-9	"
Miilyang110 / Sangjubyeo	dominant
YR15840 / Keumobyeo 1	recessive
Jouiku414 / Daesanbyeo	"