

**Distribution of Gelatinization Property in F<sub>2</sub> Plants of a Cross between  
Opaque and Translucent Endosperm NILs of Rice**

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**Objectives**

This study was conducted to examine the distribution of gelatinization property rice flour in F<sub>2</sub> plants of a cross between opaque and translucent endosperm NILs.

**Materials and Methods**

1. Materials: F<sub>3</sub> seeds harvested from F<sub>2</sub> plants in a cross of opaque/translucent endosperm NILs.
2. Methods
  - Endosperm type: Rice grain was divided between opaque and translucent endosperm by repeated observation of milled grains.
  - Gelatinization property test: Three grams of rice flour was tested using Rapid Visco Analyser(RVA).
  - Cultural method: Optimum season cultivation with standard fertilizer level.

**Results and Discussion**

1. Gelatinization property of rice grain was different between translucent and opaque endosperm NILs except peak viscosity.
2. F<sub>2</sub> plants were segregated into three endosperm types homozygous translucent endosperm group, homozygous opaque endosperm group and segregating group in endosperm type.
3. The distribution patterns of minimum, final, setback and consistency viscosity were different in rice grain of opaque and translucent endosperm. F<sub>2</sub> plants showing homozygous opaque endosperm distributed in lower values of minimum, final, setback and consistency viscosity than homozygous translucent endosperm group. But significant difference was not found in peak and breakdown viscosity between two endosperm types of F<sub>2</sub> plants.

Table 1. Gelatinization property of rice grain harvested from parental NILs

Parental NILs	Endosperm type	minimum viscosity	peak viscosity	final viscosity	breakdown	setback	consistency
KR90013-8-2-1-B1-9-7-7	Normal	232.0	328.9	470.9	96.9	142.0	238.9
KR90013-8-2-1-B1-9-14-3	Opaque	197.3	330.0	362.6	132.7	32.6	165.3

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Table 2. Distribution of gelatinization property of homozygous translucent and homozygous opaque grains F<sub>2</sub> plants

Endos. type	Minimum Viscosity							Total	Mean	S	CV	x <sup>2</sup> -test
	≤175	175.01-200	200.01-225	225.01-250	250.01-275	275.01-300	≥300.01					
N	-	1	4	10	22	24	1	62	263.6	25.9	9.8	40.17**
O	2	3	10	11	2	-	-	28	217.2	29.6	13.6	
Total	2	4	14	21	24	24	1	90				

Endos. type	Final Viscosity						Total	Mean	S	CV	x <sup>2</sup> -test	
	≤336	336.01-380	380.01-424	424.01-468	468.01-512	512.01-556						≥556.01
N	-	1	3	9	28	19	2	62	492.7	38.7	7.8	49.73**
O	2	6	10	9	1	-	-	28	399.5	50.0	12.5	
Total	2	7	13	18	29	19	2	90				

Endos. type	setback									Total	Mean	S	CV	x <sup>2</sup> -test
	≤31	31.01-64	64.01-97	97.01-130	130.01-163	163.01-196	196.01-229	229.01-262	≥262.01					
N	-	1	5	26	17	8	3	1	1	62	137.4	40.2	29.3	37.55**
O	3	9	7	6	3	-	-	-	-	28	76.6	38.8	50.7	
Total	3	10	12	32	20	8	3	1	1	90				

Endos. type	consistency						Total	Mean	S	CV	x <sup>2</sup> -test	
	≤170	170.01-190	190.01-210	210.01-230	230.01-250	250.01-270						≥270.01
N	-	1	8	22	26	5	-	62	229.0	17.5	7.6	64.11**
O	6	11	11	-	-	-	-	28	182.3	21.6	11.9	
Total	6	12	19	22	26	5	-	90				

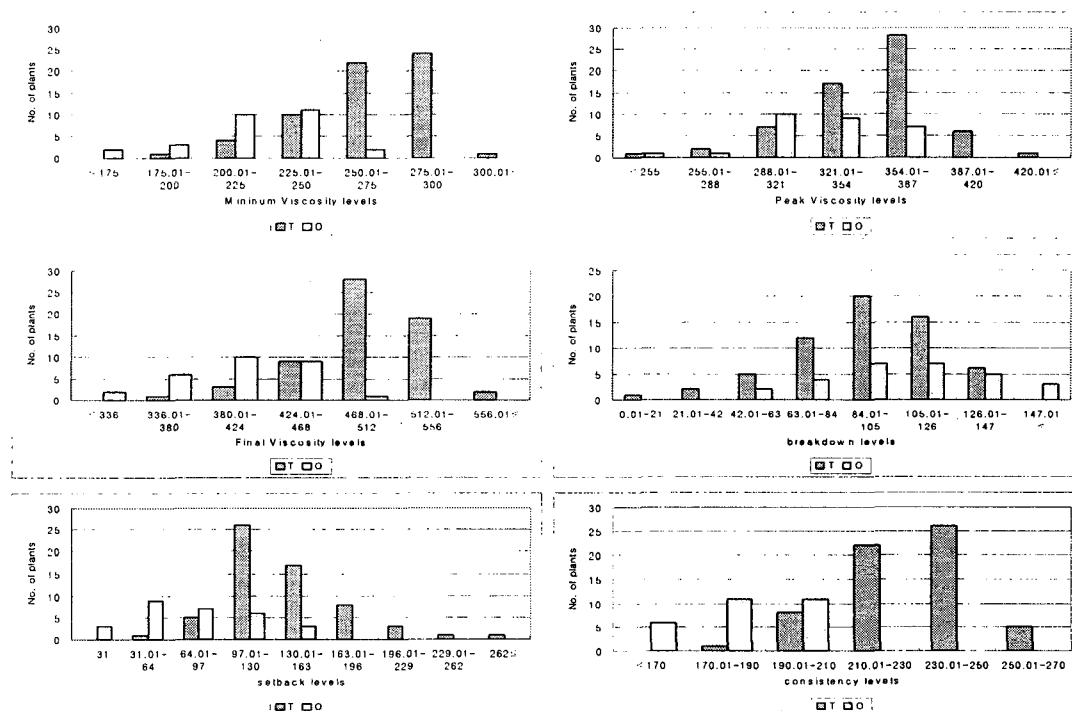


Fig. 1. Distribution of gelatinization property of homozygous translucent and homozygous opaque endosperm F<sub>2</sub> plants.