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## A New Midium-Late Maturing Rice Cultivar with Low Phytate Content “Sanggolbyeo”

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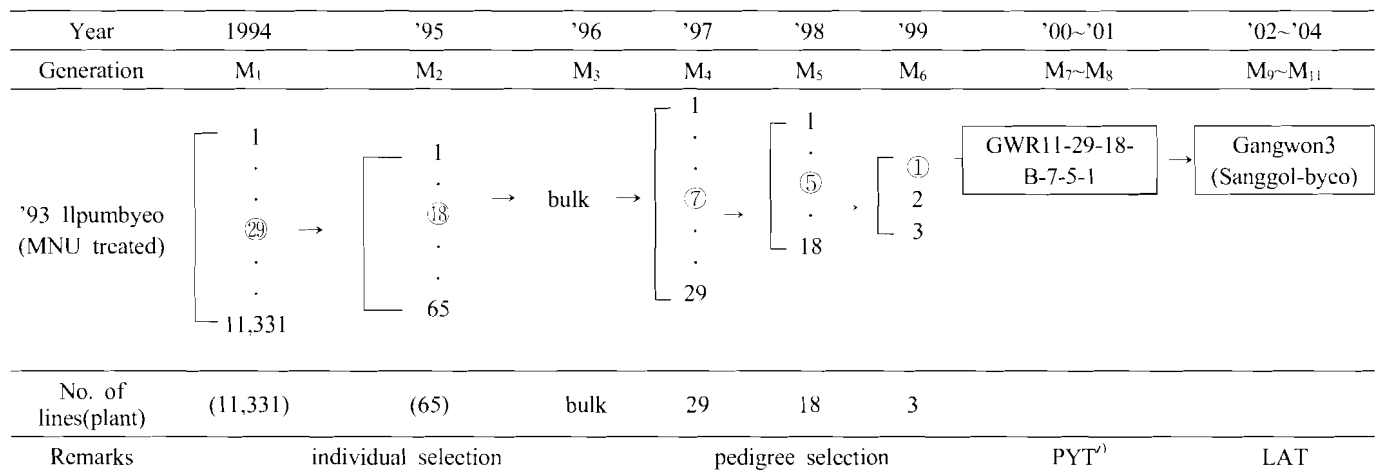
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**Abstract :** Sanggolbyeo is a new japonica rice cultivar developed from Ilpumbyeo mutation lines by N-methyl-N-nitrosourea(MNU) treatment on fertilized egg cell by the rice breeding team of Gangwon Provincial Agricultural Res.& Ext. Service in 2006. This cultivar has about 135 days growth duration from transplanting to harvesting. Sanggolbyeo has short and round grain and non-glutinous endosperm with very low phytate content, below 50% of Ilpumbyeo, implying it could help men to absorb Calcium from rice. This cultivar shows midium diseases tolerance to leaf blast, bacterial blight, virus and insect pest. The milled rice yield of Sanggolbyeo is about 4.98 MT/ha at ordinary transplanting culture in the local adaptability test. Sanggolbyeo would be adaptable for the mid-northern plain areas of Korea.

**Key words :** Sanggolbyeo, Rice, Mutation, Japonica, Leaf blast



<sup>1)</sup>PYT : Preliminary yield trial, LAT : Local adaptability test

**Fig. 1.** Pedigree diagram of “Sanggolbyeo”

**Table 1.** Heading date, Leaf and culm characteristics of “Sanggolbyeo”

Variety	Heading date	Leaf				Culm			
		Color	Length	Width	Erectness	Length(cm)	Thickness	Stiffness	Lodging
Sanggolbyeo	Aug.23	Light Green	Medium	Medium	Half erect	67	Medium	Medium	Tolerant
Ilpumbyeo	Aug.22	DarkGreen	Medium	Medium	Half erect	72	Medium	Medium	Tolerant

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**Table 2.** Panicle and grain characteristics of "Sanggalbyeo"

Variety	Panicle Length (cm)	Grain Shattering	Awn	Spikelet density	Grain		
					Length(mm)	Width(mm)	L/W ratio
Sanggalbyeo	21	hard	rare	moderate	4.73	2.94	1.61
Ilpumbyeo	20	hard	rare	moderate	4.85	3.00	1.62

**Table 3.** Yield components of "Sanggalbyeo"

Variety	No. of panicles/hills	No. of Spikelets/panicles	Ripened grains ratio (%)	Brown/rough rice ratio (%)	1,000 grains weight in brown rice (g)
Sanggalbyeo	17	95	76.5	82.2	20.9
Ilpumbyeo	17	91	78.2	83.4	22.0

**Table 4.** Milling properties, grain quality and content of phytate in "Sanggalbyeo"

Variety	Milling recovery (%)	Trans lucency (1-9)	White belly (0-9)	Amylose content (%)	protein content (%)	content of phytate	
						phytic acid(mg/g)	Phytate-P(%)
Sanggalbyeo	73.2	1	0/1	18.8	6.8	4.6	42.0
Ilpumbyeo	75.2	1	0/1	18.8	6.4	10.7	90.7

**Table 5.** Reaction to major disease and insect pests

Variety	blast		Virus diseases			Brown Plant hopper
	Leaf	Neck	Stripe	Dwarf	Black streaked Dwarf	
Sanggalbyeo	S	S	S	S	S	S
Ilpumbyeo	S	S	S	S	S	S

**Table 6.** Reaction to the environmental and physiological stress

Variety	Germination rate at low temp.(13°C)	Viviparous germination (%)	Premature heading (%)	Lodging (0-9)	Cold tolerance		
					Discoloration (0-9)	Fertility (%)	Ripening stage(1-9)
Sanggalbyeo	79	0	0	0	R	27	7
Ilpumbyeo	87	0	0	0	S	37	7

**Table 7.** Mill rice yield of "Sanggalbyeo"

Region	Test Location	Milled rice yield(MT/ha)								Index (A/B)
		Sanggalbyeo(A)				Ilpumbyeo(B)				
		'04	'05	'06	Aver.	'04	'05	'06	Aver.	
Middle plain	Chuncheon	4.81	4.56	4.46	4.61	5.13	5.65	5.05	5.28	87
	Hongcheon	4.34	4.59	4.93	4.62	5.28	5.63	5.50	5.47	85
	Hwengseong	4.91	4.91	5.11	4.98	5.36	5.21	5.28	5.28	94
	Wonju	4.71	4.78	5.37	4.95	5.46	5.69	5.72	5.62	88
	Aver.	4.69	4.71	4.97	4.79	5.31	5.55	5.39	5.41	97