

Comparison the milling characteristics to different rice varieties and altitude using automatic robot head rice milling process system with the micro computer

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Objective

This study was carried out to micro compute automatic robot head rice milling process and quality evaluation system, In order to minimize the milling losses for the milled rice of high quality, according to different rice varieties and altitude.

Materials and Methods

- o Rice variety : 17 variety(early-4, medium-8, mid-late variety 5)
- o Culture location : Altitude 10m, 150m, 275m, 430m.
- o Transplanting day : 10m(May 30 2003),150m(May 25),275m(May 20),430m(May 15).
- o Planting space(cm) : 10m, 150m - 30×15cm, 275m, 430m - 30×12cm.
- o System model : SY2000-AHRPQCS

Results and Discussion

Rice selection ratio were 98.9 ~ 99.6%. Hulling ratio were 78.2 ~ 80.4%. It was low early maturing variety as compared with medium, mid-late maturing variety. Rice milling rate was 69.1 ~ 71.3%. It was low early maturing variety as compared with medium, mid-late maturing variety. Color head rice ratio was 63.6 ~ 66.2%. It was low mid-late maturing variety as compared with early, medium maturing variety. Immatured unhulled rice was 0.4 ~ 1.1%, Immatured rice was 0.3 ~ 3.1%, Husks ratio was 18.3 ~ 19.6%, Rice bran ratio was 10.9 ~ 11.2%, Imperfect rice ratio was 4.5 ~ 7.7%, Broken rice ratio was 1.6 ~ 4.2%. Correlation coefficients between altitude and rice milling characteristic showed positive correlation coefficients, and milled/brown rice ratio was significance. Correlation coefficients between altitude and rice quality showed negative correlation coefficients, and broken rice and hull ratio were significance.

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Table 1 . The characteristics of rice milling process as ecotype

Ecotype	Selection ratio	Hulling recovery	Milled/ brown rice ratio	Milling ratio	Color head rice ratio	Grain shape head rice ratio
Earl	98.9	78.2	88.9	69.6	65.2	60.9
Medium	99.5	80.4	88.7	71.3	66.2	64.6
Mid-late	99.6	80.2	88.8	71.3	63.6	61.3

Table 2 . The characteristics of rice milling process as ecotype

Ecotype	Immatured unhulled rice	Immatured rice	Broken rice	Husks ratio	Rice bran ratio	Imperfect ratio	Broken rice ratio
Earl	1.1	3.1	0.2	19.6	10.9	4.5	4.2
Medium	0.5	2.3	0.1	18.8	11.2	5.1	1.6
Mid-late	0.4	2.6	0.2	18.3	11.1	7.7	2.3

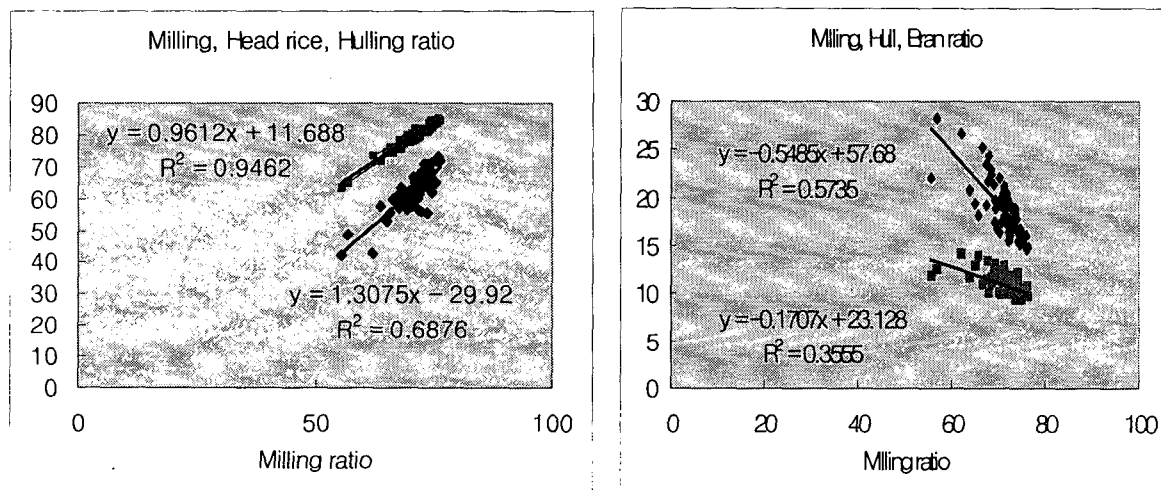


Fig. 1. Correlation of milling, Head rice, hulling ratio to different rice varieties and altitude.

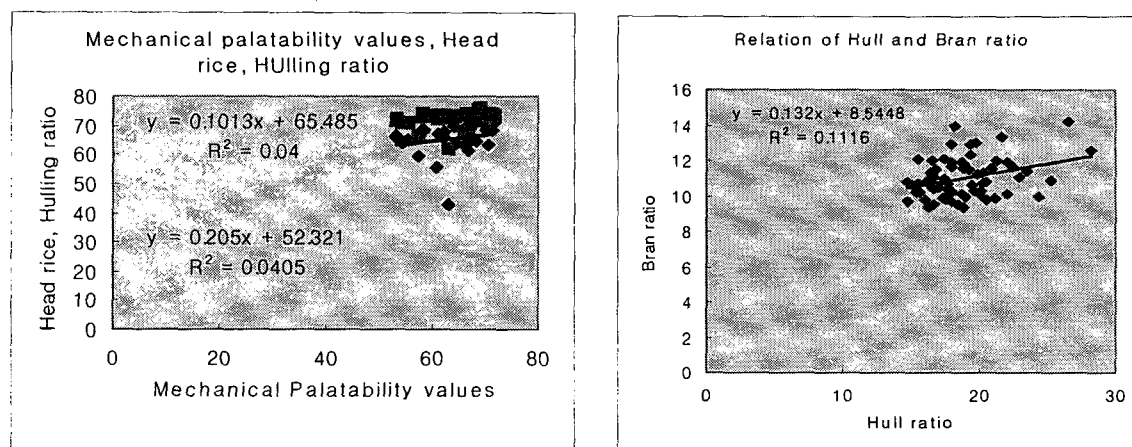


Fig. 2. Correlation of Mechanical value, head rice ratio to different rice varieties and altitude