Sensory Evaluation for Jackfruit Population in Java

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Introduction

Ripen jackfruit (*Artocarpus heterophyllus* Lam.) pulp has innumerable variations in bulb sweetness, acidity, flavor, and taste. Most people out of jackfruit grown regions have negative feelings for the flavor and taste. The fruit odor was sometimes described as blend of grapefruit, banana, and cheese, or something between spoiled onions and sweaty gym socks, and cloyingly sweet. IPGRI (2000) estimated the taste at 4 levels as 1: insipid, 2: acid, 3: bitter, 4: sweet, consistency at 4 levels, flavor at 3 levels, and juiciness at 3 levels but it was not based on sensory evaluation. No researches based on sensory evaluation for jackfruit pulp has been conducted, yet. Natives to jackfruit grown regions prefer the fruits since ancient times. We explored jackfruit population, and the diversity was examined based on the Indonesian recognition and evaluation for the sensory attributes.

Materials and Methods

Field survey was conducted from 26th September to 10th December, 2012 throughout Java Island (Fig. 1 and Table 1). We explored the jackfruit trees in Java and then conducted sensory evaluation by using a qualitative descriptive analysis with 10 selected and trained Indonesian panelists, using line scale (0-15). Measured sensory attributes were selected based on interviews to jackfruit merchants and the consumers. Simpson index (λ) and Shannon-Wiener index (H') were calculated to observe the diversity in sensory attributes.

Results

Totally 125 trees were explored. Selected sensory attributes were showed in Table 2 and Fig. 2. All sensory attributes of jackfruit population in Java showed high variances, especially in sweetness. Chewiness showed the lowest variance among the five sensory attributes (Table 2). Diversity indexes also indicated that the highest diversity in sweetness and the lowest one in chewiness (Table 3). These sensory attributes showed correlation each other except between crunchiness and juiciness, and chewiness showed negative correlation between four other attributes (Table 4).

Discussion

Five sensory attributes which compose of taste of ripen jackfruit pulp were found out based on the Indonesian recognition. Fruits from the west had high crunchiness and low juiciness, but ones from the east did reversely (Data not shown). The locality would be affected by owners' preference, land use, cultivation system, or environment.

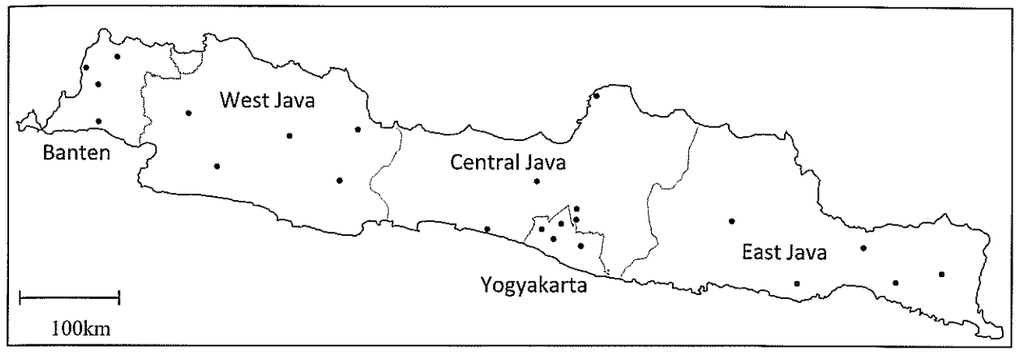

Fig. 1 Location of sampling sites in 5 Provinces

Table 1 Numbers of samples from all over the Java

Provinces	Districts	Total
Banten	Lebak	6
	Serang	5
	Pandeglang	6
	Tangerang	5
West Java	Bogor	5
	Cianjur	4
	Ciamis	5
	Kuningan	5
	Sumedang	6
Central Java	Boyolali	5
	Jepara	7
	Klaten	5
	Kebumen	4
	Temanggung	7
Yogyakarta	Gunung kidul	5
	Sleman	7
	Bantul	6
	Kulon progo	5
East Java	Jember	6
	Nganjuk	5
	Mlang	5
	Lumajang	5
	Banyuwangi	6
	Total	125

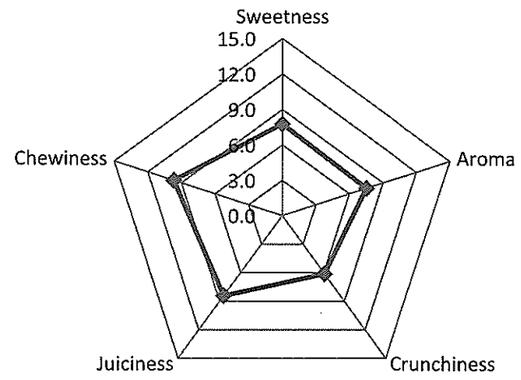

Fig. 2 Spider web diagram of sensory attributes

Table 2 Average and variances of sensory attributes

	Sweetness	Aroma	Crunchiness	Juiciness	Chewiness
Average	7.77	7.52	6.12	8.43	9.69
Variance	7.47	5.36	5.44	5.52	3.47

Table 3 Diversity index calculated using sensory attributes

Index	Sweetness	Aroma	Crunchiness	Juiciness	Chewiness
λ	0.116	0.144	0.119	0.133	0.155
H'	3.343	3.035	3.220	3.162	2.857

Table 4 Correlation between sensory attributes

	Sweetness	Aroma	Crunchiness	Juiciness	Chewiness
Sweetness	—	0.8933**	0.2539*	0.5194**	-0.2778*
Aroma		—	0.3609**	0.4850**	-0.2948**
Crunchiness			—	0.1421	-0.2362*
Juiciness				—	- 0.3251**
Chewiness					—

** and * mean the significant correlation at P<0.001 and P<0.01, respectively.

Reference: IPGRI. 2000. Descriptors for Jackfruit (*Artocarpus heterophyllus*). International Plant Genetic Resources Institute, Rome.