The 3rd FSSAT International Conference Attendance List Room 12, Moderator Ni Made Viantika Sulianderi, S.P., M.Agb.

No.	Kode ABS	Name	Name of Institution	Date of attendance at international	Title	Status of attandence
1	ABS-1	Arini Putri Hanifa, Rinaldi Sjahril	School of Agriculture and Environment Massey University; Laboratory of Plant Bioscience and Reproduction Biotechnology, Universitas Hasanuddin	January 8th 2021	Comparing satisfaction index on traditional pigmented rice plant attributes between upland and lowland farmers	Presenter
2	ABS-266	Muhammad Dassir	Faculty of Forestry, Hasanuddin University	January 8th 2021	Smallholder livelihood adaptation capacity to the risk of climate change disasters in the buffer area of Bantimurung Bulusaraung National Park South Sulawesi	Presenter
3	ABS-277	Dorothea Agnes Rampisela	Sago Research Group Universitas Hasanuddin; Departement of Soil Science, Faculty of Agriculture, Hasanuddin University	January 8th 2021	Distribution and potency of semi cultivated sago forest in South Sulawesi and its contribution to food security and rural development	Presenter
4	ABS-280	Jefny B. Markus Rawung	The Assessment Institute for Agricultural Technology of North Sulawesi. Manado. Indonesia	January 8th 2021	Utilization of sub-optimal land for the sustainability of upland rice farming in Minahasa Regency	Presenter
5	ABS-282	Suryansyah Surahman	Agricultural Science, Postgraduate School, Hasanuddin University, Makassar,	January 8th 2021	Base flow analysis in Tanralili Sub Watershed using SWAT model	Presenter
6	ABS-32	Ibrahim Erik Malia	Assessment Institute for Agricultural Technology at North Sulawesi	January 8th 2021	Feasibility study of coconut water as natural Plant Growth Regulator (PGR) on clove seedling production	Presenter
7	ABS-290	Tigin Dariati	Agricultural Science, Graduate School of Hasanuddin University	January 8th 2021	The dynamics of agricultural crop production development on land cover changes in Tinggimoncong District	Presenter
8	ABS-37	S Sudewi	Agriculture Study Program, Graduate School Hasanuddin University Makassar	January 8th 2021	Potential of endophytic bacteria in promote germination of kamba local aromatic rice seeds of Central Sulawesi	Presenter
9	ABS-56	Catur Indri Oktivian Hastuti	Indonesian Center for Agricultural Technology Assessment and Developmen	January 8th 2021	Analysis of farmers perception of intercropping technology (turiman) on upland agroecosystem	Presenter
10	ABS-70	Laode Muhammad Harjoni Kilowasid	Agrotechnology Study Program, Agriculture Faculty, University of Halu Oleo	January 8th 2021	Effects of cogongrass (Imperata Cilyndirica L) root extract on earthworms, arbuscular mycorrhiza spore, and growth of upland rice (Oryza Sativa L.) for local kambowa variety	Presenter
11	ABS-303	Veronica Sri Lestari	Faculty of Animal Science – Hasanuddin University	January 8th 2021	Some factors affecting to biosecurity practices on beef cattle farms in Bone Regency, South Sulawesi Province	Presenter
12	ABS-352	Aziza Noor Sheha	Agribusiness Study Program, Faculty of Agriculture, Hasanuddin University	January 8th 2021	Income Analysis For Seaweed In Ma'rang District Pangkep Regency	Presenter

Makassar, January 8th 2021

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Peer review declaration

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Peer review declaration

All papers published in this volume of IOP Conference Series: Earth and Environmental Science have been peer reviewed through processes administered by the Editors. Reviews were conducted by expert referees to the professional and scientific standards expected of a proceedings journal published by IOP Publishing.

- **Type of peer review:**
  Single-blind
- **Conference submission management system:**
  We conduct paper submission through submission management system (http://konfrenzi.com/). The manuscript from author has submitted before the conference through the conference website (https://fssat3.unhas.ac.id/).
- **Number of submissions received:**
  Total received abstract = 364 papers
- **Number of submissions sent for review:**
  355 full papers (19 papers rejected)
- **Number of submissions accepted:**
  291 full papers
- **Acceptance Rate (Number of Submissions Accepted / Number of Submissions Received X 100):**
  79.9 %
- **Average number of reviews per paper:**
  6 papers per reviewer
- **Total number of reviewers involved:**
  47 reviewers
- **Any additional info on review process:**
  There are some steps on review process
  1. Abstract review and acceptance
     At the first stage, abstracts submitted to the committee through the online system available in the website were reviewed by a Scientific Advisory Board/Reviewers for the suitability of the paper's topic to the theme of the conference. Abstracts that suit the theme were accepted and author were notified of the acceptance through the system. Abstract submission and review were conducted simultaneously until abstract submission deadline on October 31, 2020. As many as 364 abstracts submitted through system were reviewed. 1 abstract was rejected as not comply with the theme of the conference. Accepted abstracts were allowed to be presented in an oral or live presentation.
  2. Submission of Full Paper
     At the second stage, authors with abstracts declared accepted by the Scientific Advisory Board/Reviewer and will be presented in the conference were requested to submit a complete manuscript according to the IOP Publishing format. The deadline for receipt of a complete manuscript (full paper) was on December 15, 2020.
  3. Revision of Full Paper
     At the third stage, following the conference that took place on January 8-9, 2021, Authors were requested to revise the full paper according to the input and

suggestions from the conference audiences and re-submit the manuscript through the system until January 31, 2021.

4. Peer review of Full Paper
   At the Fourth stage, full paper previously submitted through system were reviewed following a single blind peer review process. The papers were sent to the Scientific Advisory Boards that consisted of 47 reviewers according to topic of the papers and reviewer's competency. The reviewers are from international scientists and from the Faculty of Agriculture, and Faculty of Animal Husbandry, Hasanuddin University. Review was conducted on content and format of the paper based on IOP Conference Series. The review process was carried out starting from February to March 7, 2021. At this stage, Reviewer submit a decision for the acceptance of the papers for publication in IOP Conference Series.
5. Revision of Reviewed Full Paper
   At the Fifth Stage, Review results were returned to the authors for revision and re-submission online for those accepted for publication (deadline on April 15, 2021). Following the submission of revised manuscript. The submitted papers were then subjected to proofread stage and check for similarity using Turnitin. Papers with similarity check more than 25% were returned to the authors for further revision. Subsequently, papers were prepared for submission to IOP Conference Series.

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Preface

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PREFACE

It is a great honour for us to be the host of the 3rd International Conference on Food Security and Sustainable Agriculture in the Tropics (FSSAT) on January 8th – 9th, 2021 at Agriculture Faculty of Hasanuddin University, Makassar City of South Sulawesi Province, Indonesia. This conference is a series of international scientific seminars held by the Faculty of Agriculture, Universitas Hasanuddin, Makassar, Indonesia, which has been held annually since 2017.

This conference was held as a forum for exchanging information on productivist paradigm in Indonesian food policies to feed 260 million people targets the self-sufficiency of rice, sago, corn, soybean, and meat production, including the infrastructure development such as dams, irrigation channels building, and the expansion of paddy and sago fields in the Eastern Indonesia. The unintended outcomes of these efforts are the marginalization of the local food system and dispossession of the local communities from their land and food culture. As a consequence, the human-environmental relationship has changed dramatically posing calamitous disaster and slowly disappearing foodways through local wisdom in everyday life of the local community. It also brings health issues due to the excessive use of chemical agricultural inputs in production, and the increase of degenerative disease and obesity due the unhealthy practices in the consumption level.

The International Conference on Food Security and Sustainable Agriculture in the Tropics will be held every two years, the first in 2017, the second in 2019, and the third in 2021. The covid-19 conditions that have hit the whole world have resulted in restrictions on activities to reduce the spread of Covid-19 sufferers so that the conference model from the form of a live conference has turned into a virtual conference.

The condition of the Covid-19 pandemic has raised concerns about food security throughout the world, including Indonesia, through restrictions on community activities. Several things have implications for the existence of Covid-19, including the occurrence of a very significant supply chain disruption caused by a reduction in capacity to produce food, closing transportation routes so that it will slow down the distribution of food from producers to consumers. The inability of people to consume enough healthy and nutritious food will reduce the immune system and increase disease risk. Thus ensuring an affordable food supply chain is essential during the Covid-19 outbreak. To solve this problem globally, cooperation is needed that involves scientists, academics, practitioners, professionals, governments, entrepreneurs, and communities across countries. To build a network between stakeholders, an international conference held by the Hasanuddin University Faculty of Agriculture in 2021 is important as a forum for building connectivity between researchers and/or research institutions. At this conference, a multi-disciplinary approach based on the knowledge and experience of scientists, researchers, practitioners, and policymakers will be brought together.

If the meeting cannot be held virtually, then solutions in dealing with the food crisis during the Covid-19 pandemic will not find a way out and add to the length of the crisis period chain.

This conference presents keynote speakers from 5 countries, namely Dr. Ir. Bayu Krisnamurthi, M.Si.from IPB University, Indonesia, Prof. Dr. Ir. Sumbangan Baja, M.Phil from Universitas Hasanuddin, Indonesia, Prof. Takuya Sugahara from Ehime Univerity, Japan, Dr. Ravindra C Joshi from CABI South-East Asia, Dr. Lau Wei Hong form University

Putra Malaysia, Mr. Moh, Guo-Jhong from ICDF Taiwan. First plenary session and discussion with 2 speakers for 1 hour and the second plenary and discussion with 3 speakers for 2 hours. For participant presentations (oral presentation and video presentation) it was held in 2 sessions, each session was divided into 10 rooms. The number of participants per room was 11-14 participants with an allocation of presentations for 7 minutes/participants conducted in parallel as many as 7 parallel sessions. Discussions session were held in parallel in each parallel session with an allocation of 3 minutes per participant. Virtual FSSAT 3 implementation using the zoom meeting application by the Faculty of Agriculture, Universitas Hasanuddin has which is obtained by subscription.

The seminar participants were attended by lecturers and students from various universities as well as researchers from various research institutions both from the ministry of agriculture and from Agricultural Technology Research Center. The institution of the participants came from Agricultural Technology Research Center, some polytechnic, institute and University, Indonesian Center for Estate Crops Research and Development, International Coconut Community, Center for Agricultural Technology Research and Development, PT Vale Indonesia Tbk, Sorowako. Some from overseas universities: University of New England, Armidale, Australia, and School of Agriculture and Environment of Massey University, Palmerston North New Zealand. Overall participant numbers around 1.034 participants.

There were no significant technical obstacles, speakers and participants from overseas also presented their papers fluently. Apart from sharing zoom rooms, we also created a social media group (WhatsApp) for each class to facilitate communication between participants and organizers.

All published articles are subject to a rigorous selection process and are peer-reviewed by international and national reviewers. On this occasion, we would like to thank all the authors and the team who have actively participated in the 3rd FSSAT conference, expert reviewers who are very responsive to the technical program committee, experienced senior publication chair, Publication Management Center (PMC) of Universitas Hasanuddin, authors and scholars who are enthusiastic in research. Sincerely thank you for your warm support and look forward to working with you in the next future.

Warm Regards,

Dr. Asmita Ahmad, ST., MSi.

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Comparing satisfaction index on traditional pigmented rice plant attributes between upland and lowland farmers

Comparing satisfaction index on traditional pigmented rice plant attributes between upland and lowland farmers

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Abstract. This study is conducted to evaluate the satisfaction index of traditional pigmented rice plant attributes from farmer perspectives. Farmer respondents are selected from two regions of traditional pigmented rice producers in South Sulawesi: the lowland of Jeneponto and the upland of Toraja. Face to face data collection using questionnaires are used as a research instrument. Respondents were required to rate the importance and satisfaction of plant attributes based on five-point Likert scales. The answers are analysed using Customer Satisfaction Index formula. Result showed that the satisfaction index in the lowland of Jeneponto is higher than in upland of Toraja, as much as 67.16 and 56 respectively. Similar agreement from both lowland and upland farmers was found in lower yield performance of traditional pigmented rice than expected. As the end-user of released varieties, farmers' perspective on importance and satisfaction level on plant attributes is essential for guidance in breeding and varietal improvement.

1. Introduction

The diversity of pigmented rice landraces in South Sulawesi have been reported [1, 2, 3]. Most landraces (traditional varieties) are retained by farmers intergeneration for their attributes that met farmers' demand in certain locations.

In South Sulawesi, pigmented rice landraces can be found in upland and lowland [4]. Toraja is known for its variability and conservation of rice landraces, and many of them are pigmented rice [5,6]. Beside upland, pigmented rice landraces are also found in the lowland of Jeneponto. Each of both regions has its characteristic of agroecology and socio-economic. However, they share a similarity in pigmented rice demand as signature dishes for religious and cultural ceremonies [7].

Despite culture-related, the importance of pigmented rice includes food security at farmer's household, genetic pool for varietal development, and agroecosystem stability. Besides, with the emerging market of functional food and healthy lifestyle, pigmented rice is potential economic leverage for farmers.

Due to the importance of pigmented rice, it is expected that farmers keep retaining the cultivation of such landraces. However, there is a gap of information in regards to farmers (growers)' attitude towards pigmented rice. Attitude is a crucial aspect related to farmers' satisfaction. For instance, if farmers experience low satisfaction, they stop using the product and disseminate the negative review to others [8].

Farmers have a subjective preference for different plant attributes, and their perceptions significantly affect the varietal demand [9,10]. Unrevealing each plant attribute's value by weighing its importance and satisfaction by different groups of farmers is essential to increase the retention rate of cultivation or adoption rate of selected variety.

One of the analytical tools to stipulate overall satisfaction by weighing the score of importance is Customer Satisfaction Index (CSI). Many research uses CSI to assess farmers' attitudes and responses towards superior rice [11,12] and newly introduced maize [13].

To date, very little information about farmers' attitudes and satisfaction with pigmented rice landraces. By knowing farmers' attitudes and satisfaction, appropriate strategies can be implemented to meet farmers' requirements.

This paper will investigate the performance of pigmented rice plant attributes and their importance from the farmer's perspective in both lowland and upland South Sulawesi. Farmer perspectives on pigmented rice plant attributes will be assessed using Satisfaction Index. This study aims to compare between lowland satisfaction index and upland farmers on traditional pigmented rice plant attributes.

2. Methods

2.1. Location and timing of the survey

Data collection occurred from August-October 2019. Locations selected were lowland (Bontomattene Village, Jeneponto Regency) as a representative of a developed village; and upland (Lili' Kira Ao Gading, North Toraja Regency) regions in South Sulawesi to represent a typical medium/transition village of Toraja. Many farmers in both locations are pigmented rice growers.

2.2. Sampling methods

Farmers, as respondents in this study, must have some experience in planting traditional pigmented rice. The selection of thirty (30) respondents was based on volunteer sampling aided by Agriculture Extension Officers. As the growers, farmers are the end-user of rice varieties. Hence in this study, farmers act as the costumers.

The questionnaire consisted of closed-ended questions from plant attributes to assess the importance and satisfaction level of local pigmented rice varieties performance based on farmer experience. Plant attributes include yield, pest and disease resistance, threshability, seedling vigour and viability, lodging resistance, grain colour, aroma (cooked rice), texture (cooked rice), days to mature, plant stature, economic value, and market demand.

2.3. Data analysis

Customers Satisfaction Index (CSI) is used to measure customer satisfaction from the closed-ended questionnaire. CSI was used to determine overall user satisfaction by considering the variable interest and the product's attributes. Comparison between CSI indicator values against the expectation of consumers determined the CSI level [14].

A Likert scale is used as a quantitative scale measure for the value of customer perception and the actual performance level of a product, presented in consumer satisfaction responses [15]. Five-point scales are generally regarded as the most reliable to measure the level of interest or expectation and customer satisfaction level [16]. The following are the five ratings on a Likert scale for importance:

- Very important attribute is scored 5
- Important attribute is scored 4
- Quite important attribute is scored 3
- Unimportant attribute is scored 2
- Very unimportant is scored 1

Range score in five-point Likert score for performance/satisfaction:

- Very satisfied is scored 5, meaning the performance is very good; thus, the satisfaction level is very satisfied

- Satisfied is scored 4, meaning the performance is good; thus, the satisfaction level is satisfied
- Quite satisfied is scored 3, meaning the performance is quite good; thus, the satisfaction level is quite satisfied
- Dissatisfied is scored 2, meaning the performance is bad; thus, the satisfaction level is dissatisfied
- Very dissatisfied is scored 1, meaning the performance is very bad; thus, the satisfaction level is very dissatisfied

The range scale needs to be determined using the formula below to make a numeric linear scale [15]

$$Rs = \frac{(m - n)}{b} = \frac{(5-1)}{5} = 0.8$$

where: Rs = range scale
m = maximum score
n = minimum score

Thus, range scale for importance level as follows:

1.00-1.79	very insignificant/not important
1.80-2.59	not important
2.60-3.39	quite important
3.40-4.19	important
4.29-5.00	very important

Range scale for performance level as follows

1.00-1.79	very dissatisfied
1.80-2.59	dissatisfied
2.60-3.39	quite satisfied
3.40-4.19	satisfied
4.29-5.00	very satisfied

Measuring the overall level of customer satisfaction on a product type can be undertaken using the Customer Satisfaction Index (CSI).
According [17], there are four steps to count CSI:

1. Decide Mean Important Score (MIS) and Mean Satisfaction Score (MSS) The score is based on the interest rate and performance of each respondent:

$$\text{MIS} = \frac{\sum_{i=1}^{n} Yi}{n}$$

$$\text{MSS} = \frac{\sum_{i=1}^{n} Xi}{n}$$

n = Total respondent
Yi = Interest attribute score-i
Xi = Performance attribute score -i

2. Create Weigh Factors (WF)
This weight is the percentage score of MIS per attribute to total MIS of all attribute

$$WFi = \frac{MISi}{\sum_{i=1}^{p} MISi} \text{ x } 100\%$$

Where:
p = total of attributes
i = attribute -i

3. Create weight score (WS)
   This weight is the multiplication between weight Factors (WF) and Means Satisfaction Score (MSS)
   WSi = WFi x MSSi
   Total of Weight Score (WS) of the first attribute(a-1) to the last (a-p) is called Weight Average Total (WAT)
4. Calculate CSI

$$CSI = \frac{\sum_{i=1}^{p} WSi}{HS} \text{ x } 100\ \%$$

p = attribute of p
HS = maximum scale used

Satisfaction index criteria use the range of 0 to 100% (not satisfied to very satisfied). Scale of the range is adjusted with formula as follows:

$$Rs = \frac{(m-n)}{b}$$

Range of scale: Rs = range of scale
m = Highest score
n = Lowest score
b = Total class to be used
Scale range of CSI to be used in this study :

$$Rs = \frac{100\%-0\%}{5} = 20$$

Based on the range scale, 5 class criteria are determined in Table 1.

Table 1. Customer Satisfaction Index Criteria [18].

CSI value %	CSI criteria
0<CSI≤20	Very dissatisfied
20<CSI≤40	Dissatisfied
40<CSI≤60	Quite satisfied
60<CSI≤80	Satisfied
80<CSI≤100	Very satisfied

3. Results and discussion

3.1. Upland farmers satisfaction index

CSI measurements provide user satisfaction data at a specific time range for regular evaluation to improve satisfaction toward a product [19]. Satisfaction Index can be utilised to measure the satisfaction level of farmers growing pigmented rice. The satisfaction index of traditional pigmented rice for upland farmers is presented in table 2.

Table 2. Upland farmer satisfaction index of traditional pigmented rice.

Attribute	Means of importance score (MIS)	Ascending rank	Means satisfaction score (MSS)	Ascending rank	Weighting factors (WF)	Weight score (WS)
Yield	4.67	9	2.47	3	0.09	0.22
Pest & disease resistance	4.70	10	2.30	2	0.09	0.21
Threshability	4.47	8	2.83	6	0.09	0.25
Seedling vigour & viability	4.37	6	2.47	3	0.08	0.21
Lodging resistance	4.47	8	2.50	4	0.09	0.22
Grain colour	4.33	5	3.83	8	0.08	0.32
Aroma (cooked rice)	4.30	4	3.43	7	0.08	0.29
Texture (cooked rice)	4.43	7	2.67	5	0.09	0.23
Days to mature	4.03	3	2.20	1	1.02	2.23
Plant stature	3.97	2	2.50	4	0.08	0.19
Value($)	3.27	1	2.67	5	0.06	0.17
Market demand	4.43	7	3.93	9	0.09	0.34
Total score	51.44		Weight Average Total (WAT)			2.82
CSI	56.00%		(Quite satisfied)			

Importance Score interpretation: (1) Very unimportant; (2) Not important; (3) Quite important (4) Important; (5) Very important
Satisfaction score interpretation: (1) Very dissatisfied; (2) Dissatisfied; (3) Quite satisfied; (4) Satisfied; (5) Very satisfied

Pest and disease resistance attributes achieved the highest mean of importance score (4.70), followed by yield (4.67). In contrast, the least important feature for upland farmers was economic value (3.27). The highest mean satisfaction score was for market/consumer demand (3.93) and grain colour (3.83). Whereas the least score of satisfaction attribute was days to maturity (2.2) and pest and disease resistance (2.5). The widest gap between importance and performance was for pest and disease resistance and yield, followed by yield, indicating the need for improvement in the attributes. The overall satisfaction index of pigmented rice plant attributes for upland farmers was 56%, indicating quite satisfied.

3.2. Lowland farmers satisfaction index

The means score of importance and satisfaction on plant attributes from lowland farmers differed from upland farmers, and so were the ranks (Table 3). The highest importance score was attributed to yield (5), followed by economic value (4.9). However, satisfaction score for yield was also the lowest. Plant

stature was rated least for importance (3) among the plant attributes, indicating that farmers are not happy with the height of their pigmented rice varieties. Except for Bakka Eja, most traditional pigmented rice varieties are tall, especially in lowland areas with warmer temperatures and greater sunlight.

Table 3. Lowland farmer- satisfaction index for traditional pigmented rice.

Attribute	Means of importance score (MIS)	Ascending rank	Means satisfaction score (MSS)	Ascending rank	Weighting factors (WF)	Weight score (WS)
Yield	5	12	2.5	1	0.106	0.268
Pest & disease resistance	3.8	7	3.4	8	0.081	0.278
Threshability	3.3	2	3.4	7	0.071	0.24
Seedling vigour & viability	4.1	9	2.9	4	0.087	0.254
Lodging resistance	3.4	3	3.1	6	0.073	0.227
Grain colour	3.9	8	3.6	9	0.083	0.302
Aroma (cooked rice)	3.8	5	2.7	2	0.08	0.213
Texture (cooked rice)	3.8	15	3.6	9	0.08	0.29
Days to mature	3.5	4	3.1	8	0.075	0.229
Plant stature	3	1	2.9	3	0.063	0.18
Value($)	4.9	11	4.4	12	0.104	0.453
Market demand	4.7	10	4.3	11	0.099	0.422
Total score	47.23		Weight Average Total (WAT)			3.36
CSI	67.15%		(Satisfied)			

Importance Score interpretation: (1) Very unimportant; (2) Not important; (3) Quite important (4) Important; (5) Very important
Satisfaction score interpretation: (1) Very dissatisfied; (2) Dissatisfied; (3) Quite satisfied; (4) Satisfied; (5) Very satisfied

The satisfaction index for traditional pigmented rice among lowland farmers was 67.12%, meaning that they are satisfied with the attributes of the crop in general. The present study indicates the need for continuous support and strategy based on farmers' demand, which can differ among different farmer groups by locations.

A paired-sample t-test was conducted to compare the importance scores and satisfaction scores of upland and lowland farmers. There was a significant difference in satisfaction score from upland farmers (M=2.8, SD=0.58) and lowland farmers (M=3.3, SD=0.58) (P= 0.043). Pearson's correlation between the importance and satisfaction of both lowland and upland farmers did not show a significant correlation, meaning that upland farmers have a different set of priorities than the lowland farmers.

Farmers' perception of importance and performance differed between upland and lowland farmers. Upland farmers had higher importance of overall pigmented rice crop attributes but lower satisfaction; in contrast, lowland farmers had lower importance and higher satisfaction. Hence, the final score of satisfaction index was higher in lowland.

The low satisfaction index of upland is undesirable since it can affect the sustainability in cultivating pigmented rice landraces. Whereas, Toraja region has a significant contribution to the rice landrace

preservation. As mentioned by [20], farmers' perceived image has importance influences on their satisfaction and loyalty.

4. Conclusion

The comparison of satisfaction index between lowland and upland farmers showed higher satisfaction index of lowland farmers than in upland. Hence, upland farmers' low satisfaction index indicated the discrepancy between plant performance and farmers expectancy towards plant attributes. Minimising the gap between expectancy and plant performance is suggested for further research by participatory varietal selection.

Farmers' perception of pigmented rice landraces' attributes is one of the critical factors in retaining the traditional varieties on their farm. The existence and variability of pigmented rice landraces are essential for the genetic pool of rice diversity and the food security of local people. The nutraceutical compound of pigmented rice, along with concern and demand for a healthy diet, are positive factors for retaining the pigmented rice landraces cultivation.

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