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Participatory constraint analysis of rearing *Niang Megha* Pigs by the tribal farmers of Meghalaya

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Abstract
The study was undertaken in two purposively selected districts of Meghalaya viz. East Khasi Hills and West Khasi Hills districts of Meghalaya and targeted for Participatory constraint analysis of rearing *Niang Megha* Pigs by the tribal farmers. A list of the most common constraints was prepared initially based on the responses through participatory method with 10 Key Informants (KI) and 120 randomly selected respondents, 60 each from the two districts. Thereafter the KI and Respondents were asked to rank the constraints individually. Data was collected during the month of February 2015 to April 2016. Rank Based Quotient (RBQ) technique was used to quantify the data so collected by Preferential Ranking Technique. The RBQ values indicating the severity of constraints were calculated separately for both KI and the respondents in both the districts. Spearman's rank correlation co-efficient were calculated between the ranks assigned by KI and respondents in both the districts which was found to be highly significant, with R=0.70 and R=0.95 in West Khasi Hills and East Khasi Hills districts, signifying a close association between the KI and the respondents in these districts, with regard to their attitude towards the constraints perceived by them. Based on the perceived ranking by the tribal farmers and calculated mean RBQ values, rank of each of the 14 constraints was ascertained. Out of these, high cost of feed was adjudged as the major constraints, with RBQ values of 96.8 and 95.0 in West Khasi Hills and East Khasi Hills districts, followed by other constraints like lack of adequate feed, lack of Breeding boar and no access to credit facilities.

Keywords: Participatory constraint analysis, RBQ, *Niang Megha* pigs, Meghalaya

1. Introduction
Meghalaya, literally meaning "Abode of clouds", is a state in North East India. It comprises of the Khasi, Garo and Jaintia hills with the scheduled tribe populations belonging to Khasi, Jaintia and Garo tribes which constitute 85.53% of the total population [1].These tribal people rear different livestock mostly as a tradition and for augmenting their livelihood. Pig is the most popular among them, with almost every household rearing one or two pigs in their backyards, because of the fact that pork is the most preferred meat in the state. The natives of North East India, especially the tribal communities, are ethnically and habitually accustomed to consume meat and meat products in their daily diet and pork is the much preferred meat [2]. The traditional management practices continue to dominate the production system with majority rearing pigs for domestic consumption as well as subsidiary activity. The pig population of Meghalaya as per the Livestock census [3] is 5, 69,301 of which crossbred comprises 1, 37,984 and indigenous 4, 31,317. Meghalaya local pig is known as *Niang megha* which is widely reared in this state. Popular for its diseases resistance capacity this indigenous breed is registered by National Bureau of Animal Genetic Resources under Accession No. INDIA_PIG_1300_NIANG MEGHA_09002 [4]. The newly adopted market economy and its resultant high purchasing power have elevated the demand of pork in the state on one hand and on the other aspect given rise to many associated factors affecting pig production systems. In spite of the fact that Meghalaya has seen substantial increase (3.6%) in pig production from 2007-2012 [5] but still it is not self-sufficient in pork production and draws supplies from other states [2]. Looking into the shortfall in production and consequent quantum of meat import, it can safely be presumed that there exist a multitude of constraints in the area of pig rearing. Against this backdrop a study entitled "Participatory analysis of constraints faced by the tribal farmers rearing Niang megha Pigs in Meghalaya" was undertaken to identify the constraints faced by the tribal pig farmers in Meghalaya.

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2. Materials and methods

2.1 Study area and sampling

The study was undertaken in two purposively selected districts of Meghalaya viz. East Khasi Hills and West Khasi Hills districts. Considering the concentration of pig population, four villages were selected from each district. Fifteen pig farmers were selected from each of the 8 villages making the total sample size 120. A total of 10 Key Informants (KI) were selected from each district which includes Veterinary Officer, Local Headman, NGO member and representatives of Self Help Group. In both the districts, the Key Informants (KI) was asked collectively to list the constraints faced by the pig farmers through participatory method. The most common constraints were jotted down. After that a participatory discussion was held where all the 60 respondents in each district were present who again collectively listed the constraints in their respective district. A final list of the constraints was prepared by comparing the list prepared by the Key Informants as well as the respondents separately. Later on both the Key Informants and Respondents were asked to rank the constraints individually. These were compiled together and Rank Based Quotient (RBQ) technique was used to quantify the data collected by Preferential Ranking Technique. The following formula given by Sabarathnam [6].

$$R.B.Q = \frac{\Sigma \ fi \ (n+1-I)}{N \times n} \times 100$$

Where in,

Fi = Number of respondents reporting a particular problem under i[th]rank

N = Number of Respondents

i = Number of rank

n = Number of constraints identified

After calculating the RBQ values for Key Informants and Respondents separately the ranks of all the constraints were accessed. Finally Spearman's Rank Correlation Co-efficient were calculated between the ranks of constraints assigned by KI and respondents in both the districts.

2.2 Statistical analysis

The 10 Key informants in East Khasi Hills districts were asked to rank all the 15 constraints in order to assign 1st to 15th rank as per their perception. The ranks so assigned were plotted in a table against each constraint and the RBQ values were worked out. Similarly, all the 60 respondents were also asked to rank the constraints and the RBQ values were calculated. Based on these RBQ values, ranks were finally assigned to each of the constraint separately for the KI and the respondents. Thereafter, Spearman's Rank Correlation Co-efficient was calculated between the ranks of constraints assigned by KI and respondents to assess their association which is presented in Table 1. The entire process was repeated in West Khasi Hills district as well and presented in Table 3.

As described earlier, there are two sets of RBQ values, one for the KI and the other for the respondents. The mean RBQ values were than calculated to assess the preferential ranking of each constraint as depicted in Table 2 for East Khasi Hills district. Similarly the mean RBQ values were calculated for West Khasi Hills district which are presented in Table 4.

3. Results

A total of 14 constraints, with regards to rearing of indigenous *Niang Megha* breed of pig in Meghalaya, were listed to be ranked in the current study. The Rank Correlation coefficient between the constraints perceived by the KI and the respondents was found to be 0.70 which was highly significant at 1% level of significance as presented in Table 1. This indicated that there was a close association between Key Informants and Respondents with regard to their attitude towards constraints perceived by them.

Table 1: Spearman's rank correlation co-efficient between constraints perceived by key informants and respondents in East Khasi Hills District.

Constraints	RBQ Values (KI)	Rank	RBQ Values (Respondents)	Rank	D	Di²
High cost of feed	92.8	1	97.3	1	0	0
Lack of adequate feed	68.5	5	76.6	2	-3	9
No access to credit facilities	77.8	2	60.3	6	4	16
Low purchasing power	72.8	3	54.6	8	5	25
Poor management	63.5	6	61.7	5	-1	1
Lack of training	59.2	7	61.9	4	-3	9
Scarcity of space in the market	70.7	4	48.9	9	5	25
Lack of Government initiative	47.8	8	70.5	3	-5	25
Does not fetch good price	40.7	10	55.5	7	-3	9
No insurance facilities	35.0	11	46.1	10	-1	1
Less utility because of improved breed	45.7	9	32.0	12	3	9
High cost of treatment	27.8	13	40.4	11	-2	4
Lack of linkage with financial institute	34.2	12	28.8	13	1	1
Distant marketing place	12.8	14	14.6	14	0	0
R=0.70						∑ 134

The RBQ values obtained from Key Informants (KI) as well as respondents along with their preferential ranking against each constraint of the study in East Khasi Hills district is reflected in Table 2. As per the mean RBQ values 1st rank was accorded to high cost of feed (95.0) followed by 2nd rank to lack of adequate feed (72.5) and 3rd rank to no access to credit facilities (69.0).

Table 2: Preferential ranking based on mean value of RBQ of East Khasi Hills District.

Constraints	RBQ values (KI)	RBQ values (Respondents)	Mean R.B.Q value	Preferential Ranking
High cost of feed	92.8	97.3	95.0	I
Lack of adequate feed	68.5	76.6	72.5	II
No access to credit facilities	77.8	60.3	69.0	III
Low purchasing power	72.8	54.6	63.7	IV
Poor management	63.5	61.7	62.6	V
Lack of training	59.2	61.9	60.5	VI
Scarcity of space in the market	70.7	48.9	59.8	VII
Lack of Government initiative	47.8	70.5	59.1	VIII
Does not fetch good price	40.7	55.5	48.1	IX
No insurance facilities	35.0	46.1	40.5	X
Less utility because of improved breed	45.7	32.0	38.8	XI
High cost of treatment	27.8	40.4	34.1	XII
Lack of linkage with financial institute	34.2	28.8	31.5	XIII
Distant marketing place	12.8	14.6	13.7	XIV

In West Khasi Hills district also there was high Correlation Coefficient value (0.95) as reflected in Table 3 which indicated close association between Key Informants and Respondents with regard to their attribute towards the constraints perceived by them.

Table 3: Spearman's rank correlation c-efficient between constraints perceived by key informants and respondents in West Khasi Hills district.

Constraints	RBQ Values (KI)	Rank	RBQ Values (Respondents)	Rank	D	Di^2
High cost of feed	97.1	1	96.5	1	0	0
Lack of breeding boar	85.7	2	81.4	2	0	0
Lack of adequate feed	77.1	3	70.3	3	0	0
Scarcity of space in the market	62.8	4	61.1	4	0	0
Lack of training	52.8	7	59.5	6	-1	1
Lack of credit facilities	55.0	6	51.0	9	3	9
Poor management	49.2	8	54.4	7	-1	1
High cost of treatment	47.8	10	52.2	8	-2	4
Lack of Government initiative	56.4	5	59.8	5	0	0
Lack of Breeding stock	48.5	9	43.0	10	1	1
No insurance facilities	41.4	11	35.8	11	0	0
Distant marketing place	31.4	12	26.9	14	2	4
Low purchasing power	24.2	13	29.0	12	-1	1
Seasonal fluctuation	20.0	14	28.4	13	-1	1
R=0.95						∑ 22

As per the mean RBQ values obtained from Key Informants (KI) as well as respondents along with their preferential ranking against each constraint of the study in West Khasi Hills district, exhibited in Table 4, 1st rank was accorded to high cost of feed (96.8) followed by 2nd rank to lack of breeding boar (83.5) and 3rd rank to lack of adequate feed (73.7).

Table 4: Preferential ranking based on mean value of R.B.Q of West Khasi Hills District.

Constraints	RBQ values (KI)	RBQ values (Respondents	Mean R.B.Q	Preferential Ranking
High cost of feed	97.1	96.5	96.8	I
Lack of breeding boar	85.7	81.4	83.5	II
Lack of adequate feed	77.1	70.3	73.7	III
Scarcity of space in the market	62.8	61.1	61.9	IV
Lack of Government initiative	56.4	59.8	58.1	V
Lack of training	52.8	59.5	56.1	VI
Lack of credit facilities	55.0	51.0	53.0	VII
Poor management	49.2	54.4	51.8	VIII
High cost of treatment	47.8	52.2	50.0	IX
Lack of Breeding stock	48.5	43.0	45.7	X
No insurance facilities	41.4	35.8	38.6	XI
Distant marketing place	31.4	26.9	29.1	XII
Low purchasing power	24.2	29.0	26.6	XIII
Seasonal fluctuation	20.0	28.4	24.2	XIV

4. Discussion
It is evident from the findings of this study that high cost of feed was the major constraint faced by the pig farmers in Meghalaya. This was due to the fact that the ingredients used in computing concentrate feed of pigs are not locally produced locally nor is it available in the nearby states. Therefore, concentrate feed is brought to the state from distant places, which obviously involved transportation cost and other charges leading to hike in prices of feed. The present finding gained support from another work in Meghalaya, where majority of the pig farmers perceived high cost of feed as a major constraint [7]. Similarly in the state of Nagaland it

was found to be the major constraint in pig farming, as perceived by 81.08 per cent of the respondents [8]. In Nigeria also it was assessed as a major constraints in pig farming with agreement of 36.00 per cent of the respondents under study [9]. On the contrary in a study on piggery entrepreneurship in Dhemaji district of Assam, with the help of Rank Based Quotient (RBQ) technique, high cost of feed was not reported to be a high ranked constraint [10].

Lack of adequate feed was ranked 2nd in East Khasi Hills and 3rd in West Khasi Hills district. The reason behind this was due to the absence of feed manufacturing industries in the areas where the feed has to be imported from outside the state together with bad road connectivity and blockade imposed by different association. Feed shortage was reported as the 2nd most important constraint as perceived by the livestock farmers in Zimbabwe [11]. In another study it was reported that majority of the pig farmers in Meghalaya encountered non-availability of feeds and fodders as one of the major constraint and assigned it 5th rank[7].

During data collection, it was observed that financial institution and bank did not provide credit facilities for rearing indigenous livestock. Therefore, the farmers in both the districts perceived it as a constraint and non-access to credit facilities was ranked 3rd in East Khasi Hills and 7th in West Khasi Hills. The finding was in agreement with a study in the state of Sikkim which presented lack of adequate credit facilities to be one of the major constraints perceived by the farmers [12]. The other constraints perceived by the respondents in both the districts were lack of training, scarcity of space in the market, lack of government initiative, lack of breeding boar, poor management, pig does not fetch good price, no insurance facilities, high cost of treatment, lack of breeding stock, less utility because of improved breed, low purchasing power, lack of linkage with financial institute, seasonal fluctuation and distant marketing place.

5. Conclusion
Preferential ranking of constraints in rearing indigenous *Niang Megha* breed of pig in Meghalaya as per the calculated mean value of RBQ of each constraint in the current study revealed high cost of feed to be a burning issue among the pig farmers in the state. The other constraints which the respondents gave emphasis were lack of adequate feed, lack of breeding boar and lack of access to credit facilities. Most of the farmers reared these pigs in a traditional manner but are in urgent need of scientific interventions to upscale the techniques of management and benefit from it. Since pork is a much relished meat in the state there is tremendous scope for development of piggery sector and an interdisciplinary approach to eliminate the constraints faced by the farmers can prove to be rewarding in increasing the income level of the farmers thereby giving a new angle to their livelihood.

6. Acknowledgement

7. References
1. Hazarika MK. Khasi, Garo and Jaintia communities are "models for sustainability in the future": Report and recommendations on ways to counter deforestation – Meghalaya, 2014. http://www.indiantribalheritage.org/?p=14246. 18/03/2016
2. Shadap FR, Saharia KK, Bora L, Debbarman C, Chakraborty A, Pyrtuh R. Influence of Pig Farming in Livelihood Improvement of Farmers in Meghalaya. International Journal of Livestock Research. 2017; 7(7):261-268.
3. Anonymous. Livestock Census. Content maintained by Animal Husbandry and Veterinary Department, Government of Meghalaya, 2012. http://megahvt.gov.in/livestockcensus.html. 10/06/2016.
4. NBAGR. Registered breeds of pig. 2012; http://www.nbagr.res.in/regpig.html. 10/06/2016.
5. Basic Animal Husbandry and Fisheries Statistics. Department of Animal Husbandry, dairying and Fisheries. Ministry of Agriculture, Govt. of India, Krishi Bhawan, New Delh, 2014.
6. Sabarathnam VE. Manual on field experience training for ARS Scientists, National Academy and Agricultural Research Management (NAARM), Hyderabad, 1988.
7. Shadap F. Government sponsored Piggery development in Meghalaya. M.V. Sc. Thesis (Unpublished), Assam Agricultural University, Khanapara, Guwahati, Assam, 2015.
8. Patra MK, Begum S, Deka BC. Problems and Prospects of Traditional Pig Farming for Tribal Livelihood in Nagaland. Indian Research Journal of Extension Education. 2014; 4(4):6-11.
9. Banta AL, Wamagi IT, Ayuba AM, Olukosi JO. Analysis of Socio- economic characteristics of Pig farmers that influence sustainable development in Kaduna state, Nigeria. Journal of Agriculture and Veterinary Sciences. 2012, 4.
10. Pegu B. Piggery entrepreneurship in Dhemaji district of Assam M.V.Sc. Tthesis (unpublished), Assam Agricultural University, Khanapara, Guwahati, Assam, 2014.
11. Mutibvu T, Maburutse BE, Mbiriri DT and Kashangura MT. Constraints and opportunities for increased livestock production in communal areas: A case study of simbe, Zimbabwe. Department of Animal Science, University of Zimbabwe, 2012.
12. Nath B, Chandra R, Toppo S, Chatlod L and Mohanty AK. Characteristics and constraints of pig production under rural condition in Sikkim. Online Journal of Animal and Feed Research. 2012; 2 (2):145-148.