



## Relevance of Assamese Folk Song, *Bihu Geet* in Practicing Natural Farming in the Traditional *Baree* (Homestead Garden) System of Assam, India

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### Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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### ABSTRACT

**Aim:** The study was undertaken to understand the relevance of Assamese folk songs, or *Bihu geet*, in the management of the traditional Assamese *baree* system in view of natural farming.

**Study Design:** The data obtained from group discussion and personal interview method have been tabulated as described by [1].

**Place and duration of Study:** The study was conducted in a total of 24 villages from six districts viz. Nalbari, Baksa, Dhemaji, Lakhimpur, Golaghat, and Sivsagar during the period January 2021 to January 2022

**Methodology:** From the three agro-climatic zones of Assam, two districts were selected and from each district, four villages were selected. From each village, 10 farmers above 60 years of age were selected randomly thus making a sample size of 240 respondents. Data was collected by using a focus group discussion method and a personal interview method using a semi-structured interview schedule.

**Results:** A total of 36 *Bihu geet* reflecting natural farming practices in the traditional *baree* system and its role in the management of the *baree* have been documented.

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**Conclusion:** From this study, it can be concluded that *Bihu Geet* forms an indispensable part of the Assamese *Baree* system and its scientific validation should be studied further as these are based on practical observation over a long period of time and can form a basis for natural farming.

*Keywords:* Baree system; diverse ecosystem; folksongs; natural farming.

## 1. INTRODUCTION

The initiation of modern agriculture can be traced back to the subsistence production system that started in small plots around households. Homestead gardens, or *Baree*, have been an integral part of the Assamese people since time immemorial. Most households in Assam have a homestead land adjoined to their house. The homestead is well fenced, mostly having irrigation sources. The *baree* system plays a vital role in providing food and income for the family. *Baree* in Assam is also a traditional land use practice, mostly around the dwelling house where different plant species including fruit, vegetables, spices, herbs, and ornamentals, along with other components of the farming system like livestock, poultry, fishery, sericulture, bee-keeping, etc., are maintained by the members of the farm family with the primary objective of fulfilling their various household needs

Assam has a diverse ecosystem, such as a hot humid subtropical climate with varied topography, as well as many rivers and their tributaries, and diverse flora and fauna due to its climatic conditions. Home garden systems in this region have evolved successfully over the centuries, enduring and adjusting to the eco system's challenges of change in time and need. The *Baree* system in Assam has been prevalent since time immemorial, as documented by different visitors such as Hiuen Tsang, the Chinese scholar, and Sahabuddin Talesh, a historian of the Mughal era who came to Assam in 1662 AD. However, the *Baree* was standardized and upgraded in the Brahmaputra valley during the rule of the Ahom kings. During the reign of Swargadeu Pratap Singh (1603-1641 AD), the most famous Chief of the Revenue Office, Momai Tamuly Borbaruah, reconstituted villages for enhancing revenue collection and developed *Baree* into a self-sufficient system for economic upliftment as well as self-dependence of the farm families. Multi-functionality is a characteristic feature of *Baree*. It has the natural potential to provide food, fuel, fodder, green manure, timber resources, etc. *Baree* can improve food security and increase the

availability of food, provide better nutrition through diversification, enhance income and rural employment, decrease risk due to diversification, and numerous environmental benefits [2]. *Baree* provides food security to the household by increasing the availability, accessibility, and utilization of food products. Food items from *Baree* vary from horticultural crops to livestock products. The diversity of food items leads to an overall increase in dietary intake and helps in the bioavailability and absorption of essential nutrients. Besides food and nutritional security, *Baree* contributes tremendously toward income generation, livelihood improvement, and the economic welfare of households through entrepreneurship and rural development. *Baree* plays a major role in the biodiversity conservation of an area.

The study was undertaken to understand the relevance of Assamese folk songs or *Bihu geet* in the management of the traditional Assamese *baree* system in view of natural farming.

Folk songs like *Bihu Geet* are an integral part of the Assamese community and they depict the different aspects of nature in general and agricultural practices and concepts. These *Bihu geet* serve as a source of ITK and guide the community to follow different agricultural aspects and to follow natural farming. ITK is fruitful for the sustainable development of the community and country as a whole [3]. In Assamese culture, many popular *Bihu Geet* are prevalent which reflects the Assamese traditional *Baree* system, and these help the common people in managing their *Baree*. With the recent trend of natural farming that encourages the use of every living organism on the farm and avoids the usage of any external chemical or organic fertilizers, it becomes essential to time travel to our ancestor's methodology of farming and studies their farming practices. Keeping this in view an effort was made to study the relevance of a few *Bihu Geets* related to the Assamese *Baree* system with the following objectives:

- a) To study the impact of these *Bihu Geets* on the traditional knowledge of our society in the field of horticulture.

- b) To include these folk songs in the cultivation practices with special reference to natural farming.

## 2. MATERIALS AND METHODS

The study was conducted in three different agro-climatic zones of Assam viz. Upper Brahmaputra Valley Zone (UBVZ), Lower Brahmaputra Valley Zone (LBVZ), and North Bank Plains Zone (NBPZ), India. Two districts from each zone were selected on the basis of cultural and linguistic practices and from each district, four villages were selected adding up to 24 villages. From each village, ten farmers of the age group 60 years and above were selected randomly making a sample size of 240 respondents. Data for the relevant study was collected by using a focus group discussion method and a personal interview method using a semi-structured interview schedule [1]. The relevant data were documented and the rationale drawn from the folksongs has been tabulated.

## 3. RESULTS AND DISCUSSION

From the present investigation, it has been found that the Assamese folksongs or *Bihu geet* are known to a majority of the farmers belonging to the age group of 50 years and above. But now all *Bihu geet* are related to the field of horticulture. Altogether 36 *Bihu geet* were identified and have been mentioned in the Table 1. It has been found that 4 *Bihu geet* are related to the layout and planning of the *Baree*, 3 *Bihu geet* are related to the planting method of the horticultural crops, 1 *Bihu geet* is related to plant spacing, 3 *Bihu geet* are related to the cropping system, 1 *Bihu geet* is related to fertilization of the crops, 18 *Bihu geet* are related to crop diversification, 3 *Bihu geet* are related to crop management and 3 *Bihu geet* are related to post-harvest management. To figure out the science behind the *Bihu geet*, a remark has been presented for each of the *Bihu geet* in Table 1. The remarks are based on literature and provide an insight into the scientific cause behind the *Bihu geet*.

**Table 1. Assamese Baree system in traditional Bihu Geet: Layout and planning**

Sl.no.	<i>Bihu geet</i>	Meaning in English	Remarks
1	<i>Aagbari suani Kakini Tamule Pachbari suan Paan Barghar suani Gabharu suali Uliai dibaloi taan.</i>	The front orchard looks beautiful by the tall arecanut ( <i>Areca catechu</i> L.) plants and the back orchard of betelvines ( <i>Piper betel</i> L.). The main house is beautified by grown-up girls. It's sad to give them away.	Areca-nut plants and betel-leaf creepers are a part of the rural Assamese homestead and the nuts and the leaves play an important role in the social life of the people—in worship, in social ceremonies, in day-to-day courtesy, lovemaking, and, course, as a minor addiction [4]. Arecanut gives us income and one can able to get money as and when necessary, by selling the areca nut and betel vine leaves planted in the homestead garden.
2	<i>Barir pisfale oou gos ejupi Lole bor moue baah Rati bau xxat haal dinot nai ehali o Paribor nai tur xaah</i>	Elephant apple ( <i>Dillenia indica</i> ) tree at the back of the orchard where the bee colony makes a hive; At night speak about plowing with seven-pair bullocks but not a single pair in the morning. Honey from the	The perennial and tall plant like elephant apple is planted at the back of the orchard where the wild bee colonies can make a hive. After someday the honey may be harvested from the wild bee hives taking necessary precautions.

Sl.no.	Bihu geet	Meaning in English	Remarks
3	<i>Dhapore thereju kolakoi pokise</i> <i>Pokise mirika tenga</i> <i>Tumak log pabolo pukhurir</i> <i>paroloi</i> <i>digholkoi melisu benga</i>	The there fruits ( <i>Prunus jenkinsii</i> ) have ripened into black, also the Mirika tenga ( <i>Parameria polyneura</i> ) fruits have ripened, To meet you near the bank of the pond I have taken a leap.	The plants like <i>Prunus jenkinsii</i> and <i>Parameria polyneura</i> are planted at the boundary of the orchard adjacent to the fish pond which is integrated with another component. These trees flower during August- September.
4	<i>Piralir amita pate pahikota</i> <i>Chingile chitike atha</i> <i>Bihure talite tumak dekhari pora</i> <i>Bukutkihori janu betha</i>	Papaya tree at the raised bed adjacent to the house, when cut oozes out gum, After seeing you at the Bihu, I feel pain in my heart.	The papaya plant is sensitive to water stagnation; therefore, it is planted at a raised area adjacent to the house

**Table 2. Assamese Barea system in traditional Bihu Geet: Planting method**

Sl.no.	Bihu geet	Meaning in English	Remarks
1	<i>Bharalar tupate Kerela</i> <i>bagale</i> <i>Komora bogale salat</i> <i>Jibane marane neriba Lahari</i> <i>Neriba bipadar kalat</i>	Bittergourd ( <i>Momordica charantia</i> L.) climbs on the top of the traditional storehouse and ash gourd ( <i>Benincasa hispida</i> Cogn.) climbs on the roof. Do not leave me alone during my lifetime, nor leave at the time of stress.	Bitter gourd climbs on the top of the traditional storehouse and ash gourd climbs on the roof to give vegetables to the family when there is some problem in getting food from other sources. So, the people of Assam always grow these two crops for meeting the requirement of vegetables at the time of scarcity.
2	<i>Junor puhori pori salore</i> <i>kumura</i> <i>jilike jun jen hoi</i> <i>tiyohori hedali hawuli porise</i> <i>japi diya nokoi</i>	The moonlight falls on the ash gourd ( <i>Benincasa hispida</i> Cogn.) growing in the rooftop Shines like the moon. The cucumber ( <i>Cucumis sativus</i> L) support is falling down and needs repairing.	Ash gourd, cucumber, etc are most commonly grown vegetables in the rooftop and homestead gardens of Assam.
3	<i>Sopora matite dherua xisilu</i> <i>Kitira kitiri hol</i> <i>Monore Kathati kom buli</i> <i>xasute</i> <i>Monote molongi gol</i>	Dheruwa seeds ( <i>Raphanus raphanistrum</i> sativus) when sown in heavy compact soil. The growth was poor Preserved my feelings in my heart And these remained inside my heart	Seeds of <i>Raphanus raphanistrum</i> sativus should be sown in well-drained fine tilth soil instead of heavy compact soil so that the underground growth is not hampered [5]

Many farmers use local perception and ancestral knowledge to manage their activities, they use information from their perception of certain meteorological variables to make decisions at the time of sowing, harvesting, and even the application of pesticides, as reported by studies in indigenous territories. tropical [17-19]. In tropical conditions, the development of productive systems responds mainly to the

environmental, cultural, and ecological conditions of an area. For many agricultural areas, monoculture predominates, with little genetic diversity, low management practices, and high dependence on the season of greatest rainfall [20-22]. Additionally, the local and ancestral perception has great strength, due to its deep roots in the experiences and personal experiences of agricultural communities [23-25].

**Table 3. Assamese Baree system in traditional Bihu Geet: Plant spacing and cropping system**

SI.No.	Bihu geet	Meaning in English	Remarks
1	<i>Narikolor barikhon korisa kenekoi</i> <i>Nai re parore Saruwa mati</i> <i>Lagile nalage Nalagile lage</i> <i>Kothati jane ne tumi.</i>	Coconut ( <i>Cocos nucifera</i> L.) is cultivated on the riverside. Good bearings could be expected if the leaves of one plant do not touch those of nearby plants.	Riverine alluvial soil is rich and is good for coconut cultivation as it is rich in nutrients. The local people have gained experience in soil management because they know that to address the adverse effect of soil acidity; they have to use compost manure [3]. The coconut should be planted at proper spacing (7.5 m x 7.5 m) for optimum yield [5].
2	<i>Lair maje maje</i> <i>lofa dali dali</i> <i>tare majot khutura sak</i>	Lai ( <i>Brassica rugosa</i> (Roxb.) Prain), lofa ( <i>Malva verticillata</i> L.) and khutura xaak ( <i>Amaranthus viridis</i> L. are grown together in the kitchen garden.	Leafy vegetables like <i>lai</i> , <i>lofa</i> , <i>khutura</i> are grown as mixed crop in <i>Baree</i> or kitchen garden as an alternate source of food and nutrition and also provide additional income.
3	<i>Tamulot Bagale</i> <i>Barir Jalukjupi</i> <i>Madarat bagale Pan</i>	Black pepper ( <i>Piper nigrum</i> L.) climbs on areca nut and betel vine ( <i>Piper betel</i> ) climbs on Modar ( <i>Erythrina lysistemon</i> L.)	Black pepper climbing on the areca nut plant gives a very beautiful look to the homestead garden and the betel vine also gives beauty along with the <i>Modar</i> plant. It also gives additional income from the same unit of land. In the arecanut-based multistoried cropping system, black pepper and betel vine is an important components [6].
4	<i>Laur xoot bogale sangot oi togori</i> <i>Jika xoot bogale jengot</i> <i>Tumar podulite jopona khulute</i> <i>dhekurai dhorile thengot</i>	Vines of cucurbits climb at bamboo trellis Vines of Ridge gourd climbs at perches After opening your entrance gate, Dhekura (a local breed dog) grasped my leg	Cucurbitaceous plants should be grown with suitable climbing support. Bottle Gourd should be grown by using a trellis while Ridge gourd requires bamboo perches for support and optimum yield.

**Table 4. Assamese Baree system in traditional Bihu Geet: Fertilization**

Sl.No.	Bihu geet	Meaning in English	Remarks
1	<i>Puroi r kojola guti oi lohari</i> <i>puroi r kojola guti</i> <i>jalukor gurite gubor sopai diba,</i> <i>panot sapai diba mati</i>	Reddish brown Seeds of Puroi xaak ( <i>Bassela alba</i> L.) oh lahari(Sweetie) Reddish brown Seeds of Puroi xaak Do the earthing up in black pepper with cow dung and in beetle vine with soil	Sufficient quantities of cow dung should be applied to the base of the black pepper plant and earthing up with the soil in betel vine is to be done each year which will help in the supply of nutrients and conservation of moisture near the base of the plant [7].

**Table 5. Assamese Baree system in traditional Bihu Geet: Crop diversification: Vegetable**

Sl.No.	Bihu geet	Meaning in English	Remarks
1	<i>Lao kha, bengena kha</i> <i>Basare basare barhi jaa</i> <i>Mar saru baper saru</i> <i>Toi hobi bar goru</i>	The farmer sings to the cattle as such: Eat bottlegourd ( <i>Lagenaria siseraria</i> Standl.), eat brinjal ( <i>Solanum melongena</i> L.) Grow up from year to year. Your parents are of small stature, May you be a large one.	On the very first day of the Bohag Bihu, rites are performed on cows or cattle and called <i>Goru Bihu</i> . On this day, the cattle are taken to the banks of the rivers, ponds or water channels for bathing while vegetables like bottle gourds, brinjals, etc. are splashed on them and goaded with the twigs of the <i>Dighloti</i> ( <i>Litsea salicifolia</i> Hook.f.), a creeper-like plant. The villagers recite the <i>Bihu geet</i> while bathing the cows.
2	<i>Aaye tulile kotona dukhere</i> <i>barir alu kachu khai</i> <i>deuta bilania bilai thoi ahile</i> <i>sarai bhangiboloi pai</i>	Mother with painful hardship nurtures us by feeding colocasia ( <i>Colocasia esculenta</i> Schott) and yam ( <i>Dioscorea spp</i> ) from the backyard garden. Father being a food distributor in religious functions gets food items for us.	Potato and Yam planted in the backyard become a source of food at the time of the food crisis. So, it is advised to plant colocasia and yam in the backyard of <i>Baree</i> .
3	<i>Lai lofa chuka paleng aru dhania</i> <i>ataibur botoror sak,</i> <i>titaphulor sakare tumaloi buli</i> <i>randhisu duporoor bhat.</i>	Preparing lunch for you with all the seasonal leafy vegetables like Lai ( <i>Brassica rugosa</i> Roxb.), Lofa ( <i>Malva verticillata</i> L.), Chuka ( <i>Rumex acetosa</i> ), Paleng ( <i>Beta vulgaris</i> Roxb.), and Dhania ( <i>Coriandrum sativum</i> L.) along with Titaphul ( <i>Phlogacanthus thrsiflorus</i> ).	All the seasonal leafy vegetables are an essential part of the Assamese diet supplementing nutritional requirements. On the first day of the Bohag Bihu festival <i>i.e.</i> <i>Goru Bihu</i> , hundred different kinds of leafy vegetables are consumed as remedial measures against several ailments. It was reported that the leaf was the most widely used plant part for medicinal use [8]

Sl.No.	Bihu geet	Meaning in English	Remarks
4	<i>Akaal hole buli dui hate ajuri kenekoi huda bhat khaba barire posola habire dhekia tare emuthi khaba</i>	Though there is famine, banana ( <i>Musa spp</i> ) stalk from homestead garden and Dhekia ( <i>Diplazium esculentum</i> ) can still make a delicious meal.	Assam's <i>Baree</i> system provides all the necessary vegetables in dire time also. It gives an additional income.
5	<i>Noltenga khutura konkoi bilahi Kolakoi kosure thuri Kolpatot nuriyai tuloike thoi disu Dhankheror juite puri</i>	Noltenga ( <i>Tetrastigma angustifoli</i> ), Khutura ( <i>Amaranthus viridis</i> ), cherry tomatoes and stems of black colocasia, Wrapped them in banana leaves and roasted them in a paddy straw fire only for you.	Food wrapped in banana leaves and further roasting it enhances the taste apart from nutritional benefits.
6	<i>Chote goye goye bohage palehi Phulile bhebeli lata Koinu koi thakile Urake nopare Bohagor Bihure kotha</i>	The <i>Chaitra</i> month is going out and Bohag is in. The Bhebeli ( <i>Paederia foetida</i> L), a creeper growing in <i>Baree</i> is in bloom, It will not end about Bohag Bihu if we say again and again	Bihu songs give a picture of the changing of nature with the season, shrubs and trees, and put the new leaves and blossoms in the homestead gardens. It also indicates the rich diversity of the <i>Baree</i> system.

**Table 6. Assamese Barea system in traditional Bihu Geet: Crop diversification: Fruits**

SI.No.	Bihu geet	Meaning in English	Remarks
1	<i>Barir lisujoopa rongakoi pokise</i> <i>Tumar gal dukhonir dore</i> <i>Goosote dutaman tumaloi xhasisu</i> <i>Raati hole baduli pore</i>	The litchi tree ( <i>Litchi chinensis</i> Sonn.) of the homestead garden has ripened red just like your cheeks, Have kept a few for you at the tree but Bats attack these during the night	Litchi fruit ripens during the month of May-June and the right time to harvest the fruits is when the pericarp turns pinkish red.
2	<i>Tumaloi buli poniol parilu</i> <i>Kaite futile haat</i> <i>Tumi khaba buli pitiki dilu moi</i> <i>Ssitiki porile gaat</i>	While harvesting Indian coffee plum ( <i>Flacourtia jangomas</i> ) just for you Thorns pricked my hand I smashed them for you And got spilled on my body	<i>Flacourtia jangomas</i> is a tree that generally grows upto 6-10m. Although the branches of old trees are thornless the young trees have woody thorns. The berries ripe during March to July [9].
3	<i>Tetelir tolote karnu taate nati</i> <i>Pahori ahilu kusi</i>	Beneath the Tamarind tree, someone left their grandchild into sleep.	Tamarind is a leguminous tree and holds a plethora of benefits apart from enhancing the soil quality. It is a multipurpose plant with an exceptionally large spreading crown that provides shade. Almost all parts of the tree find a place in the food, pharmaceutical, timber, and textile industry [10].
4	<i>Narikol gosore sirili pate oi</i> <i>Botahot hale jale</i> <i>Tumaloi buli gamoosa hasute</i> <i>Jopate oiye khale</i>	Fronds of Coconut tree Sways in the wind Preserved Gamusa for you But got damaged by termites	From performing holy rites to delicacies coconut forms an indispensable part of every household in Assam. Hence, almost homestead garden in Assam has coconut tree plantations.
5	<i>Tulashir tole Mriga pahu chare,</i> <i>Take dekhi Ramachandrai</i> <i>Hara dhanu dhare.</i>	The deer beneath the tulshi( <i>Ocimum tenuiflorum</i> ) plant grazes. Seeing this, Ramachandra gets ready with his bow and arrow.	Some simple hymn-like songs are sung on the occasion of Kati Bihu at the time of praying in front of the sacred <i>Tulshi</i> plant in the evening, In Hinduism culture, the <i>Tulshi</i> plant is very secret and auspicious. They pray for the blessing and good health of their crops [11].



Table 7. Assamese Barea system in traditional Bihu Geet: Crop diversification: Flowers

Sl.No.	Bihu geet	Meaning in English	Remarks
1	<i>Krisnai murate bakul phool epahi, Niyar pai mukali hol O' Govindai Raam.</i>	The <i>bakul</i> ( <i>Mimusops elengi</i> ) flower coming in contact with dew unfolded its petals on the head of Krishna(God)	The men villagers form bands in their area and visited households with folk musical instruments for performing <i>Husori</i> at the time of <i>Bohag Bihu</i> . They start with chanting and dance-like movements, forming a ring sung songs called <i>Husori Ghosha</i> which have a <i>Vaishnava</i> flavour.
2	<i>Deotar podulit gondhase madhuri Keteki molemolai O' Gobindai raam</i>	The fragrance of <i>Madhuri</i> flower ( <i>Quisqualis indica</i> L.) and <i>Keteki</i> flower ( <i>Pandanus odoratissimus</i> ) at the gateway of my Father's home feels Godly	<i>Quisqualis indica</i> L. has a sweet fragrance and it is generally planted at the gateway of the house. Similarly, <i>Pandanus odoratissimus</i> also has a sweet fragrance and is cultivated at the boundary of the homestead garden. Apart from beautification of the area, these flowers also possess some medicinally active phytochemical constituents responsible for pharmacological activities [12]
3	<i>Kunjalata Kopowful fuli ase Nasoni bhanik dhuliai mati ase Nahu buli nokoba beya pabo Siro dinor karone nematibo</i>	The orchids ( <i>Rhynchostylis retusa</i> ) are in full bloom The drummers are seeking for the dancers. Please don't say you won't come Won't talk forever	<i>Rhynchostylis retusa</i> is an epiphytic orchid and the plant is considered as a symbol of merriment, fertility and love among the youth in Assam [13]
4	<i>Tumar barite phulile Indrajit-Malati Mur barit parile chaa, Dinare dintu tumaloi dhauti Rati pure mure gaa.</i>	The chrysanthemums ( <i>Chrysanthemum morifolium</i> Ramat) blossom in your garden. Their shadow falls on mine. All the daylong I think of you. My body burns at night.	<i>Bihu</i> songs are specifically meant to be sung at <i>Bihu</i> time in the company of peers and have a sort of ritualistic significance about them. Accompanied by the lusty drumming and dancing, these songs are marked by youthful vigorous and fastness of movement [14]
5	<i>Eibeli Bihuti ramake jamake Nahar phul phulibar batar, Naharor gundh pai laharir tat nai Gasakat bhang jai jatar.</i>	<i>Bihu</i> this year is so glorious. The <i>Nahar</i> ( <i>Mesua ferrea</i> ) is in bloom. Its perfume makes my sweetie restless. She crushes her spinning wheel under her steps	It is <i>Bihu</i> time which gives an opportunity for marriageable young men and women to meet and exchange their feelings and even to choose their life partners. The joyfulness of the festival is echoed in the <i>Bihu</i> songs

Sl.No.	Bihu geet	Meaning in English	Remarks
6	<i>Hauli tulilu nador panitupi</i> <i>Jukari tulilu laai,</i> <i>Matu matu buli matibo pora nai</i> <i>Aasu tumar mukhole sai</i>	Bent forward to draw water from the well And Harvested Lai xaak ( <i>Brassica rugosa</i> (Roxb.) with a slight shake Hesitating to call you I stare at your face	<i>Brassica rugosa</i> Roxb. should be harvested with a gentle shake so that the roots are not disturbed and the growing point is kept intact for subsequent flushes to grow.
7	<i>Barire dhapore mitha aam ejupi</i> <i>Tate bohi binale kuli</i>	The sweet mango tree at the boundary of the homestead garden Where the Cuckoo bird sits and chirps	Mango trees should be planted at the boundary of the homestead garden. Doing so serves the purpose of windbreak and also provides shade to the house.

Table 8. Assamese *Baree* system in traditional Bihu Geet: Crop management

Sl.No.	Bihu geet	Meaning in English	Remarks
1	<i>Kothalor gosote raghumola bogale</i> <i>Rox pom pelale xuhi</i> <i>Tumar sintate kami haar ulale dehau gol</i> <i>johi khohi</i>	<i>Raghumola</i> ( <i>Tolypanthus involucrates</i> Roxb.), a parasitic plant climbs on the Jackfruit tree, And sucks the sap of the plant And so does my health deteriorate in thoughts of yours	Parasitic weed crops are a major problem in perennial fruit crops. They suck the sap of the plant which deteriorates the health of the crop.
2	<i>Pokakoi aamore mithakoi roxe oi</i> <i>Tokali pari toi khabi</i> <i>Aamore xahore temi xaji dime</i> <i>Tate mansada thobi</i>	The sweet juice of a ripe mango, Eat it with delight Will design a container with the mango endocarp To store tobacco in it.	The endocarp of Mango is hard and people in ancient times use this as a container to store items like Tobacco. Such containers can be made air tight and easy to use.
3	<i>Maalbhog khutura borali bhokuwa</i> <i>Gojil gakhroti bon</i> <i>Kopalar ghame toi matite pelaiso</i> <i>Kaloinu xasiso dhon</i>	Malbhog banana ( <i>Musa paradisiaca</i> ), Khutura ( <i>Amaranthus viridis</i> ), Borali ( <i>Barilius barila</i> ), Bhokuwa ( <i>Labeo catla</i> ) Gakhroti bon ( <i>Euphorbia hirta</i> ) germinated in the homestead garden For whom are you working Sweat and toil and saving your hard-earned money.	The Homestead Garden serves as a basket of resources with naturally growing herbs rich in nutrients. Moreover, with the integration of a fishery and horticultural crops like Banana, one can easily meet daily dietary needs and be self-sustainable in the long run.

**Table 9. Assamese Barea system in traditional Bihu Geet: Post-harvest management and marketing**

<b>Sl.No.</b>	<b>Bihu geet</b>	<b>Meaning in English</b>	<b>Remarks</b>
1	<i>Poka tamul thook pari moi anilu Gaatot goorabolo buli Aaora aaora kori kaipoon holnu Goniba nuwara tumi</i>	I harvested the ripened areca nut to preserve it underground But you could not count the total yield	In Assamese culture, Arecanut forms an inevitable part of every ritual. Ripe areca nuts are harvested and preserved in thick layers of mud to elicit a moist chewing feel when consumed and this product is popularly known as "Bura tamul" [15].
2	<i>Pooka tamul kipun pifalor sootalot Gaat khandi gooralu moi Take nu besi o' suta aani dime Tiyoni boi dibi toi</i>	I preserved the ripe Areca nuts underground in the backyard of my house After selling them, I will buy you yarn to weave clothes for me	The fermentation of the areca nut is done to preserve it for a long time and give a specific taste. A pit of 2.5 feet is dug and leaflets of areca nut are placed surrounding the side and bottom of the pit. Then the pit is filled with areca nuts and covered with soil. In this way, the areca nuts can be preserved for upto 8-9 months. After the due fermentation time, the areca nuts are taken out from the pit and used for various purposes [16].
3	<i>Poota buha tamul putate herale Bisari napalu gaat Aamar morom seneh kotenu herale Xomondhat melile faat</i>	Could not find the spot where I preserved the ripen arecanuts underground When did our relations fall apart?	Ripe Arecanuts are preserved underground by digging the soil upto a certain depth and then covered with soil. In most of the cases, the spot where the areca nuts were preserved becomes unrecognizable in course of time. Hence, after filling up the pit with soil, the soil should be raised upto a certain height like the carapace of a turtle. This also helps prevent water stagnation near the pit.

Studies carried out in tropical areas [26-30] establish that they contribute to current and future research, as well as support specialists who study the potential impacts of climate variability and change on the production of crops such as corn [31], tomatoes [32] and other tropical crops [33-36] based on cultural and local knowledge [37-39].

In general, farmers indicated certain conclusions about the evolution of community activity, as indicated by the studies by [40-43]. Seen in this way, the foregoing allows us to infer that the recognition of knowledge, beliefs, and local practices that rural agricultural communities have regarding these factors, contribute to providing valuable, diverse, and complementary information to the scientific one, for the construction of policies associated with the development of alternatives for sustainable natural agriculture.

#### 4. CONCLUSION

The traditional *Bihu Geet* reflects the various aspects of horticultural concepts and practices. Many of the knowledge and technologies associated with these *Bihu geet* are backed by scientific reasons and have provided the Assamese community with comfort and self-sufficiency in various ways. *Bihu geet* can form a strong base of knowledge for researchers and development professionals in planning and executing their research strategy and experimental procedure. By blending them with modern technologies, an integrated farming approach can be formulated which also serves the purpose of social acceptance. By inculcating these *Bihu geet* while practicing natural farming, the dependence of farmers on the purchase of critical inputs can be reduced. At a time when the agrarian community is gaining momentum toward Natural farming, it becomes very essential to preserve and validate these *Bihu geet* as they are eco-friendly and sustainable.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

#### REFERENCES

1. Gogoi B, Bhagowati S, Das S. Traditional Crop Management Practices of Central Brahmaputra Valley Zone of Assam, India. International Journal of Current

- Microbiology and Applied Science. 2017; 6(7):2405-2407.
2. Landon-Lane C. Livelihood Grow in Garden-Diversifying Rural income through home Garden. Rome, Italy, FAO, UN. 2011;2.
3. Pandey V, Mittal R, Sharma P. Documentation and Application of Indigenous Traditional Knowledge (ITK) for Sustainable Agricultural Development. Asian Journal of Agricultural Extension, Economics and Sociology. 2017;15(3):1-9.
4. Mohan NK, Borah NK. Asomor Ghor Bari, A Book on traditional Assamese Homestead Garden. Udyan Prakash, Guwahati-17; 2001.
5. Assam Agricultural University. Package of Practices for Horticultural Crops of Assam. Assam Agricultural University, Jorhat and Directorate of Horticulture and Food Processing, Assam. 2019;17-20.
6. Assam Agricultural University. Package of Practices for Horticultural Crops of Assam. Assam Agricultural University, Jorhat and Directorate of Horticulture and Food Processing, Assam. 2010;199.
7. Bhagawati RR, Neog M. Horticulture in traditional wise-sayings of Assam. Asian Agri-History. 2006;10(2):147-152.
8. Mazumdar D, Neog M, Gohain S. Use of ethnomedicinal plants in traditional medicine in Upper Assam, India Asian Agri-History. 2019;23(3):213-220.
9. Sasi S, Anjum N, Tripathi YC. Ethnomedicinal, Phytochemical and Pharmacological aspects of *Flacourtia jangomas*: A review. International Journal of Pharmacy and Pharmaceutical Sciences. 2018;10(3):9-15.
10. Pugalenti M, Vadivel V, Gurumoorthi P, Janardhanan K. Composative nutritional evaluation of little known legumes, *Tamarindus indica*, *Erythrina indica* and *Sesbania bispinosa*. Tropical Subtropical Agroecosystem. 2004;4:107-23.
11. Bhalerao AK, Kumar B, Singha AK, Jat PC, Pasweth AM, Deka Bidyut C. Agricultural Folk Songs of Assam, ICAR-Agricultural Technology Application Research Institute, Umiam, Meghalaya, India; 2016.
12. Sahu J, Patel PK, Dubey B. *Quisqualis indica* Linn: A review of its medicinal properties. International Journal of Phamaceutical and Phytopharmacological Research. 2012;1(5):313-321.

13. Sondhi A. Wonders of India: Flowers. The Energy and Resources Institute. 2011;28-29.
14. Dutta, Sarma, Das. A Handbook of Folklore Material of North-East India, ABILAC, Assam, Guwahati; 1994.
15. Kesava Bhat S, Pandiselvam R, Jaganathan D. Processing and value addition of Arecanut. Product Diversification in Plantation Crops. Today and tomorrow's Printers and Publishers, New Delhi-110002, India. 2017;119-134.
16. Narzary Y, Brahma J, Brahma C, Das S. A study on indigenous fermented foods and beverages of Kokrajhar, Assam, India, Journal of Ethnic Foods. 2016;1-9. Available: <http://dx.doi.org/10.1016/j.jef.2016.11.010>
17. Olivares B, Guevara E, Demey J. Use of climatic bioindicators in agricultural production systems of Anzoátegui state, Venezuela. Multiciencias. 2012;12(2):136-145. Available: <https://n9.cl/ak22r>
18. Olivares B, Guevara E, Demey J. Use and demand of agrometeorological information in agricultural production systems in Anzoátegui, Venezuela. Multiciencias. 2012;12(4):372-381. Available: <https://n9.cl/yuyd>
19. Olivares B, Zingaretti ML, Demey Zambrano JA, Demey JR. Typification of agricultural production systems and the perception of climatic variability in Anzoátegui, Venezuela. Revista FAVE - Ciencias Agrarias. 2016;15(2):39-50. Available: <https://doi.org/10.14409/fa.v15i2.6587>
20. Olivares B. Systematization of ancestral and traditional knowledge of the Kariña ethnic group in Anzoátegui state, Venezuela. Revista de Investigación. 2014;82(38):89-102. Available: <https://n9.cl/fewif>  
Camacho R, Olivares B, Avendaño N. Agri-food landscapes: An analysis of the livelihoods of indigenous Venezuelans. Revista de Investigación. 2018;42(93):130-153. Available: <https://n9.cl/9utqc>
21. Cortez A, Rodríguez MF, Rey JC, Ovalles F, González W, Parra R, Olivares B, Marquina J. Space-time variability of precipitation in Guárico state, Venezuela. Rev. Fac. Agron. (LUZ). 2016;33(3):292-310. Available: <https://n9.cl/pmdck>
22. Olivares B, Cortez A, Parra R, Lobo D, Rodríguez MF, Rey JC. Evaluation of agricultural vulnerability to drought weather in different locations of Venezuela. Rev. Fac. Agron. (LUZ). 2017;34(1):103-129. Available: <https://n9.cl/d827w>
23. Olivares B. Valorization of ancestral and local knowledge through the perception of the climate in indigenous agricultural communities of the South of Anzoátegui, Venezuela. UDO Agrícola. 2012;12(2):407-417. Available: <https://n9.cl/0ljhy>
24. Olivares B, Rodríguez MF, Cortez A, Rey JC, Lobo D. Physical Natural Characterization of Indigenous Community Kashaama for Sustainable Land Management. Acta Nova. 2015;7(2):143-164. Available: <https://n9.cl/6gezo>
25. Montenegro E, Pitti J, Olivares B. Adaptation to climate change in indigenous food systems of the Teribe in Panama: A training based on CRISTAL 2.0. Luna Azul. 2021;51(2):182-197. Available: <https://n9.cl/qvwvz>
26. Montenegro E, Pitti J, Olivares B. Identificación de los principales cultivos de subsistencia del Teribe: Un estudio de caso basado en técnicas multivariadas. Idesia. 2021;39(3):83-94. Available: <http://dx.doi.org/10.4067/S0718-34292021000300083>
27. Bertorelli M, Olivares BO. Population fluctuation of *Spodoptera frugiperda* (J.E. Smith) (Lepidoptera: Noctuidae) in sorghum cultivation in Southern Anzoátegui, Venezuela. Journal of Agriculture University of Puerto Rico. 2020; 104(1):1-16. Available: <https://doi.org/10.46429/jaupr.v104i1.18283>
28. Casana S, Olivares B. Evolution and trend of surface temperature and windspeed (1994 - 2014) at the Parque Nacional Doñana, Spain. Rev. Fac. Agron. (LUZ). 2020;37(1):1-25. Available: <https://n9.cl/c815e>
29. Olivares B., Zingaretti ML. Application of multivariate methods for the characterization of meteorological drought periods in Venezuela. Luna Azul. 2019; 48:172-192. Available: <http://dx.doi.org/10.17151/luaz.2019.48.10>
30. Olivares B, Hernández R, Arias A, Molina JC, Pereira Y. Agroclimatic zoning of corn

- cultivation for the sustainability of agricultural production in Carabobo, Venezuela. *Revista Universitaria de Geografía*. 2018;27(2):139-159. Available:https://n9.cl/i0upn
31. Olivares B, Hernandez R, Arias A, Molina JC, Pereira Y. Eco-territorial adaptability of tomato crops for sustainable agricultural production in Carabobo, Venezuela. *Idesia*. 2020;38(2):95-102. Available:http://dx.doi.org/10.4067/S0718-34292020000200095
32. Olivares B, Hernández R. Ecoterritorial sectorization for the sustainable agricultural production of potato (*Solanum tuberosum* L.) in Carabobo, Venezuela. *Agricultural Science and Technology*. 2019;20(2):339-354. Available:https://doi.org/10.21930/rcta.vol20\_num2\_art:1462
33. Olivares B, Paredes F, Rey J, Lobo D, Galvis-Causil S. The relationship between the normalized difference vegetation index, rainfall, and potential evapotranspiration in a banana plantation of Venezuela. *SAINS TANAH - Journal of Soil Science and Agroclimatology*. 2021;18(1):58-64. Available:http://dx.doi.org/10.20961/stjssa.v18i1.50379
34. Olivares B, Rey JC, Lobo D, Navas-Cortés JA, Gómez JA, Landa BB. Fusarium Wilt of Bananas: A Review of Agro-Environmental Factors in the Venezuelan Production System Affecting Its Development. *Agronomy*. 2021;11(5):986. Available:https://doi.org/10.3390/agronomy11050986
35. Olivares B, Lobo D, Cortez A, Rodríguez MF, Rey JC. Socio-economic characteristics and methods of agricultural production of indigenous community Kashaama, Anzoategui, Venezuela. *Rev. Fac. Agron. (LUZ)*. 2017;34(2):187-215. Available:https://n9.cl/p2gc5
36. Olivares B, Parra R, Cortez A. Characterization of precipitation patterns in Anzoátegui state, Venezuela. *Ería*. 2017;3(3):353-365. Available:https://doi.org/10.17811/er.3.2017.353-365
37. Olivares B, Hernández R. Regional analysis of homogeneous precipitation areas in Carabobo, Venezuela. 2019;16(2):90-105. Available:https://doi.org/10.22507/rli.v16n2.a9
38. Olivares B. Relationship of nature, climate and spirituality of the Kariña agricultural indigenous communities of Anzoátegui state, Venezuela. *Revista Tiempo y Espacio*. 2014;61(2):129-150. Available:https://n9.cl/duqh2
39. Olivares B, Hernández R. Application of multivariate techniques in the agricultural land's aptitude in Carabobo, Venezuela. *Tropical and Subtropical Agroecosystems*. 2020;23(2):1-12. Available:https://n9.cl/zeedh
40. Olivares B, López M. Normalized Difference Vegetation Index (NDVI) applied to the agricultural indigenous territory of Kashaama, Venezuela. *UNED Research Journal*. 2019;11(2):112-121. Available:https://doi.org/10.22458/urj.v11i2.2299
41. Olivares B, Pitti J, Montenegro E. Socioeconomic characterization of Bocas del Toro in Panama: An application of multivariate techniques. *Revista Brasileira de Gestao e Desenvolvimento Regional*. 2020;16(3):59-71. Available:https://n9.cl/1dj6
42. Pitti J, Olivares B, Montenegro E. The role of agriculture in the Changuinola District: A case of applied economics in Panama. *Tropical and Subtropical Agroecosystems*. 2021;25-1:1-11. Available:https://n9.cl/quyl2
43. Barua JP, Ahmed AA, Gogoi S, Pathak S, Hatibarua P. Baree: The Home Garden Of Assam, Horticultural Research Station, Kahikuchi, Guwahati; 2019.

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