

Speed Post



Directorate of Research (Agri.)
Assam Agricultural University, Jorhat-13, Assam
(Recipient of Sardar Patel Outstanding Institution Award)

Dr. Ashok Bhattacharyya
Director

No. 7(G.I)/16/DRA(T)Pt/2019-20/ 7947

Dated 22.07.19

To

✓ The Deputy Registrar,
Geographical Indications Registry,
Intellectual Property Office Building,
Industrial Estate, G. S.T. road
Guindy, Chennai-600 032

Sub: Revised application for Geographical Indications registration of "Chokuwa rice of Assam".

Sir,

With reference to the subject cited above, I would like to submit the revised application for "Chokuwa rice of Assam" (Application No. 572) along with "Statement of the case", "Additional representation" and "Map of Assam" for GI registration.

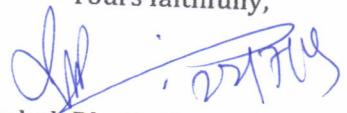
This is for your kind consideration and necessary action please.

Thanking you.

Encl:

1. Application form GI- 1 copy
2. Statement of the case - 1 copy
3. Additional representation - 1 copy
4. Map-1 copy

Yours faithfully,


(Ashok Bhattacharyya)
22/7/19

Copy to :



1. The Secretary to the Hon'ble Vice Chancellor, AAU, Jorhat
2. Dr. Gargi Sharma, Asstt. Prof., Dept. of PBG and Member-Secretary, IPR Cell, AAU, Jorhat

**THE GEOGRAPHICAL INDICATIONS OF GOODS
(REGISTRATION AND PROTECTION) ACT, 1999**

To be filled in triplicate along with the Statement of Case accompanied by five additional representation of the Geographical indication)

One representation to be fixed within the space and five others to be send separately

FORM GI-1

A	Application for the registration of a geographical indication in Part A of the Register Section 11 (1), Rule 23(2) Fee: Rs.5,000 (See entry No.1A of the First Schedule)	
B	Application for the registration of a geographical Indication in Part A of the Register from a convention country Section 11(1), 84(1), Rule 23(3) Fee : Rs.5,000 (See entry No.1 B of the First Schedule)	

Application is hereby made by for the registration in Part A of the Register of the accompanying geographical indication furnishing the following particulars :-

Name of the Applicant :	Secretary, Seuj Satirth
Address :	Central Cultural Building, Kachumari, Dehajan, Dimow-785662, Dist. Sivsagar, Assam
List of association of persons/producers/organization/authority:	Seuj Satirth (List of producer already submitted)
Type of goods:	Agricultural goods, Class 30
Specification:	<p>“Chokuwa rice of Assam” is a unique gift of nature. This class of rice is not known in any other parts of the world. Chokuwa rice is a special class of semi glutinous winter rice (<i>Sali</i> rice in vernacular) of Assam which is in cultivation from time immemorial. This group of rice is characterized by low amylose content (12-17%) of the grains. Chokuwa rice varieties are tall, photoperiod sensitive and long duration with low yield potential. However, this class of semi glutinous rice differs from other <i>Sali</i> rice varieties in its plant and grain characteristics.</p> <p>The average plant characteristics of Chokuwa rice varieties are given below:-</p> <ol style="list-style-type: none"> 1. Plant height: 158 cm 2. Panicle number: 9.2

	<p>3. Days to maturity: 160 days 4. Number of filled grain: 158 5. Number of chaffy grain: 15</p> <p>The average grain characteristics of Chokuwa rice varieties are given below:-</p> <p>1. Kernel Length: 6.6 mm 2. Kernel breadth: 2.4 mm 3. Kernel Length /breadth ratio: 2.75 4. Kernel shape: Long bold 5. Kernel colour: White to light red 6. Amylose content (%): 12-17</p>
Name of the geographical indication [and particulars]	“Chokuwa rice of Assam”
Description of the goods :	<p>Rice is a major crop of Assam which provides food and nutritional security to more than 3 crore population residing in the state. The crop is grown in a wide range of diverse situations in Assam like the hilly slopes of Karbi Anglong district to deep water areas of Dhemaji district. North East India is widely recognized as a secondary centre of origin for rice and as such Assam is known for its rich diversity of rice cultivars too. Among the various indigenous rice landraces of Assam some of those have certain unique characteristics which are rare to find in the common rice germplasm across the world. There are certain rice varieties in Assam which exhibit glutinous properties and are known as Waxy rice. Waxy rice is an important class of rice and is classified in two groups viz., Bora (glutinous) and Chokuwa (Semi-glutinous) based on amylose content. Chokuwa rice is a specialty rice of Assam which is known for its low amylose content. The amylose content of Chokuwa rice varies from 12-17%. Whereas the amylose content of other rice varieties ranges between 20-27%. In terms of taste and cooking quality Chokuwa rice varieties are intermediate between glutinous rice and non-glutinous rice. The Chokuwa rice is grown in Assam from time immemorial to cater the household needs of the farmers. Chokuwa rice of Assam has significance in social and religious ceremonies and forms a popular daily breakfast diet in rural Assam. However, this is not</p>

used for regular consumption. Highly valued delicacies are prepared from Chokuwa rice. The most important feature of this group of rice is that, the parboiled Chokuwa rice become soft on just soaking in ordinary water. Though chokuwa rice varieties with low amylose content (AC) exhibit soak-n-eat character, it is also reported that not all low AC rice show soak-and-eat property. That is why Chokuwa rice is used extensively for instant preparations. Its preparations are very popular in community feasts and festivals in Assam. Soft rice, which is locally know as “komal chaul” is prepared from this class of rice by soaking the rice either in cold or hot, water for a brief period of time. For this ‘soak and eat’ characteristics of this rice, this class of rice is metaphorically termed as “magical rice” also. Moreover, rice powders and rice flakes prepared from Chokuwa rice are very tasty too and preferred by the local people of Assam.

Geographical area of production and map :

Chokuwa rice varieties are grown in various parts of Assam except two hill districts during *Sali* season (June/July-October/November. The districts in which Chokuwa rice is grown are: Tinsukia, Dhemaji, Dibrugarh, Lakhimpur, Sivsagar, Jorhat, Golaghat, Nagaon, Morigaon, and Sonitpur between the latitude of 26.00⁰ N to 27.50⁰ N and the longitude of 93.96⁰ E to 95.00⁰E.

The latitude and longitude of the chokuwa rice growing districts are:

Darrang: 26.4523° N, 92.0273° E

Dhemaji :27.6087° N, 94.7692° E

Dibrugarh: 27° 29'N, 94° 54'E

Golaghat :26° 31'N, 93° 58'E

Jorhat :26° 45'N, 94° 13'E

North Lakhimpur :27° 14'N, 94° 07'E

Majuli: 27.0016° N, 94.2243° E

Marigaon: 26.2600° N, 92.2630° E

Nagaon: 26° 21'N, 92° 41'E

Sibsagar: 26° 59'N, 94° 38'E

	<p>Sonitpur : 26.6739° N, 92.8577° E Tinsukia: 27° 30'N, 95° 22'E</p>
<p>Proof of origin [Historical records] :</p>	<p>The Statistical Account of Assam written by W.W. Hunter (1879) mentioned 87 varieties of rice. Among these <i>Chokuwa</i> are so soft that the people in Assam used to them un-boiled just soaking in water which was then called <i>komal Chaul</i> (pp. 250, 253,300). The same document also revealed the presence of Chokuwa varieties of rice like 'goru chakua', 'saru chakua' and 'bar chakua' (page 370). <i>(William Wilson Hunter (1879). A Statistical Account of Assam. Publised by Trübner & co., London, pp 250, 253,300)</i></p>
<p>Method of Production :</p>	<p>Chokuwa rice of Assam is“winter rice (<i>Sali</i> rice)”. It is transplanted in puddled soil, mainly, in the <i>Sali</i> season (June/July — November/December). The chakuwa rice plants are tall, have long duration (160 days) and are photosensitive. Chokuwa rice has an average grain yield of 2.5t/ ha. The Chokuwa rice is grown along with the staple rice varieties by farmers for their home consumption during special occasions during the <i>Sali</i> season. The actual area of production of Chokuwa rice is not available it is clubbed under <i>Sali</i> rice with traditional landraces. The productivity of these photoperiod sensitive, tall traditional Chokuwa cultivars is not more than 1.0t/ ha in farmers field. Moreover, Chokuwa rice is grown in relatively marginal lands. Since the inception of the Rice Research Station at Titabar, germplasm collection drives had been made and a number of varieties were collected at the station. Since 1924, about 23 Chokuwa rice cultivars were collected from different parts of the state and were conserved in the station. The performance of Chokuwa rice genotypes are given in Annexures I and 2. Assam is bestowed with certain unique agro ecological features for which Chokuwa rice is successful in this region. Assam is one of the seven</p>

states of northeast India, which is located between 24° N and 28°18' N latitudes and 89°4' E and 96°00' E longitudes. The State is surrounded by Arunachal Pradesh, Nagaland, Manipur and Myanmar in the East Mizoram, Tripura and Meghalaya in the South Bangladesh and West Bengal in the West and Bhutan and Arunachal Pradesh in the North. The state is surrounded by many hills in all directions. The total geographic area of Assam is 78523 sq. km with a population of 31 million as per census 2011. The climate of Assam is of humid subtropical nature with warm humid summer and cool dry winter. Due to unique geographical location coupled with varied physiography, the state has wide array of climatic conditions. Soils in the Assam valley are acidic and high in available phosphorus and potassium and moderate in organic matter and nitrogen. The most typical characteristics of Assam soil is acidity, where pH of the soils generally ranges between 4.2 to 5.8. The annual normal rainfall is 2431.9 mm of which 1550.0 mm occurs during the months of June to September. Most of the Chokuwa rice cultivation is under the mercy of monsoon rain during *Sali* season (June/July - Nov/December). The mean annual maximum temperature varies from 23.6° C to 31° C and minimum temperature varies from 10 to 25.20 C. Chokuwa rice is grown in marginal lands, uplands or on *Sali* seed beds after uprooting the seedlings, late in the season. Harvesting of crop is done after attaining the physiological maturity after cultivation as a transplanted crop.

Raising of Seedlings:

Land is thoroughly puddled and seed beds of 1.0 m

length and 1.25m breadth are prepared with 30 cm gap in between the beds. The length of the bed may vary according to convenience. Seed beds are mainly fertilized with dry cowdung. The nursery is raised by wet method. Germinated seeds are used for sowing in the well prepared nursery bed and adequate irrigation facilities are provided. The nursery bed is drained occasionally to encourage production of vigorous seedlings with short roots. Seedlings will be ready for transplanting 25-30 days after sowing.

Field preparation:

Field should be prepared thoroughly by ploughing 4 to 5 times followed by harrowing and laddering. Ploughing should be started at least 21 days ahead of transplanting so that weeds are dried up/decayed. Well rotten FYM or compost @ 10t/ha has to be applied during field preparation. In addition, the inorganic nutrients are also suggested at rate of 20N: 10P₂O₅: 10K₂O (in Kg/ha) in areas with moderate fertility level. Since Chokuwa rice cultivars are less responsive to chemical fertilizer and inaccessibility of chemical fertilizers to many farmers results in very limited application of chemical fertilizer in Chokuwa rice. Seedlings are transplanted @ 2-3 seedlings per hill in rows at a gap of 30-35 x 20-25 cm, at a depth of 3-4 cm in medium land situation. Farmers hardly apply in chemicals for pest control, since traditional varieties of Chokuwa rice have moderate level tolerance to major pests. The crop has duration of 135-165 days. The temperature between 28⁰C and 30⁰C during flowering and dough stage are ideal for grain filling.

Harvesting:

Harvesting of crop will be done after attaining physiological maturity. This usually coincides with November- December months. Upon attaining physiological maturity, panicles are selected using strict quality standards using characteristic morphological features of the Chokuwa rice for the collection of seeds for the next season. Threshing of the harvested panicles is done by rubbing with feet in a clean and dry place. After threshing manually, seeds are cleaned and dried in sunlight to a moisture level of 12 to 13 per cent. Storing

	<p>the seed in "Toom" after proper drying and cleaning.</p> <p>("Toom" is a container made of bamboo covered with straw. Straw used in Toom should be of the same variety used for storage).</p> <p>Traditional knowledge associated with Chokuwa rice of Assam:</p> <ol style="list-style-type: none"> i. Farmers know the art of selection of proper site for cultivation. ii. Farmers have the traditional knowledge on the method of cultivation. iii. Farmers possess the traditional know how on issue relating to plant protection of Chokuwa rice. iv. Use of traditional know-how and skill in preparing various products from Chokuwa rice.
<p>Uniqueness :</p>	<ol style="list-style-type: none"> i. Chokuwa rice is a particular class of waxy rice with low amylose content, traditionally identified and selected by farmers. ii. "Chokuwa rice" is a unique gift of nature. This group of rice exhibit "soak and eat" characteristics for which instant preparations like "soft rice (Komal chaul) can be made. For these "soak and eat" characteristics of this rice, this class of rice is metaphorically termed as "magical rice" also. iii. Chokuwa rice varieties belong to traditional <i>Sali</i> rice varieties which are photosensitive and long duration (160 days) varieties exclusively grown in Assam. This class of rice is not known in any other parts of the world.

Inspection body	<ol style="list-style-type: none"> 1. Director of Research (Agri), Assam Agricultural University, Jorhat or his nominee. 2. Chief Scientists, Regional Agricultural Research Stations of AAU in Titabor, Lakhimpur, Nagaon. 3. District Agriculture Officers in concerned districts 4. Representative of Seuj Satirth
Others	<p>Reference:</p> <ol style="list-style-type: none"> 1. Dr. Kishor Kumar Sharma. (2014). Rice of Assam. SEUJI DHARANI, MONDAY, 24 FEBRUARY 2014. http://sadik2crs.blogspot.com/2014/02/rice-of-assam.html 1. K. Pragnya^{1*}, K.V. Radha Krishna¹, L.V. Subba Rao and K. Suneetha. (2018) Studies on Morphological Characterization in Soft Rice (<i>Oryza sativa</i> L.) Genotypes. Int.J.Curr.Microbiol.App.Sci 7(5): 1348-1374.

Along with the Statement of Case in Class^b.....^b.....in respect of^c Chokuwa rice of Assam in the name(s) of^d **Seuj Satirtha** whose address is ... **Central Cultural Building, Kachumari, Dehajan, Demow-785662, Dist. Sivasagar, Assam** ... Who claims to represent the interest of the producers of the said goods to which the geographical indication relates and which is in continuous use since centuries in respect of the said goods.

2. The Application shall include such other particulars called for in rule 32(1) in the Statement of Case.

3. All communications relating to this application may be sent to the following address in India.

Director of Research (Agri), Assam Agricultural University (AAU), Jorhat 785013, Assam

4. In the case of an application from a convention country the following additional particulars shall also be furnished. **Not applicable**

(a) Designation of the country of origin of the Geographical Indication.

(b) Evidence as to the existing protection of the Geographical Indication in its country of origin, such as the title and the date of the relevant legislative or administrative provisions, the judicial decisions or the date and number of the registration, and copies of such documentation.

Additional Representation

a. Name of the Applicant :	Secretary, Seuj Satirth
b. Address :	Central Cultural Building, Kachumari, Dehajan, Dimow-785662, Dist. Sivsagar, Assam
c. List of association of persons/producers/organization/authority:	Seuj Satirth (List of producer enclosed)
d. Type of goods:	Agricultural good, Class 30 (Rice and preparation made from rice)
e. Specifications:	<p>“Chokuwa rice of Assam” is a unique gift of nature. This class of rice is not known in any other parts of the world. Chokuwa rice is a special class of semi glutinous winter rice (<i>Sali</i> rice in vernacular) of Assam which is in cultivation from time immemorial.</p> <p>This group of rice is characterized by low amylose content (12-17%) of the grains. Chokuwa rice varieties are tall, photosensitive and long duration varieties with low yield potential . However, this class of semi glutinous rice differs from other Sali rice varieties in its plant and grain characteristics.</p> <p>The average plant characteristics of Chokuwa rice varieties are given below:-</p> <ol style="list-style-type: none">1. Plant height: 158 cm2. Panicle number: 9.23. Days to maturity: 160 days4. Number of filled grain: 1585. Number of chaffy grain: 15

	<p>The average grain characteristics of Chokuwa rice varieties are given below:-</p> <ol style="list-style-type: none"> 1. Kernel Length: 6.6 mm 2. Kernel breadth: 2.4 mm 3. Kernel Length /breadth ratio: 2.75 4. Kernel shape: Long bold 5. Kernel colour: white to light red 6. Amylose content (%): 12-17
<p>f. Name of the Geographical Indication and particulars:</p>	<p>“Chokuwa rice of Assam”</p> <p>North East India is widely recognized as a secondary centre of origin for rice and as such Assam is known for its rich diversity of rice cultivars too. Among the various indigenous rice landraces of Assam some of those have certain unique characteristics which are rare to find in the common rice germplasm across the world. There are certain rice varieties in Assam which exhibit glutinous properties and are known as Waxy rice. Waxy rice is an important class of rice and is classified in two groups viz., Bora (glutinous) and Chokuwa (Semi-glutinous) based on amylose content. Chokuwa rice is a specialty rice of Assam which is known for its low amylose content. The amylose content of Chokuwa rice varies from 12-17%. Whereas the amylose content of other rice varieties ranges between 20-27%. In terms of taste and cooking quality Chokuwa rice varieties are intermediate between glutinous rice and non-glutinous rice. The Chokuwa rice is grown in Assam from time immemorial to cater the household needs of the farmers. Chokuwa rice of Assam has significance in social and religious ceremonies and forms a popular daily breakfast diet in rural Assam. However, this is not used for regular consumption. Highly valued delicacies are prepared from Chokuwa rice. The most important feature of this group of rice is</p>

that, the parboiled Chokuwa rice become soft on just soaking in ordinary water. Though Chokuwa rice varieties with low amylose content (AC) rice exhibit soak-n-eat character, it is also reported that not all low AC rice show soak-and-eat property. That is why Chokuwa rice is used extensively for instant preparations. Its preparations are very popular in community feasts and festivals in Assam. Soft rice, which is locally know as “komal chaul” is prepared from this class of rice by soaking the rice either in cold or hot, water for a brief period of time. For this ‘soak and eat’ characteristics of this rice, this class of rice is metaphorically termed as “magical rice” also. Moreover, rice powders and rice flakes prepared from Chokuwa rice are very tasty too and preferred by the local people of Assam.

Chokuwa rice varieties are tall, photosensitive and long duration varieties with low yield potential. However, this class of semi glutinous rice differs from other Sali rice varieties in its plant and grain characteristics.

The average plant characteristics of Chokuwa rice varieties are given below:-

1. Plant height: 158 cm
2. Panicle number: 9.2
3. Days to maturity: 160 days
4. Number of filled grain: 158
5. Number of chaffy grain: 15

The average grain characteristics of Chokuwa rice varieties are given below:-

- 1 Kernel Length: 6.6 mm
2. Kernel breadth: 2.4 mm
3. Kernel Length /breadth ratio: 2.75
4. Kernel shape: Long bold
5. Kernel colour: White to light red
6. Amylose content (%): 12-17

STATEMENT OF THE CASE

Information on the applicant:

Name of the Applicant: Sri Surajit Kachari, Secretary, Seuj Satirth.

Address: Central Cultural Building, Kachumari, Dehajan, Dimow-785662 Dist. Sivsagar, Assam.

Name of the geographical indication: Chokuwa rice of Assam.

Type of goods: Agricultural good, Chokuwa rice

Specification and description of the goods:

North-east India, including Assam, is known for its rich biodiversity across the world. Assam is traditionally a rice growing area and rice plays a pivotal role in the socio-cultural life of the people of the state. North East India is widely recognized as a secondary centre of origin for rice and as such the crop has enormous diversity in this region, which has resulted due to highly variable rice growing ecosystems. Among the various indigenous rice landraces of Assam some of those have certain unique characteristics which are rare to find in the common rice germplasm across the world. Among them are joha (aromatic), waxy (bora), semiwaxy (Chokuwa) and red bao (Deep and floating) rice are unique gift of nature which are grown from time immemorial to cater the household needs of the farmers. The different classes of rice have different uses. Farmers traditionally selected some of the land races to be consumed as a staple food. The high and intermediate amylose rice varieties are consumed as staple foods and the low amylose and waxy land races were selected to make food products. Low amylose rice varieties, locally termed as Chokuwa rice varieties, are preferred over the waxy varieties to prepare various specialty food products. The most important feature of this group of rice is that, the parboiled Chokuwa rice become soft on just soaking in ordinary water. Though Chokuwa rice varieties with low amylose content (AC) rice exhibit soak-n-eat character, it is also reported that not all low AC rice show soak-and-eat property. That is why Chokuwa rice is used extensively for instant preparations. Its preparations are very popular in community feasts and festivals in Assam. Soft rice, which is locally know as “komal chaul” is prepared from this class of rice by soaking the rice either in cold or hot,

water for a brief period of time. For this 'soak and eat' characteristics of this rice, this class of rice is metaphorically termed as "magical rice" also. Moreover, rice powders and rice flakes prepared from Chokuwa rice are very tasty too and preferred by the local people of Assam. The districts in which Chokuwa rice is cultivated are: Tinsukia, Dhemaji, Dibrugarh, Lakhimpur, Sivsagar, Jorhat, Golaghat, Nagaon, Morigaon, and Sonitpur between the latitude of 26.000 N to 27.500 N and the longitude of 93.96'E to 95.000E.

The Chokuwa rice plants are generally tall in nature. The Chokuwa varieties are long duration varieties and are photosensitive. Chokuwa rice has an average grain yield of 2.5/ ha.

Names of some land races of Chokuwa rice:

Chakuwa 1	Kalamdani Chakuwa	Sam Chakuwa
Chakuwa 2	Kola Boka Chakuwa	Saru Chakuwa 1
Chakuwa 3	Boka Chakuwa 1	Pozo Chakuwa
Chakuwa 4	Boka Chakuwa 2	Bor Chakuwa 2
Haru Chakuwa 1	Lahi Chakuwa	Boka Chakuwa 1
Kajoli Chakuwa	Maju Chakuwa 2	Boka Chakuwa 2
Bora Chakuwa	Malbhog Chakuwa	Maju Chakuwa 1
Boga Chakuwa	Misiri Chakuwa	
Bor Chakuwa 1	Nepali Chakuwa	

The average plant characteristics of Chokuwa rice varieties are given below:-

1. Plant height: 158 cm
2. Panicle number: 9.2
3. Days to maturity: 160 days
4. Number of filled grain: 158
5. Number of chaffy grain: 15

The average grain characteristics of Chokuwa rice varieties are given below:-

1. Kernel Length: 6.6 mm
2. Kernel breadth: 2.4 mm

3. Kernel Length /breadth ratio: 2.75
4. Kernel shape: Long bold
5. Kernel colour: white to light red
6. Amylose content (%): 12-17

Mode of origin/ brief history:

The Statistical Account of Assam written by W.W. Hunter (1879) mentioned 87 varieties of rice. Among these Chokuwa are so soft that the people in Assam used to them un-boiled just soaking in water which was then called *komal Chaul* (pp. 250, 253,300). The same document also revealed the presence of Chokuwa varieties of rice like 'goru chakua', 'saru chakua' and 'bar chakua' (page 370).
(William Wilson Hunter (1879). *A Statistical Account of Assam*. Publised by Trübner & co., London, pp 250, 253,300)

The military systems of Ahoms of medieval period specifically mentioned Komal Chaul, a product of Chokuwa rice, as soldiers' food as referred by famous historician of Dr S K Bhuyan in his book "History of Assam" published in 1965. It was stated in that book that "The food menu of an Assemese soldier was extremely simple. He had in his kit a bag of specially prepared raw rice, soaked in water, - Komal Chaul as it called - and he thrust morsels into his mouth from time to and thereby satisfied his alimentary need."

Method of production:

The Chokuwa rice is grown along with the staple rice varieties by farmers for their home consumption during special occasions during the Sali season. The actual area of production of Chokuwa rice is not available it is clubbed under Sali rice with traditional landraces. The productivity of these photoperiod sensitive, tall traditional Chokuwa cultivars is not more than 1.0 ha in farmers' field. Moreover, Chokuwa rice is grown in relatively marginal lands. Since the inception of the Rice Research Station at Titabar, germplasm collection drives had been made and a number of varieties were collected at the station. Since 1924, about 23 Chokuwa rice cultivars were collected from different parts of the state and were conserved in the station. The performance of Chokuwa rice genotypes are given in Annexures I and 2. Assam is one of the seven states of northeast India, which is located between 24° N and 28°18' N latitudes and 89°4' E and 96°00' E longitudes. The State is surrounded by Arunachal Pradersh, Nagaland, Manipur and Myanmar in the East Mizoram, Tripura and Meghalaya in the South

Bangladesh and West Bengal in the West and Bhutan and Arunachal Pradesh in the North. The state is surrounded by many hills in all directions. The total geographic area of Assam is 78523 sq. km with a population of 31 million as per census 2011. The climate of Assam is of humid subtropical nature with warm humid summer and cool dry winter. Due to unique geographical location coupled with varied physiography, the state has wide array of climatic conditions. Soils in the Assam valley are acidic and high in available phosphorus and potassium and moderate in organic matter and nitrogen. The most typical characteristics of Assam soil is acidity, where pH of the soils generally ranges between 4.2 to 5.8. The annual normal rainfall is 2431.9 mm of which 1550.0 mm occurs during the months of June to September. Most of the Chokuwa rice cultivation is under the mercy of monsoon rain during Sali season (June/July - Nov /December). The temperature between 28⁰C and 30⁰C during flowering and dough stage are ideal for grain filling. In Assam, the mean annual maximum temperature varies from 23.6⁰ C to 31 .7⁰ C and minimum temperature varies from 10⁰ to 25.2⁰ C. Chokuwa rice is grown in marginal lands, uplands or on Sali seed beds after uprooting the seedlings, late in the season. Harvesting of crop will be done after attaining physiological maturity after cultivation as a transplanted crop.

Raising of Seedlings:

Land is thoroughly puddled and seed beds of 1.0 m length and 1.25m breadth are prepared with 30 cm gap in between the beds. The length of the bed may vary according to convenience. Seed beds are mainly fertilized with dry cowdung. The nursery is raised by wet method. Germinated seeds are used for sowing in the well prepared nursery bed and adequate irrigation facilities are provided. The nursery bed is drained occasionally to encourage production of vigorous seedlings with short roots. Seedlings will be ready for transplanting 25-30 days after sowing.

Field preparation:

Field should be prepared thoroughly by ploughing 4 to 5 times followed by harrowing and laddering. Ploughing should be started at least 21 days ahead of transplanting so that weeds are dried up/decayed. Well rotten FYM or compost @ 10t/ha has to be applied during field preparation. In addition, the inorganic nutrients are also suggested at rate of 20N: 10P₂O₅: 10K₂O (in Kg/ha) in areas with moderate fertility level. Since Chokuwa rice cultivars are less responsive to chemical fertilizer and inaccessibility of chemical fertilizers to many farmers results in very limited application of chemical fertilizer in Chokuwa rice. Seedlings are transplanted @ 2-3 seedlings per hill in rows at a gap of 30-35 x 20-25 cm, at a depth of 3-4 cm in medium land situation. Farmers hardly apply in chemicals for pest control,

since traditional varieties of Chokuwa rice have moderate level tolerance to major pests. The crop has duration of 135-165 days. The temperature between 28⁰C and 30⁰C during flowering and dough stage are ideal for grain filling.

Harvesting:

Harvesting of crop will be done after attaining physiological maturity. This usually coincides with November- December months. Upon attaining physiological maturity, panicles are selected using strict quality standards using characteristic morphological features of the Chokuwa rice for the collection of seeds for the next season. Threshing of the harvested panicles is done by rubbing with feet in a clean and dry place. After threshing manually, seeds are cleaned and dried in sunlight to a moisture level of 12 to 13 per cent. Storing the seed in "*Toom*" after proper drying and cleaning.

("Toom" is a container made of bamboo covered with straw. Straw used in Toom should be of the same variety used for storage).

Uniqueness:

In Assam, The two main rivers viz., the Brahmaputra and the Barak flow through the state with 40 and 7 major tributaries each, respectively. The Brahmaputra valley occupies about 5.6 million ha with 24 administrative districts while the Barak valley is about 0.7 million ha with 3 districts. The Brahmaputra flows from the east (Sadiya) to west (Dhubri). The altitude at Sadiya is 134 m while in Dhubri it is 35 m. The Brahmaputra valley is an alluvial plain having varying topography. The Barak River flows from east to west through undulating plains. Thus the state has distinct physiographic units - the plains, the plateaus, to grow Chokuwa rice. The districts in which Chokuwa rice is grown are: Tinsukia, Dhemaji, Dibrugarh, Lakhimpur, Sivsagar, Jorhat, Golaghat, Nagaon, Morigaon and Sonitpur. On an average, the relative humidity is more than 80% in almost all the locations of Assam throughout the year. Even during dry winter months, the average relative humidity is never below 75% in the region. Because of such unique agro ecological feature, Chokuwa rice is successful in this region. Though Chokuwa rice varieties with low amylose content (AC) rice exhibit soak-n-eat character. It is also reported that not all low AC rice show soak-n-eat property (Bhakta et al, 2011).

The uniqueness of Chokuwa rice can be summarized as below:

- i. Chokuwa rice is a particular class of waxy rice with low amylose content, traditionally identified and selected by farmers.
- ii. “Chokuwa rice” is a unique gift of nature. This group of rice exhibit “soak and eat” characteristics for which instant preparations like “soft rice (Komal chaul) can be made. For these “soak and eat” characteristics of this rice, this class of rice is metaphorically termed as “magical rice” also.
- iii. Chokuwa rice varieties belong to traditional Sali rice varieties which are photosensitive and long duration (160 days) varieties exclusively grown in Assam. This class of rice is not known in any other parts of the world.

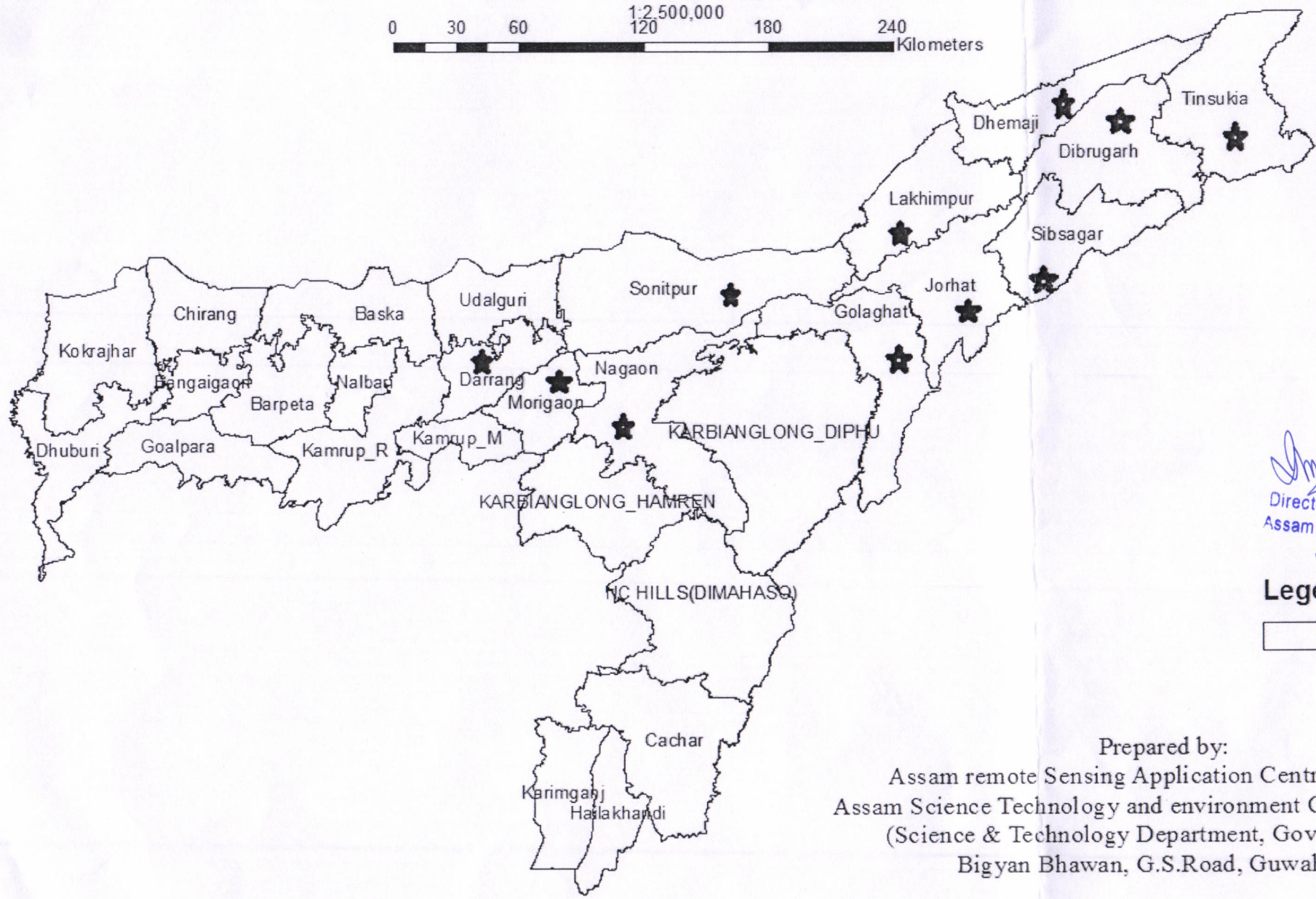
Justification for GI and Future prospect:

Chokuwa rice is a unique gift of nature. It is a particular class of waxy rice with low amylose content, traditionally identified and selected by farmers. This class of rice is not known in any other parts of the world. This group of rice exhibit a unique “soak and eat” characteristics for which instant preparations like “soft rice (Komal chaul) can be made. For these “soak and eat” characteristics of this rice, this class of rice is metaphorically termed as “magical rice” also. Though Chokuwa rice varieties with low amylose content (AC) rice exhibit soak-n-eat character, it is also reported that not all low AC rice show soak-n-eat property. The protection of Chokuwa rice Assam is not only of commercial interest but it is important from social, ecological and environmental point of view also. Protection of Chokuwa rice of Assam through GI will be beneficial to the urban and rural community. Assamese farmers use their traditional know skill inherited from their forefathers to grow Chokuwa rice and produce various specialty rice products like komal chaul, rice flakes, rice floor etc. This traditional skill needs to be protected and promoted through GI Status to Chokuwa rice. Furthermore, Komal chaul has great demand among Assamese people and its popularity is increasing across the globe. It had even been used by Indian soldiers fighting in Siachen located in the peak of Himalayas, the highest battlefield of the world in 1960s. Siachen with a sub-zero temperature, surrounded by frosty ice and snow. Therefore, it is not an ideal place to cook food by using fire for a long period of time. The soldiers were using .Komal Chaul' which just needed to soak in water and therefore very convenient to use in battle-field (Samaddar and Samaddar, 2010). Production of komal chaul from this particular rice is closely connected to the traditional knowledge of the region concerned and thereby creating awareness for commercial production of this product will promote a resource efficient green economy, which is a dire need for the developing and least developed areas of Assam.

90°00'E 91°00'E 92°00'E 93°00'E 94°00'E 95°00'E 96°00'E

District Boundary Map of Assam

0 30 60 120 180 240 Kilometers
1:2,500,000



[Signature]
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Legend
 □ Dist_Boundary

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Source: Survey of India Toposheets & Map of Rev. Dept., GC

90°00'E 91°00'E 92°00'E 93°00'E 94°00'E 95°00'E 96°00'E

Annexure 1. Performance of the chakuwa varieties for yield and yield attributing traits

Sl.no.	Name of the variety	Days to 50% Flowering (days)	Plant height (cm)	Panicle no./plant	Panicle Length(cm)	Yield Kg /ha
1	Boga Chakuwa	127	161.7	7.5	27.5	2537.5
2	Boka Chakuwa 1	136	162.2	10.3	25.2	2349.8
3	Boka Chakuwa 2	123	157	8.5	23.8	2139.7
4	Bor Chakuwa 1	119	152.7	8.1	25	2332
5	Bora Chakuwa	128	159.5	7.9	25	2483.8
6	Chakuwa 1	128	157.2	8.5	28.8	2266
7	Haru Chakuwa 1	129	156.4	9.5	30.6	2437.1
8	Kajoli Chakuwa	131	166.5	9.2	29.7	3523.2
9	Kalamdani Chakuwa	136	161.8	10.6	29.4	3886.4
10	Kola Boka Chakuwa	128	152.7	10.1	25.5	2409
11	Lahi Chakuwa	128	157.7	8.3	29.3	2437.1
12	Maju Chakuwa 1	129	143.7	8.2	24.5	2525
13	Maju Chakuwa 2	128	156.1	7.2	25.1	2482.3
14	Malbhog Chakuwa	129	154.3	9.5	24.1	2657.8
15	Misiri Chakuwa	127	156.5	9	27.4	1864.8
16	Nepali Chakuwa	133	156.7	9.7	26.7	2148.2

7	Sam Chakuwa	128	161.7	10.3	27.4	2247.6
18	Saru Chakuwa 1	130	159.8	9.2	29.2	2756.8
19	Pozo Chakuwa	131	168.3	9.1	28.4	3307.9
20	Chakuwa 2	128	155.6	10.9	26.9	2055.9
21	Chakuwa 3	126	167.5	13.1	27.6	2460.3
22	Bor Chakuwa 2	129	152.7	10.7	26.8	2463.5
23	Chakuwa 4	122	157.5	8.3	28.3	2131.1
	Range	119-136	143.7-168.3	7.2-13.0	23.8-30.6	1864.8-3886.4
	Average	128.39	158.08	9.29	27.05	2517.51


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Annexure 2. Grain characteristics of Chakuwa germplasm of Assam

Sl.no.	Name of the variety	Filled grain no.	Chaffy grain no	Kernel length (mm)	Kernel Breadth (mm)	Kernel L/B ratio	Amylose content (%)	Kernel shape	Kernel colour
1	Boga Chakuwa	171	16	6.16	2.46	2.5	14.6	long bold	white
2	Boka Chakuwa 1	148	12	5.84	2.5	2.34	15.3	short bold	light red
3	Boka Chakuwa 2	148	14	6.56	2.4	2.73	15.7	long bold	white
4	Bor Chakuwa 1	149	4	6.52	2.6	2.51	16.8	long bold	white
5	Bora Chakuwa	150	12	6.32	2.56	2.47	15.5	long bold	white
6	Chakuwa 1	144	28	7.84	2.8	2.8	14.8	extra long bold	white
7	Haru Chakuwa 1	134	14	6.68	2.4	2.78	17.3	long bold	white
8	Kajoli Chakuwa	196	15	6.92	1.92	3.6	16.6	extra long slender	red
9	Kalamdani Chakuwa	163	15	7.6	1.84	4.13	17.2	extra long slender	white
10	Kola Boka Chakuwa	143	18	6.68	2.5	2.67	15.5	long bold	white
11	Lahi Chakuwa	154	51	6.76	2.08	3.25	16.8	extra long slender	white
12	Maju Chakuwa 1	105	4	6.92	2.46	2.81	14.8	long bold	white

13	Maju Chakuwa 2	189	10	6.04	2.56	2.36	15.7	long bold	white
14	Malbhog Chakuwa	177	10	6	2.64	2.27	16.7	long bold	white
15	Misiri Chakuwa	137	11	6.52	2.56	2.55	17.7	long bold	white
16	Nepali Chakuwa	173	12	5.92	2.5	2.37	17.6	short bold	light red
17	Sam Chakuwa	148	16	6.32	2.36	2.68	16.5	long bold	white
18	Saru Chakuwa 1	150	13	7	2.28	3.07	16.5	extra long slender	white
19	Pozo Chakuwa	231	14	6.32	2.24	2.82	14.8	long bold	white
20	Chakuwa 2	131	32	6.84	2.48	2.76	14.5	long bold	white
21	Chakuwa 3	189	8	6.88	2.48	2.77	15.7	long bold	white
22	Bor Chakuwa 2	155	5	6.2	2.56	2.42	15.8	long bold	light red
23	Chakuwa 4	146	10	6.6	2.4	2.75	16.8	long bold	red
	Range	105-231	4-51	5.84-7.84	1.84-2.64	2.27-4.13	14.5-17.7		
	Average	157.87	14.96	6.58	2.42	2.76	16.00		


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