

Directorate of Research
Bihar Agricultural University, Sabour-813210

File. No. DR/327/ Letter No...346

Date...03.06.2016.

To,

Registrar of Geographical indications
Intellectual Property Building,
DST Road, Guinaly,
Chennai-600032.

Sub: Regarding statutory fee under Geographical indications at Bihar Agricultural University, Sabour, Bhagalpur.

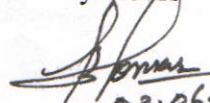
Sir,

Kindly find enclosed herewith an account payee cheque no. 997733 dated 02.06.2016 amounting to Rs. 20,000=00 (Rupees Twenty thousand) only which is to be given 5,000=00 per variety in registration fee for geographical indications i.e. (1) Zardalu Mango (2) Shahi Litchi (3) Katarni Rice and (4) Magahi Pan. The variety is popular in Bihar.

You are kindly requested to Geographical Indications for registration under GI act.

Thanking you.

Sincerely Yours


03.06.2016

Director Research
Director Research
Bihar Agricultural University
Sabour, Bhagalpur (BIHAR)
P.N. - 813210

Copy to:

Dr. R. R. Singh, Assoc. Prof. Deptt. of Horti (Fruit)/ Dr. Mankesh Kumar, Asstt. Prof. Deptt. of PBG/ Dr. Ruby Rani, Asstt. Prof. Deptt. of Horti. (Fruit)/Dr. Prabhat Kumar, I/C BRC, Islampur/Dr. Chandan Roy, Asstt. Prof., Deptt. of PBG & Nodal Officer PPV & FR for information and necessary action.





भारतीय स्टेट बैंक
State Bank Of India

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BIHAR
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PAY Registrar of Geographical indications.
रुपये RUPEES Twenty thousand only.

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Rohit Kumar

Asst. Comptroller
Directorate of Research
B.A.U., Sabour (Bhagalpur)

[Signature]
Director Research
DIRECTOR- RESEARCH A/C
Bihar Agricultural University
Please sign
Sabour Bhagalpur (BIHAR)
PIN - 813210

MULTI-CITY CHEQUE Payable at Par at All Branches of SBI
Directorate of Research
B.A.U., Sabour (Bhagalpur)

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23-04-2016
MANIPAL TECHNOLOGIES LIMITED, KARNATAKA, CTS-2010

C	Application for the registration of a geographical indication In Part A of the Register for goods falling in different classes Section 11 (3), Rule 23(5) Fee: Rs.5,000 for each class (See entry No.IC of the First Schedule)
D	A single application for the registration of a geographical Indication in Part A of the Register for goods falling in different classes from a convention country Section 11(3), rule 23(4) Fee : Rs.5,000 for each class (See entry No.ID of the First Schedule)

I. 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 :Bihar Agricultural University,
Sabour, Bhagalpur, Bihar, India-813210

-Address :Director Research,
Bihar Agricultural University, Sabour,
Bhagalpur, Bihar, India-813210
Phone No. 641-2451056 & 2451058
Email-drbau1908@gmail.com

-List of association of persons/producers/organization/authority:

-Type of Goods :Class 31-Horticulture Products (Fruits) – Mango

-Specification :The Mango cultivar Zardalu is one of the choicest varieties of Bhagalpur, Bihar. It is a moderately vigorous with spreading tree habit, the trunk is slender in nature and shape of the tree is top rounded. The leaves are evergreen, alternate, simple, 15-35 cm long, and 6-16 cm broad; when young they are orange-pink, rapidly changing to a dark, glossy red, then dark green as they mature. The flowers are produced on terminal panicles 10-40 cm long; each flower is small and creamish to pinkish yellow in colour with five petals measuring 5-10 mm, having sweet flavour. The fruits are medium in size (186-265g) with golden yellow peel. Pulp is golden yellow in colour.

-Name of the geographical indication [and particulars]

Zardalu Mango of Bhagalpur



जर्दालू आम
भागलपुर की पहचान

-Description of the Goods:

Division: Magnoliophyta

Class: Magnoliopsida

Subclass: Rosidae

Order: Sapindales

Family: Anacardiaceae

Genus: *Mangifera*

Botanical Name: *Mangifera indica* L.

Mango (*Mangifera indica* L.) belongs to the Family Anacardiaceae and Genus *Mangifera*. It is one of the most important fruit crop in India having a great cultural, socio economic and religious significance since the ancient times.

The characteristics of Zardalu tree/fruit.

S.No.	Characters	Observation
1	Tree habit	Tall
2	Compactness	Semi Open
3	Leaf Shape	Oblong lanceolate
4	No. Of leaves (apical 10cm)	11.6
5	Average leaf area (sq.cm)	72.49
6	Colour of young leaf	Light pink
7	Tip of leaf	Acuminate
8	Margin of Leaf	Flat
9	Leaf habit	Smooth
10	Orientation of Leaf	Intermediate
11	Date of panicle emergence	30 th January
12	Inflorescence shape	Cylindrical
13	Length of inflorescence. (cm)	25.5
14	Width of inflorescence. (cm)	20.0
15	Colour of inflorescence	Light green
16	Hairiness of rachis	Slightly hairy
17	Leafy bracts	Nil
18	Stalk insertion	Obliquely inserted
19	Base	Rounded
20	Basal Cavity	Shallow

21	Sinus	Shallow
22	Beak	Slightly Prominent
23	Ventral Shoulder	Rising then rounded
24	Dorsal Shoulder	Long Curve
25	Apex	Rounded
26	Surface	Smooth and Even
27	Peel thickness	Medium Thick
28	Peel texture	Leathery
29	Sweetness	Very Sweet
30	Flavour	Very pleasant
31	Fibre in Pulp	Less Fibrous
32	Consistency of Pulp	Smooth
33	Pulp Colour	Reddish Yellow
34	Maturity	7 th June
35	Storage Life	Medium

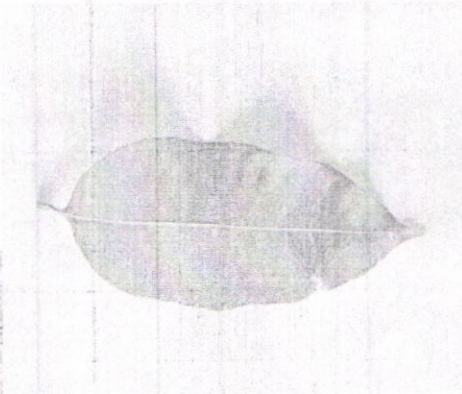
Physico-chemical parameters of fruit of Zardalu Mango.

S.No.	Fruit Characters	Observation
1	Fruit Weight (g)	186-265
2	Weight of Pulp (g)	114-187.67
3	Weight of peel (g)	23-39.33
4	Length of fruit (cm)	10.55
5	Width of stone (g)	35.67-59.00
6	Stone length (cm)	7.25-9.30
7	Stone Width (cm)	2.37-5.30
8	Stone thickness (mm)	16.41-31.33
9	Breadth of fruit (cm)	6.60
10	Fruit length/diameter ratio	1.56-1.79
11	Fruit Peel thickness (mm)	0.11-1.70
12	TSS (° Brix)	20.33-23

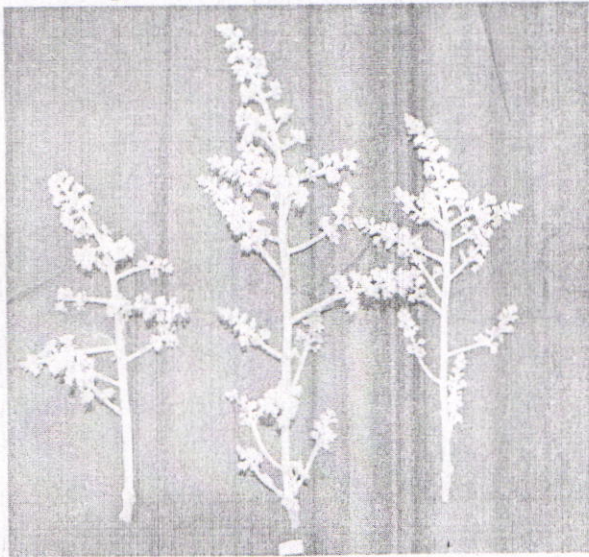
13	Titration acidity (%)	0.23-0.35
14	Total Sugar (%)	10.82-15.05
15	β carotene (mg/100g pulp)	2.58-4.36
16	Vitamin C (mg/100g fruit wt.)	20.22-35.62
17	Organoleptic Taste (100marks)	73.5



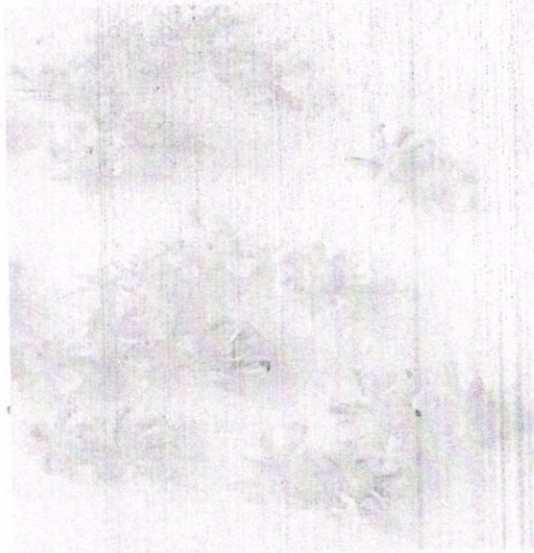
Zardalu Mango Tree



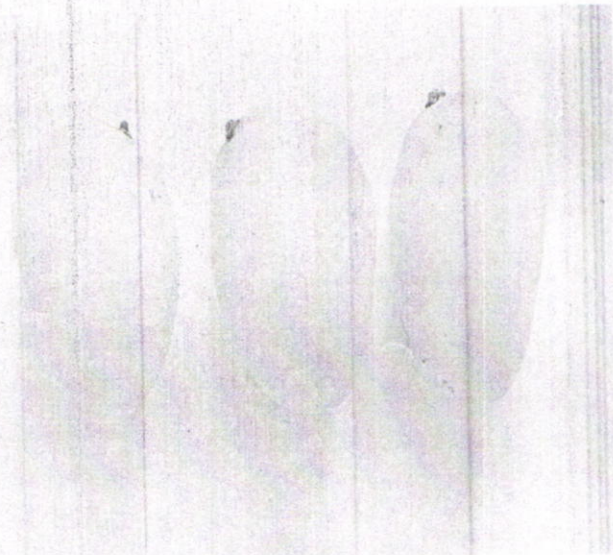
Zardalu Mango Leaf



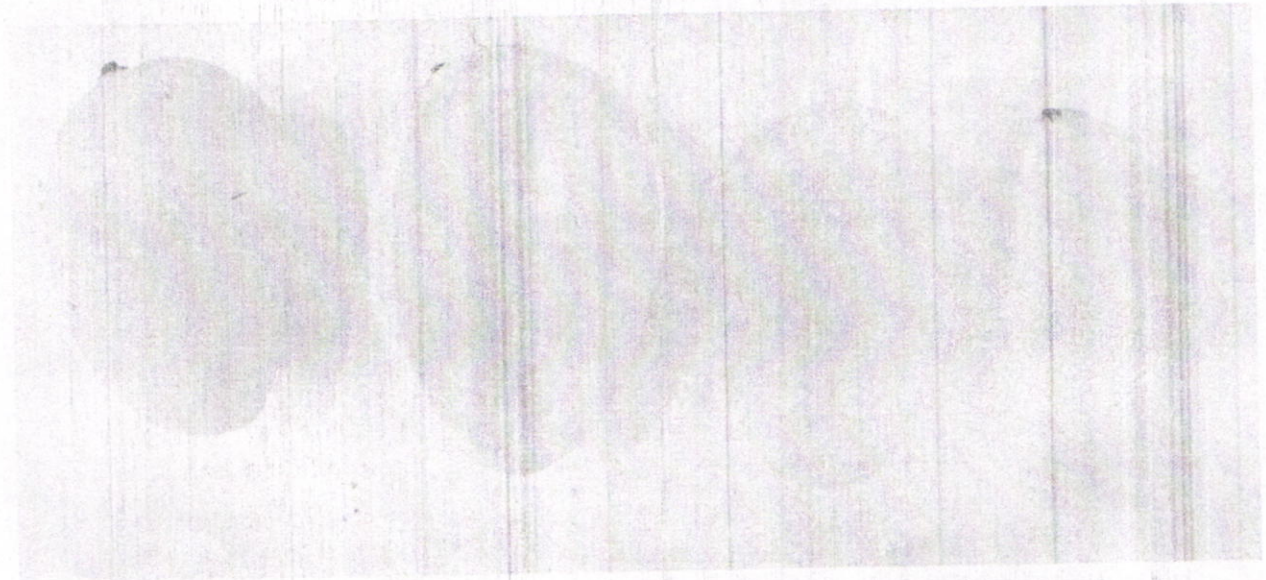
Zardalu Mango Panicle



Zardalu Flower



Zardalu Fruit



Zardalu Fruit & Stone

-Geographical area of production and map:

Zardalu mango is presently cultivated in Bhagalpur district and adjoining areas of Banka and Munger.



-Proof of Origin (Historical Records)

Zardalu mango is a unique variety of mango grown in Bhagalpur and adjoining districts of Bihar since long (Chadha, 2001, Majumder & Sharma, 1990). As per the Bihar District Gazetteer, Bhagalpur, it is one of the important varieties of mango. Presently, it has been planted in this region and some nurseries have been established for its multiplication.

It is believed that Zardalu mango was first cultivated in this region by Maharaja Rahmat Ali Khan Bahadur of Khadakpur. It is said that Zardalu mango originated as a superior chance seedling (Singh, 1967).

More than 200 year old Zardalu tree is still alive in a village at Tagepur, P.O. & P.S. Jagdishpur under Bhagalpur district which acted as a mother plant/ source of further multiplication. A special programme on area expansion under Zardalu plantation in Bhagalpur district has been launched from last four years by State Horticulture Mission.

Govt. of Bihar. B.A.U. Sabour have been assigned to produce a large number of Zardalu grafts every year to meet farmers' requirement of Zardalu plants.

-Method of Production:

Propagation:

True to type Zardalu mango plants can be propagated by veneer grafting. In this method the scion or bud stick are detached completely from the mother plant at the time of grafting. The scion should be a healthy 22-25cm long terminal or axillary shoots of the previous season's growth (3-4 months old) with active buds. Leaf blades are cut off leaving petioles about 10 days earlier and the buds should be ready to sprout. The root stock is prepared by making a slanting cut of 5 cm long on one side of the stem and the bark along with wood is removed with an oblique cut. A slanting cut of the same size on one side of the scion base is made which will just fit with the notch of the stock. The scion is then placed in position on the stock in such a way that the two cambium rings of both stock and scion come in close contact. It is then wrapped tightly with alkathene film keeping the terminal end free. When the scion begins to grow at the top (after about 3 weeks), the upper part of the stock is removed, thus forcing the bud to grow more rapidly. The plastic wrap is removed after 2-3 months. Other vegetative propagation methods like inarching, side grafting and epicotyl grafting can be employed.

Planting

Land is be prepared by deep ploughing followed by harrowing and levelling with a gentle slope for good drainage. Planting is done at a spacing of 10-12m X 10-12 m. Then pits of 1m X 1m X 1m size are dug. Those are exposed to sun for about 30 days. The top soil is mixed with 20-25 kg well rotten farmyard manure, 2.5 kg single super phosphate and 1 kg muriate of potash. One year old healthy, straight growing grafts are planted at the centre of pits along with the ball of the earth intact during rainy season in such a way that the roots are not expanded and the graft union is above the ground level. Plants should be irrigated immediately after planting.

Training and pruning:

About one meter from the base on the main trunk should be kept free from branching and the main stem can be allowed thereafter spaced at 20-25 cm apart in such a way that they grow in different directions. Branches which cross over/rub each other may be removed.

Manure and fertilizers:

A dose of 100 g N, 50gP₂O₅ and 70g K₂O/ year is given to a one year old Zardalu plant. The dose is increased every year so that at the tenth year and thereafter a dose of 1Kg N, 500gP₂O₅ and 700g K₂O should be applied in two split doses during June- July and October respectively. Besides 50 Kg FYM is given during the month of November- December.

Maturity, Harvest, Yield and Post Harvest handling of fruits

Zardalu mangoes are harvested when fruits attain its full size and shoulders of fruit raises above the point of attachment. The peel colour of mature fruit changes from dark green to light green. It should be harvested with 5-8 cm pedicel to avoid sap burn injury. Injury to the fruit during harvesting brings down their quality and also makes them prone to fungal attack. In Bhagalpur region Zardalu mangoes are harvested from last week of May to 2nd week of June. Average yield of Zardalu is 72Kg/plant. After harvesting, the mangoes are graded according to their size, weight, shape, colour and free from defects. To maintain their quality, proper packaging is a must. Perforated cardboard boxes are used for packaging. Paper shavings are used as cushioning materials in the boxes to protect from mechanical injury during handling and transport.

-Uniqueness:

It possesses exceptional fruit quality and are fairly heavy bearing in nature. It derives its name from Zardalu, a dry fruit popular in North West Frontier province and Sind in Pakistan owing to similarity of shape and quality (Singh, 1967). The trees are moderately vigorous, spreading, top round, trunk slender; shoots thick. The leaves of Zardalu plant are spreading, inclined to be crinkled; margins entire; venation moderately prominent; tip sub acuminate; base acute; emerging and immature growing leaves deep chrysolite green. The inflorescence of Zardalu mango is large, conical, apricot buff, moderately puberulent; stamen unequal, smaller than pistil and oblique to it; staminoides poorly developed. The fruits are medium, oblong; base obliquely rounded; stalk inserted obliquely; cavity absent to slight; shoulders

unequal, ventral higher and broader than dorsal, ventral shoulder rising and then rounded, dorsal shoulder ending in a long curve; beak distinct to prominent; sinus slight; apex broad pointed; skin thin, smooth to inclined to be rough, golden yellow; dots small, moderately distinct. Flesh firm to soft, sparingly fibrous, close to the skin, capucine yellow; flavour very pleasant to delightful; taste sweet; juice moderately abundant. The stone is medium in size, oblong and covered all over with dense short and soft fibers; veins forked and slightly depressed. The fruit quality is very good; bearing medium to heavy; early to mid-season; moderately resistant to wind and hoppers, keeping and peeling qualities is medium.

-Inspection Body:

Internal Watchdog Mechanism

The quality of Zardalu Mango will be monitored by internal watchdog mechanism in order to maintain the original physical and chemical characteristics as per GI registration by the following committee members.

- IV. Director Research, Bihar Agricultural University, Sabour, Bhagalpur-813210.
- V. Chairman, Department of Horticulture (Fruit & Fruit Technology), Bihar Agricultural University, Sabour, Bhagalpur-813210.
- VI. Scientists, Mango Research Group, Department of Horticulture (Fruit & Fruit Technology), Bihar Agricultural University, Sabour, Bhagalpur-813210.

The committee will also help to regulate the use of Geographical Indications for the welfare of local farming community. The committee will frame the terms and conditions to use brand name of GI registered Zardalu mango by any of the marketing agency. The logo of Zardalu mango will be used to create brand image of GI registered produce.

Regulation of GI in the territory

To regulate the use of GI in the territory, the Inspection Structure is proposed to consist the following members:

- IV. Director, ICAR Complex for Eastern Region, Patna, Bihar.
- V. Directorate of Horticulture, Government of Bihar.
- VI. President, Bihar Mango Growers Federation, Bhagalpur, Bihar.

Zardalu mango in the geographical production area will be identified and will be allotted an identification number to ensure traceability and quality.

References:

1. Bihar district gazetteer, Bhagalpur. Gazetteer of India. Page 184 &194
2. Chadha K.L.2001. Handbook of Horticulture. ICAR Publication. New Delhi. 239p
3. Majumder P.K & Sharma D.K. 1990. In Fruits Tropical and subtropical *Ed* Bose T.K. and Mitra S.K. 8p
4. Singh. D. 1967. The Mango. A handbook. Raghava Khurup C.G. ICAR Publication. New Delhi. 31p

Along with the Statement of Case in Class 31 in respect of Horticulture Products (Fruits)–Mango in the name(s) of Bihar Agricultural University whose address is Bihar Agricultural University, Sabour, Bhagalpur, Bihar, India-813210 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 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 Research,
Bihar Agricultural University, Sabour,
Bhagalpur, Bihar, India-813210
Phone No. 641-2451056 & 2451058
Email-drbau1908@gmail.com

4. In the case of an application from a convention country the following additional particulars shall also be furnished.

(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.

SIGNATURE

OF THE SIGNATORY