

**G.I. APPLICATION NUMBER – 635**

Application Date: 03-12-2018

Application is made by The Director, Directorate of Agriculture, Kashmir Division Government of Jammu and Kashmir, Lal Mandi, Srinagar – 190 008, Jammu and Kashmir, India for Registration in Part A of the Register of **Kashmir Saffron** under Application No. 635 in respect of Saffron falling in Class – 30 is hereby advertised as accepted under Sub-section (1) of Section 13 of Geographical Indications of Goods (Registration and Protection) Act, 1999.

- A) Name of the Applicant** : Directorate of Agriculture
- B) Address** : The Director,  
Directorate of Agriculture, Kashmir Division  
Government of Jammu and Kashmir,  
Lal Mandi, Srinagar – 190 008,  
Jammu and Kashmir, India.

Facilitated by:

1. Sher-e-Kashmir University of Agriculture Sciences & Technology, Kashmir (SKAUST-K), Shalimar, Srinagar – 190 025, Jammu and Kashmir, India.
2. Saffron Research Station, Dussu (Pampore), Jammu and Kashmir, India.

- C) Name of the Geographical Indication:**

**KASHMIR SAFFRON**



- D) Types of Goods** : Class 30 – Saffron
- E) Specification:**

**Kashmir Saffron** is cultivated and harvested in the Karewas (high lands) of Jammu and Kashmir by local farmers. This produce is famous all over the world as a Spice, Health Rejuvenator and is also used for cosmetics as well as for medicinal purposes. Besides having high medicinal value, Kashmir Saffron has been associated with traditional Kashmiri Cuisine and represents the rich cultural heritage of Kashmir. The Kashmir Saffron has gained its name over the ages due to its unique qualities such as high Aroma, Deep Colour, Long and Thick Threads (Stigmas) which can be found only in the Saffron grown and produced in Jammu and Kashmir. The Kashmir Saffron is the only Saffron grown at an altitude of 1600m to 1800m amsl (Above the Mean Sea Level) in the world, which adds to its uniqueness and differentiates it from other Saffron varieties available in the market world over. Moreover, the traditional method of separating Red and Yellow portions of the Stigmas by rubbing the stigmas between the thumbs of two hands is unique to the farmers of

Jammu and Kashmir only, which naturally enhances the colour of the stigmas and keeps it purely natural as well as organic. The Kashmir Saffron also has the distinction of being the purely chemical-free, organic and safest as well as the preferred choice of the consumers.

The saffron available in Kashmir is of three types:

- i. **Lachha Saffron**: This saffron consists of the stigmas just separated from the flowers and dried up without any further processing. In this type of saffron, the only difference is that the yellow colour tail of the stigmas is not cut, i.e., its length remains the same as taken out from the flower. The stigmas in *Lachha* saffron consist of yellow color tail and red colour front/top end of the stigmas.
- ii. **Mongra Saffron**: This type of saffron is the stigmas of the saffron detached from the flower, dried in the sun and then further processed traditionally. The further processing of *Lachha* saffron by traditional method, unique to the people of Kashmir converts *Lachha* saffron into *Mongra* saffron. The traditional method, commonly known as *Loût Czhtun* meaning "Tail Cutting" is the unique process, by which the Kashmir farmers cut the yellow colored tail of *Lachha* saffron and separate the red color head/top portion of the stigma from the yellow-color tail. This process seems simple as the stigmas are rubbed between the thumbs whereby typically yellow portion is separated from the red portion but it is not as simple as it seems, it can be done only by the farmers of Kashmir.

The separated only red color stigmas constitute the *Mongra* saffron. Since the process of tail cutting is an additional step and is painstaking process, the *Mongra* saffron becomes more costly. Moreover, the weight of the saffron gets decreased when the yellow portion is cut-out from the rest of the top portion of the stigma, leaving only red-colored stigmas. The *Mongra* saffron is considered of the highest quality since it consists only of the red-colored stigmas.

- iii. **Guchhi Saffron**: This type of saffron is same as *Lachha* Saffron, the only difference between the two is that in *Lachha* saffron dried stigmas are packed loose in the air tight containers, whereas in *Guchhi* saffron, the stigmas are joined together and tied with cloth thread making a bundle of the stigmas. In local dialect *Guchha/Guchhi* means 'small bundle'. The other difference is that the *Guchhi* is cultivated in Poochal, Kishtwar and nearby areas. Most of the farmers of Poochal usually sell their saffron crop to the saffron traders in the form of small bundles in Pampore or Srinagar.

#### F) Description:

**Kashmir Saffron** is cultivated and harvested in the Karewas (high lands) of Jammu and Kashmir by local farmers. This produce is famous all over the world as a Spice, Health Rejuvenator and is also used for cosmetics as well as for medicinal purposes. Besides having high medicinal value, Kashmir Saffron has been associated with traditional Kashmiri Cuisine and represents the rich cultural heritage of Kashmir. The Kashmir Saffron has gained its name over the ages due to its unique qualities such as high Aroma, Deep Colour, Long and Thick Threads (Stigmas) which can be found only in the Saffron grown and produced in Jammu and Kashmir. The Kashmir Saffron is the only Saffron grown at an altitude of 1600m to 1800m amsl (Above the Mean Sea Level) in the world, which adds to its uniqueness and differentiates it from other Saffron varieties available in the market world over. Moreover, the traditional method of separating Red and Yellow portions of the Stigmas by rubbing the stigmas between the thumbs of two hands is unique to the farmers of Jammu and Kashmir only, which naturally enhances the colour of the stigmas and keeps it purely natural as well as organic. The Kashmir Saffron also has the distinction of being the purely chemical-free, organic and safest as well as the preferred choice of the consumers.

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The saffron flowers when ready are hand-picked in early morning to retain its aroma, color and maintain its high quality. Usually, the time to handpick the saffron flowers is considered best from early morning till 9AM or 10 AM in the morning. The saffron flowers are lavender in color with six petals; the centre is marked with yellow anthers and a pale yellow pistil. The pistil consists of an ovary from which arises a style 9-10 cm long dividing at the top in three red trumpets like stigmas (2.5mm long) that is dried to form the commercial spice- Saffron. The Saffron flower arises directly from the corms or seed. After the flowers are handpicked and collected in wooden baskets, they are dried in open sun with traditional protective methods.

The stigmas are then separated from the flowers and packed in air tight containers to keep their aroma intact. The stigmas have a yellow tail which is also cut out from the orange-red colored stigmas to make it pure saffron with high quality content. The yellow tails are cut applying traditional method, which is unique to the people of Kashmir engaged in growing and cultivation of the saffron. The saffron from the valleys of Kashmir is characterized with its unique and special qualities such as Longer and Thicker Stigmas, Natural Deep-Red Color of the stigmas, High Aroma, Bitter Flavor, Chemical-Free processing and High Quantity of Crocin (Coloring Strength), Safranal (Flavour) and Picrocrocin (Bitterness)- all these features make it stand out of the crowd. The Kashmir Saffron is also naturally blessed with the Natural and Geographical factors which have great impact on its quality and characteristics. It is grown at an altitude of 1600-1800m a.m.s.l (Above the Mean Sea Level) whereas the other parts of the world grow/ produce the saffron at an altitude of 600m-1,000m a.m.s.l., which means that the Soil, Environment and Farmers of Kashmir

are blessed with some special qualities whereby the Saffron in Kashmir is grown because of Altitudinal Effect whereas other Saffron growing countries produce it because of Longitudinal Effects. Moreover, the fields of Saffron in Jammu and Kashmir remain covered with snow-clad mountains for a period of 4-5 months, which have impact on the temperature and geographical conditions required for the cultivation of Saffron as compared to other Saffron Growing places in the world. The coverage of Saffron fields by the Himalayan mountains also impact the rainfall, which also have its bearing on the quality of Saffron.

**G) Geographical area of Production and Map as shown in page no: 19, 20, 21 & 22**

Kashmir holds the distinction of being one of the three prominent saffron cultivating regions in the world. Kashmir saffron is being grown in the fields of Pampore which has been famous, ab-initio, by its original name Padam-por, situated on the bank of river Vatista. And also in Kishtwar. Pampore is located at 34°01'N and 74°56'E with average elevation of 1,574 metres, about 25 km south-east of Srinagar in Kashmir. Whereas, Kishtwar is commonly known as '*The Land of Sapphire and Saffron*', which is located 144 Km towards West of the Srinagar city at 1631m amsl and is between 34°10' N Latitude and 75°25' E Longitude. Saffron is also grown in few places of Districts of Budgam and Srinagar.

District	
Pulwama	Khrew, Ladoo, Dussu, Lathipora, Sambora, Awantipora and Koil etc.
Budgam	Chadoora, Nagam, Dawlatpora, Sarwin, Hapatnar, Gopalpora, Hyathpora, Chrawani and Chirar-i-Sharief etc.
Srinagar	Zeewan, Khunmoh, Balhama, Sampora and Yachnambal etc.
Kishtwar	Poochal, Hidyul, Berwarnag, Tund, Namil, Cherrad, Hullar, Blasia, Gatha, Bandakoota and Sangrambatta etc.

**H) Proof of Origin (Historical records):**

In India, the saffron is historically grown in Kashmir and it is believed that saffron cultivation was introduced in Kashmir by 'the Central Asian immigrants around 1 century B.C. as saffron was known as *Bahukam* in ancient Sanskrit literature (Amarakosara, 11.6.124). *Bahalikam* is a derivative of *Bahalike*, the sanskritized version of Greek Bactria, presently called *Balakh*.' It is a matter of historical fact that Kashmir was under the rule of Bactrian Greeks during 180 BC to 75 BC. However, Kashmir became so much famous for the saffron cultivation that alongside *Bahalikam*, saffron also became known after the name of Kashmir as *Kashmirajam* in the Ancient Indian Sanskrit literature *Amarakosa*. Unfortunately, the ancient historical texts of Kashmir have not survived to us.

The earliest reference about saffron in Kashmir can be found in one of the oldest historical text available now is in the *Nilamatapurane*, Vol. 1, edited and Translated by Vaid Kumari), which belongs to 5th - 6th Century A.D. The reference to saffron in Kashmir can also be found in *Rajatarangini*, written by a 12th century poet and historian Kalhana, in which he refers to Kashmir saffron as one of the special attributes of Kashmir, which indicates its presence in Kashmir even before the reign of King Lalitaditya in 750 AD. The author of the *Ragatarangini*, the famous Sanskrit history of Kashmir, who began to write in 1148 AD, alludes to the saffron in his introduction. According to Nauriyal et. al.(1977) Saffron is mentioned in Kashmiri of records 5th century BC. Moreover, Sir Water Lawrence, in his book "The Valley of Kashmir" has written about saffron and has mentioned the word Saffron nearly 29 times in his book. He undertook a detailed study of the cultivation of saffron and its utilities. He writes people from different parts of Kashmir used to throng Pampore for the cultivation of Saffron. Regarding the origin and evolution of Saffron

in Kashmir he has mentioned a story that during the reign of the King Lalta Dit, there was a famous physician in Padampur (the city founded by Lalta Dit's minister, Wazir Padam), to whom a *nāg* (spring) or water god, who fell sick of an eye complaint, went for the cure. The physician tried to cure him but in vain. Then, he finally asked the *nāg* or water-god whether he was a man, and on finding out that he was a *nāg* he at once saw that the remedies applied to the *nāg's* eyes were nullified by the poisonous vapours which issued from the water-god's mouth. So, he 'bound his eyes with a cloth and the *nāg* was restored to health. In his gratitude the nag gave the physician a bulb of saffron, and the cultivation sprang up at Padampur, now known as Pampur' or Pampore. The same story has been narrated by other historians with little clarifications. It is also said that saffron has originated from the Takshak city and that its cultivation spread in its neighborhood. It is narrated that the Lord of the spring offered Hakeem Waga Bhat, saffron bulbs as a token of reward for curing his eye ailment. He has also mentioned that the cultivation of saffron was a major source of revenue for the state and the seeds were also brought from Kishtwar (now a District in Jammu province/division of J&K). From this book, we can find the historical presence of saffron in two places in Jammu and Kashmir, i.e Pampore and Kishtwar spring located in Zewan village 10 km, towards the east of Srinagar. However, there are various other conflicting accounts about the origin of saffron in India, while some suggest that saffron among other spices reached India with Persian rulers and others present the other version of same story that after Persia conquered Kashmir, Persian saffron crocus corms were transplanted in Kashmir soil; and first harvest occurred sometimes prior to 500 B.C.

Ancient Chinese Buddhist accounts from the *Mula-Sarasvativadīn* monastic order, present yet another account of saffron's arrival to India. According to a legend, an *arhat* (Indian Buddhist Missionary) by the name of Madhyantika was sent to Kashmir in the 5th century B.C. where he reportedly sowed Kashmir's first saffron crop. Mention of saffron can still be found in ancient Chinese-medical books and some historians believe that saffron first came to China with Mongol invaders by way of Persia whereas others are referring to saffron as having origin in Kashmir such as Wan Zhen, a Chinese medical expert reported that the habitat of saffron is in Kashmir, where people grew it principally to offer it to Buddha in the 3rd century. Kashmir Saffron has also been mentioned in Sanskrit Encyclopaedia of China. According to Chinese records, in 647 A. D., the King of Kashmir had presented saffron as gift to the Chinese Emperor. In 519 A.D. the King of Cambodia had sent a consignment of saffron to China. Kashmir has been described in *Amarkosh* (thesaurus/major producer in this context) with reference to saffron. According to Abul Fazl, the famous court historian of Akbar, there was twelve thousand *bighas* under Saffron cultivation at Pampore. Experiments to introduce saffron cultivation at other places were also made. Thus, according to Abul Fazl, Saffron fields extended about a *Kos* at Andarki. According to Jehangir (Tuzuki Jehangir), the yearly produce of Saffron was about 500 Hindustani maunds, and to quote him, "it is not known whether such a huge quantity is grown anywhere in the world".

As per the famous traditional Kashmiri legend, saffron first arrived in the 11th or 12th century AD, when two foreign and itinerant Sufi ascetics, Khwaja Masood Wali (R.A.) and Hazrat Sheikh Sharif-ud-din Wali (R.A.), wandered into Kashmir. According to the legend the foreigners, having fallen sick, beseeched a cure for illness from a local tribal chieftain. When the chieftain obliged, the two holy men reputedly gave him a saffron crocus bulb as payment and thanks. Indeed, to this day, grateful prayers are offered to the two saints during the saffron harvesting season in late autumn. The saints, also have a golden-domed shrine and tomb dedicated to them in the saffron-trading village of Pampore. However, famous Kashmiri poet and scholar Mohammed Yusuf Teng disputes this story and states that saffron had been cultivated in Kashmir for more than two millennia. Indeed, such ancient indigenous cultivation is alluded to in Kashmiri Tantric Hindu epics of that time as well.

On enquiring from the saffron growers about the history of this valuable crop, the farmers replied that the corms of this spice were brought to the region by Shaikh Bab Sahib- a local saint, who had

prayed to God to bless the soil of the region with such qualities which will succeed the crop. From that time people believe that it was only the region of Pampore which is blessed with the unique soil for the successful cultivation of the saffron crop. Another legend speaks of Alexander-The Great who saw an ocean of violet flowers around his tent and under the hooves of horses when he reached Kashmir during his campaign to East. The Kashmiri *Vaids* namely *Veghbhata* and *Sushtra* used saffron as an important ingredient in Auyurvedic medicines. Hence, there is enough evidence to show that saffron has centuries-old presence in Jammu and Kashmir. However, most of the sources refer to its historical presence in the area of Pampore, whereas a few others mention about its presence in Kishtwar and other areas of the state also.

## I) Method of Production:

### I. Cultivation Process:

- a. **Sorting of corms:** On the basis of corm weight, the corms are classified into 4 groups, viz., < 4 g (small), 4 to 6 g (medium), > 6-8 g (large), >8g [(very large (corms with 2.5-3 cm diameter have 8g weight)]. Corms weighing more than 8 g, free from injuries and disease lesions are sorted out and the outer loose scales are removed before planting.
- b. **Corm treatment:** Saffron fields are infected with plant parasitic nematodes that cause chlorosis of radical leaves and they turn yellow leading to complete corm rot. Management practice involves initial corm treatment of sorted corms using *Carbendizime* 50 WP @ 0.1% and 75 WP Mancozeb @ 0.3% before sowing to give protection against the diseases.
- c. **Integrated Nutrient Management:** In fresh planting all inorganic fertilizers and manures is applied during land preparation as a single supplement except for Nitrogen that is applied in three equal split doses. After disc plough well rotten Farm Yard Manure is applied and mixed. Before final ploughing with cultivator chemical fertilizers and organic manures in terms of 1/3<sup>rd</sup> urea and full dose of DAP, MOP and Vermi-compost is applied and mixed well with the soil. Remaining Nitrogen is applied as band placement in December and February when moisture is available. However in existing crop INM schedule is followed with August hoeing. Integrated nutrient management module (INM) is being followed. Urea @ 145.728 kg/ha (7.286 kg/kanal), D.A.P @ 132 kg/ha (6.600 kg/kanal), MOP @ 83 kg/ha (6.600kg/kanal), FYM @ 10 tons/ha (5 quintals/kanal) and Vermi-compost @ 5 quintals/ha (25 kg/kanal) is being applied to the saffron crop.
- d. **Planting:** Planting cycle, planting time, planting method and seed rate are the critical factors for saffron productivity. Mother corms once planted are retained in the field for many years, allowing these to produce daughter corms which continue the production cycle without interruption, though at the cost of declining productivity. The planting cycles are generally of 10-12 years duration. Prior to the plantation of saffron corms deep ploughing is done using bullock drawn plough. **Every month from January- September ploughing is carried out to keep the field clean.** After the field is ready, corms of different grades are planted in September by hand dropping of saffron corms behind bullock drawn plough. **The field is laid out into 2m × 2 m beds with deep drainage channels on both the sides.** However, scientific cultivation practices recommend hand sowing of corms at proper depth of 15 cm. In one hectare of land 40-50 quintals of corms weighing above 8 g are sown on raised bed with drainage channels all around with a plant population of 5 lac corms/ha. **Hand sowing of corms is practiced in rows at spacing of 20x10 cm and at a depth of 15 cm with 1 corm/hill. Sowing is completed between 15<sup>th</sup> August to 30<sup>th</sup> August to ensure profuse flowering around 1<sup>st</sup> fortnight of October.**
- e. **Irrigation:** Saffron in Kashmir is grown under rainfed conditions. However, under National Saffron Mission, Government has contemplated to provide water to saffron crop through creation of 128 bore wells and its distribution through pressurized irrigation system using sprinklers. Irrigation schedule is available with a total water requirement of about 2300 m<sup>3</sup>/ha.

- f. **Rodent Management:** Rodents cause considerable annual loss to the saffron crop by damaging the saffron corms. Management of rodents using Rodenticides is sporadic and not taken as a campaign and with missionary zeal. However, farmers mostly smoke the burrows by burning cow dung and grass. Saffron rodents (*Pitymys lucuru*) can be managed through six day management schedule. However, no such schedule can be practised for control of porcupine, a wild pest that, of late, has been damaging saffron fields.
- g. **Intercultural operations:** Weeds cause significant losses to the saffron crop through depletion of nutrients. Farmers generally do not practice weeding and allow the weeds to grow with the crop and harvest weeds as a fodder in May when saffron foliage dries. September hoeing is practised by every saffron farmer with some exceptions for June hoeing.
- h. **Crop Rotation:** Rotation of Saffron fields after a planting cycle of more than 15 years is a common practice in Jammu & Kashmir. Generally saffron fields are either kept fallow or rotated with Linseed for 2-3 years before a new crop is raised, recently maize and oat as a fodder have been introduced in the cropping system. Rotation is a crucial factor for control of pests and diseases and enhancement of soil fertility. Farmers have experienced that saffron should not be cultivated on the same land and a proper fallow period should be practiced or bring other crops in rotation. Similar practise is being followed in Iran (Behnia, 1992) and in Spain a rest period of 10-20 years is practiced for soils under cultivation of saffron (Habibi and Bagheri, 1989).
- i. **Multiple cropping:** Saffron in J&K particularly in Kashmir is cultivated as an alley crop between rows of almond trees. Almond has shown symbiotic relationship with saffron as the trees shed their leaves before the onset of flowering season. Presently, apple orchards have been established on saffron lands particularly in district Budgam similar practice of multiple cropping of saffron with orchard plants such as grapes, barbery and almond is followed in Iran intercropping saffron with black cumin has been introduced recently (Kafi *et al.*, 2006). In Spain, Saffron has also been planted between rows of Olive plants and in vineyards (Rashed Mohashel, 1990).

## II. Post-Harvest Processing:

In Jammu and Kashmir saffron flowers in second fortnight of October and continues till first week of November but this is conditional to temperature and moisture availability. Flowers are harvested by family members earlier in the morning on calendar basis, fixed for each area by the farmers. Flowers are picked from the base and are collected in polythene bags, wicker baskets, plastic baskets or cloth bags.

Kashmir saffron is well known for its intrinsic high quality but traditional post harvest practices followed by the farmers result in post harvest losses to the tune of 30% in the product quality. Since the flowering is erratic due to lack of irrigation facilities and picking days are fixed therefore mostly young flowers with shorter pistil are also harvested that leads to decline in productivity. Study on Kashmiri saffron shows that parts of the fresh saffron flower contains 8% stigmas, 2% style, 80% sepals and petals and 2% residue. As the crocin is confined to stigmas only, the size and yield of stigmas are the main concentrations in the selections of particular stage of harvesting the flowers. Normally the average weight of fresh tripartite stigma varies from 26 to 37 mg, it's length varies from 28 to 35 mm and it's diameter from 3 to 4mm from flower bud to full bloom stage which is spread over 5 days. However, the combined length of stigma and style varies from 45 to 55 mm. Present post-harvest practices result in a recovery of 20-22g of saffron per kg of fresh saffron flowers. Under National Saffron Mission Post harvest Technology is aimed at improving recovery and quality with a bench value of 30 g/kg of saffron flowers.

The following steps are important for post-harvest interventions.

- a. **Flower Picking:** Most of the farmers pick flowers without any picking schedule or flower age. However, under scientific practices farmers practice picking of 2 day old opened flowers in open baskets in early morning hours after ensuring that no dew is on the flowers to avoid flower deterioration.
- b. **Pistil Separation:** Stigma separation is delayed due to lack of sufficient family labour leading to loss of recovery. Under modern practice farmers separate pistils within 10 hours of flower picking ensuring recovery of about 25-30g dry saffron from 1 kg of fresh saffron flowers.
- c. **Pistil Drying:** Under traditional practices saffron is dried under shade that takes about 72 hours leading to quality deterioration. In modern scientific methods pistil are dried using quick methods of drying involving hot air dryers, solar dryers, electric dryers and vacuum dryers.
- d. **Harvest Management:** In Jammu & Kashmir state saffron is mostly marketed in three forms viz: Lachha, Gucchi and Mongra. Lachha and Gucchi form consists of total filament (whole stigmatic portion+style) while Mongra form consists of whole stigmatic portion without any style. Mongra saffron contains 10 percent more pigment in comparison to corresponding Lachha & Gucchi.
- e. **Land use pattern:**  
Saffron is the predominant crop of the heritage site, besides maize, rice and some fruit and vegetable crops. Wuyun reveals the maximum geographical area (1,160.55 ha) followed by Ladhoo (908.94 ha), Lethpora (720 ha) and Shar-i-Shali (670.73 ha). Konibal reveals highest percentage of net area sown (89%). There is wide variation in the cropping pattern, depending upon water availability and soil type. More than 66 % of net area sown in the heritage site is under saffron cultivation followed by 20% under rice, 6% under maize, 4 % under fruits, 1.6 % under vegetables and 1.3% under pulses.

#### J) Uniqueness:

The unique characteristics of the GI product- Kashmir Saffron are Longer and Thicker Stigmas, Natural Deep-Red Color of the stigmas, High Aroma, Bitter Flavor, Chemical-Free processing and High Quantity of Crocin (Coloring Strength), Safranin (Flavour) and Picrocrocin (Bitterness).

*Kashmir Saffron* is an agricultural produce cultivated and harvested in the Karewas (high lands) of Jammu and Kashmir by local farmers. This produce is famous all over the world as a Spice, Health Rejuvenator and is also used for cosmetics as well as for medicinal purposes. Besides having high medicinal value, Kashmir Saffron has been associated with traditional Kashmiri Cuisine and represents the rich cultural heritage of Kashmir. The Kashmir Saffron has gained its name over the ages due to its unique qualities such as high Aroma, Deep Colour, Long and Thick Threads (Stigmas) which can be found only in the Saffron grown and produced in Jammu and Kashmir. The Kashmir Saffron is the only Saffron grown at an altitude of 1600m to 1800m amsl (Above the Mean Sea Level) in the world, which adds to its uniqueness and differentiates it from other Saffron varieties available in the market world over. Moreover, the traditional method of separating Red and Yellow portions of the Stigmas by rubbing the stigmas between the thumbs of two hands is unique to the farmers of Jammu and Kashmir only, which naturally enhances the colour of the stigmas and keeps it purely natural as well as organic. The Kashmir Saffron also has the distinction of being the purely chemical-free, organic and safest as well as the preferred choice of the consumers.

The quality of Kashmir saffron has been found best by the scientific researchers when tested on fresh-weight basis. The quality of saffron is scientifically tested on the basis of its chemical composition and the amount of chemicals present in it. The major components of saffron are



*crocin*, *picrocrocin* and *safranal*. *Crocin* is responsible for the color of saffron, whereas *picrocrocin* and *safranal* are responsible for its bitter taste and aroma. In other words Saffron's quality depends on its three major metabolites providing the unique colour and flavour to the stigmas. However, these three natural chemicals/metabolites in Saffron are effected by the geographical factors such as Altitude/height of the place where Saffron is Grown, Soil, Moisture, Rainfall and such other climatic factors. It is important to point out herein that the Altitude has the impact on the content of *Crocin*, *Picrocrocin* and *Safranal* in the Saffron, i.e. more the Altitude more the Content of *Crocin* and *Picrocrocin* but lesser the content of *Safranal*.

#### **Traditional Know-How:**

The traditional method of separating Red and Yellow portions of the Stigmas by rubbing the stigmas between the thumbs of two hands is unique to the farmers of Jammu and Kashmir only, which naturally enhances the colour of the stigmas and keeps it purely natural as well as organic. The Kashmir Saffron also has the distinction of being the purely chemical-free, organic and safest as well as the preferred choice of the consumers.

#### **Geographical Linkage:**

The Kashmir Saffron has certain unique qualities for which it is famous all over the world. The uniqueness of Kashmir saffron is directly attributable to the geographical and climatic conditions of Saffron growing areas, such as Pampore(Pulwama), Budgam, Srinagar and Kishtwar. The first and the foremost unique thing about Kashmir Saffron is that it is produced, grown and cultivated at an altitude of 1600 to 1800 m Above Mean Sea Level (amsl), and no other place in the world has cultivated saffron at such an high altitude. Moreover, the Kashmir Saffron differs from other types of saffron from different regions, in the sense that saffron in Kashmir grows because of altitudinal effect whereas in other places saffron is grown because of longitudinal effect. In addition to this, the soil of Pampore (Pulwama), Budgam, Srinagar and Poochal(Kishtwar) differs in its characteristic features from other saffron growing places in the world. Kashmir saffron is produced at an altitude of 1600-1800m (amsl). which is grown and produced in Karewas (high lands) of Kashmir because of 'altitude effect' and no other country in the world produces saffron at such an altitude, whereas all other countries which produce saffron, produce it at an altitude of 600-800m a.m.s.l, i.e., they produce saffron because of longitudinal effect. The saffron in Kashmir is grown in temperate climatic conditions whereas it is grown in other places in arid or semi-arid climatic conditions. Moreover, the saffron fields of Pampore, Budgam, Srinagar and Poochal and nearby areas are surrounded by snowcapped mountains for at least 3-4 months after the winter season is over, which has great impact on climate, especially temperature of that region. The high mountain peaks also affect the rainfall, which plays very crucial role in the production, yield and qualities of Kashmir saffron. These are the major differences with regard to the geographical factors which make Kashmir saffron unique in itself.

The geographical and human factors also do have a great impact on the quality of the saffron. The traditional method of planting, time period of planting, irrigation, time and quantity of supply of organic manure and vermicompost etc. to the saffron fields also differs in Kashmir as compared to other saffron growing areas in the world.

#### **The Unique Characteristics of GI Product-Kashmir Saffron:**

The unique characteristics of the GI product- Kashmir Saffron are Longer and Thicker Stigmas, Natural Deep-Red Color of the stigmas, High Aroma, Bitter Flavor, Chemical-Free processing and High Quantity of Crocin (Coloring Strength), Safranal (Flavour) and Picrocrocin (Bitterness).

*Kashmir Saffron* is an agricultural produce cultivated and harvested in the Karewas (high lands) of Jammu and Kashmir by local farmers. This produce is famous all over the world as a Spice, Health Rejuvenator and is also used for cosmetics as well as for medicinal purposes. Besides having high medicinal value, Kashmir Saffron has been associated with traditional Kashmiri Cuisine and

represents the rich cultural heritage of Kashmir. The Kashmir Saffron has gained its name over the ages due to its unique qualities such as high Aroma, Deep Colour, Long and Thick Threads (Stigmas) which can be found only in the Saffron grown and produced in Jammu and Kashmir. The Kashmir Saffron is the only Saffron grown at an altitude of 1600m to 1800m amsl (Above the Mean Sea Level) in the world, which adds to its uniqueness and differentiates it from other Saffron varieties available in the market world over. Moreover, the traditional method of separating Red and Yellow portions of the Stigmas by rubbing the stigmas between the thumbs of two hands is unique to the farmers of Jammu and Kashmir only, which naturally enhances the colour of the stigmas and keeps it purely natural as well as organic. The Kashmir Saffron also has the distinction of being the purely chemical-free, organic and safest as well as the preferred choice of the consumers.

The quality of Kashmir saffron has been found best by the scientific researchers when tested on fresh-weight basis. The quality of saffron is scientifically tested on the basis of its chemical composition and the amount of chemicals present in it. The major components of saffron are *crocin*, *picrocrocin* and *safranal*. *Crocin* is responsible for the color of saffron, whereas *picrocrocin* and *safranal* are responsible for its bitter taste and aroma. In other words Saffron's quality depends on its three major metabolites providing the unique colour and flavour to the stigmas. However, these three natural chemicals/metabolites in Saffron are effected by the geographical factors such as Altitude/height of the place where Saffron is Grown, Soil, Moisture, Rainfall and such other climatic factors. It is important to point out herein that the Altitude has the impact on the content of *Crocin*, *Picrocrocin* and *Safranal* in the Saffron, i.e. more the Altitude more the Content of *Crocin* and *Picrocrocin* but lesser the content of *Safranal*.

***Uniqueness on account of GXE Interaction:*** Distinct environmental conditions and interaction of saffron sub-population with environment of Kashmir has resulted in unique saffron genotype for morphological, biochemical and cytological descriptors that has placed Kashmir saffron under unique category showing distinct wide range of variability for corm, floral, foliage and high intrinsic quality of for all the three carotinoids. Saffron cultivated under temperate climatic conditions in Kashmir is a natural sub population without any new recombinants due to its triploid nature and structural variants observed for flower and leaf exhibit a non heritable nature suggesting that chances of somatic recombination at the time of division of corm can give rise to variants found in the natural population exhibiting a wide range of variation for economic and corm attributing traits.

#### **Medicinal Properties of Kashmir Saffron:**

Kashmir Saffron is famous all over the world as a Spice, Health Rejuvenator and is also used for cosmetics as well as for medicinal purposes. Besides having high medicinal value, Kashmir Saffron has been associated with traditional Kashmiri Cuisine and represents the rich cultural heritage of Kashmir. Saffron is a rich source of proteins, vitamins (riboflavin and thiamine), potassium, iron, copper, zinc, sodium and manganese thus imparting antioxidant property to it.

Saffron has been used in medicines, spice, golden coloring, perfumes and incense for various purposes since 3500 years ago in Egypt and Middle East. It was exported to China in the 13<sup>th</sup> century of the Yuan dynasty as health food; in the 16<sup>th</sup> century of the Min dynasty as a medicine; and to Japan in the beginning of the 17<sup>th</sup> century as a medicine. In 1886, the first Japanese Pharmacopoeia was announced and saffron was accepted as a medicine. Since then, the Japanese have used saffron as medicine.

The stigmas of the plant are mainly used for its medicinal properties extensively in traditional medicine or various purposes, as an aphrodisiac, antispasmodic, expectorant, for treatment of stomach ailments, reducing stomachache and for relieving tension.

In Persian traditional medicine, it is used for depression. It is also used to treat insomnia and in the treatment of measles, dysentery, jaundice, cholera etc. It is generally used as a paste to treat acne. It is also used as analgesic, antidepressant, diuretic, immune stimulant, interfere on inducer and for inhibiting the thrombin formation. At low doses, it causes the stimulation of the pregnant uterus and in larger amounts it can cause constriction and spasm. The antidepressant activity of saffron has been found to be similar to the activity of standard drugs Cimetidine and Fluoxetine. Antinociceptive and anti-inflammatory activities were reported from stigmas and petals of saffron.

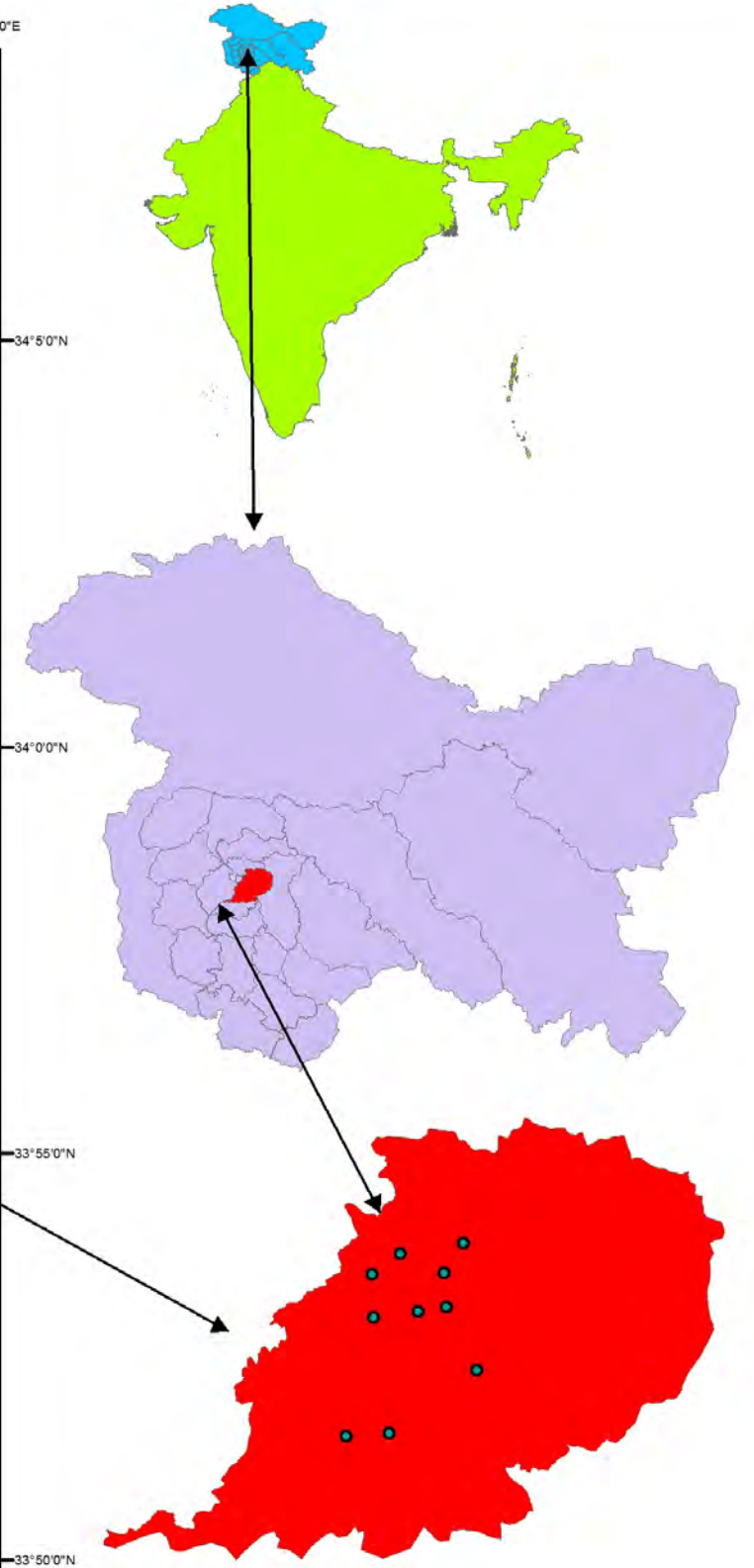
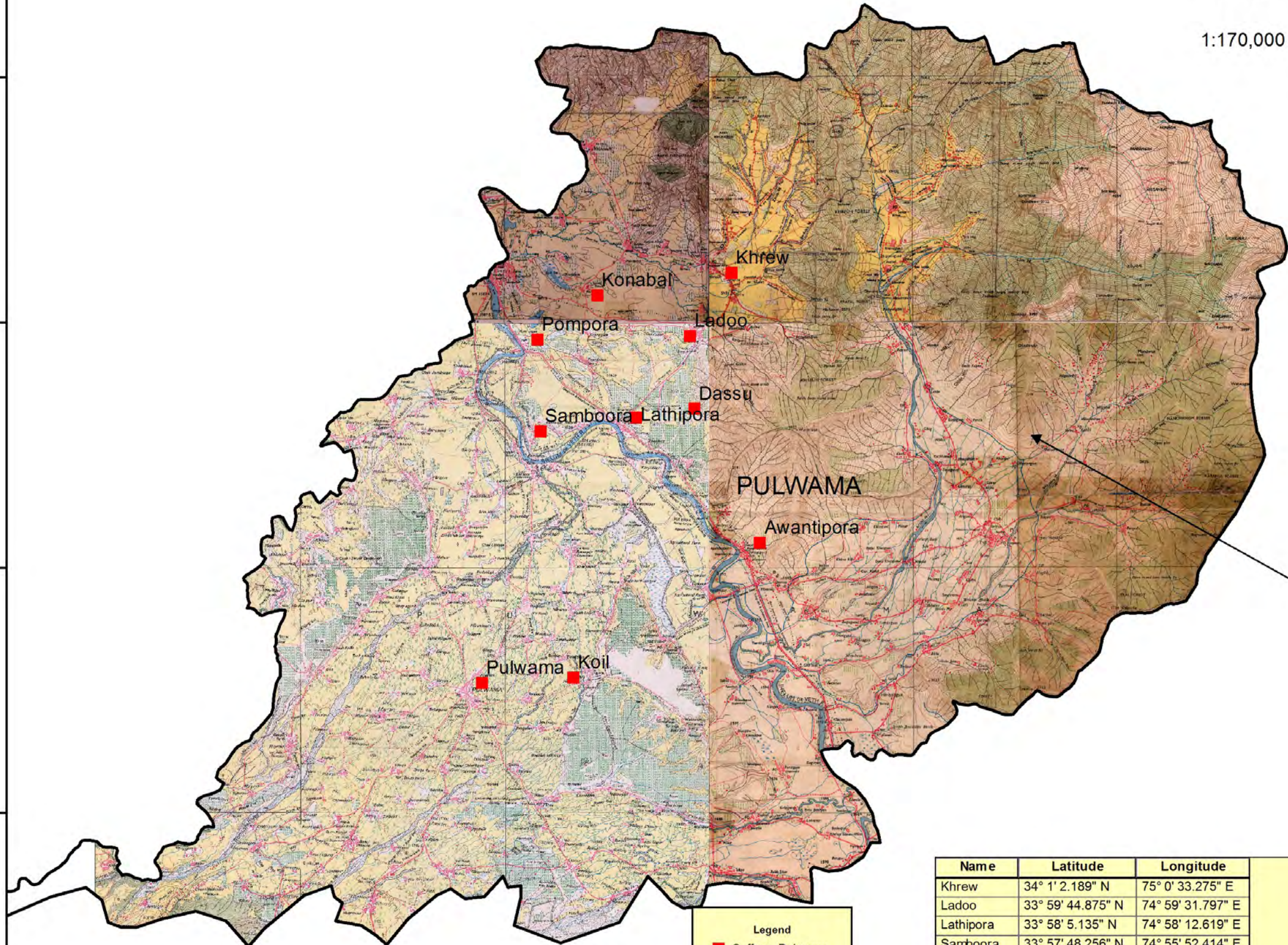
Saffron is also used against blood diarrhea, fever, hepatitis, liver and spleen syrosis, urine infection, diabetes, and dermal diseases. In English pharmaceutical codex saffron syrup, saffron glycerin and saffron tincture are discussed. Saffron is appetitive and facilitates digestion. Its essential oil is relaxant and could be useful in insomnia of nervous origin.

**K) Inspection Body:**

- 2 (Two) representative from the Agriculture Department.
- 1 (one) representative from Spices Board, Govt. of India.
- 1 (one) representative from the National Horticulture Board.
- 1 (one) representative from the National Agency on Medicinal & Aromatic Plants.
- 2 (Two) representatives from State agency on Medical & Aromatic Plants;
- 2 (Two) representatives from SKUAST Kashmir;
- 4 (Four) farmers of the growers associations of 'Kashmir Saffron'.
- 1 (One) trader of 'Kashmir Saffron'.
- 1 (One) representative from a NGO of national or International repute;

**L) Others:**

# Saffron Cultivated areas of Pulwama (J&K)



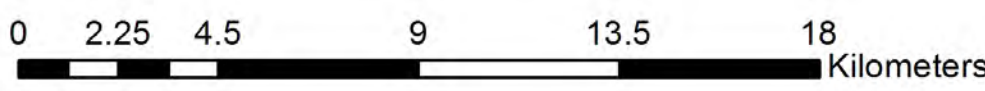
Name	Latitude	Longitude
Khrew	34° 1' 2.189" N	75° 0' 33.275" E
Ladoo	33° 59' 44.875" N	74° 59' 31.797" E
Lathipora	33° 58' 5.135" N	74° 58' 12.619" E
Samboora	33° 57' 48.256" N	74° 55' 52.414" E
Konabal	34° 0' 34.694" N	74° 57' 15.612" E
Pompura	33° 59' 40.492" N	74° 55' 47.687" E
Awantipora	33° 55' 31.664" N	75° 1' 14.625" E
Dassu	33° 58' 15.836" N	74° 59' 38.774" E
Koil	33° 52' 46.713" N	74° 56' 41.035" E
Pulwama	33° 52' 40.131" N	74° 54' 26.643" E

**Legend**

- Saffron\_Pulwama
- Pulwama\_Distt

**pulwama RGB**

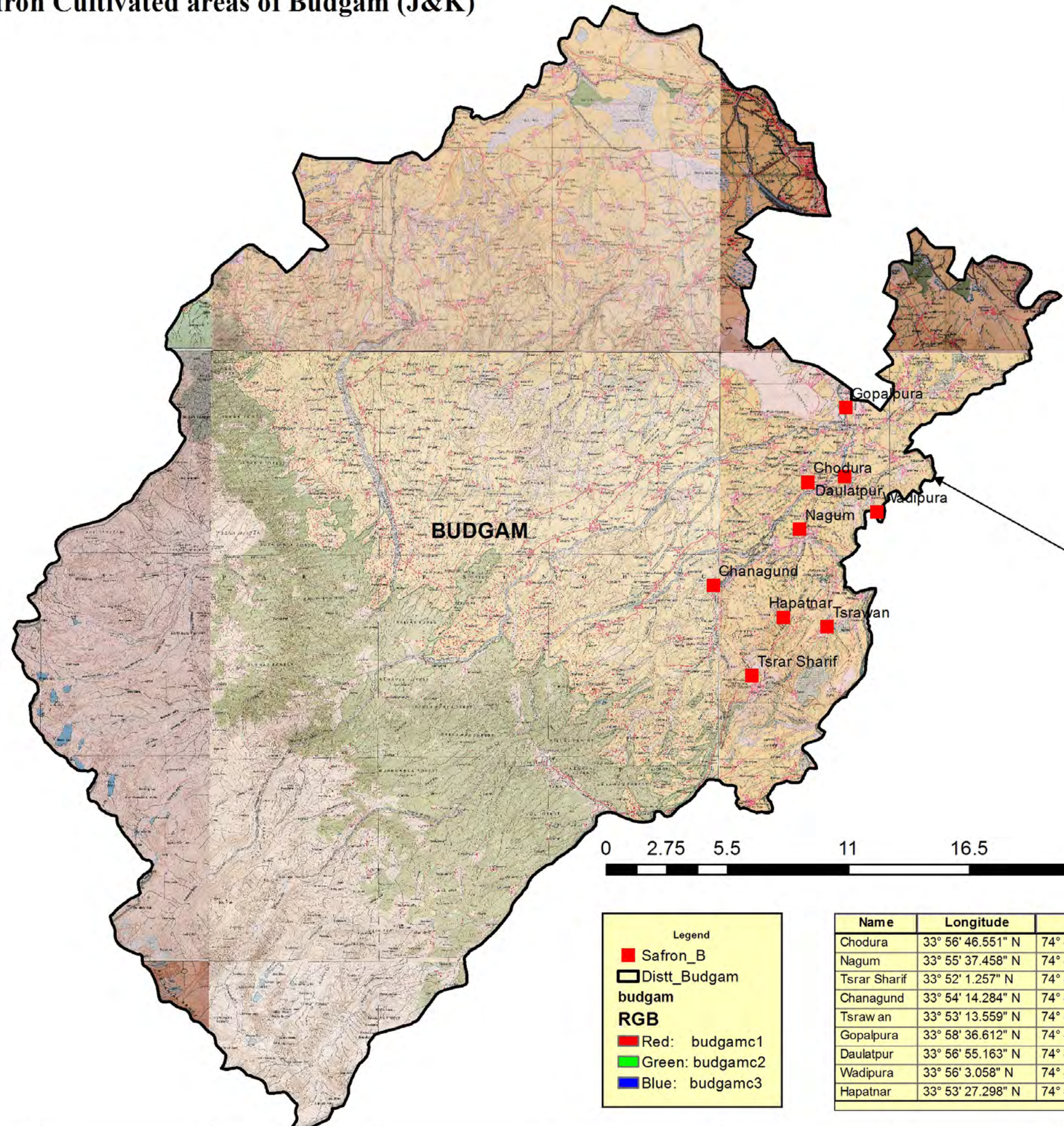
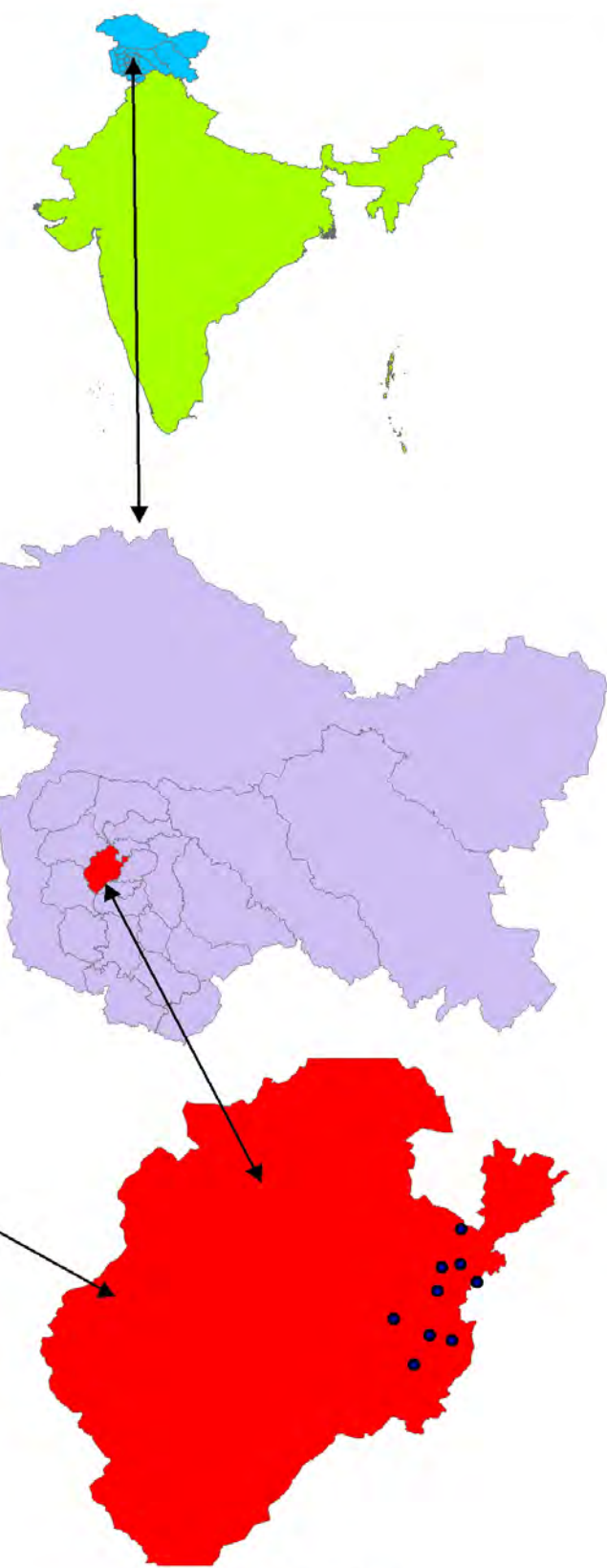
- Red: pulwamac1
- Green: pulwamac2
- Blue: pulwamac3



Map Published by: Directorate of Agriculture, Kashmir (J&K)  
Dated :- 03.01.2019

**Map showing Saffron Growing Areas of District Pulwama Jammu & Kashmir**  
Prepared By:- Shabir Ahmad January 01, 2020

# Saffron Cultivated areas of Budgam (J&K)



**Legend**

- Safron\_B
- Distt\_Budgam

**RGB**

- Red: budgamc1
- Green: budgamc2
- Blue: budgamc3

Name	Longitude	Latitude
Chodura	74° 47' 36.912" E	33° 56' 46.551" N
Nagum	74° 47' 22.462" E	33° 55' 37.458" N
Tsrar Sharif	74° 45' 59.085" E	33° 52' 1.257" N
Chanagund	74° 44' 50.208" E	33° 54' 14.284" N
Tsraw an	74° 48' 11.682" E	33° 53' 13.559" N
Gopalpura	74° 48' 44.135" E	33° 58' 36.612" N
Daulatpur	74° 48' 41.630" E	33° 56' 55.163" N
Wadipura	74° 49' 39.573" E	33° 56' 3.058" N
Hapatnar	74° 46' 54.329" E	33° 53' 27.298" N



Map Published by: Directorate of Agriculture, Kashmir (J&K)  
Dated :- 03.01.2019

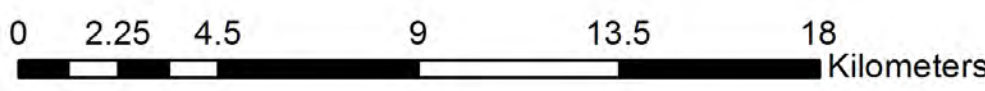
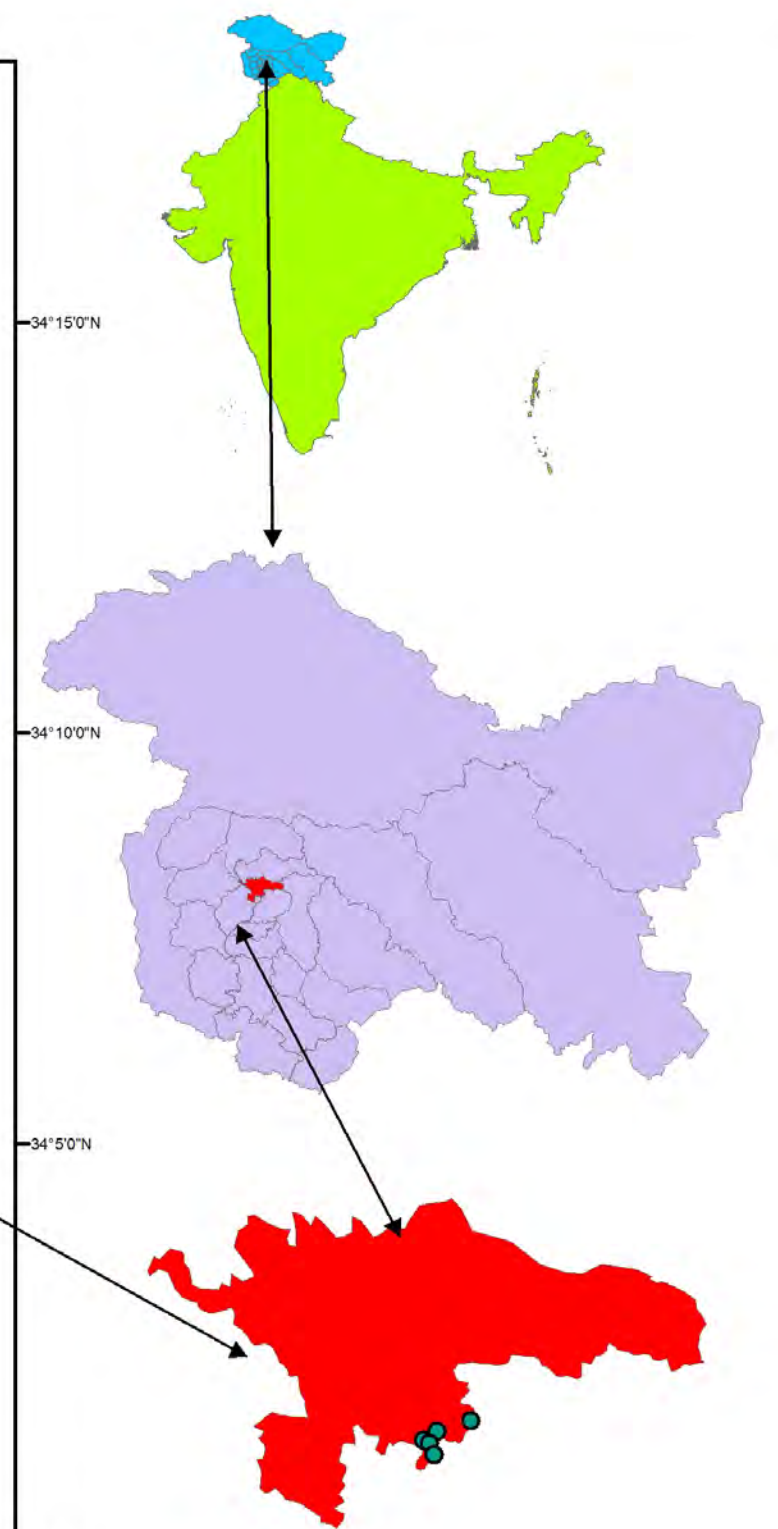
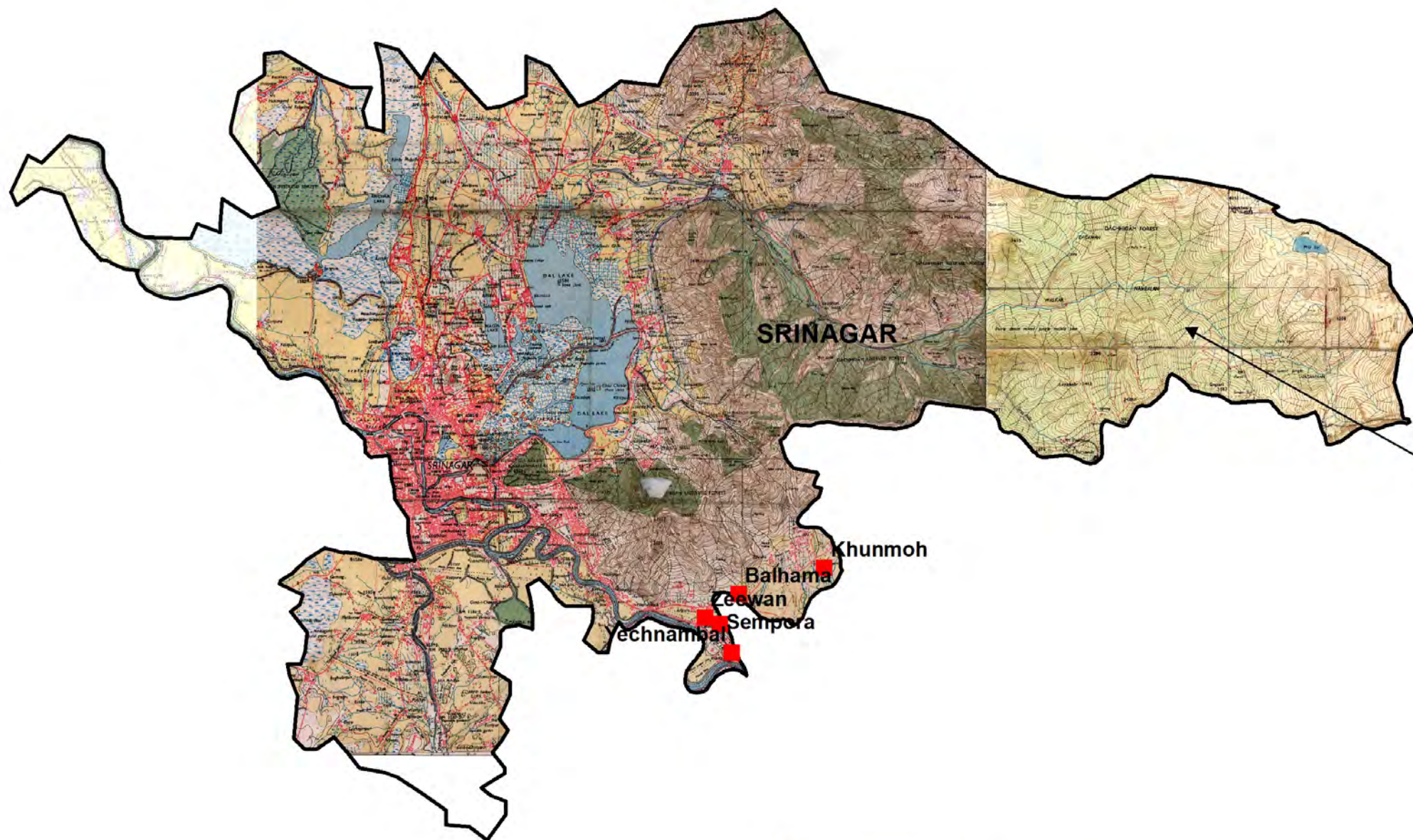
## Map showing Saffron Growing Areas of District Budgam Jammu & Kashmir

Prepared By:- Shabir Ahmad January 01, 2020

74°40'0"E 74°45'0"E 74°50'0"E 74°55'0"E 75°0'0"E 75°5'0"E 75°10'0"E

# Saffron Cultivated areas of Srinagar (J&K)

N  
1:170,000



**Legend**

- Saffron\_Sgr
- Srinagar\_Distt

**RGB**

- Red: sgrc1
- Green: sgrc2
- Blue: sgrc3

Name	Latitude	Longitude
Khunmoh	34° 3' 12.313" N	74° 56' 40.170" E
Balhama	34° 2' 45.209" N	74° 54' 54.705" E
Zeew an	34° 2' 21.262" N	74° 54' 13.122" E
Sempora	34° 2' 14.593" N	74° 54' 31.559" E
Yechnambal	34° 1' 45.129" N	74° 54' 46.149" E

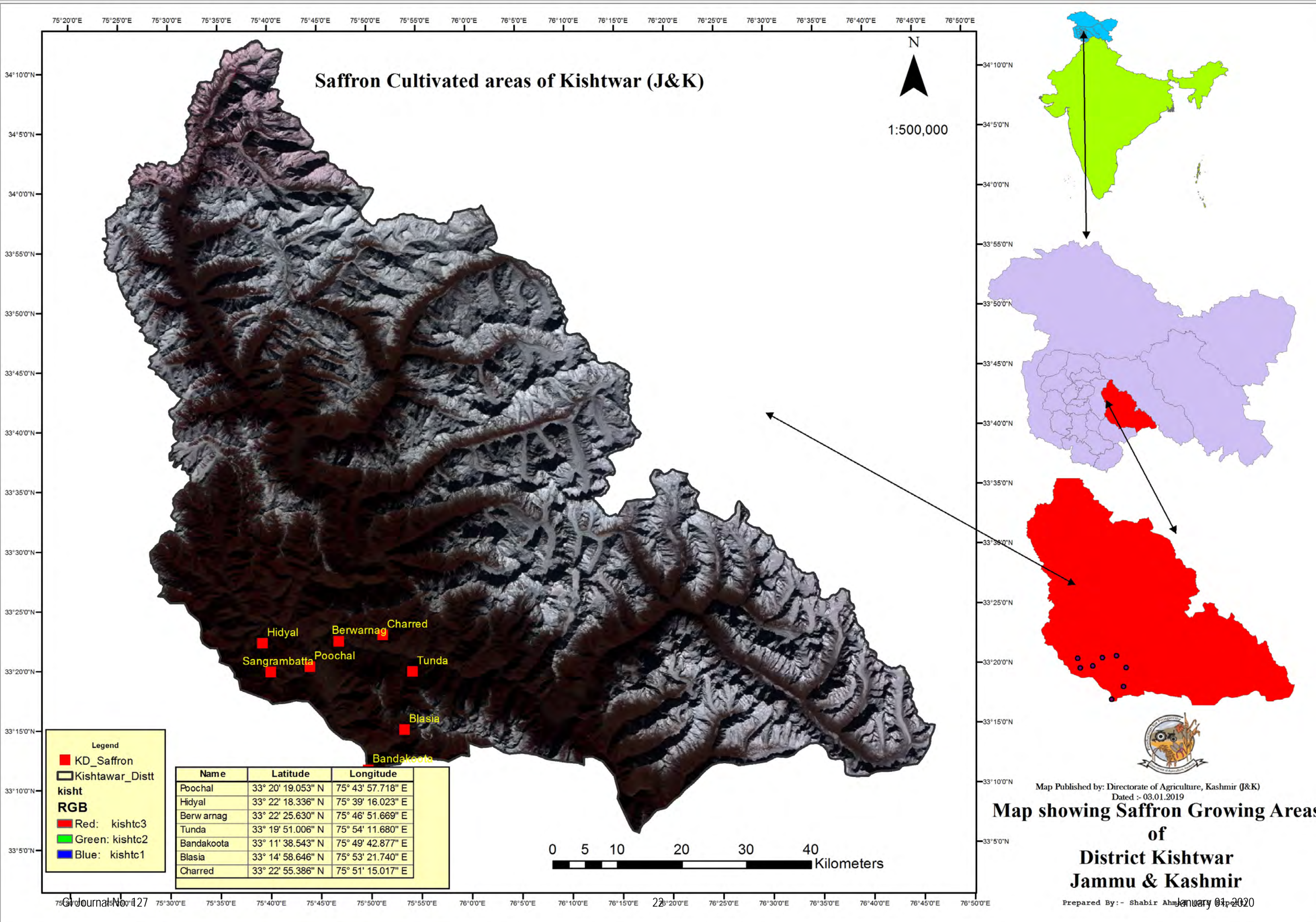


Map Published by: Directorate of Agriculture, Kashmir (J&K)  
Dated :- 03.01.2019

## Map showing Saffron Growing Areas of District Srinagar Jammu & Kashmir

Prepared By:- Shabir Ahmad January 01, 2020

Journal No. 127 74°40'0"E 74°45'0"E 74°50'0"E 74°55'0"E 75°0'0"E 75°5'0"E 75°10'0"E

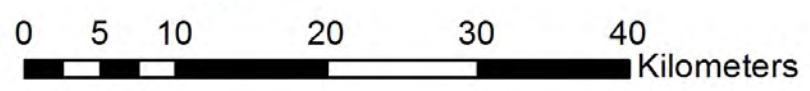


### Saffron Cultivated areas of Kishtwar (J&K)



1:500,000

Name	Latitude	Longitude
Poochal	33° 20' 19.053" N	75° 43' 57.718" E
Hidyal	33° 22' 18.336" N	75° 39' 16.023" E
Berw arnag	33° 22' 25.630" N	75° 46' 51.669" E
Tunda	33° 19' 51.006" N	75° 54' 11.680" E
Bandakoota	33° 11' 38.543" N	75° 49' 42.877" E
Blasia	33° 14' 58.646" N	75° 53' 21.740" E
Charred	33° 22' 55.386" N	75° 51' 15.017" E



**Legend**

- KD\_Saffron
- Kishtwar\_Dist

**RGB**

- Red: kishtc3
- Green: kishtc2
- Blue: kishtc1



Map Published by: Directorate of Agriculture, Kashmir (J&K)  
Dated :- 03.01.2019

## Map showing Saffron Growing Areas of District Kishtwar Jammu & Kashmir

Prepared By:- Shabir Ahmad January 01, 2020