

THE CLASS STARTED WITH A BRIEF REVIEW OF THE PREVIOUS CLASS AT: (01:22 PM):

CROPPING SEASONS: (01:26 PM):

	Kharif	Rabi	Zaid
Sowing Season	June-July	October-November	Aug-Sept (Kharif Zaid) Feb-March (Rabi Zaid)
Harvesting Season	September-October	March-April	Dec-Jan (Kharif Zaid) April-May (Rabi Zaid)
Crops	Rice, Maize, Jowar, Ragi, Bajra, Pulses, Cotton, Jute.	Wheat, Barley, Gram, Linseed, Mustard, Potatoes.	Oilseeds, Pulses, Fruits, and Vegetables.

Must remember → (Rice, Sugarcane, Cotton, Jute) (Wheat, Mustard, Gram(Chana))

(Maize is in both Kharif and Rabi)

- **Temperature Requirement For Various Crops:**

- **Temperature Crops**

High(>25
degrees C) Rice, Jute,
Rubber, Coffee,
Sunflower.

Medium(25-20
degrees C) All Pulses,
Sugarcane,
Cotton,
Oilseeds,
Maize, Tea.

Low(<20
degrees C) Mustard,
Wheat.

- **Precipitation Required:**

- **Rain Crops**

High
>125
cm Rice, Jute,
Rubber,
Coffee,
Tea,
Sugarcane.

Medium
125 cm-
75 cm. Wheat,
Maize.

Low
<75 cm Pulses,
Oilseeds,
Cotton,
and Millets.

- **Soil Requirements:**

- **Soils Crops**

Alluvial Rice,
Wheat,
Sugarcane,
Cotton,
Jute.

(Jute grows only in Alluvial soil)

Black Cotton,
Sugarcane,
Orange,
Tobacco.

(Sugarcane needs at least 150cm of rainfall but in the areas where soil is found has low rainfall so people depends on groundwater which causes water stress.)

(Cotton and Tobacco are normal here and Tobacco need less water.)

Red Vegetables,
Ragi, Rice,
Sugarcane, Potato,
Tobacco.

Laterite Spices,
Coffee,
Rubber,
Tea Rice,
Sugarcane.

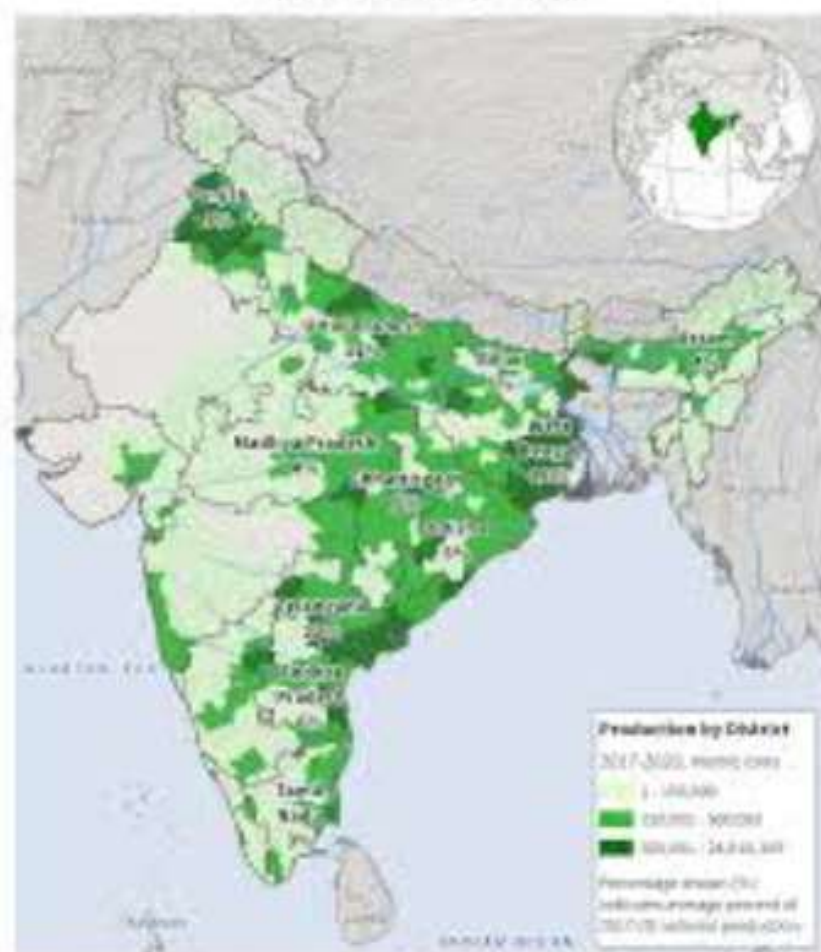
(Coffee, Tea, Spices, Rubber are exclusive to laterite soil.)

also known as
black cotton soil

Plantation
crops

- Map Of Rice Producing Areas:

India: Rice Production



- **Map of Wheat Producing Areas:**



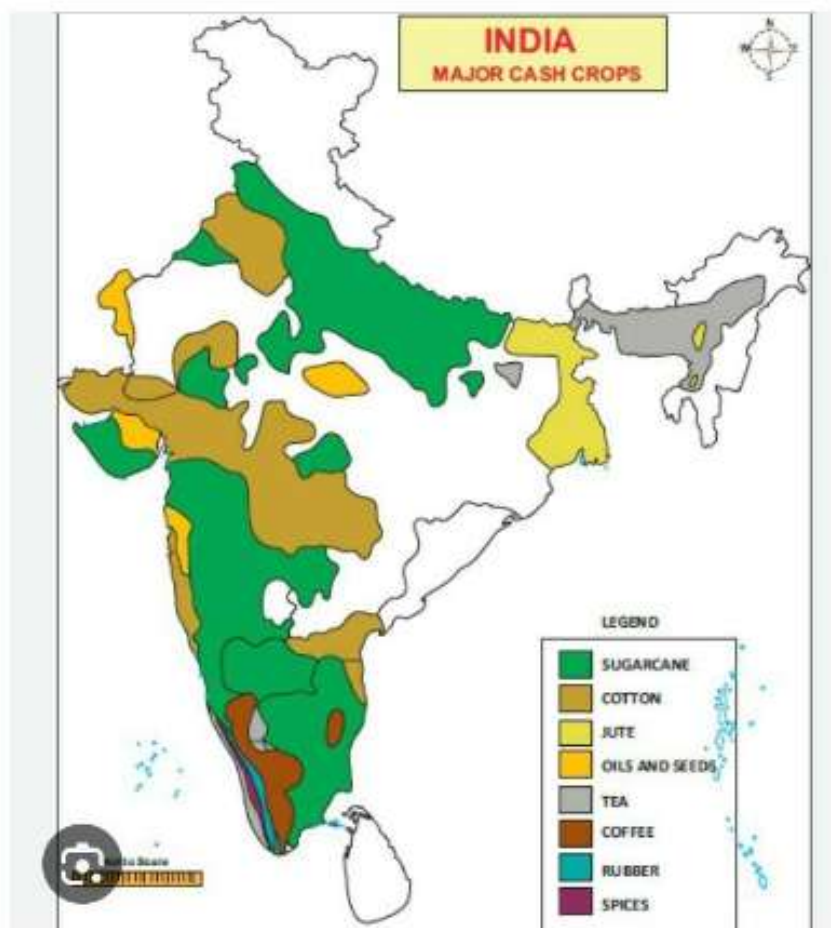
- **Factors Rice-Wheat Combination:**

- a) Along the Northern Ganga Plains in Punjab, Haryana, UP, and Bihar.
- b) In Summer rice and in winter cropping of wheat.
- c) Both crops grow well in the alluvial soil.
- d) Availability of a good irrigation facility.
- e) Minimum Support Price (MSP) also plays a role in the high cropping of wheat and rice.
- f) Availability of a good variety of seeds.

- **Negative Consequences:**

- Depletion of groundwater resources. (bz along with rice, high yielding wheat also requires water.)
- Salinization of soil due to the flood irrigation method.
- Deterioration of fertility of the soil. (bz both absorb high nutrients)
- Both require high amounts of chemical fertilizers.
- Both crops are labor and energy-intensive.
- Issue of stubble burning.

- **Map Of Various Crops:**



- Around 50% of the coffee is produced in Karnataka.

In Punjab there is a law that one can't transplant rice in March-April or we can say earlier so one has to transplant in June 1st week because if they grow earlier then due to dry air evaporation takes place and salinization of soil happens. So, bz of this there remains less time bw cutting of rice and sowing of wheat and farmers do not get sufficient time to cut out remaining waste of rice so stubble burning happens and also wheat requires little moisture in air which exist till end of October.

PULSES, MILLETS, AND OILSEEDS: (02:43 PM):

- 1) Millets:
- Types of Millets:



- Bajra, Jowar, and Ragi are the three important millet crops in India.
- A mean temperature range of 26-29°C during the growth.
- It is grown where rainfall ranges from 500-900mm.

- **Map Of Millet Producing India:**



PULSES: (03:06 PM):

- **2) Pulses:**

- **Conditions:**

Moderate

- ~~Low~~ temperature.

Low

- ~~Moderate~~ rainfall.

Pulses are leguminous crop and fixes nitrogen in soil enriches nutrients in soil and increases fertility of soil.

- Grows in any type of soil.

- Pulses are the major source of protein in India but are not sufficiently grown in India.

- India produces 25% of the world's pulses, yet India is the largest importer of pulses.

- **Map Of Pulses Producing Regions:**



- > Mostly happens in MP.
- > And also in Rajasthan, UP, Maharashtra and some part of Karnataka.

- > Reduction in cultivation in northern belt due to replacement by rice.
- > Lower price support through MSP.
- > Long market supply chain. (i.e. large number of middlemen.)

- **Reasons For Low Production Of Pulses:**

- a) Less research on seed variety.
- b) Less area under cultivation (acrage). and has not increased since Green Revolution.

- **Measures To Increase Pulse Production:**

- a) Cultivation of pulses should be increased areawise.
- b) Short-growing pulses through research can be provided for cultivation between Rabi and Kharif. (short growing means which can be develop in short time.)
- c) providing better quality seeds.
- d) improvement in the market supply chain.
- e) Encourage private players and contract farming.

-> Better price support.

- Common Pulses Of India:



- | Name of the Pulse | Common Name |
|--------------------------|-------------------------|
| Chick Pea (Kabuli Chana) | Bengal Gram, Chana Dal. |
| Pigeon Pea (Arhar) | Tuar Dal. |
| Black Gram (Urad) | Urad Dal |
| Brown Lentil (Masoor) | Massor Dal |
| Green Gram (Moong) | Moong Dal |

all are in MSP

OILSEEDS: (03:36 PM):

- **3) Oilseeds:**
- **Conditions:**
- a) Requires moderate temperature except mustard which requires low and Sunflower high temperature.
- b) Low rainfall required around 75 cm.
- c) Could be grown in any type of soil.
- **Map Of Oilseeds Producing Region:**



-> MP is the larger producer.
-> Also produce in Gujarat, Rajasthan, Karnataka, AP and Telangana.

- **Palm oil**, Sunflower oil, and Soybean oil are the most imported oils in India.
- **Low Oil Seed Production:**
- a) Focus shifted to food grains during the Green Revolution.
- b) Low awareness among farmers.
- c) Marketing and post-harvest facilities are not apt for oilseed cultivation.
 - > Mostly grown in rain fed region.
 - > Low productivity.
 - > More number of middlemen.

Palm oil: import from Indonesia and Malaysia.
Soyabean oil: from Argentina and Brazil.
Sunflower oil: Argentina and Ukraine.

- **Measures To Increase Oil Seed Production:**
- a) Technological support to increase the yield.
- b) Awareness to the farmers.
- c) Establishment of the processing plant in the rural areas.
- d) Better price support.
- e) Use of micro irrigation.

-> Utilizing untapped potential for ex: rice bran oil, cotton seed oil.

TOPICS OF THE NEXT CLASS:

Population, etc.

Crops	Temperature	Rainfall	Soil	Leading Producers
1. Rice	Not above 35°C	150-300 cm	Clayey or loamy	West Bengal, Uttar Pradesh, Andhra Pradesh, Punjab, Tamil Nadu.
2. Wheat	10°-15°C (sowing) 21°-26°C (harvest)	80 cm	Well drained loams, and clay loams	Punjab, Haryana, Uttar Pradesh, Rajasthan, Madhya Pradesh.
3. Millets				
(a) Jowar	Not below 16°C	<100 cm	Variety of soils including clayey, sandy	Maharashtra, Madhya Pradesh, Karnataka, Andhra Pradesh and Telangana.
(b) Bajra	25°-30°C	40-50 cm	Sandy loams, black and red soils	Rajasthan, Uttar Pradesh, Gujarat, Maharashtra, Haryana.
(c) Ragi	20°-30°C	50-100 cm	Red, light black and sandy loams	Karnataka, Tamil Nadu, Uttarakhand, Maharashtra and Andhra Pradesh.
4. Pulses	20°-25°C	50-75 cm	Dry, light soil	Madhya Pradesh, Maharashtra, Uttar Pradesh, Rajasthan and Andhra Pradesh.

Crop	Temperature	Rainfall	Soil	Leading States
Sugarcane	20°C–26°C	100–150 cm or irrigation facilities with high humidity.	Well-drained rich alluvial, heavy loam or lava soil.	UP, Maharashtra, Tamil Nadu (highest yield hectare), Karnataka, Andhra Pradesh.
Cotton	21°C–30°C but not below 21°C. 200 frost free days	50–75 cm or irrigation facility.	Deep black soil (regur), alluvial soils and laterite soil.	Gujarat, Andhra Pradesh, Maharashtra and Punjab.
Jute	24°C–35°C	Heavy rainfall of 150 cm with 90 per cent of relative humidity.	Light sandy or clayey loams.	West Bengal (70 per cent of the production, over 60 per cent of the area), Bihar, Assam, Odisha.

Crop	Temperature	Rainfall	Soil	Leading States
Groundnut	20°C to 25°C	50 to 100 cm	Sandy loams, loams and well-drained soils.	Gujarat, Telangana and Tamil Nadu.
Mustard and Rapeseed	10°C to 20°C	25 to 40 cm	Loams. Heavier loams (for mustard). Light loams (for rapeseed).	Uttar Pradesh, Rajasthan, Punjab, Madhya Pradesh and Haryana.
Soyabean	13°C to 24°C	40 to 60 cm	Friable loamy, acidic soils.	Madhya Pradesh, Rajasthan and Maharashtra.
Sunflower	26°C to 30°C	Less than 50 cm	Well-drained loamy soils.	Bihar, Maharashtra, Andhra Pradesh and Karnataka.
Sesamum	21°C	40 to 60 cm	Well-drained light loamy soil and black cotton soil.	Uttar Pradesh, Rajasthan, Maharashtra, Madhya Pradesh, Odisha, Gujarat, Karnataka, Andhra Pradesh, Telangana and Tamil Nadu.
Cotton Seeds	21°C to 30°C	50 to 75 cm	Black soils.	Gujarat, Andhra Pradesh, Telangana, Maharashtra and Punjab.
Linseed	15°C to 20°C	45 to 75 cm	Alluvial soils, clayey loamy soils and deep black soils.	Madhya Pradesh and Uttar Pradesh.
Castor Seeds	20°C to 25°C	50 to 75 cm	Red sandy loams in Peninsular India and light alluvial soils in the Plains.	Gujarat, Andhra Pradesh, Telangana and Rajasthan.

Important Cash Crops of India

Crops	Temperature	Rainfall	Soil	Distribution
Tea	24°C-30°C	at least 150cm	forest soil; rich in humus and iron.	1. Assam: the Brahmaputra valley, Surma valley 2. West Bengal: the Duars, Darjeeling 3. Tamil Nadu: highest yield per hectare 4. Kerala
Coffee	15°C-28°C but does not tolerate frost or heat	150-200 cm	well drained, friable loamy soil, rich in vegetable mould.	1. Karnataka 70.4 % of total production; 2. Kerala 21.7 % of total production; and 3. Tamil Nadu 5.8 % of total production.
Rubber	25°C-35°C	152-200 cm	rich well drained alluvial or laterite soils.	1. Kerala: Kottayam, Ernakulum, Kozhikode and Kollam. 2. Tamil Nadu 3. Karnataka

Soil	Formation	Areas	Characteristics	Crops
Alluvial Soil	Deposition of sediments by rivers.	Inland alluvium in Punjab, Haryana, U.P., Bihar, West Bengal, parts of Gujarat and Rajasthan. Deltaic alluvium in the deltas of Ganga-Brahmaputra, Mahanadi, Godavari, Krishna and Kaveri. Coastal alluvium along the coastal strips of the Peninsula.	Loamy. Coarse and dry in upper reaches of the river and gets finer and moist as the river flows down. Rich in minerals especially Potash and Lime. Poor in Nitrogen and Humus.	Large variety of Rabi and Kharif crops; rice, wheat, sugarcane, cotton, gram and oilseeds; jute in Ganga-Brahmaputra delta.
Black Soil	Residual soils formed by weathering of lava rocks.	Deccan lava tract. Maharashtra, Madhya Pradesh, Gujarat, Andhra Pradesh, Karnataka, Rajasthan, Uttar Pradesh and parts of Tamil Nadu.	Clayey. Black in colour. Rich in lime, Magnesium. Poor in Phosphorous, Nitrogen and Organic matter. Very fertile.	Cotton, cereals, oilseeds, citrus fruits and vegetables, tobacco, and sugarcane.
Red Soil	Prolonged weathering of crystalline rocks. Differs on the basis of parent rock material and climatic conditions.	Plateau region of Peninsular India extending northwards along Konkan coast. Tamil Nadu, Karnataka, Andhra Pradesh, South-East Maharashtra, Chhattisgarh, parts of Odisha, Jharkhand, Bundelkhand, Meghalaya, Mizoram, Manipur, Telangana and Nagaland.	Loamy or Sandy. Red in colour due to large amounts of iron-oxides Deep and fertile in lowland; thin and poor in highlands. Poor in Nitrogen, Phosphorus, Potassium and Organic matter.	Vegetables, rice, ragi, tobacco, groundnut and potatoes.
Laterite Soil	Due to leaching in areas of heavy rain.	Highland areas of Peninsular plateau. Patches in Madhya Pradesh, Odisha, Maharashtra, West Bengal, Andhra Pradesh, Telangana, Karnataka, Kerala, and Tamil Nadu.	Coarse and porous. Red due to Iron Oxide. Poor in Lime, Nitrogen and Magnesium. High acidity and low moisture retention.	Tapioca, cashewnuts. With manure ragi, rice, sugarcane, tea, rubber and coffee.

MAIN CROPS IN INDIA

Cereals

wheat, rice, jowar, gram,
bajra, ragi, pulses.

Plantations

coffee, rubber, tea.

Cash Crops

sugarcane, tobacco.

Oilseeds

linseed, groundnut,
sesame, sunflower,
rapeseed, mustardseed.

Spices

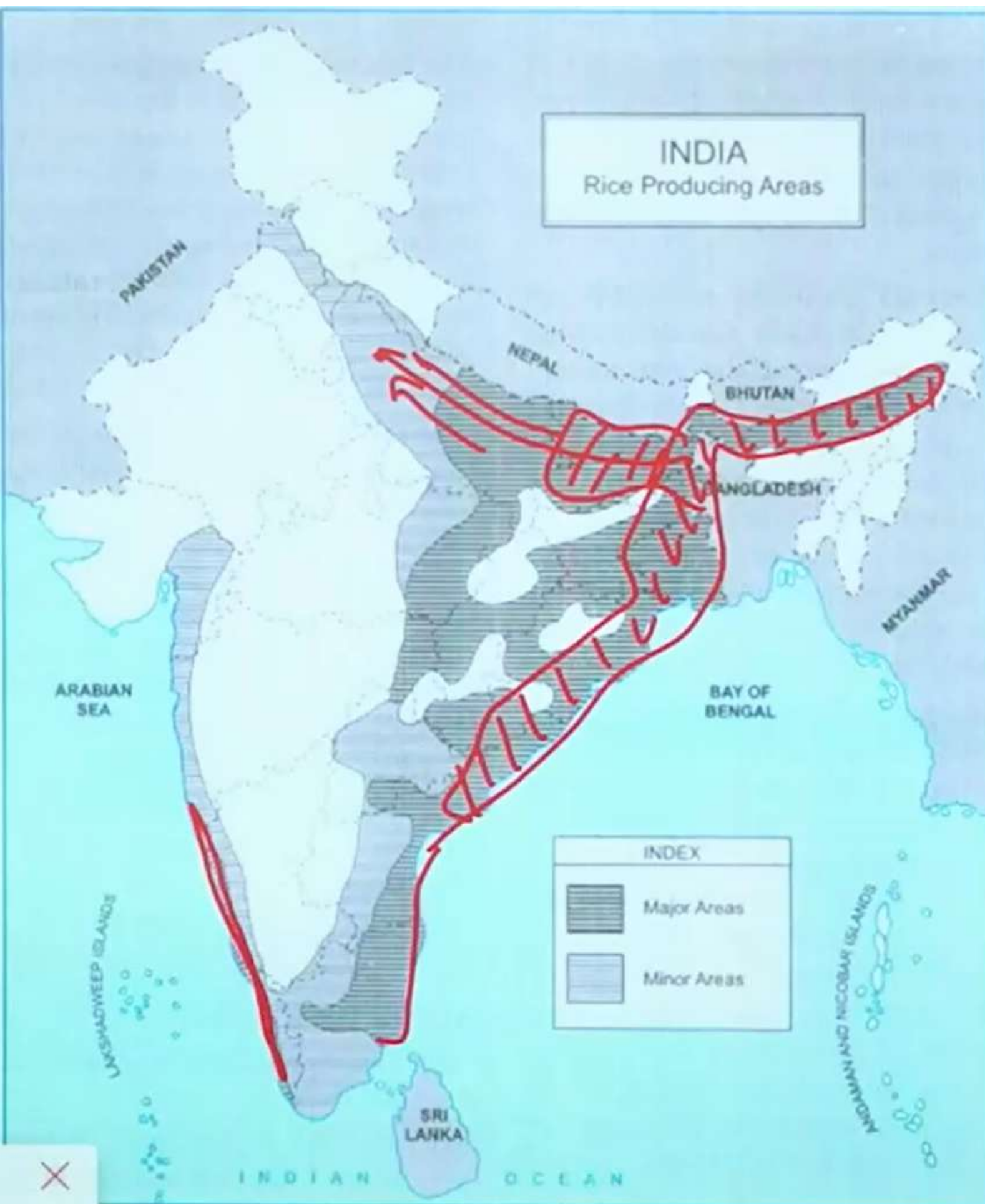
pepper, ginger, turmeric,
chillies, cloves, saffron.

Fibre Crops

cotton, jute.

INDIA

Rice Producing Areas



Rice Producing Areas

INDIA

Wheat Producing Areas

PAKISTAN

NEPAL

BHUTAN

BANGLADESH

ARABIAN
SEA

BAY OF
BENGAL

INDEX

- Major Areas
- Minor Areas

INDIAN

OCEAN

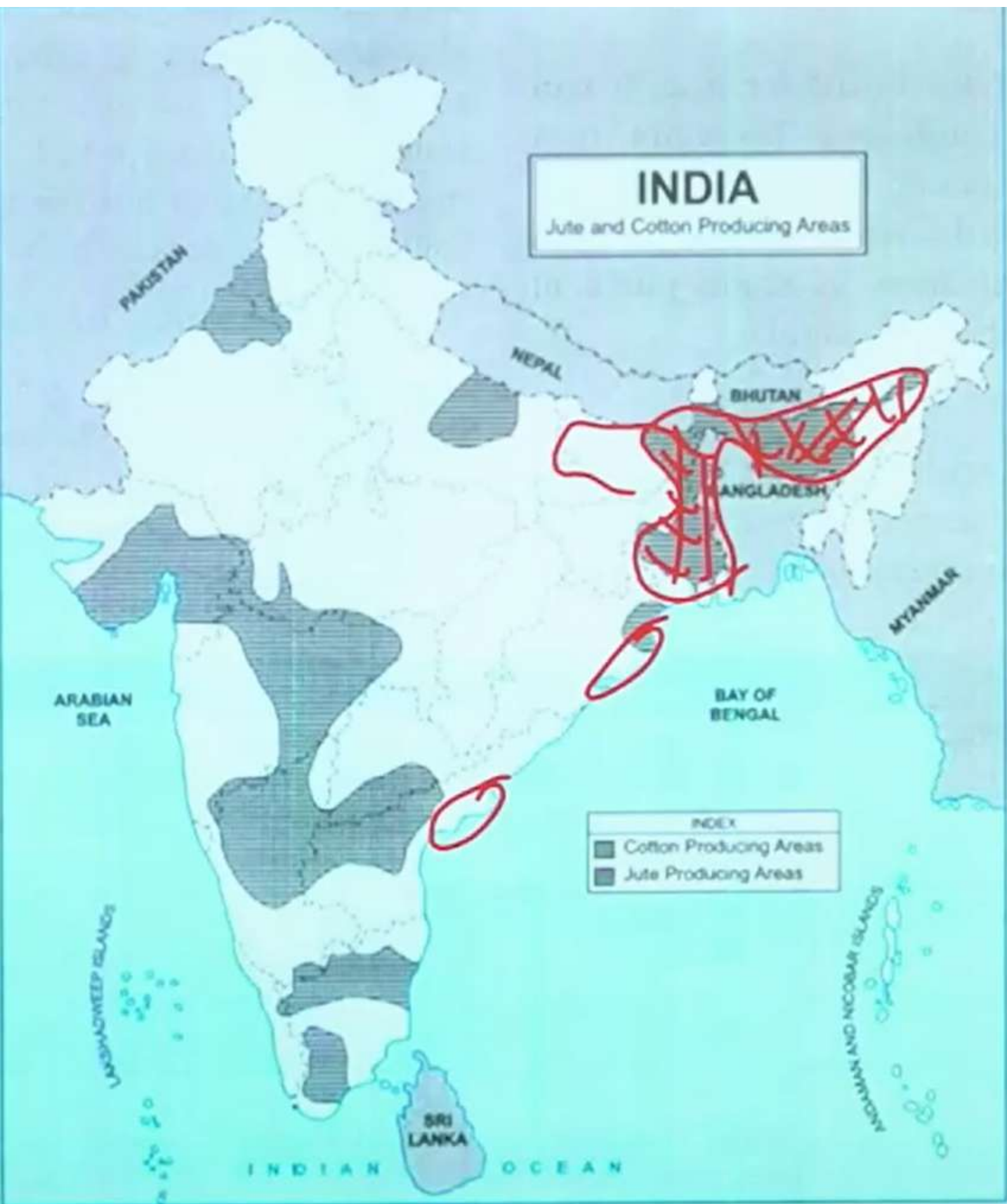
Wheat Producing Areas



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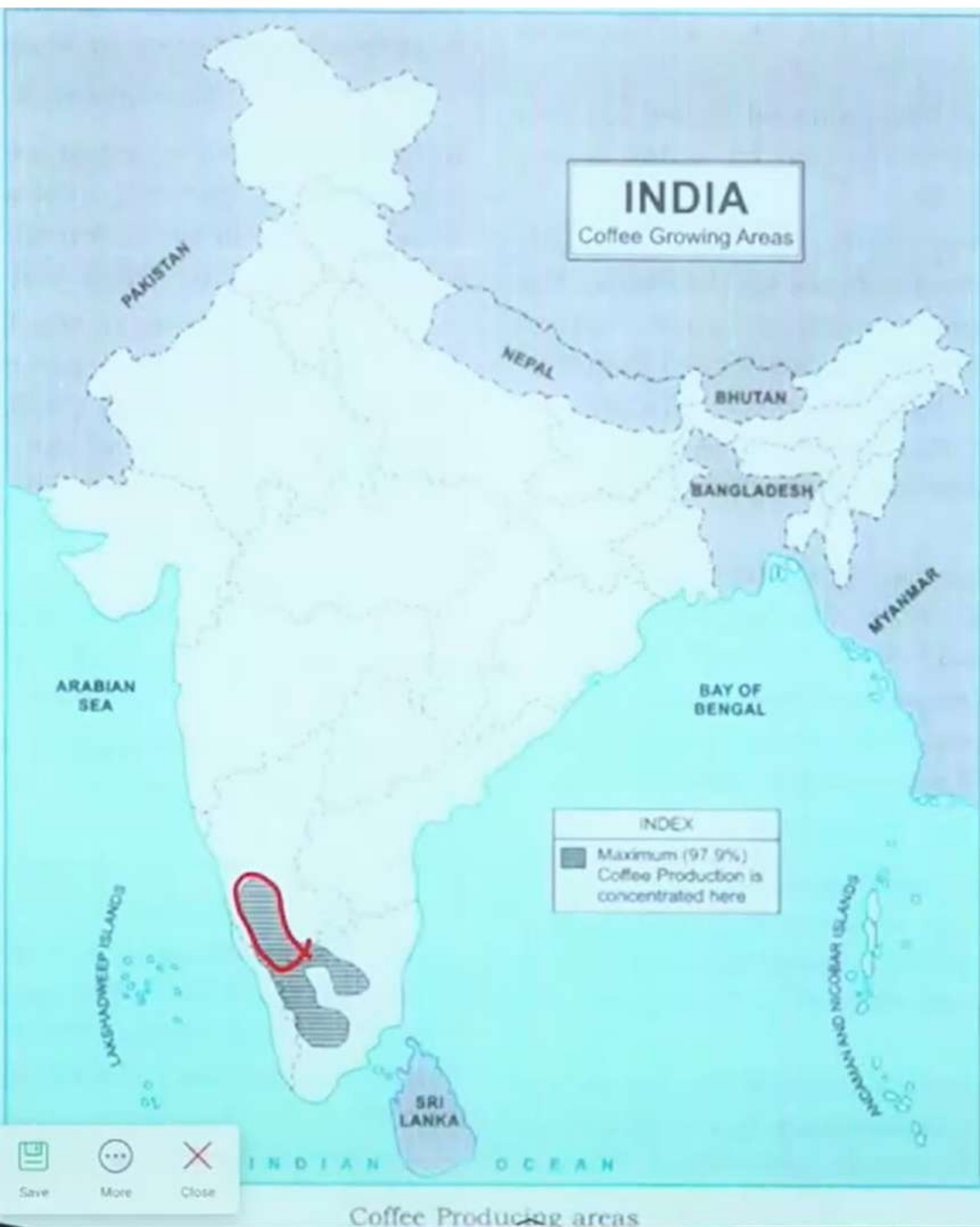
Sugarcane Producing Areas



Cotton and Jute Producing Areas



Tea Producing Areas





Rubber Producing Areas

MILLETS OF INDIA

Amaranth

राजगीरा

Barnyard

सनवा

Buckwheat

कुट्टू

Finger millet

रागी

Foxtail millet

कांगनी

Kodu

कोडो

Little millet

सामा

Pearl millet

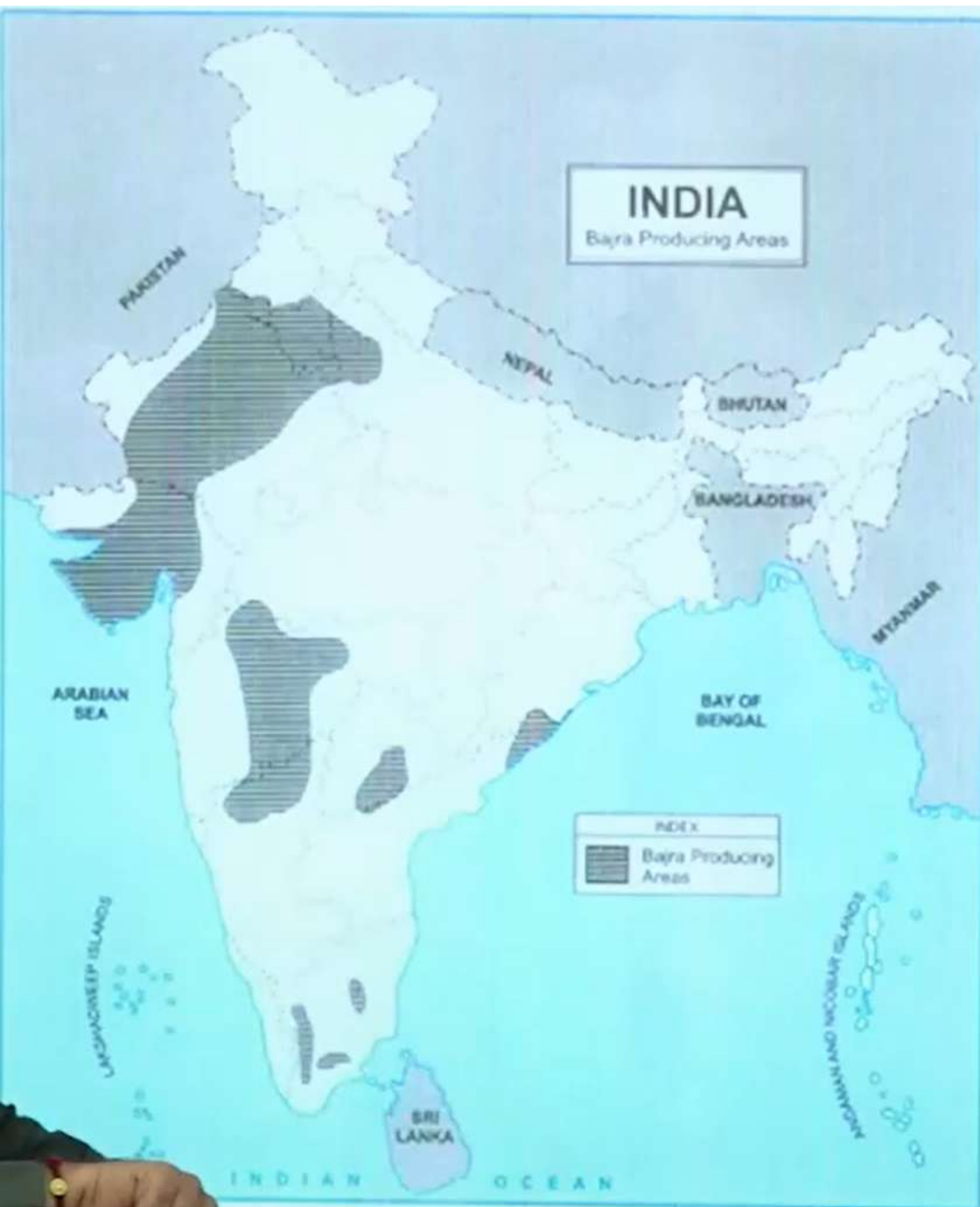
बाजरा

Proso millet

चेना

Sorghum

जवार



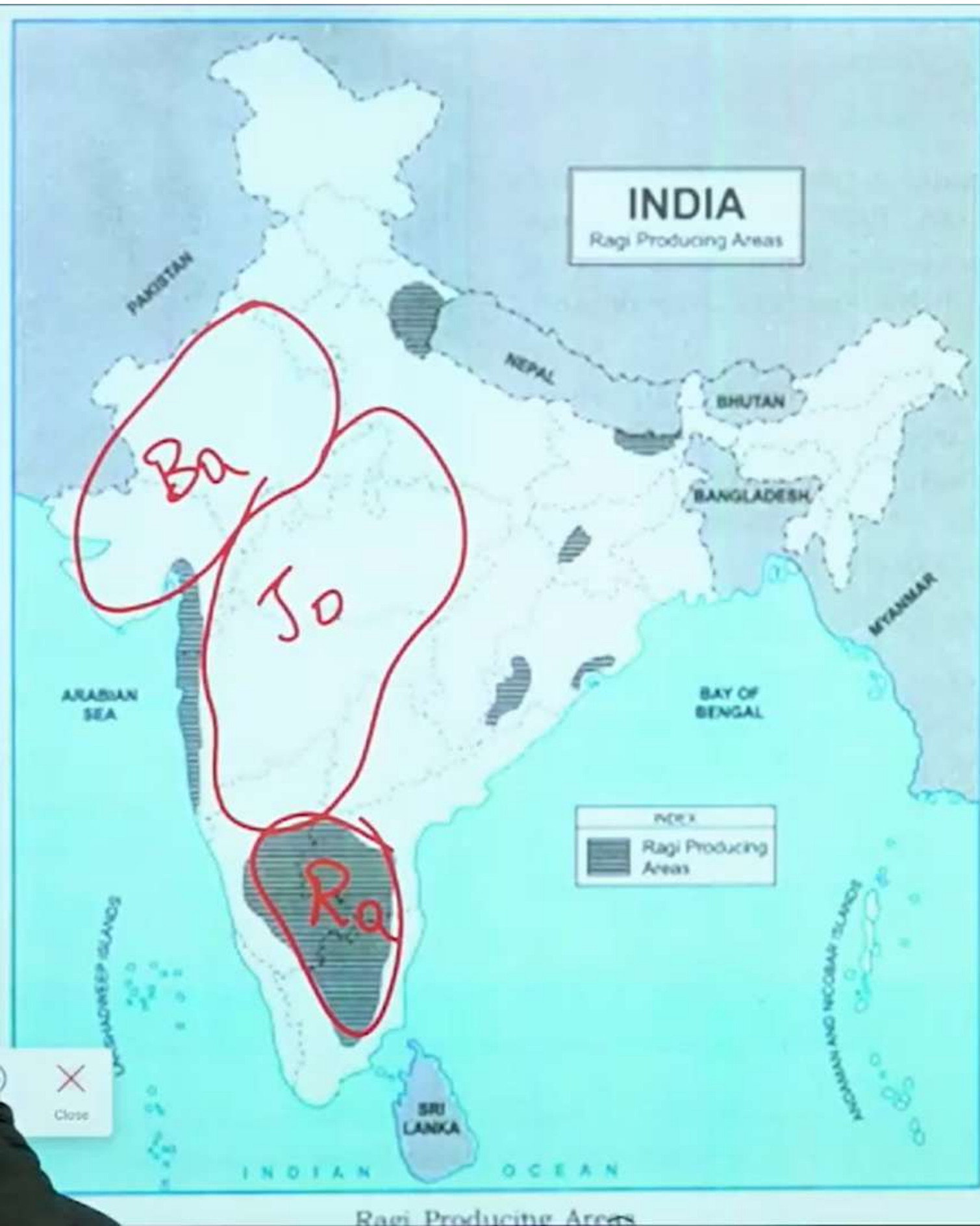
Bajra Producing Areas



Jowar Producing Areas



Ragi Producing Areas



Chickpeas/Garbanzo beans
Safed chana



Brown Chickpeas
Kala chana



PIGEON PEAS
Cajanus cajan

Split Chickpeas (brown)
Chana Dal



Gram/
Bengal gram

Split Pigeon Peas
Toor Dal



Black Gram Lentils
Sabut (whole) Urad



Split and dehusked black gram lentils
Urad Dal



Indian Brown Lentils
Sabut Masoor



Red/Orange/Pink Lentils
Split and dehusked Brown Lentils
Masoor Dal



Mung Beans/Green Gram
Hare Mung



Petite Yellow Lentils
Split and dehusked Mung Beans
Mung Dal



Also as just
"Lentil"

Under MSP:
Gram, Arhar, Urad, Moong, Lentil

Kidney Beans
Rajma



Black Eyed Peas
Raungi/Lobia



Cowpea

Horsegram



Under MSP

- Groundnut
- Soyabean
- Sunflower
- Safflower
- Mustard/Rapeseed
- Toria (very similar to mustard)
- Sesamum/ Sesum (til)
- Nigerseed (Ramtil)

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