BYJU'S EXAM PREP | IAS

GIST OF YOJANA

MILLETS

JANUARY
2023

TOPICS:

- International Year of Millets 2023
- Millets in Diet
- Millets Cultivation in North East India
- Health Benefits for Lifestyle Diseases
- Millets for Pregnant and Lactating Women

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Rank 11
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Rank 5
Suharsha Bhagat


Rank 16
Ananya Das


Rank 23
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Rank 28
Kushaal Yadav


Rank 39
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Gist of Yojana January 2023: Millets

Yojana Magazine is an important source of material for the UPSC exam. The monthly magazine provides details of major government schemes and programmes in various domains. Moreover, coming from the government, it is an authentic source of information for the UPSC Exam. Here, we provide the Gist of Yojana, exclusively for the IAS Exam.

	TABLE OF CONTENTS
1.	International Year of Millets 2023
2.	Millets-Ancient Grains for Healthy Future
3.	Millets in Diet- The Right Approach
4.	India's Wealth-Millets for Health
5.	Millets Cultivation in North East India
6.	Health Benefits for Lifestyle Diseases
7.	Millets for Pregnant and Lactating Women
8.	Start Up's Making Millets Popular

Chapter 1: International Year of Millets 2023

Introduction:

- 2023 marks the celebration of the International Year of Millets which has been spearheaded by the sustained efforts of India.
- The Government of India has prioritised millets due to their huge potential and alignment with several UN Sustainable Development Goals as crops that are resilient to climate change, nutrient-rich, and water-efficient.
- India is poised to become the global hub for millets with a production of more than 170 latch tonnes which makes for more than 80% of the millets produced in Asia.
- The earliest evidence for these grains has been found in the Indus Valley civilization and was one of the first plants to be domesticated for food.
- It is grown in about 131 countries and is the traditional food for around 60 crore people in Asia & Africa.

- A sub-mission on the National Food Security Mission— Nutri Cereals was implemented considering the high-nutritive value, potential for economic empowerment of small & marginal farmers, and contribution to maintaining the earth's biodiversity.
- In April 2018, Millets were rebranded as "Nutri Cereals" and the year 2018 was declared as the National Year of Millets, aiming at larger promotion and demand generation.

International Year of Millets and Sustainable Development Goals:

- IYM 2023 aims to contribute to the UN 2030 Agenda for Sustainable Development, particularly SDG 2 (Zero Hunger), SDG 3 (Good health and well-being), SDG 8 (Decent work and economic growth), SDG 12 (Responsible consumption and production), SDG 13 (Climate action) and SDG 15 (Life on land).
- The sustainable cultivation of millets can support climate-resilient agriculture SDG 13 (Climate Action) and SDG 15 (Life on Land)
    - Millets are often referred to as climate-resilient crops because they can grow on arid lands with minimal inputs and maintenance, are tolerant or resistant to diseases and pests and are more resilient to climate shocks than other cereals.
    - Expanding the production of millets can support the transformation to more efficient, inclusive, resilient and sustainable agrifood systems for better production, better nutrition, a better environment and a better life.
- The sustainable production of millets can fight hunger and contribute to food security and nutrition SDG 2 (End Hunger)
    - Millets are very often the only crops that can be harvested in the dry season in arid areas with poor fertile soils therefore contributing to the food security and nutrition of vulnerable populations and reducing further soil degradation and helping support biodiversity and sustainable land restoration.
- Millets can be an important part of a healthy diet SDG 3 (Good Health and Well-Being)
    - Millets are good sources of minerals, dietary fibre, antioxidants and protein. With a low glycaemic index, they are a good option for people with high-blood sugar.
        - Dietary fibre has a role in regulating bowel function, blood sugar and lipids, and satiation.
    - Millets are also gluten-free and an excellent and cost-effective source of iron for iron-deficient diets.
- Greater consumption of millets can offer opportunities to smallholder farmers to improve their livelihoods SDG 8 (Decent Work and Economic Growth).
    - By promoting millets and regaining market opportunities, additional sources of revenue can be created boosting economic growth.
- Greater trade in millets can improve the diversity of the global food system SDG 8 (Decent Work and Economic Growth) and SDG 12 (Sustainable Consumption and Production)

- Millets, including sorghum, account for less than 3% of the global grains trade. With the need to improve the resilience of global trade and its ability to respond to sudden changes in the foodgrain market, millets are a valuable option to increase output diversity and mitigate risks related to production shocks.

Chapter 2: Millets-Ancient Grains for Healthy Future

Millets in Indian Literature:

- India has a rich tradition of consumption of millets. There have been innumerable sources of literature and documents that suggest how millets were an intrinsic part of our food habits, culinary, rituals, and society at large.
- Kalidasa, in his `Abhijnana Shakuntalam', has sage Kanva pouring foxtail millet while bidding farewell to Shakuntala in Dushyant's court, which indicates the auspicious nature attributed to this millet.
- There is mention of millets in Yajur Veda's verses.
- Sushruta in his Samhita classified cereals as dhanya varga, khudhanya varga and samidhanya varga where khudhanya varga included various millets.
- Kannada poet Kanakdasa personified ragi as the weaker sections of society through his metaphoric creation `Rarnacilaanya Charitre', which showed its conflict with the 'mighty' rice and gave a powerful social message.
- Kautilya's Arthashastra has a mention of various millets and their various properties when soaked or boiled.
- Ain-i-Akbari, written by Abul Fazl, records millets and their cultivating regions.

Reduction in Millets Use:

- In the Indian subcontinent, millets were used as staple in most households prior to the Green Revolution.
- Use of Millets reduced significantly over the years due to a multitude of factors such as,
- Due to socioeconomic factors brought on by the crop's hardiness, they were reduced to being the staple food of the underprivileged.
- With the growing support for wheat and rice and easy availability, people moved to them due to a desire for upward mobility.
- Kotki Hatao Soyabean Lagao (Remove Kodo and Little millet and grow Soybean) was a famous slogan in unified Madhya Pradesh until the early 2000s directed towards millet farmers and encouraging them to move towards oilseeds.
- All of these factors led to the steady decline of millets from our diverse food plates.

Renewed Interest for Millets:

- Since Covid Pandemic, there has been a resurgence in interest in eating healthily, and millets are becoming more and more popular. There has been an increase in discussion and interest in millets during the past two years.
- The Prime Minister of India recently stressed the importance of making millet a future food option due to its health benefits, climate resilience, and potential for food security.
- Despite this, there is a significant need to work on awareness and consumption of millets as myths and misconceptions about millets still continue to be widespread.
- A study assessing Millets and Sorghum Consumption Behaviour in Urban India in 2021' found that the major reason the respondents did not eat more millets was that it was not eaten at home (40%), followed by reactions such as not liking the taste (22%).
- In rural India, the challenge continues to be the socio-economic view on consuming millets which discourages widespread consumption.
- The incidence of gluten intolerance and celiac disease (CD) is on the rise in the European and American markets.
- Millets being naturally gluten- free and nutritious are a perfect alternative and the availability of millets on the shelves is slowly increasing.
- To increase demand and make them a regular food option mission mode campaigning is required which not only encourages people to move towards millets but also counters the myths and misconceptions as well as demystifies their cooking.

Production & Processing of millets:

- At present, production is limited because millets are being grown only in certain pockets. In addition to this, the processing facilities are also limited and largely present in the southern part of the country.
- While major millets like Finger millet, Pearl millet and Sorghum are still easily available due to the ease of post-harvest processing, minor millets like Foxtail millet and Little millet need to be de-hulled before consumption.
- The prices of these millets become higher due to logistical and transportation issues to the rest of the country. Due to these factors, the supply of millets, especially the minor millets is erratic thereby discouraging further value addition and consumption.
- To address this, production as well as processing needs to be supported and encouraged in different states to uniformly increase supplies to match the demands and also keep a check on the prices.
- Unless the cost of production and processing can be brought down, it will be difficult to increase the mass consumption of millets.

Chapter 3: Millets in Diet- The Right Approach

Millets - An Invaluable Food:

- Millets are the original super-foods which perfectly suit Indian agricultural practices, soil and weather.
- Millets provide the right nutrients for sustenance and growth, grow in all types of the soil and weather conditions, and also require minimum inputs. These properties of millets makes it an invaluable food.

Nutritional benefits of millets:

Millets being rich source of minerals, vitamins and fibre provide multiple health benefits-

- Niacin, vitamin B3- a micronutrient found in millets is useful for proper metabolism, nervous system functioning and keeps the digestive system healthy. It is an essential nutrient - means that it cannot be synthesised by the body and is obtained from food which we eat.
- The nutrients like magnesium, zinc and fibre present in millets makes it excellent food for diabetic and PCOD patients.
- Folic acid present in millets aid in iron assimilation, is good for skin health and also fertility.

Guidelines for introducing millets on our plate:

Doing away with the traditional foods, reduces its farming which inturn affects the health of soil and ecology. So it is the right time to introduce millets on our plate and do that in a right way-

1. Eat millets as per the season - For instance bajra and makai in the winter, jowar for summer. It ensures easy availability of nutrients at the time they are needed and also ties well with the farming practices and crop cycles.
2. Eat millets with the right food combination - These food combinations ensure that the right ingredients come together and make digestion and nutrient assimilation easier. For example, bajra, a hard to digest food, is taken with ghee/ butter.
3. Eat millets in all its forms.
4. Don't eat multigrain - If one grain is good, many are not necessarily better.
5. Don't replace all grains with millets.

Chapter 4: India's Wealth-Millets for Health

Millets (Mota Anaj) :

- Millets are a collective group of small seeded annual grasses that are grown as grain crops mainly on marginal land in dry areas of temperate, subtropical and tropical regions.
- Asia and Africa are the major production and consumption centres of millet crops.
- Classification of millets -
    - Major Millets - Finger Millet (Ragi/ Mandua), Pearl Millet (Bajra), Sorghum (Jowar).
    - Minor Millets - Foxtail Millet (Kangani/Kakun), Kodo Millet, Proso Millet (Cheena), Barnyard Millet (Sanwa/Sawa/Jhangora), Little Millet (Kutki).
    - Pseudo Millets - Amaranth (Chaulai), Buckwheat (Kuttu).
- Rajasthan, Karnataka, Maharashtra, Uttar Pradesh and Haryana are the top five millet producing states in India.

Importance of Millets:

Climate friendly crop -

- Millets adapt to a wide range of temperatures and moisture conditions.
- Require less chemical fertilisers.
- Pest free crops.
- Can even sustain in drought prone regions.
- Minimum rainfall for growth.
- Low carbon and water footprints.

Nutritious & Healthy -

- Good source of calcium, magnesium, zinc, phosphorus, copper, vitamins, iron, phytochemicals, antioxidants and other micronutrients.
- Millets are gluten free and considered good for celiac patients.

Viable option for small farmers -

- Millets require low investment and therefore, prove to be a sustainable and viable source of income for small farmers.

Economic & Food Security -

- Millets are cheaper as compared to other food grains.
- Under India's National Food Security Mission - the area and production of millets has increased significantly - from 14.52 million tonnes (2015-16) to 17.96 million tonnes (2020-21).

Millets as a part of the food basket:

- GoI declared 2018 as the "National Year of Millets" to raise awareness about its health benefits and boost its production.
- Millets are called 'nutri-cereals' owing to their great nutritional quotient.

- Poshan Abhiyan - Poshan Abhiyan, also called National Nutrition Mission was launched in March, 2018 with an objective to reduce malnutrition in the country. Poshan 2.0 was launched in 2021 to tackle malnutrition and leverage traditional knowledge systems and popularise the incorporation of millets in local recipes in order to enhance quality of supplementary nutrition.

Initiatives by GoI to make IYOM a success:

- Various creative campaigns on radio, social media, offline events and activities are being organised by the GoI to showcase millets as a superfood, reviving lost recipes and thereby, making it as an essential component of the mainstream food basket.
    - In events like Dubai Expo, IITF (International Indian Trade Fair) and Surajkund Mela etc millets have been showcased.
- India has more than 500 startups working in the millet value added chain and the Indian Institute on Millet Research has incubated 250 startups under RKVY-RAFTAAR.
- FSSAI (Food safety and Standard Authority of India) celebrates "recipe ravivar" every sunday on social media platforms where each month is dedicated to a specific variety of millets.
- Eat Right Melas and Walkathons have been organised across the country.
- As part of 'seven sutras' in the run up to IYOM, the government programmes will deal with issues relating to enhancement of production/productivity; nutrition and health benefits; processing and recipe development; value addition; entrepreneurship development; international outreach; and policy intervention for mainstream millets.

Chapter 5: Millets Cultivation in North East India

Introduction:

- Millets are often grown in tropical and subtropical regions at an altitude of 2,100 metres. 8-10 degree Celsius is the required minimum temperature for germination.
- These crops can tolerate a certain level of soil alkalinity and adapt well to a variety of soil types, from extremely poor to very fertile.
    - Sandy, loamy, and alluvial soils with good drainage are the best types of soil for them.
- Its cultivation in Jhum field is ideal during the months of April and May. The ideal growth temperature range for millets is between 26-29° C for optimum production and good crop yield.
- It is grown in regions with rainfall between 500 and 900 millimetres.

Importance of Organic Agriculture in Millets:

- The Green Revolution in the 1960's with high-yielding wheat and rice varieties and contemporary agricultural techniques, which required the substantial use of chemical fertilisers and pesticides, had a significantly worsening effect on the environment.
- Water bodies were poisoned and agricultural land was extensively destroyed as a result of the use of pesticides and the quick succession of crops without giving the soil enough time to restore its nutrient quality.
- These issues can be experienced in North Eastern States if not addressed in time.
- In recent years, this issue has gotten worse as the impact of climate change has been more widespread. Agricultural communities all over India have been hit by the abrupt rise in temperature and the ensuing water constraint.
    - For Instance, wheat production in Madhya Pradesh, which is known as India's "Wheat Bowl," has been harmed because of repeated heat waves.
- However, the recent monsoon failure in India's North Eastern States, where most farmers depend on rain-fed agriculture to raise their crops, has had a catastrophic impact on the local farmers in the area.

Nutrient management in organic millet cultivation:

- Millets do not require chemical fertilisers and they grow better in dry conditions without chemical fertilisers. Therefore, most farmers grow it with farmyard manure in purely ecological conditions.
- In recent years, farmers have also started using organic fertilisers like vermicompost found in their backyard. Growth promoters like Panchagavya, Amritpani are also used. These practices not only make millet production environmentally friendly but also make them remain under the farmer's control.
- In organic millet farms, nutrient management should efficiently supply crop's nutrient needs, prevent nutrient depletion, and maintain or increase soil productivity without disproportionate nutrient losses.

Shifting cultivation of millets in hill/tribal areas:

- Shifting cultivation, also known as "Slash and burn" or "Swidden," is a type of farming used by tribal groups in Arunachal Pradesh. This farming approach permits the production of two or three annual crops before abandoning the field until the trees have recovered enough to permit a second filling.
- The majority of the crops planted on lands under shifting agriculture are millets, specifically finger millet, small millet, foxtail millet, proso, kodo millet, pearl millet, and sorghum. In addition to millets, valuable commercial crops are grown, including red gram, horse gram, castor, plantain, and turmeric.

- Since they don't use any chemical pesticides or fertilisers, tribal farmers don't need to take any action to control pests and diseases. By default, all aspects of Jhum production fall under organic farming.

Application of organic matter to the soil:

- **Manures:** In organic farming, applying manure to the millet crop is frequently a beneficial source of nutrients. However, because millet crops extract more nitrogen and potassium than phosphorus, using manures to fulfil all of the crop's nutritional requirements could result in an excess of some nutrients, such as phosphorus.
- **Compost:** By using biological processes in under-regulated settings, composting is a technique that transforms organic wastes into organic fertilisers with increased nutrient concentrations while also reducing the bulk of organic materials through the loss of water and carbohydrates during decomposition.
    - Composting also often kills some diseases and weed seedlings, making it easier to handle than hulk organic material.
- **Cover crops:** Cover crops can enhance the microbial activities, nitrogen cycling, and physical characteristics of the soil. In addition, cover crops can recover leftover nitrogen mineralised from soil and organic amendments before it is lost by volatilisation, runoff, or leaching.
- **Green Manures:** Green manure is the term for uncomposted, green plant matter used as manure.
- **Crop rotation:** Crop productivity, nutrient availability, insect control, nutrient usage efficiency, and soil physical qualities can all be improved through crop rotation.

Chapter 6: Health Benefits for Lifestyle Diseases

Introduction:

- India's consumption pattern has been considerably impacted by modernisation, leading to decreased consumption of some grains like millets and increased consumption of foods derived from animals, such as oil, refined sugar, fat, and alcohol.
- Around 71% of all fatalities worldwide are now attributed to non-communicable illnesses, a burden that has escalated as a result of this consumption pattern.
- Millets are considered wonder foods. With their high levels of fibre content, vitamins, minerals, phytochemicals. and antioxidants, they can help fight many modern-day, lifestyle diseases.

- Important amino acids enhance millets' nutritional value. However, the nutritive and medicinal potentials of bioactive chemicals found in millets are largely unexplored, and a thorough evaluation of existing evidence in the literature is lacking.
- Millets include many bioactive principles that have been shown to reduce cardiovascular risk, diabetes, ageing, and even cancer.
- Consumption of dietary fibre lowers the absorption of glucose maintaining blood glucose levels and is thus useful in Non-Insulin Dependent Diabetes (NIDDM).
- Owing to its incomplete/slow fermentation by microflora in the large intestine allows normal gut functioning. Dietary fibre contributes to faecal bulk and along with it increased faecal mobility and fermentation of contents all contribute to the prevention of colon cancer.

Table 1: Carbohydrate-to-fibre ratio of common millets compared with rice

Cereal	Common Name	Dietary Fiber Content (g/100g)
Finger Millet	Ragi	11.2
Foxtail Millet	Kangani	11.2
Pearl Millet	Bajra	11
Sorgham	Jowar	9.7
Proso Millet	Cheena	9.1
Little Millet	Sama	7
Rice	Chawal	3.2

Image Source: Yojana

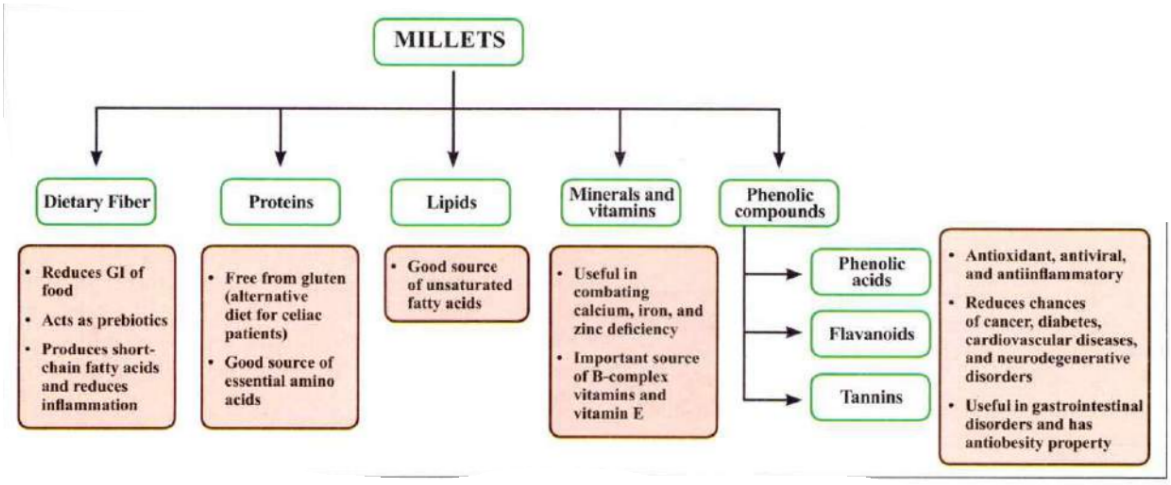

Image Source: Yojana

Impact of Millets on Diabetes Mellitus & Heart Disorders:

- Hyperglycemia and altered protein, carbohydrate, and lipid metabolism are hallmarks of NIDDM, a long-term metabolic illness. Dietary glycaemic load is directly linked to a higher risk of developing NIDDM, Dietary fibre is crucial for glucose regulation.
- Millet is an excellent source of leucine, slowly digesting carbohydrate (and minerals), blunting the otherwise sudden increase in postprandial glucose level, thus making it a nutritious food for diabetes.
- Increasing the risk of NIDDM significantly increases the risk of heart disorders. Low-density lipoprotein (LDL) and high-density lipoprotein (HDL) have opposing effects on the chance of developing heart disease.
- Another factor contributing to the risk of heart disorders is triglyceride. Since there has been a long-standing correlation between an elevated triglyceride level and the chance of developing heart diseases.
- Millets enriched in niacin reduce LDL and triglyceride levels and correct lipoprotein abnormalities. Furthermore, millets retard the absorption of dietary cholesterol. Thus, millets-rich foods are suggested as one of the means to reduce the risk of heart disorders.

Impact of Millets on Cancer:

- Millet grains include phenolic components such as phenolic acids, flavonoids, and tannins, making them anti-nutrients that lower the incidence of colon and breast cancer in animals.
- An in-vivo study found that adding foxtail millet to one's diet promotes the activation of the gut receptor, which in turn aids in the treatment of colon cancer linked to colitis. As a result of the study, it was discovered that millet-based diets aided in suppressing the STAT-3 signalling pathway.
    - In cancer cells, unregulated cell proliferation, angiogenesis, and apoptosis evasion are all crucially influenced by the STAT transcription factor family.

Impact of Millets on Brain Disorders:

- Several studies have shown that excessive fat consumption in the human diet can not only increase risk of heart diseases but recent epidemiological research has revealed that dementia risk is also increased by a high-fat, high-calorie diet.
- Due to the fact that an 1-IFD has been shown to generate oxidative brain dysfunction may result from stress in the brain. Additionally, oxidative stress is reportedly a catalyst and aggravating factor for neurodegenerative conditions like Addison's disease (AD).
- Increased oxidative stress also stimulates proinflammatory factor production, which results in inflammation in the brain, which can cause dementia.

Chapter 7: Millets for Pregnant and Lactating Women

Significance of Millets for Pregnant women:

- Pregnancy increases the demand for nutrients to promote the growth and development of the foetus with changes in weight, plasma and blood volume.
- Anaemia caused by iron deficiency is one of the major health problems in pregnant women due to inadequate intake of iron-rich foods.
- Similarly, lactating mothers also suffer from iron deficiency anaemia due to blood loss in the postnatal period.
- A study indicated that taking millet-based foods in diet during prenatal and postnatal periods play an important role in improving the nutritional status of pregnant women and lactating mothers.
- The millet-based supplementary food products are very nutritious for pregnant women and lactating mothers. Millet milk malt is prepared from the flour of various millets, jaggery and milk powder. Ragi cutlets are prepared from Ragi (Finger millets) flour which is a rich source of protein, iron, calcium, phosphorus, and dietary fibres.
- One of the many nutrient-rich grains for pregnant women is Pearl millets known as Bajra. It is an excellent source of iron which helps in improving haemoglobin levels in pregnant and lactating mothers. It is also rich in dietary fibres, antioxidants, zinc, magnesium, copper and Vitamin.
- Studies show that millet-based foods contribute to improving the Body Mass Index (BMI) in pregnant women and lactating mothers.
- Lactating mothers are also advised to consume Ragi to increase the production of breast milk.
- Kodo millets are highly nutritious. They are gluten-free, easy to digest, and rich in phytochemical constituents, antioxidants and dietary fibre.

Chapter 8: Start Up's Making Millets Popular

Initiatives to promote startup's to promote millets:

- According to the Indian Council of Agricultural Research (ICAR), more than a thousand startups are working on coarse grains in the country. Some of these have become fully functional, and some are in the process of launching their products in the market.
- ICAR's Hyderabad-based Indian Institute of Millet Research (IIMR) aims to make these entrepreneurs successful by introducing their brands in the market keeping in mind the International Year of Millets.
- IIMR has set up a technology incubator NutriHub with the help of the Department of Science and Technology (DST) to promote millets.

    - NutriHub trains people for startups. Along with this, startups are also provided with the facility to develop their products and assess their quality.
    - Dozens of startups have successfully launched their millet-based food products in the market under the guidance of IIMR.
- The Union government in 2022 announced the "Millet Challenge" for startups, with a seed grant of Rs 1 crore each to three winners to design and develop innovative solutions for and across the millet's value chain.
- Many states have included Millet in the National Nutrition Mission and Mid-Day Meal Scheme. Many startups are contributing towards the millets.
- The Government is also enabling startups for the export promotion of value-added products like noodles, pasta, breakfast-cereal mix, biscuits, cookies, snacks, and sweets in the Ready to Eat (RTE) and Ready to Serve (RTS) categories.

Significance of Startup's to promote Millets:

- Most of the startups procure coarse grains directly from farmers. After processing them, they prepare products and sell them online and offline.
- This has resulted in an increase of the production of coarse grains.
- This will also lead to better nutritional security, Atmanirbhar Bharat, women participation, scope of value addition, employment generation, startup environment, and climate resilience.
    - For Instance, An Agri startup from Tamil Nadu is directly procuring produce from 13000 farmers in 10 states. Their mission is to promote natural food grains. The company's theme is Farm to Fork, i.e., from the farm to the dining table.

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In-depth coverage of syllabus which includes the following guides: Indian Polity by M Laxmikanth, India's Ancient Past by R S Sharma, History Of Modern India by Bipan Chandra, Ethics, Integrity and Aptitude by P N Roy Chowdhury and G Subba Rao
+16 more titles

Test Your Knowledge
Perfect your exam writing skills and knowledge with - modular tests (MCQ and descriptive), question paper discussions, personalised analysis of answers and answer writing strategies

Current Affairs Webinar
Twice a week live webinar classes to discuss current affairs followed by revision notes

Ease of Accessibility
Prepare at your own convenience, anywhere and anytime with the BYJU'S IAS tablet

Course Highlights

Daily news analysis based on The Hindu

Practice to perfection with Prelims and Mains Test Series

Post Mains Interview Guidance Program

Delhi
B-1/8, Lower Ground Floor, Apsara Arcade, Sadhu Vaswani Marg, Pusa Road, Karol Bagh, Rajinder Nagar, Delhi 110005

Shop No. 19, Vardhaman Central Mall, Nehru Vihar, Delhi. nearest metro- Vishwa Vidyalaya metro station

Hyderabad
Srishti Tower, Hitech City Rd, VIP Hills, Silicon Valley, Madhapur, Hyderabad, Telangana 500081

3-6-196/197, 2nd Floor, Prime Plaza, Himayatnagar Main Road, Himayatnagar, Hyderabad, Telangana 500029

Bangalore
BYJU'S Classes, Tavarekere Main Rd, Opp: Forum back gate, Venkateshwara Layout, S.G. Palya, Bengaluru, Karnataka 560029

Chennai
St Patricks School, Kasturba Nagar 3rd Cross St, Gandhi Nagar, Adyar, Chennai, Tamil Nadu 600020

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