YOJANA SUMMARY

MILLETS

JANUARY 2023

INTERNATIONAL YEAR OF MILLETS 2023

*There is a need for **diversity on the land and on our tables**. If agriculture becomes monoculture, it impacts our health and the health of our lands. Millets are a good way to increase agricultural and dietary diversity. Raising awareness to create **'Millet Mindfulness'** is an important part of this movement.*

Both institutions and individuals can make a tremendous impact. While institutional mechanisms can encourage production of millets and make it profitable via policy initiatives, individuals can make health-conscious and planet-friendly choices by making millets a part of their diet. I am positive that the International Year of Millets 2023 will start a mass movement towards a secure, sustainable and healthy future.

- **PM Narendra Modi's message during the opening ceremony of the International Year of Millets at FAO Headquarters in Rome, Italy**

International Year of Millets

- The United Nations General Assembly has declared the year 2023 'International Year of Millets'.
- It will help in creating awareness throughout the world about the significant role of millets in sustainable agriculture and its benefits as a smart and superfood.
- It will provide a unique opportunity to increase global production, ensure efficient processing and consumption, promote better utilisation of crop rotations, and encourage better connectivity throughout food systems to promote millets as a key component of the food basket.

India and Millets

- India is poised to become the **global hub for millets** with a production of more than 170 lakh 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 civilisation and was one of the first plants to be domesticated for food.

Why There Is A Renewed Focus On Millets?

- A once-in-a-century pandemic followed by a conflict situation has shown that **food security** is still a concern for the planet. Climate change can also impact food availability.
- Millets are easy to grow, climate resilient, and drought resistant. They are good for the consumer, cultivator and climate.
- They are a rich source of balanced nutrition for consumers. They benefit cultivators and our environment since they need lesser water and are compatible with natural ways of farming.

International Year of Millets (IYM) and SDG

- 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).
- This co-relation can be seen from following discussion:

1. 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**.

- They are tolerant or resistant to diseases and pests and are more resilient to climate shocks than other cereals.
- Including and/or expanding the production of millets in national agricultural systems 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.

2. **The sustainable production of millets can fight hunger and contribute to food security and nutrition – SDG 2 (End Hunger)**
   - Millets can help to overcome food scarcity, therefore, contributing to the food security and nutrition of vulnerable populations.
   - Millets can grow in very poor and fertile soils in dryland conditions and do not heavily deplete soil nutrients. By providing land cover in arid areas, they reduce further soil degradation and help support biodiversity and sustainable land restoration.
3. **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.
   - Millets are also gluten-free and an excellent and cost-effective source of iron for iron-deficient diets.
4. **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 for smallholders and in the food sector, boosting economic growth.
   - Millets are deeply rooted in Indigenous Peoples' culture and traditions and therefore a **strategic crop** to guarantee food security in areas where they are culturally relevant.
5. **Proper handling of millets is key to maintaining their high quality and nutritional benefits - SDG 2 (End Hunger) and SDG 3 (Good Health and Well-Being)**
   - Innovative agro-processing, especially in the production of nutritious foods, could target both traditional and non-traditional markets.
   - This value addition could lead to market expansion, and increased food and nutrition security and incomes for smallholder farmers.
6. **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. These are a valuable option to increase output diversity and mitigate risks related to production shocks.

Conclusion

- Market structure and transparency, in relation to volumes and prices of millets, are key elements to ensure stability and sustainability.
- It is important to ensure that millet traders benefit from the same tools as other grain traders, such as digitalisation, which could boost the added value of millet along the grains value chain and consequently provide more revenue opportunities for producers.

MILLETS: ANCIENT GRAINS FOR A HEALTHY FUTURE

India has been a leader in the millet movement and is showing the way to the rest of the world in promoting and showcasing the potential of millets.

Decline In The Consumption Of Millets

- Millets have been a part of the Indian food basket for hundreds of years. They are deeply ingrained in our food systems, culture, and traditions. They find mention in religious texts and are a part of many traditional Indian practices.
- In the Indian subcontinent, millets were used as staple in most households prior to the Green Revolution.
- However, their presence in our food plates reduced significantly over the years due to a multitude of factors.
    - **Socio-economic dynamics** resulting from the hardy nature of the crop, relegated them to be the grain of the poor.
    - With the **growing support for wheat and rice** and easy availability, people moved easily to them due to a desire for upward mobility.
    - In many places **millets have been systematically discouraged from cultivation**.
        - *Kodo Kutki Hatao Soyabean Lagao* (Remove Kodo and Little millet and grow Soyabean) was a famous slogan in unified Madhya Pradesh until the early 2000s.

Production And Supply Of Millets Is Erratic

- 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.

Way Forward

- Production as well as processing needs to be supported and encouraged in different states. We can encourage farmers to grow millets by linking them to markets.
- Through the revival of traditional methods and increased facilities available for post-harvest processing and the creation of primary processing clusters at the farm level, we can increase the production and supply of millets in all parts of the country.
- Gluten-free value-added products made from millet can be developed for the export market.
- A number of studies over the last few years have also substantiated claims made regarding the healing powers of millets. Doctors, nutritionists, and the medical community can be made more aware of these.

Conclusion

- In order to make this sustainable and truly manifest the spirit of the International Year of Millets, it needs to become a mass movement.

- Also, it should be kept in mind that behavioural change takes time. To give them their rightful & continued place in the food basket, concerted & sincere efforts need to be made.
- Supporting farmers, creating an enabling environment for industry and startups, and increasing awareness among consumers are key to the future of millets.

MILLET CULTIVATION IN NORTH-EAST INDIA

Agro-climatic Conditions For Millet Cultivation

- Millets are often grown in **tropical and subtropical regions** at an altitude of 2,100 m.
- Being a heat-loving plant, 8-10° C 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.
- 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.

Millet Production Against The Backdrop Of Climate Change

- Green Revolution in the 1960s brought a significant increase in the total production of food crops. However, it also 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.
- In recent years, this issue has gotten worse as the impact of climate change has been more widespread. In Madhya Pradesh, known as India's "Wheat Bowl," repeated heat waves have negatively harmed wheat production.
- Due to the increasing frequency of droughts in some of India's most productive agricultural regions, farmers must adopt farming techniques that have the least negative environmental effects while maintaining the yield.
- This is where sustainable organic farming and millet cultivation comes into play.
- Millets do not require chemical fertilisers. Therefore, most farmers grow it with farmyard manure in purely ecological conditions.

Consumption Habits Of Millets In The North-East Region

- **Zan**: The most favoured porridge recipe among the *monpa tribes* of Arunachal Pradesh. The dish is made using millet flour.
- **Apong:**
    - Apong and Madua Apong are two popular beverages made in Arunachal Pradesh using rice and millet, respectively, through an unrestrained fermentation process.
    - The *Adi and Nyishi* Tribes frequently brew this. It is important to the traditional Adi tribal culture since it relates to shamanic practices, ritualistic principles, and folklore.
    - The Adi tribe holds its annual *Solung Festival* in the month of September. Apong is served as a staple and distributed to everyone throughout the festival

INDIA'S WEALTH: MILLET FOR HEALTH

Millet Production in India

- India produces more than 170 lakh tonnes of millets per year and is the **largest producer of millets in the world**; accounting for 20% of global production and 80% of Asia's production.
- India's average yield of millets (1239 kg/hectare) is also higher than global-average yield of 1229 kg/hectare.
- Major millet crops grown in India and their percentage share of production are:
  - **Pearl Millet** (Bajra) - 61%, **Jowar** (Sorghum)-27%, and **Finger Millet** (Mandua/Ragi) - 10%.
- Millets have been a part of our tradition, culture, and ancient civilisation, their relevance being cited in sacred texts such as Vedas, Puranas, and Tolkappiyam.

What Are Millets?

- Millets, popularly called "Mota Anaj" in Hindi, are a collective group of small-seeded annual grasses that are grown as grain crops, primarily on marginal land in dry areas of temperate, sub-tropical, and tropical regions.
- In India, millets can be clubbed into major, minor, and pseudo categories.
  - **Major Millets**: Sorghum (Jowar), Pearl Millet (Bajra), Finger Millet (Ragi/Mandua)
  - **Minor Millets**: Foxtail Millet (Kangani/Kakun), Proso Millet (Cheena), Kodo Millet, Barnyard Millet (Sawa/Sanwa/ Jhangora), Little Millet (Kutki)
  - **Pseudo Millets**: Buck-wheat (Kuttu) and Amaranth (Chaulai)
- The top five states producing Millets are Rajasthan, Karnataka, Maharashtra, Uttar Pradesh, and Haryana.

What Is The Importance Of Millets?

- **Climate-friendly crop**
  - Millets are resilient to climate change as they are pest free, adapted to a wide range of temperatures and moisture regimes, and demand less input of chemical fertilisers to grow.
  - It makes them bio-diverse and climate- smart crops. These crops have low carbon and water footprints.
- **Viable options for small farmers**
  - Due to the low investment needed for the production of millets, they millets prove to be a sustainable and viable income source for small and marginal farmers.
- **High in nutrition and health benefits**
  - Millets are known to be a storehouse of nutrition.
  - They are gluten-free and are also considered good for celiac patients.
- **Economic and food security**
  - Millet have been cheaper in price in comparison to other food grains. Over the years, the production of millets has increased from 14.52 million tonnes (2015-16) to 17.96 million tonnes in 2020- 21
  - Its exports are increasing exponentially as the demand for millets is increasing at a fast rate worldwide.

Steps Taken By The Govt To Make Millets As A Part Of The Food Basket

- The Government of India declared 2018 as the "**National Year of Millets"** to raise awareness about its health benefits and boost millet production.
- They are labelled as ***"Nutri-cereals"*** due to their high nutrition quotient.

- Millets were included under Prime Minister's overarching scheme for holistic nutrition, **POSHAN Abhiyan** in the same year.
- The Government of India also launched **Mission POSHAN 2.0** in 2021 to tackle malnutrition and leverage traditional knowledge systems and popularise the incorporation of millets in local recipes.
    - Under the POSHAN Abhiyan every year, September is celebrated as Rashtriya Poshan Maah or National Nutrition Month across the country.
- The Ministry of Women and Child Development has further encouraged all states and union territories to incorporate millets in the recipes to enhance the nutritional quality provided under the Supplementary Nutrition programme of Anganwadi Services.
- Millets are being supplied at least once a week.

Initiatives Towards Making IYM 2023 A Success

- Various creative campaigns are being taken up to break the stigma of millet being the "food of the poor", showcasing it as a **superfood**.
- Over 500 startups are working in millet value chain while the **Indian Institute on Millet Research** has incubated 250 startups under **RKVY-RAFTAAR**.
- Food Safety and Standards Authority of India (FSSAI) is actively spreading awareness of the health benefits of the miracle crop by celebrating "***Recipe Ravivar***" every Sunday on social media platforms where each month is dedicated to a specific variety of millet.
- Over 100 ***Walkathons and Eat Right Melas*** have been organised in various cities across the country.
- Union Health Ministry has done away with fried food such as samosa, bread pakoras, and the like from its canteen menu in favour of healthier options such millet roti, cheelas, etc.
- The Government of India has launched a set of seven sutras in the run-up to IYM 2023 and has allocated different government departments for the same.
    - The seven sutras outline areas in the enhancement of production/productivity, nutrition and health benefits, value addition, processing, and recipe development, entrepreneurship/startup/collective development, awareness creation-branding, labelling and promotion, international outreach, and policy interventions for mainstreaming.
- The Government also plans to establish **Centres of Excellence on millets** across the length and breadth of the country and link industries with these centres.

Popularising Millets In Telangana: Case Study

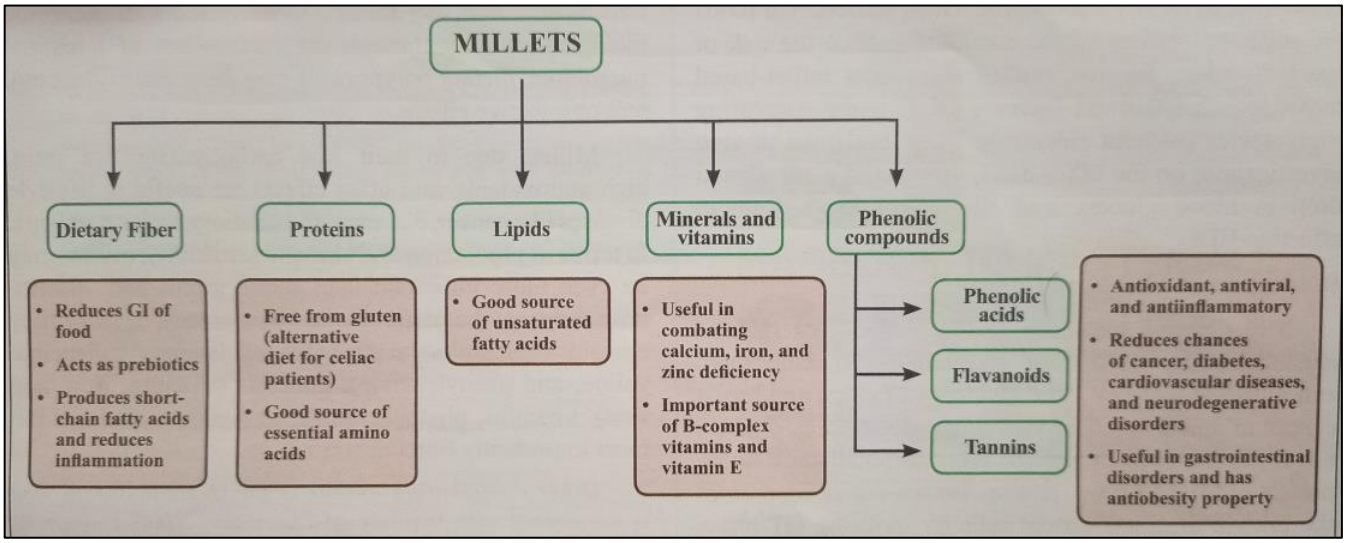
- Kumaram Bheem Asifabad is a predominantly tribal and one of the most backward districts in Telangana. The district under the **Project Sampoorna** focused on ensuring the availability of traditional and food like millets.
- Towards this objective, various activities were undertaken that included: food festivals; millet recipe trainings etc.
- Millet cooking videos were shared through social media and millets were made available for local purchase. Home visits were also undertaken on day-to-day basis.
- To promote millet cultivation, Agriculture Officers trained farmers and **subsidised seeds** were distributed.
- **SHG Women** were trained in production, processing, and marketing.

- Under decentralised **Millet Village Circular Economic Model**, millets are grown, procured, processed, packaged, and sold locally to villagers at cheaper prices.
- Following the initiative, behavioural change has been observed in the community and it has been seen that 80% of beneficiaries have acceptance for millets.
- They are now consuming millets and nutritional vegetables in other two meals, other than supplementary nutrition provided at Anganwadis.

HEALTH BENEFITS FOR LIFESTYLE DISEASES

- 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.
- Because of their **low carbohydrate-fibre ratio** they can also be useful in many lifestyle diseases like cardiac, diabetes mellitus, and some kinds of cancer.
- Consumption of dietary fibre lowers the absorption of glucose maintaining blood glucose levels and is thus useful in Non-Insulin Dependent Diabetes (NIDDM).
- Moreover, fibre also binds cholesterol, thus protecting from heart disease. Millet fibre contribute to the prevention of colon cancer.

Phytochemicals Present In Millets



- 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.

STARTUPS MAKING MILLETS POPULAR

- According to the Indian Council of Agricultural Research (ICAR), more than a thousand startups are working on coarse grains in the country.

- ICAR's Hyderabad-based **Indian Institute of Millet Research (IIMR)** aims to make these entrepreneurs successful by introducing their brands in the market.
- IIMR has set up a technology incubator NutriHub with the help of the Department of Science and Technology (DST) to promote millets.
- Startups are provided grants of upto Rs 25 lakh under the Government's **Rashtriya Krishi Vikas Yojana (RKVY-RAFTAAR)**.
- The Central Government started a **Millet Startup Innovation Challenge**. This initiative encourage young minds to find technical and business solutions to the existing problems in the millet ecosystem.
- 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. For this, the Ministry of Commerce has made necessary policy amendments.
- A few years ago, the **National Agriculture Innovation Project** of the World Bank formulated a strategy to increase millet production. Since then, continuous efforts have been made for this.
    - IIMR has so far developed more than 500 millet recipes, and their technology is transferred to startups and industries.
    - Under the **Rashtriya Krishi Vikas Yojana**, more than 70 startups had been provided funding ranging from Rs 5-25 lakh.
- As per rough estimates, the startups currently working on millets are doing a business of Rs 1,000 crore annually.

MSP of Millet

- The Minimum Support Price (MSP) for various kinds of cereal in the country is fixed by the government.
- The Government also procures food grains on MSP. It motivates farmers to grow that crop as it fetches a reasonably good price.
- Today, MSP is fixed for 22 cereals, pulses, and oilseeds, of which three major coarse cereals are Jowar, Bajra, and Ragi.
- In the **Budget of 2018-19**, the Central Government announced **fixing MSP for other cereals and coarse cereals with a minimum profit of 50 per cent**.
    - That is, 50 per cent of the cost of the crop will be kept as profit for the farmers. The Commission for Agricultural Costs and Prices (CACP) makes this assessment.
- Following this, a record MSP was fixed in 2018-19 for Jowar, Bajra, and Ragi, the three coarse cereals grown in abundance in the country.

INDIA AS A CLIMATE LEADER AND ITS G20 PRESIDENCY

Rising from the ashes of the 1997 Asian financial crisis, G20 has become a legitimate voice of the 19-emerging economics and EU.

India's Presidency of G20

- India's year- long presidency of a grouping that represents 80% of global GDP, 75% of global exports and 75% of world trade is a shot in the arm for multilateral and plurilateral cooperation.

- The motto for its presidency "***One Earth One Family One Future***" signals the intent to build endurable partnerships.
- The G20 mandate of ensuring global financial stability and sustainable growth resonated after Covid-19 pandemic and Russian- Ukrainian war disrupted global economic networks and created domestic economic crises across the globe.
- The need for building responsive, equitable and diverse supply chains and securing access to critical resources like rare earth minerals for future-proofing has been made clear.

Setting The Global Climate Goalpost- India As A Leader

- India's support towards fossil fuel consumption declined by 3% between 2014-16. **Tax on coal** production saw an increase of 3 times in the 2010-16 period.
- Despite being heavily reliant on coal, India has reduced the carbon intensity of its GDP by 24% during 2005-2016.
- **Panchamrit strategy,** as illustrated by the Prime Minister in COP 26, lays special mention on the shift to renewable energy.
- By ignoring the developmental needs of the developing world and whitewashing over their **common but differentiated responsibilities**, the developed world continues with its luxury emissions.
- **With insistence on equity**, India's leadership of LMDCs ensured that their survival emissions are not compromised over mitigation and adaptation efforts.
- India's pioneering global environmental leadership has culminated in the International Solar Alliance, Coalition of Disaster Resilient Infrastructure and LiFe movement among others.

The Intersection of G20 Agenda and Addressing Climate Change

- MEA has specified that the Indian focus shall be on energy security, climate finance and the development of green hydrogen during the G20 presidency.
- Industry 4.0's support in the mega transition to a climate-friendly future is a must.
- PLI schemes for lithium-ion production and semiconductor manufacturing indicate that India is mindful of emerging geopolitical trends as well.

A Roadmap for Indian Presidency

- To meet the climate change challenges, G20 countries are utilising regulatory, market, education and information- based instruments throughout value chains.
- A case in point is the successful implementation of the **Extended Producer Responsibility** (EPR) based **polluter pays principle by G20 members**.
- A 2021 OECD report on the role of G20 in assuring a global resource-efficient and circular economy elaborates on national and subnational roadmaps and strategies. It suggests four pathways:
    - Promote resource efficiency throughout the full lifecycle of products.
    - Align sectoral policies and Covid-19 recovery packages with resource efficiency objectives.
    - Strengthen policy development through better data and indicators.
    - Enhance international cooperation.
- With respect to Environmental, Social and Governance (ESG) norms, development of clean and climate-resilient infrastructure and green growth, G20 can become a standard setter and rule maker.