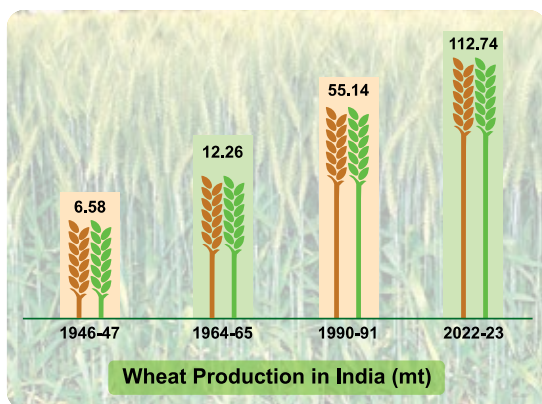




Strategy for India to Become a Global Wheat Player

Policy Brief





Trust for Advancement of Agricultural Sciences (TAAS)

GOAL

Harnessing the potential of agricultural sciences for the welfare of the people.

MISSION

Promoting growth and advancement of agriculture through scientific partnerships, policy advocacy and public awareness.

OBJECTIVES

- To act as a 'Think Tank' to deliberate on key issues relating to agricultural research and innovation for development (ARI4D) and influence policy decisions
- To organize workshops, conferences, brainstorming sessions, policy dialogues seminars and special lectures on emerging issues and new developments in agricultural sciences
- To disseminate knowledge among stakeholders through publication of proceedings, strategy papers and policy papers
- To confer awards to the scientists of Indian and foreign origin for their outstanding contributions having impact on Indian agriculture
- To facilitate scientific interactions and partnership building of non-resident Indian agricultural scientists with Indian scientists

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Introduction

India, the world's second largest wheat producer, faces a fast-growing domestic demand for wheat and wheat products. By 2050, with a projected population of 1.7 billion, India's wheat needs are estimated to reach 125 million tons (mt) for raw wheat, 2.7 mt for bread, 3.5 mt for biscuits, and 0.25 mt for pasta¹. The major factors driving this increased food demand are: (i) population pressure: India's growing population, (ii) increased urbanization wave: more people migrating to cities and changing dietary habits towards processed foods like bread and biscuits, (iii) changing lifestyles: busy lifestyles and rising incomes do lead to convenient food options, and (iv) evolving food preferences: consumers are opting for diverse wheat products including potentially new categories like ready-to-eat *chapattis*. India's National Food

Security Act (NFSA) 2013 aiming to provide free foodgrains, further adds to the pressure, requiring a steady increase in wheat production to meet its domestic obligations as well as to capture the potential of global wheat demands.

Current Production and Export Scenario

Wheat production in India is increasing, despite the challenges of second-generation problems of Green Revolution and frequent weather fluctuations. It is quite encouraging that the wheat harvest in 2022-23 has surpassed 110 mt (112 mt estimated production in 2024). In fact, the current resilience is driven by the development of climate-resilient wheat varieties and an efficient seed distribution system. The trends in area, production and yield in wheat are shown in Figure 1. The domestic

¹ <https://kisanvedika.bighaat.com/news-updates/bumper-wheat-crop-forecast-for-india-in-2022-23/>

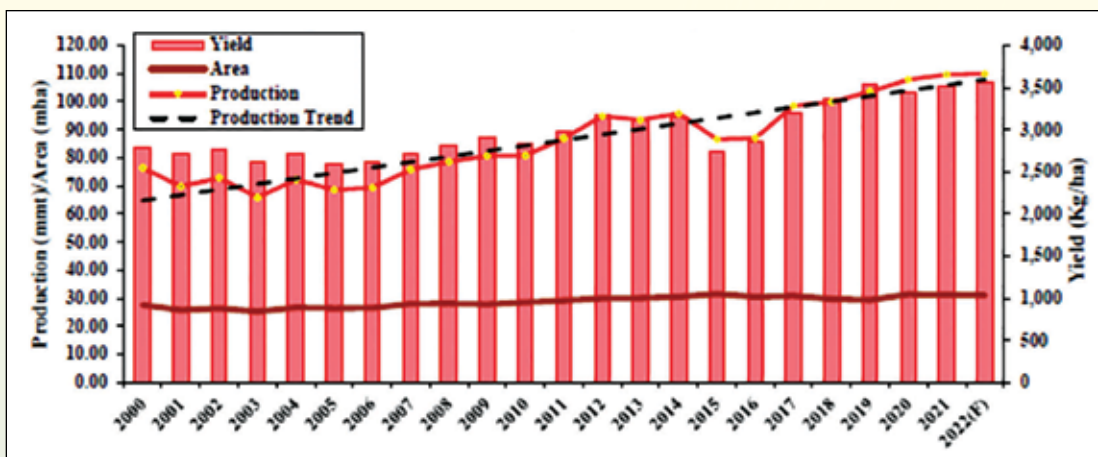


Fig. 1. Wheat area, production and yield in India

Source: MoA&FW and FAS New Delhi Forecast for 2022 (MY 2022/2023)

wheat consumption is presently estimated at 80-90 mt annually, whereas the government keeps a reserve of around 24-26 mt/year to run its food support programs. For 2022-23, the government planned to procure 44 mt wheat to run these social support schemes and maintain sufficient reserve stocks. India’s accelerating wheat export program is also getting a push on account of disruption due to Ukraine-Russia conflicts². Traditionally, India is not a major wheat exporter even though we are the second-largest wheat producer and hold around 9 per cent of global stocks. In 2021-22

(April-March), India’s wheat exports reached an all-time high (Fig. 2). The surge in exports was due to global price increases and inventory shortages in the Black Sea region, thus making Indian wheat more competitive in the global market. The top ten importing countries in 2020-21 were: Bangladesh, Nepal, United Arab Emirates, Sri Lanka, Yemen, Afghanistan, Qatar, Indonesia, Oman, and Malaysia. During 2022-23 (April-March), India’s wheat exports amounted to approximately 5.5 mt which was significantly lower than the initial target of 10 mt set before the export ban imposed in May 2022³.

² https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Grain+and+Feed+Annual_New+Delhi_India_IN2022-0027

³ <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/agriculture/041222-india-eyes-wheat-exports-of-11-mil-12-mil-mt-in-my-2022-23-on-black-sea-disruptions>

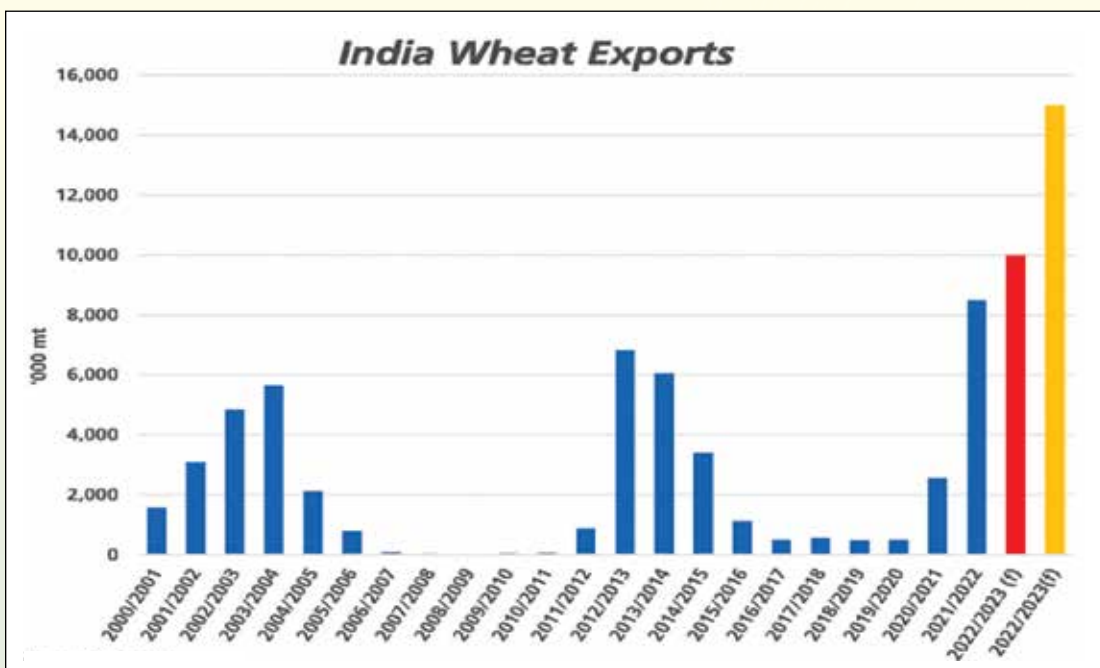


Fig. 2. Wheat export trends in the last two decades

Source: USDA Industry

However, recently India emerged as a key supplier of wheat to Egypt, Iran, Bangladesh and Indonesia, which were earlier dependent for wheat supply from Ukraine.

India’s wheat exports have been growing with a 48.56 per cent compounded annual growth rate (CAGR) during 2016-2020 but India’s share in the world wheat exports is still less than 1 per cent⁴. It is quite evident that India has the potential to become a major wheat exporter. However, the present surplus of

around 15 mt is not adequate for sustainable export to countries like Brazil, Indonesia, and countries in North Africa, Sub-Saharan Africa, and the Middle East. Therefore, there is an urgent need to increase quality wheat production for multiple benefits to: (i) boost India’s foreign currency reserves, (ii) strengthen political, geopolitical and economic partnerships at regional and global levels, and (iii) become a reliable source of wheat for nations facing shortages of wheat.

⁴ <https://pib.gov.in/PressReleasePage.aspx?PRID=1786624>

Key Challenges to Increase Wheat Export

Research and Development

Evidently, future wheat breeding will face a significant challenge to enhance both production and productivity, and also to be directed towards achieving diverse genetic improvements with a shorter breeding cycle. This is especially critical given the current limitations of narrow genetic base of wheat, even with past successes of crop breeding. Traditional breeding methods will not be able to meet the domestic as well as export demands. The solution lies in accelerated breeding programs that combine conventional strategies with cutting-edge molecular and genetic technologies by: (i) utilizing a wider range of genetic material to address a multitude of traits and breeding objectives, (ii) significantly reducing the time it takes to deliver new varieties to farmers, (iii) precisely identifying and deploying desirable genes to create genotypes suited to various agro-ecologies, (iv) transferring valuable genes from even distant sources into commercially viable wheat cultivars, and (v) accelerating breeding programs and high-throughput processes to

meet the ambitious goals to increase production as well as quality of wheat.

Overcoming Yield Barriers

For India to become a significant player in the global wheat market, it needs to achieve a surplus that caters to both domestic and international demands. Currently, India has low productivity (3.66 t/ha) compared to its competitors like China and Mexico (over 6 t/ha). Since possibility of expansion of area under cultivation is limited, increasing yield per hectare is the main option to generate market surplus of wheat. In fact, India must aim to increase productivity to at least 5 t/ha. This challenge stems from the substantial gap between the potential yield of existing wheat varieties and what farmers actually achieve in the field. The key reasons for this gap include but not limited to:

- **Weed resistance and losses:** Up to 20-30 per cent of potential productivity is lost due to weed damage depending upon the region. Unfortunately, weeds in North-West India are becoming increasingly resistant to the current herbicides available in the market.

- **Nutrient imbalance and inconsistent irrigation:** Imbalanced use of nutrients and inconsistent irrigation practices that do not align with critical growth stages further limit the yield potential.
- **Skilled labor shortage:** The lack of skilled labor also poses a major challenge.
- **Terminal heat resistance:** The lack of varieties that can withstand the terminal heat in North-West India.

By addressing the above issues, India can significantly improve its wheat yield, pave the way for a substantial exportable surplus, and establish itself as a major player in the global wheat market. The above efforts will ensure India's food security and also address: (i) increasing competitiveness of Indian wheat in the global market, allowing for exports at attractive prices, (ii) boosting farmers' income by exporting higher volumes which can significantly benefit wheat-growing farmers in India, and (iii) improving land management, as improved wheat productivity may free-up land for growing other critically important oilseeds and pulses, thus significantly reducing India's import dependence.

Stakeholders' Dialogue

In view of the above, a Dialogue on India to Emerge a Global Wheat Player, was organized by the Trust for Advancement of Agricultural Sciences (TAAS), New Delhi, a neutral Think Tank, in collaboration with Indian Council of Agricultural Research (ICAR) and ICAR-Indian Institute of Wheat and Barley Research (IIWBR), Karnal at New Delhi on 22 March, 2024 at the National Agricultural Science Centre (NASC), Pusa Campus, New Delhi. The Technical Program of the Dialogue is appended as *Annexure I*. Forty-one stakeholders including policy makers, regulators, researchers, farmers, Farmer Producer Organizations (FPOs), exporters, and private sector representatives attended the Dialogue (*Annexure II*). The objectives of the Dialogue were to: (i) analyze the constraints and opportunities for wheat production and export, (ii) understand the production and internal consumption scenario, including levels of buffer stock, (iii) suggest strategies for targeted quality wheat production, procurement and export to target countries, (iv) understand phytosanitary measures and seed quality adherence to meet the international standards, and (v) develop enabling policy framework for sustainable long-term export of wheat.

Major Recommendations

Recognizing the need to ensure domestic food security and also to become a major wheat player globally, the stakeholders emphasized an urgency to address the current production challenges, enhance production, explore export promotion strategy, and meet specific quarantine and sanitary and phytosanitary (SPS) requirements for international trade. This Policy Brief outlines the consolidated research, development and policy related recommendations that can help India emerge as a major global player.

Research

1. India has considerable potential to increase wheat productivity without horizontal expansion of cultivated area. This can be achieved by increasing the current national average from 3.66 t/ha to around 5 t/ha. In this regard, the Indian wheat program with active role of ICAR-IIWBR, could play an important role by: (i) using diverse genetic diversity to improve yield potential, and (ii) having a robust pre-breeding national network involving ICAR-IIWBR, major wheat research institutions/SAUs and CIMMYT/ICARDA.
2. Despite the high yield potential (over 8.0 t/ha) for some improved varieties, a significant gap exists both at the research farms and farmers' fields. To bridge this gap, the ICAR-IIWBR needs to collaborate with state agriculture departments in different agro-ecological regions, and to assess the reasons behind existing yield gaps.
3. The grain quality is the most critical to accelerate wheat export, and hence we need to lay greater thrust now on the quality improvement to meet international requirements as well as standards. Therefore, research efforts need to lay greater focus on quality improvement as well as on value-added wheat products such as flour, pasta and biscuits.
4. To ensure long-term disease management, it is essential to strengthen basic research for developing wheat varieties possessing inherent resistance to Karnal bunt, and other diseases like blast.
5. Wheat trade is affected mainly by the presence of fungal diseases, such as Karnal bunt, *Fusarium* head blight and wheat

blast. Karnal bunt affects wheat (*Triticum aestivum*), triticale (*Triticum aestivum* × *Secale cereale*), and durum wheat (*Triticum durum*). Comparatively, durum wheat is resistant to Karnal bunt but is susceptible to head scab or *Fusarium* head blight. *Fusarium* head blight is caused by *Fusarium graminearum*, which produces mycotoxins, viz. deoxynivalenol (DON). Therefore, ICAR needs to initiate a special research program to effectively control these three major fungal diseases.

6. There is need to conduct research on developing alternate phytosanitary treatments to mitigate the pest risks associated with wheat exports while minimizing reliance on traditional chemical methods. This would enhance both safety and marketability of Indian wheat in the global market, reduce potential environmental impact due to chemical treatments and ensure compliance with evolving international SPS regulations.

Development

7. To minimize the risk of Karnal bunt while exporting wheat,

India needs to develop a two-step strategy: (i) designate Karnal bunt-free zones, and (ii) promote cultivation of durum wheat, which is highly tolerant to Karnal bunt.

8. Strategically, it will be better to designate pest and disease-free zones, focused mainly on wheat production aimed at exports. This will enhance India's credibility and marketability in the eyes of international buyers. Also, there is a need to streamline the export clearance process through rigorous but quick phytosanitary inspections and needed government clearances.
9. A robust monitoring system has to be established for the designated pest and disease-free zones to track both the production and quality of produce. This would enable proactive adjustments and consistency in meeting required export standards.
10. There is a need to enhance cost competitiveness through an efficient input delivery mechanism, since traditional methods of fertilizer application do lead to inefficiencies and nutrient imbalance. Hence, precision agriculture could

- help in increasing production. Techniques such as soil sensors, decision support systems and variable-rate applicators would help in balanced fertilizer use including micronutrients. Also, there is a need to suggest appropriate measures for adoption of good agricultural practices (GAP).
11. A Biosafety Level 3 (BSL 3) facility at the ICAR-IIWBR Regional Station, Flowerdale, Shimla, has to be established for an early detection and characterization of new or emerging wheat rust variants in order to expedite the development of rust-resistant wheat varieties. This research facility will allow the scientists to safely examine the dangerous wheat rust pathogens, viz., Ug99, which is currently not found in India.
 12. In order to minimize post-harvest losses, there is an urgent need to create modern grain storage facilities such as silos using good storage practices (GSP). Hence, creation of infrastructure for safe wheat storage having proper temperature and humidity control in designated export zones is highly justified.
 13. To streamline export supply chain, there is need to develop a dedicated system for aggregation, grading, storage, procurement, and all related logistics for guarding against pests and diseases.
 14. The farmers need to be empowered through effective communication and innovative extension services for faster technology adoption, with major focus now on public-private partnership.
 15. For planned production and marketing, both within and outside India, the Regional Wheat Varietal Atlases are required to be developed for specific regions. These atlases could serve as a valuable resource for: (i) analyzing varietal distribution patterns that help predict future market demands (e.g. high-protein for bread, durum for pasta), (ii) understanding regional potential for strengthening breeding programs to develop specific varieties, and (iii) taking informed decisions on resource allocation for research, extension, and seed production to meet rising market demands.

Policy

16. Actively promote and incentivize the cultivation of durum wheat varieties which offer an attractive option for wheat exports due to inherent resistance to Karnal bunt, being a major quarantine requirement for many importing countries. This will minimize the risk of export rejection and ensure India's entry into the durum wheat market.
17. There is a need to enhance biosecurity to safeguard wheat production through stricter surveillance and monitoring protocols in a coordinated manner among different agricultural organizations involved – Department of Agriculture Cooperation and Farmers Welfare (DAC&FW), Directorate of Plant Protection, Quarantine, and Storage (DPPQ&S), ICAR-IIWBR and wheat research centers of SAUs – to prevent the spread of transboundary diseases like wheat rusts and wheat blast, which can cause significant economic threats.
18. Provision needs to be made for giving incentives to wheat farmers who adopt GAP for producing wheat that meets the strict phytosanitary requirements for export. This will improve grain quality and reduce the risk of contamination.
19. To ensure export quality and meet diverse needs of buyers, a policy framework needs to be implemented for segregated wheat procurement through minimum support price. In this regard, public-private partnerships (PPPs) can be a viable option for facilitating efficient and cost-effective management, needing required policy support.
20. To become a global leader, there is an urgent need to take up proactive role for market expansion through a well-structured long-term national wheat export policy which can meet diverse buyers' needs (*e.g.* protein content, grain quality).
21. The new markets for sustainable wheat exports need to be strategically explored by leveraging the network of Indian high commissions to identify and assess potential wheat import markets globally. In this context, the customized export policies need to be developed for each target country,

considering factors like import needs, quality requirements, local trade regulations, *etc.* To ensure this, creation of positions of Agricultural Attachés, in the countries having scope for wheat import will be highly justified.

22. For India to become a reliable wheat supplier, a two-phased strategy with specific focus on geopolitically strategic partners is recommended: (i) Identify key partner countries that would require consistent wheat imports. These countries can be considered as 'Wheat Friendship' countries, receiving guaranteed regular wheat supply of minimum agreed quantity. This would build much needed trust and reputation as a dependable supplier; (ii) Once the demands of 'Wheat Friendship' countries are met, India could gradually expand its reach to other countries requiring wheat import.
23. For ensuring easy and urgent access by farmers to safe, effective, and economical

herbicides to control weeds, especially when labour is costly and often not available and also increasing incidence of weedicide resistance is being reported from North-West India, there is a need to accelerate the regulatory approval process for next-generation herbicides, targeting specifically the complex weeds. Import of new safe herbicides be, therefore, expedited, and the financial support for herbicide research must be enhanced in the best national interest.

24. There is a need to explore the possibility of tag-credit lines for wheat exports by developing strategic financial partnerships. These credit lines, linked to targeted wheat purchases, could incentivize international buyers and establish long lasting relationships with the importing countries. Such a win-win initiative must be promoted in the best national interest.

Technical Program

**Venue : NASC Complex, New Delhi
22 March, 2024**

10:00-10:50

10.00-10.07	Welcome	Bhag Mal , Secretary, TAAS
10.07-10.19	Setting the Context	RS Paroda , Founder Chairman, TAAS
10.19-10.29	Special Remarks	RB Singh , Former President, NAAS
10.29-10.44	Address by the Chief Guest	Himanshu Pathak , Secretary, DARE & Director General, ICAR
10.44-10.50	Vote of Thanks	Gyanendra Singh , Director, ICAR-IIWBR

10.50-11.20 Tea Break and Group Photo

11.20-12.35 Session I : Strategies for Promoting Wheat Export

Co-Chairs : **RB Singh**, Former President, NAAS
: **PL Gautam**, Chancellor, RCPAU

Rapporteur : **Amit Sharma**, Principal Scientist, ICAR-IIWBR

11.20-11.35	Export Linked Wheat Production Strategy	Gyanendra Singh , ICAR-IIWBR
11.35-11.50	Strategy to Make Wheat Production Globally Competitive	Raka Saxena , NIAP
11.50-12.05	Export Requirements and Value Chain	Ritesh Sharma , BEDF
12.05-12.20	India's Niche for Wheat Export	Raju Kapoor , FMC

12.20-12.30 Concluding Remarks by **RB Singh**, Former President, NAAS
Co-Chairs **PL Gautam**, Chancellor, RCPAU

12.30-14.00 **Session II: Group Discussion on Production, Export Promotion and Quarantine Considerations**

Group 1 : Eco-regional Production Options

Convener : **Gyanendra Singh**, Director, ICAR-IIWBR

Rapporteur : **Satish Kumar**, Principal Scientist, ICAR-IIWBR

Group 2 : Export Options and Way Forward

Convener : **Raju Kapoor**, Director Public & Industry Affairs, FMC

Rapporteur : **RK Tyagi**, Senior Consultant, TAAS

Group 3 : Quarantine and SPS Considerations

Convener : **JP Singh**, Plant Protection Advisor, DPPQS

Rapporteur : **MS Saharan**, Head, Pathology, ICAR-IARI

14.00-15.00 **Lunch**

15.00-16.20 **Plenary Session**

Chief Guest : **Ramesh Chand**, Member, NITI Aayog

Chair : **RS Paroda**, Chairman, TAAS

15.00-15.30 **Presentation of Group Recommendations**

Gyanendra Singh, Director, ICAR-IIWBR

Raju Kapoor, Director Public & Industry Affairs, FMC

JP Singh, Plant Protection Advisor, DPPQS

15.30-15.45 Address by Chief Guest **Ramesh Chand**, NITI Aayog

15.45-16.15 Concluding Remarks by Chair **RS Paroda**, Chairman, TAAS

16.15-16.20 Vote of Thanks **RK Tyagi**, Senior Consultant, TAAS

16.20-16.45 **Tea**

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Recent Publications

1. Consultative Meeting on Agricultural Extension Platform for South Asia (AEPISA) - Proceeding and Recommendations, 8 March, 2024.
2. Saguna Regenerative Technique and Agro-tourism - A Success Story by Chandrashekhar Hari Bhadsavle, March 2024.
3. Stakeholders Dialogue on Enhancing Fertilizer Use Efficiency for Sustainable Soil Health - Proceeding and Recommendations, February 2024.
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10. National Dialogue on Sustainable Growth and Development of Indian Dairy Sector – Proceedings and Recommendations, 16-17 December, 2022.
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Printed : May, 2024