

BUILDING RESILIENCE IN AUSTRALIAN WHEAT PRODUCTION

Presented by:

Name

ID

AUSTRALIAN WHEAT INDUSTRY

- Australia, ranking among the top five wheat-exporting countries worldwide.
- Wheat, a staple crop grown primarily in the southern and eastern regions of Australia.
- The industry is vital for both domestic consumption and international trade.



REGIONS OF PRODUCTION:

Western Australia:

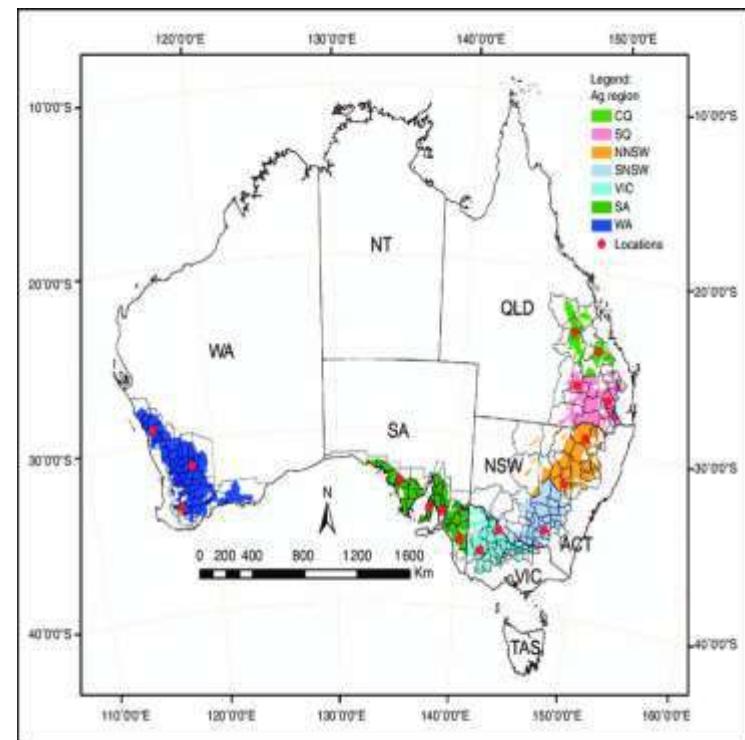
The largest producer, contributing over 30% of the national production.

New South Wales:

Another significant wheat-growing area, contributing around 30%.

Victoria, South Australia & Queensland:

Smaller, but still crucial contributors to national production

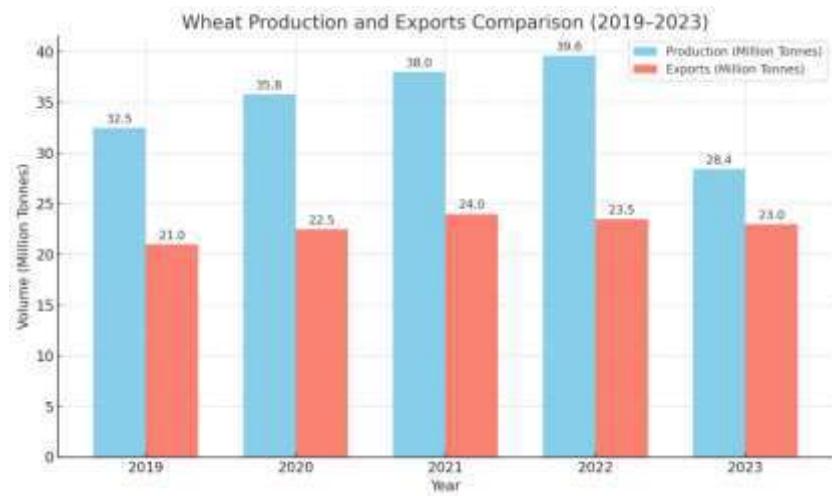


ECONOMIC CONTRIBUTION

Contribution to GDP:
Agriculture accounts for 2.4% of Australia's GDP in 2023–24.

Employment:
sector provides employment for approximately 315,600 people.

Exports:
Reach 23 million tons in the 2023/24, making up 13.7% of global wheat exports.



Wheat production and export volumes over the past five years.

SOCIAL AND ENVIRONMENTAL IMPORTANCE

Food Security:

- Australia produces more food than it consumes, exporting around 70% of its agricultural production, which contributes to global food security.

Rural Development:

- The wheat industry supports rural communities by providing employment and sustaining local economies.

Sustainability Practices:

- Farmers are increasingly adopting sustainable practices to ensure long-term viability and reduce environmental impacts.



CURRENT MANAGEMENT PRACTICES

- **Precision Agriculture:**
- Utilization of technologies such as **GPS-guided tractors** and **soil moisture sensors** to optimize the use of water, fertilizers, and pesticides, ensuring efficient resource use and higher yields.
- **Drones** for crop monitoring, identifying potential issues such as pests or diseases in real-time.
- **Crop Rotation:**
- Farmers alternate wheat with other crops like **canola, barley, or legumes** to improve soil fertility, reduce soil erosion, and prevent pest buildup.
- A key benefit is **breaking pest and disease cycles**, which helps in reducing chemical inputs.



Robot hardware composition of a forest mapping robot.

Climate Change:

- Increasing temperatures and erratic rainfall patterns have impacted sowing and harvesting schedules, reducing yield reliability across major wheat-growing regions.

Drought & Water Scarcity:

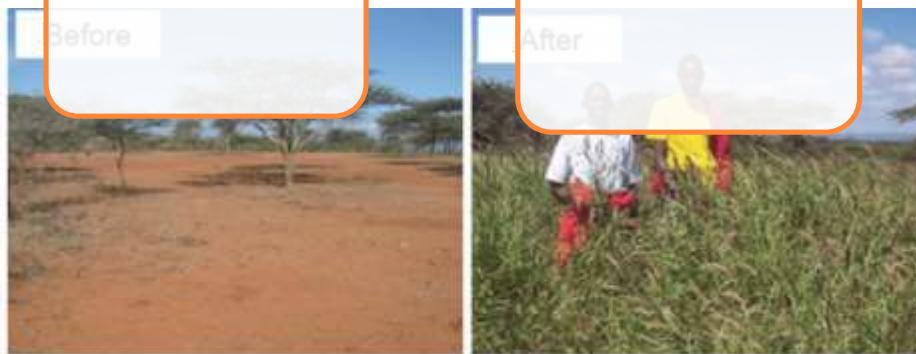
- Extended droughts in New South Wales and Western Australia have led to reduced soil moisture, increasing crop failure risks.

Soil Degradation:

- Intensive monoculture practices and overuse of synthetic fertilizers have led to nutrient depletion and salinity issues, especially in marginal lands.

Pest & Disease Pressure:

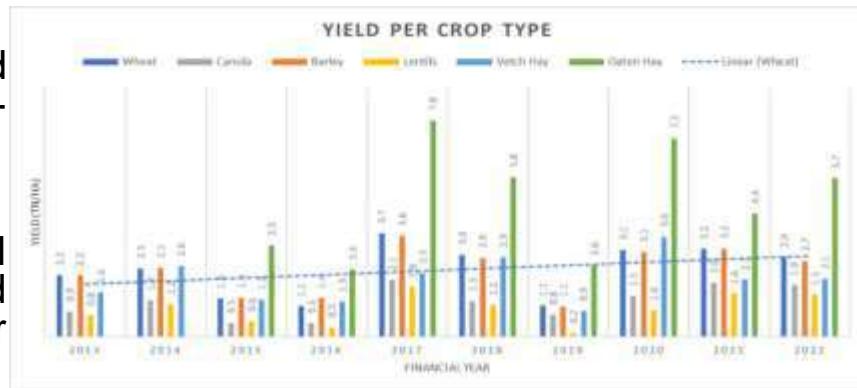
- Rising temperatures contribute to higher incidences of fungal diseases and insect pests, challenging crop protection.



Degraded land (left) and After rehabilitation (right)

MARKET, ECONOMIC, AND POLICY CHALLENGES

- **Trade and Export Barriers:** Volatile global markets and trade restrictions, such as tariffs from China (historically), have affected wheat exports.
- **Rising Input Costs:** Fertilizer, fuel, and machinery costs have surged post-COVID-19, reducing profit margins for farmers.
- **Logistical Constraints:** Inadequate rural infrastructure, especially transport and storage facilities, increase time and cost for exporters.
- **Policy and Regulatory Uncertainty:** Regulatory frameworks like the Wheat Port Code are outdated, causing concerns about fair access to bulk export terminals.



- Graph showing rising input cost

DRIVING INNOVATION THROUGH TECHNOLOGY

- **Precision Agriculture**

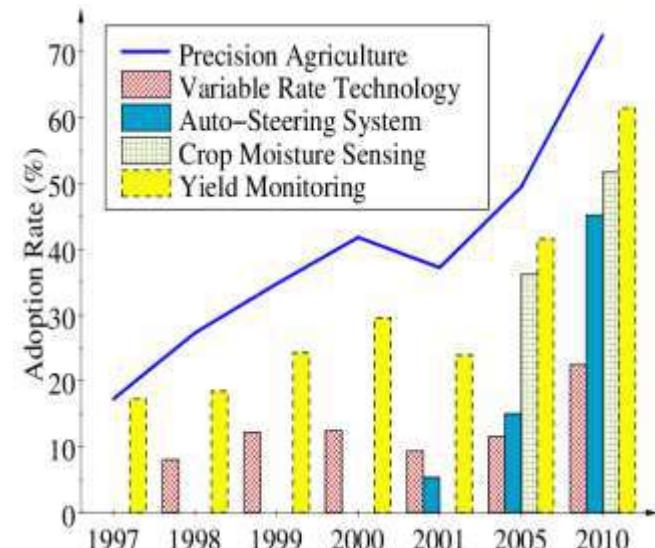
Technologies like GPS-guided tractors, drones, and soil sensors allow for targeted input application, increasing yields and reducing waste.

- **Gene-Edited Wheat (e.g., HB4, CRISPR)**

Australia has begun trials of gene-edited wheat varieties aimed at increasing drought tolerance and yield by up to 10%.

- **Smart Irrigation Systems**

Sensor-based irrigation reduces water usage and improves efficiency in dryland farming systems.



POLICY SUPPORT AND INDUSTRY PARTNERSHIPS

- **Wheat Port Code Review (2024)**

The government is assessing the renewal of the Wheat Port Code to improve access, transparency, and pricing fairness for exporters.

- **Government Grants and Programs**

Investment through R&D agencies like GRDC (Grains Research & Development Corporation) is funding innovation in climate-resilient crops.

- **Industry Collaboration**

AEGIC (Australian Export Grains Innovation Centre) partners with international buyers to tailor wheat quality to market needs.



STRATEGIC RECOMMENDATIONS FOR A SUSTAINABLE FUTURE

4 Pillars of Sustainable Wheat



Invest in Research & Development

Fund climate-resilient wheat breeding, soil health research, and drought-resistant varieties.



Improve Infrastructure

Upgrade rural roads, rail, and ports to reduce export costs and delays



Policy Reform

Modernize trade-related regulations (e.g. Wheat Port Code), streamline export licensing, promote sustainable practices



Promote Knowledge Sharing

Encourage farmer education and digital extension services for modern agtech adoption



CONCLUSION & FUTURE OUTLOOK

- **Summary:**
- Wheat is a cornerstone of Australian agriculture, contributing significantly to GDP, exports, and rural employment.
- The industry faces **environmental, economic, and policy challenges**, especially from climate change and global market volatility.
- Current production systems are transitioning towards **sustainability** through precision agriculture and improved crop rotations.
- **Future Outlook**
- Investment in **research and innovation** will drive climate-resilient wheat varieties and sustainable practices.
- **Policy reforms and infrastructure upgrades** will strengthen Australia's position in the global wheat market.
- **Collaboration across government and industry** will be key to long-term resilience and food security.



Thank You

