

A Shift from Customary to Contemporary Agriculture

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Abstract

Conventional or customary agriculture refers to traditional farming practices that rely on established methods, such as manual or animal-powered tillage, and often involve the use of synthetic fertilizers, pesticides, and herbicides to enhance crop yields and protect against pests and diseases while modern agriculture is characterized by the integration of advanced technologies, sustainable practices, and data-driven decision-making. It often involves the use of precision farming techniques, genetic engineering, and a focus on resource efficiency to enhance productivity while minimizing environmental impact. The shift from conventional or customary to modern agriculture is seen as a necessary evolution to ensure the long-term viability of food production while minimizing environmental impact and addressing the challenges posed by a growing global population and changing climate.

Keywords: Conventional agriculture, Contemporary agriculture, precision agriculture, modern agriculture, internet of things, sustainable development

Introduction

Modern agriculture refers to the contemporary practices, technologies, and methods employed in the cultivation of crops and the raising of livestock. It involves the integration of advanced technologies, scientific principles, and sustainable farming practices to increase efficiency, productivity, and the overall sustainability of agricultural systems. Some key aspects of modern agriculture include:

- ✚ **Technology Integration:** Modern agriculture heavily relies on technology, including precision farming techniques, GPS-guided tractors, drones, and sensor technologies. These tools help farmers optimize resource use, reduce waste, and improve overall efficiency.
- ✚ **Genetic Engineering:** Advances in biotechnology have led to the development of genetically modified (GM) crops that possess desirable traits such as resistance to pests,



diseases, and harsh environmental conditions. This technology aims to enhance crop yields and reduce the need for chemical inputs.

- ✚ **Precision Farming:** Precision agriculture involves using data-driven technologies to manage field variability in crops. Farmers can make more informed decisions about planting, irrigation, fertilization, and harvesting by using sensors, GPS technology, and data analytics.
- ✚ **Sustainable Practices:** Modern agriculture places a strong emphasis on sustainability. Farmers are increasingly adopting practices that minimize environmental impact, such as conservation tillage, cover cropping, and organic farming methods.
- ✚ **Vertical Farming and Indoor Agriculture:** As urbanization increases and available arable land decreases, there's a growing interest in vertical farming and indoor agriculture. These methods involve growing crops in vertically stacked layers or controlled indoor environments, often using hydroponics or aeroponics.
- ✚ **Automation:** The use of robotics and automation in agriculture is on the rise. Automated machinery can perform tasks such as planting, harvesting, and monitoring crops, reducing the need for manual labor and increasing efficiency.
- ✚ **Data Analytics:** Farmers are increasingly leveraging data analytics to make more informed decisions about crop management. This includes analyzing weather patterns, soil conditions, and crop performance data to optimize farming practices.
- ✚ **Biological Pest Control:** Modern agriculture encourages the use of biological pest control methods, such as introducing natural predators or using biopesticides, to reduce the reliance on chemical pesticides.

The adoption of these modern agricultural practices aims to address the challenges of feeding a growing global population while minimizing environmental impact and ensuring long-term sustainability. However, it's important to note that the adoption of these practices can vary widely based on geographical location, economic factors, and local farming traditions.

Difference between customary and contemporary agriculture

Modern agriculture and customary agriculture refer to two different approaches to farming, each characterized by distinct practices, technologies, and philosophies. The differences between the two are as follows:

Technology and Innovation:

- **Modern Agriculture:** Emphasizes the use of advanced technologies, precision farming, and data-driven approaches. Technologies such as GPS-guided tractors, drones, and sensor-based monitoring systems are commonly employed.
- **Customary Agriculture:** Typically relies on traditional farming methods and may not integrate the latest technological advancements to the same extent. Customary farming practices often involve more manual labor and less reliance on digital tools.

Chemical Inputs:

- **Modern Agriculture:** Involves the use of synthetic fertilizers, pesticides, and herbicides to boost crop yields and protect against pests and diseases. Genetically modified (GM) crops are also common in modern agriculture.
- **Customary Agriculture:** Also utilizes chemical inputs, but there may be less emphasis on genetically modified organisms (GMOs). Customary farmers may rely more on traditional breeding methods to develop desired traits in crops.

Sustainability Practices:

- **Modern Agriculture:** Places a greater emphasis on sustainability through practices such as conservation tillage, cover cropping, and integrated pest management. There is a growing awareness of environmental impacts, and efforts are made to reduce the ecological footprint of farming.
- **Customary Agriculture:** May not prioritize sustainability to the same extent. Practices can vary widely, and some customary farms may use more traditional and potentially less sustainable methods.

Diversity of Crops:

- **Modern Agriculture:** Often involves specialization in a few high-yielding crops. Monoculture, or the cultivation of a single crop over a large area, is common.
- **Customary Agriculture:** May include a broader range of crops, and there may be more diversity within a single farm. Crop rotation is a traditional practice used to maintain soil fertility.

Land Management:

- **Modern Agriculture:** Utilizes precision farming techniques to optimize the use of land, water, and other resources. Data-driven decisions help farmers manage fields more efficiently.



- **Customary Agriculture:** May rely on more traditional land management practices without the same level of precision and data-driven decision-making.

Philosophy and Approach:

- **Modern Agriculture:** Tends to adopt a more scientific and technology-driven approach, with a focus on maximizing efficiency, productivity, and sustainability through the integration of advanced methods.
- **Customary Agriculture:** Encompasses a broader range of farming practices, and the term is often used to refer to mainstream or widely adopted methods within a particular region or country.

It's important to note that the terms "modern agriculture" and "customary agriculture" can be used differently in various contexts and regions. Additionally, the adoption of specific practices can vary among individual farmers and agricultural operations within each category. The ongoing evolution of agricultural practices means that the distinctions between these two approaches are not always rigid or universally defined.

Government interventions in modern agriculture

Governments around the world often play a crucial role in shaping and supporting modern agriculture through various interventions. These interventions are designed to address challenges, promote sustainability, ensure food security, and enhance the overall efficiency of the agricultural sector. Some common government interventions in modern agriculture include:

1. **Research and Development Funding:** Governments invest in agricultural research and development to promote innovation. This funding supports the development of new technologies, crop varieties, and farming practices that enhance productivity, resilience, and sustainability.
2. **Subsidies:** Governments may provide subsidies to farmers to offset the costs of inputs such as fertilizers, pesticides, and seeds. Subsidies can also be directed toward equipment purchases, irrigation systems, and other investments to support agricultural production.
3. **Extension Services:** Governments often establish agricultural extension services to provide farmers with information, training, and technical assistance. These services help farmers adopt modern practices, stay informed about market trends, and address challenges in crop management.



4. **Infrastructure Development:** Investments in rural infrastructure, such as roads, irrigation systems, and storage facilities, contribute to the overall development of the agricultural sector. Improved infrastructure facilitates the transportation of goods, reduces post-harvest losses, and enhances market access for farmers.
5. **Market Support:** Governments may implement policies to stabilize agricultural prices and ensure fair returns for farmers. Price support mechanisms, commodity market regulations, and creation of agricultural marketing boards are examples of interventions aimed at stabilizing markets and supporting farm incomes.
6. **Crop Insurance Programs:** To protect farmers against the risks of crop failure due to weather events, pests, or diseases, governments often introduce crop insurance programs. These programs help farmers manage risks and recover losses in case of adverse events.
7. **Land Reform Policies:** Governments may implement land reform policies to address issues related to land distribution, land tenure, and access to agricultural land. Such policies aim to promote equitable land ownership and enhance the overall efficiency and sustainability of agriculture.
8. **Environmental Regulations:** Governments enact regulations to address environmental concerns associated with agriculture. These may include restrictions on certain agricultural practices, incentives for environmentally friendly farming methods, and penalties for pollution.
9. **Training and Education:** Supporting educational programs in agriculture helps build a skilled workforce and ensures the transfer of knowledge about modern farming practices. This includes formal education, vocational training, and capacity-building initiatives.
10. **Biotechnology Regulations:** Governments establish regulations governing the use of biotechnology in agriculture, including genetically modified organisms (GMOs). These regulations ensure the safety of agricultural products, protect the environment, and address public concerns about genetically modified crops.
11. **Food Security Programs:** Governments implement programs to enhance food security, which may include subsidies on essential food items, distribution of food aid, and the development of policies to maintain a stable food supply.

The nature and extent of government interventions in agriculture vary widely among countries and regions, depending on factors such as economic conditions, political priorities,



and the structure of the agricultural sector. Additionally, the effectiveness of these interventions is often a subject of ongoing debate and evaluation.

Conclusion

The integration of the advancements like innovation, data driven farming, genetic improvement, sustainable practices, IOT, etc. in modern agriculture leads to increased efficiency, higher yields, and more sustainable crop production, helping to meet the growing global demand for food. While customary agriculture referred to traditional farming practices that rely on established methods, such as manual or animal-powered tillage, and often involve the use of synthetic fertilizers, pesticides, and herbicides to enhance crop yields It is important to note that advancements in agricultural practices, technology, and sustainability are ongoing. Some proponents of conventional agriculture argue that it has been instrumental in meeting global food demand and that improvements can be made to mitigate its negative impacts. Others advocate for alternative and sustainable farming methods, such as organic farming, agroecology, and regenerative agriculture, as potential solutions to address the challenges associated with conventional agriculture. Overall, discussions around the success or failure of conventional agriculture often involve weighing its contributions to food security against its environmental and social costs.

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