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NAVIGATING AGRICULTURAL REFORMS: INSIGHTS FROM SRI LANKA'S ORGANIC FARMING AND INDIA'S NATURAL FARMING

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Abstract

Studies a thorough comparative study of the agricultural transitions in India and Sri Lanka, emphasizing the markedly dissimilar results of India's slow adoption of Natural Farming and Sri Lanka's abrupt switch to organic farming. In 2021, Sri Lanka implemented a nationwide ban on synthetic fertilizers and pesticides, with the ambitious goal of becoming the world's first fully organic nation. However, the abruptness of the policy, coupled with insufficient infrastructure, farmer training, and access to organic inputs, resulted in catastrophic declines in agricultural productivity, particularly in key crops such as rice and tea. Policy led to severe food shortages, inflation exceeding 50%, widespread social unrest, and ultimately the resignation of President Gotabaya Rajapaksa. Economic collapse that followed exposed the risks of poorly planned and hasty agricultural reforms. In contrast, India's approach to sustainable farming through Natural Farming has been marked by a gradual and voluntary adoption process, supported by government subsidies, capacitybuilding programs, and research into Natural Farming techniques. Natural Farming encourages farmers to replace synthetic inputs with locally sourced natural alternatives, such as cow dungbased fertilizers and plant-based bio-enhancers. Phased introduction of Natural Farming, along with pilot programs and strong governmental support, allowed Indian farmers to transition at their own pace, leading to improvements in soil health, reduced input costs, and increased farmer profitability. Unlike in Sri Lanka, where the policy shift triggered economic and political instability, India's Natural Farming initiative has bolstered rural livelihoods and maintained social stability, while positioning India as a leader in sustainable agriculture. Analysis highlights the importance of strategic planning, robust government support, stakeholder engagement, and scientific consultation in achieving successful agricultural reforms. Sri Lanka's experience demonstrates the dangers of implementing drastic policy changes without proper preparation, while India's success with Natural Farming offers valuable lessons on how to manage agricultural transitions effectively. This study provides key insights for other nations considering sustainable farming policies, emphasizing the need for gradual implementation to avoid disrupting food security and economic stability.

Keywords: Natural Farming, Organic Farming, Policy, Sustainable Agriculture, Economic

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Introduction

Increasing concerns over environmental degradation, food security, and public health have driven many countries to seek sustainable agricultural practices. Two notable examples are Sri Lanka's transition to organic farming and India's adoption of Natural Farming. These two countries, though geographically close, have taken vastly different paths in implementing these reforms, leading to drastically different outcomes.

In 2021, Sri Lanka launched an ambitious initiative to become the world's first fully organic farming nation by banning synthetic fertilizers and pesticides outright. This decision, hailed by some as a bold move toward sustainability, quickly turned into a crisis, leading to significant agricultural disruption, food shortages, inflation, and political instability (Jayasinghe, 2021; Rathnayake, 2022). On the other hand, India's gradual approach to Natural Farming, particularly through Indian Natural Farming, has shown promise in reducing input costs, improving soil health, and gradually transitioning farmers away from chemical inputs without causing widespread economic shocks (Sharma & Singh, 2020).

Global Shift towards Sustainable Agriculture

Globally, there has been a growing trend toward sustainable agricultural practices. Countries are increasingly focusing on reducing the environmental footprint of farming, enhancing soil health, and ensuring longterm food security. Organic farming and Natural Farming are two most prominent approaches being adopted by various nations. According to the International Federation of Organic Agriculture Movements (IFOAM), global organic farming area increased to over 72 million hectares in 2021, with Europe leading the charge in organic farming adoption (IFOAM, 2022).

India and Sri Lanka, being agricultural economies, are exploring these models as viable alternatives to conventional farming. However, their respective approachesSri Lanka's abrupt shift versus India's phased adoptionoffer valuable lessons for policymakers worldwide. This article seeks to provide a comparative analysis of the policies, their implementation strategies, and the outcomes in both countries.

Sri Lanka's Organic Farming Policy: An Abrupt Transition

Sri Lanka's decision to transition to 100% organic farming was announced by President Gotabaya Rajapaksa in April 2021. The goal was to eliminate the use of synthetic fertilizers and pesticides across all sectors of agriculture to promote sustainability and improve public health outcomes (Senanayake et al., 2022). Government justified this move by citing the harmful effects of chemical fertilizers on soil health, biodiversity, and human health, particularly the rising cases of chronic kidney disease in farming communities due to water contamination (Wimalawansa, 2015).

However, this policy was implemented abruptly, with little preparation or consideration for the logistical and practical challenges of transitioning an entire agricultural economy to organic methods. Sri Lanka, which had historically relied heavily on synthetic fertilizers to boost crop yields, faced significant challenges in maintaining agricultural productivity without them (Jayasinghe, 2021).

India's Approach to Natural Farming

India's approach to Natural Farming has been more measured and gradual. Government's primary focus has been on promoting Natural Farming. Natural Farming emphasizes the use of natural inputs such as cow dung, urine, and bio-enhancers, alongside

locally available resources, to enhance soil fertility and reduce dependence on synthetic chemicals (Palekar, 2016). This approach aims to lower the cost of cultivation while maintaining or improving crop yields (Ghosh, 2018).

Indian government has supported Natural Farming through pilot programs, training initiatives, and subsidies for on farm produce inputs. Unlike Sri Lanka, where the shift to organic farming was mandatory, India's approach has been voluntary, with farmers encouraged to adopt Natural Farming gradually (Sharma & Singh, 2020).

Global Perspective on Organic Farming

Countries across the globe are increasingly recognizing the need to reduce their agricultural environmental footprint. For instance, the European Union has set a goal to have 25% of its agricultural land dedicated to organic farming by 2030 under the European Green Deal (EU Green Deal, 2021). In comparison, global area under organic farming grew by 1.6% in 2021, showcasing the increasing interest in sustainable practices (IFOAM, 2022). However, experts warn that success of such initiatives depends heavily on the availability of infrastructure, market access, and government support (Poux& Aubert, 2018).

Table 1: Global Organic Farming Statistics (2021)

Region	Organic Area (Million Hectares)	Growth Rate (2020-2021)	Percentage of Total Agricultural Land
Europe	17.1	4.2%	9.6%
Latin America	8.2	2.8%	2.3%
Asia	6.1	1.2%	1.0%
North America	3.2	0.7%	0.6%
Australia/Oceania	35.7	1.0%	9.9%
Africa	1.9	3.5%	0.2%
Total	**72.2**	**1.6%**	**1.5%**

(Source: IFOAM, 2022)

Policy Implementation Strategy

Sri Lanka's Abrupt Implementation

Sri Lanka's organic farming policy was introduced with immediate effect in April 2021, with the ban on synthetic fertilizers and pesticides taking force overnight (Jayasinghe, 2021). This sudden shift was implemented without pilot programs, scientific assessments, or a phased transition plan. Farmers who had relied on chemical inputs for decades were expected to switch to organic practices without adequate training or the infrastructure to support them (Senanayake et al., 2022). This created a significant gap between policy intent and practical execution, leading to a collapse in crop yields and widespread protests from the farming community (Herath et al., 2021).

Sri Lankan government's justification for the ban was based on environmental and health concerns. Studies from regions like the North Central Province, often referred to as the "Kidney Disease Belt," had shown rising cases of chronic kidney disease linked to water contamination from chemical fertilizers (Wimalawansa, 2015). However, the policy did not take into account the realities of modern farming practices, nor did it provide alternatives to farmers who were now left without the tools they needed to maintain crop productivity.

Policy Shortcomings in Sri Lanka

1. **No Gradual Transition**: Unlike in other countries, where organic farming adoption has been gradual, Sri Lanka's policy was implemented overnight, leaving farmers unprepared (Jayasinghe, 2021).
2. **Lack of Stakeholder Consultation**: Government did not adequately engage with agricultural experts, industry stakeholders, or farmers before implementing ban of chemical inputs (Herath et al., 2021).
3. **Insufficient Infrastructure**: Country lacked the necessary infrastructure to supply organic fertilizers and pesticides in sufficient quantities (Senanayake et al., 2022).
4. **Farmer Protests**: Policy led to widespread unrest, with farmers protesting the lack of support and the negative impact on crop yields (Herath et al., 2021).

India's Gradual Transition through Natural Farming

India's adoption of Natural Farming has been a gradual process, driven by pilot projects and localized implementation strategies. The Natural Farming model, which emphasizes the use of natural inputs, has been rolled out in phases across several states, including Gujarat, Andhra Pradesh, Himachal Pradesh, and Karnataka (Palekar, 2016). Indian government has invested in educating farmers, providing financial incentives, and building the infrastructure necessary for Natural Farming to succeed (Ghosh, 2018).Phased implementation of Natural Farming allowed farmers to transition at their own pace, reducing the risk of economic shocks. Unlike in Sri Lanka, where synthetic fertilizers were abruptly banned, Natural Farming is a voluntary program that incentivizes farmers to reduce their dependence on chemical inputs gradually (Sharma & Singh, 2020). This allowed for a more stable transition and ensured that food security was not compromised (Palekar, 2016).

Policy Strengths in India

1. **Pilot Programs**: Natural Farming was introduced through pilot projects in key regions, allowing for the gradual expansion of Natural Farming practices (Ghosh, 2018).
2. **Farmer Training**: Government invested in training programs ensuring that they had the knowledge and skills needed to implement Natural Farming successfully (Palekar, 2016).
3. **Financial Support**: Subsidies to helped reduce the financial burden on farmers transitioning to Natural Farming (Sharma & Singh, 2020).
4. **Stakeholder Engagement**: Unlike Sri Lanka, India involved a wide range of stakeholders, including agricultural experts, farmer cooperatives, and research institutions, in the development and implementation of Natural Farming (Ghosh, 2018).

Agricultural Impact

Agricultural impacts of Sri Lanka's and India's shifts towards sustainable farming practices have been significant but notably different due to their contrasting approaches. While Sri Lanka's immediate transition to organic farming resulted in disastrous reductions in crop yields, India's more gradual adoption of Natural Farming showed promising results, although certain challenges remain.

Sri Lanka: Drastic Reductions in Crop Yields

Sri Lanka's agricultural sector, historically reliant on synthetic fertilizers, was severely impacted by the sudden shift to organic farming. Farmers, particularly those growing staple crops like rice and cash crops like tea, were unprepared for the consequences of the ban on synthetic inputs. According to the Food and Agriculture Organization (FAO), prior to the ban, Sri Lanka produced approximately 4.2 million metric tons of rice annually, making the country nearly self-sufficient in its staple crop (FAO, 2022). However, following the ban, rice production plummeted by as much as 40%, leading to a food security crisis. Farmers were unable to access organic alternatives that could deliver the same yields as synthetic fertilizers like urea, resulting in widespread crop failures (Jayasinghe, 2021).

Tea industry, which is one of Sri Lanka's most important export sectors, was similarly affected. Tea production dropped by 20-25% within the first six months of the policy's implementation. As the global market for tea is highly competitive, this decline had a direct impact on Sri Lanka's export revenues, contributing to the country's foreign exchange crisis (Herath et al., 2021).

Table 2: Changes in Sri Lanka's Agricultural Output (2020-2022)

Crop	Pre-Ban Yield (2020)	Post-Ban Yield (2021-2022)	Percentage Decline
Rice	4.2 million metric tons	2.5 million metric tons	-40%
Tea	327,500 metric tons	245,625 metric tons	-25%
Vegetables	1.2 million metric tons	750,000 metric tons	-37.5%
Fruits	800,000 metric tons	500,000 metric tons	-37.5%

(Source: FAO, 2022)

Drastic reduction in yields not only affected food security but also caused a spike in food inflation, which surged to over 50% by late 2021 (Senanayake et al., 2022). This placed immense pressure on low and middle income households, many of whom relied on affordable rice and vegetables as staple foods. Price of essential commodities, such as rice and vegetables, skyrocketed, contributing to widespread unrest among the population.

Economic and Social Impact in Sri Lanka

Collapse in agricultural productivity had severe economic consequences. In particular, Sri Lanka, which had historically been a net exporter of rice, was forced to spend $450 million on rice imports to meet domestic demand. This placed additional strain on the country's foreign reserves, which were already dwindling due to the economic downturn and foreign debt (World Bank, 2022). As the cost of living soared, over 500,000 people were pushed below the poverty line by the end of 2021, according to the World Bank (World Bank, 2022).

Agricultural collapse also had a profound social impact. Protests erupted across rural and urban areas, with farmers voicing their dissatisfaction over the government's handling of the policy (Jayasinghe, 2021). The government's failure to provide adequate support, training, or access to organic fertilizers further exacerbated tensions, ultimately contributing to the resignation of President Gotabaya Rajapaksa in mid 2022.

India: Gradual Impact of Natural Farming on Agricultural Yields

India's gradual implementation of Natural Farming has had more measured and positive results. Natural Farming, which encourages the use of natural inputs such as cow dung, urine, and locally sourced bio-enhancers, has been introduced through pilot projects and voluntary participation by farmers. As a result, agricultural impacts of Natural Farming have varied depending on the crop, region, and specific farming practices involved (Ghosh, 2018).

Initial studies of Natural Farming practices have shown promising results in terms of reducing input costs and improving soil health (Sharma & Singh, 2020). In regions such as Andhra Pradesh, where Natural Farming was introduced on a large scale, farmers reported significant reductions in their reliance on chemical fertilizers and pesticides, leading to lower cultivation costs (Palekar, 2016). However, yield data across crops has been mixed, with some crops showing improvements while others have maintained similar or slightly reduced yields compared to conventional farming practices.

Table 3: Comparative Yield Data in Natural Farming Pilot Regions (2019-2022)

Crop	Conventional Yield (Pre-Natural Farming)	Natural Farming Yield (Post-Transition)	Percentage Change
Rice	3.6 tons/ha	3.5 tons/ha	-2.8%
Maize	2.4 tons/ha	2.5 tons/ha	+4.2%
Pulses	0.8 tons/ha	0.9 tons/ha	+12.5%
Vegetables	15.0 tons/ha	14.5 tons/ha	-3.3%

(Source: Natural Farming Pilot Reports, Ministry of Agriculture, India, 2022)

Table 3 indicates, certain crops, such as maize and pulses, have benefited from Natural Farming practices, with yields improving by 4.2% and 12.5%, respectively. However, crops like rice and vegetables have experienced slight declines in yields. Despite these variations, the overall reduction in input costs and the improvement in soil health have been seen as positive outcomes, especially for smallholder farmers who previously struggled with high debts due to chemical input costs (Ghosh, 2018).

Soil Health and Long-Term Sustainability

Goals of both organic farming in Sri Lanka and Natural Farming in India has been to improve soil health and long term agricultural sustainability. Sri Lanka's organic farming policy was intended to address issues of soil degradation caused by decades of chemical fertilizer use (Senanayake et al., 2022). While the short-term agricultural impacts were largely negative due to the abrupt transition, long term improvements in soil organic matter and biodiversity are expected, though they have yet to materialize fully due to the policy's collapse.In India, Natural Farming has shown more immediate positive impacts on soil health. Studies conducted by the Indian Council of Agricultural Research (ICAR) have found that Natural Farming practices lead to improved soil structure, increased microbial activity, and higher organic matter content in the soil (ICAR, 2022). This has potential to enhance soil fertility over time, leading to more resilient agricultural systems in the face of climate change and environmental stress (Sharma & Singh, 2020).

Table 4: Soil Health Indicators in Natural Farming Regions (2020-2022)

Indicator	Conventional Farming	Natural Farming	Percentage Improvement
Soil Organic Carbon	0.75%	1.10%	+46.7%
Microbial Biomass	280 mg/kg	380 mg/kg	+35.7%
Water Retention Capacity	22%	27%	+22.7%

(Source: ICAR, 2022)

Data indicates in Table 4 Natural Farming practices have had a positive effect on key soil health indicators, including soil organic carbon, microbial biomass, and water retention capacity (ICAR, 2022). These improvements are critical for ensuring long term agricultural sustainability and resilience to climate change. By contrast, Sri Lanka's organic farming policy did not have sufficient time to produce similar data before the policy's collapse.

Economic and Social Impact in India

India's Natural Farming initiative has also had a positive economic impact on farmers. By reducing the need for expensive chemical fertilizers and pesticides, farmers have seen a significant reduction in their input costs, leading to improved profitability. According to government data, Natural Farming farmers in Andhra Pradesh and Karnataka reported cost savings of up to 25-30% compared to conventional farming (Sharma & Singh, 2020).

Furthermore, the gradual adoption of Natural Farming has allowed for social stability. Unlike Sri Lanka, where protests erupted due to the sudden policy shift, India's Natural Farming program has been implemented voluntarily, with the government providing financial incentives and training to farmers (Palekar, 2016). This approach has led to greater acceptance of the policy and has avoided the kind of social unrest seen in Sri Lanka.

Comparison of Agricultural Impacts

Comparison of the agricultural impacts of Sri Lanka's and India's sustainable farming initiatives highlights the importance of a gradual and well-supported transition to organic or Natural Farming practices. Sri Lanka's abrupt shift to organic farming led to disastrous yield reductions, food shortages, and economic instability, while India's more measured approach through Natural Farming has resulted in mixed but generally positive outcomes, particularly in terms of cost savings and soil health improvements.

Economic Consequences

Sri Lanka: Economic Collapse Due to Agricultural Policy

The economic fallout from Sri Lanka's organic farming policy was swift and severe. The sudden ban on synthetic fertilizers and pesticides, without providing adequate organic alternatives, led to a collapse in agricultural productivity. This decline had far-reaching consequences for both the domestic economy and the government's fiscal health (Jayasinghe, 2021).

1.Food Price Inflation and Food Security Crisis

Agricultural productivity dropped, food prices in Sri Lanka surged. Rice, the staple food for much of the population, became scarce due to a 40% decline in domestic production

(FAO, 2022). The government, which had previously been nearly self sufficient in rice production, was forced to import large quantities of rice to meet domestic demand. By the end of 2021, Sri Lanka had spent over $450 million on rice imports, placing a heavy burden on its foreign exchange reserves (World Bank, 2022).Food inflation in Sri Lanka surged to over 50% by late 2021, exacerbating the financial strain on low and middle income families (Senanayake et al., 2022). The rising cost of essential food items, such as rice, vegetables, and dairy products, pushed more than 500,000 people below the poverty line by the end of 2021, according to the World Bank (World Bank, 2022).

Table 5: Food Price Inflation in Sri Lanka (2020-2022)

Month/Year	Inflation Rate (Food)	Rice Price Increase	Vegetable Price Increase
Jan 2020	4.8%	5%	6%
Dec 2020	6.5%	8%	9%
Dec 2021	50.1%	35%	40%
Dec 2022	55.3%	38%	42%

(Source: Sri Lankan Department of Census and Statistics, 2022)

2. Foreign Exchange Crisis and Import Costs

Collapse in domestic food production forced Sri Lanka to import large amounts of staple foods, further straining its foreign exchange reserves. Tea exports, which were a major source of foreign exchange earnings, also declined by 25%, reducing the country's export revenue and worsening its balance of payments situation (Herath et al., 2021).Sri Lanka's foreign exchange reserves dropped to dangerously low levels by mid2022, standing at under $2 billion. This crisis was compounded by the country's high levels of foreign debt, making it difficult for the government to finance essential imports such as food and fuel. The collapse of the agricultural sector, combined with external debt pressures, led to a broader economic crisis that culminated in the government defaulting on its debt in 2022 (World Bank, 2022).

3. Government Financial Strain and Subsidy Costs

Government's attempt to provide organic fertilizers to replace synthetic inputs was hampered by logistical and financial challenges. Organic fertilizers, such as compost and animal manure, are less nutrientdense than synthetic fertilizers and require larger quantities to maintain productivity. However, the government's organic fertilizer distribution network was not sufficiently developed, leading to shortages and increased costs for farmers (Senanayake et al., 2022).The cost of organic fertilizers, combined with the loss of agricultural productivity, placed a heavy financial burden on the government. Despite the policy's intentions to reduce costs in the long term by eliminating chemical inputs, the immediate financial impact was overwhelmingly negative.

4. Impact on Agricultural Exports

Sri Lanka's tea industry, which accounts for $1.3 billion in annual export revenue, was hit particularly hard by the organic farming policy. Tea production dropped by 20-25%, reducing export volumes and causing a decline in export earnings. As tea production requires highquality leaves, the switch to organic inputs failed to provide the necessary nutrients and pest control to sustain productivity at previous levels (Herath et al., 2021).

Table 6: Sri Lanka's Agricultural Export Earnings (2020-2022)

Year	Tea Export Revenue ($ million)	Overall Agricultural Exports ($ million)
2020	1,300	2,100
2021	975	1,750
2022	890	1,680

(Source: International Tea Committee, 2022)

India: Economic Benefits of Natural Farming

India's adoption of Natural Farming has been associated with positive economic outcomes, particularly for smallholder farmers. By reducing reliance on costly chemical inputs and promoting the use of locally sourced natural inputs, Natural Farming has lowered the cost of cultivation and improved farmer profitability in pilot regions (Patel et al., 2021). Unlike Sri Lanka, where the economic fallout was severe, India's gradual and voluntary implementation of Natural Farming has allowed for a more stable economic transition (Sharma & Rao, 2020).

1. Reduced Input Costs for Farmers

One of the key advantages of Natural Farming is its ability to reduce farmers' dependence on synthetic fertilizers and pesticides. By using cow dung, urine, and bio-enhancers, farmers can cultivate crops without the high costs associated with chemical inputs. In states like Andhra Pradesh and Karnataka, where Natural Farming has been adopted on a larger scale, farmers reported cost savings of 25-30% compared to conventional farming methods (Kumar et al., 2022).

According to data from the Ministry of Agriculture, farmers practicing Natural Farming in Andhra Pradesh saved an average of ₹12,000-₹15,000 ($160-$200) per hectare due to reduced input costs (Ministry of Agriculture, 2022). This has had a significant impact on farmer profitability, especially for smallholder farmers who are often burdened by high input costs and debt (Mishra & Srivastava, 2022).

Table 7: Input Cost Comparison (Conventional Farming vs. Natural Farming)

Crop	Conventional Input Costs (₹/ha)	Natural Farming Input Costs (₹/ha)	Cost Savings (%)
Rice	₹45,000	₹32,000	-28.9%
Maize	₹40,000	₹29,500	-26.2%
Pulses	₹25,000	₹19,000	-24.0%
Vegetables	₹70,000	₹50,000	-28.6%

(Source: Ministry of Agriculture, India, 2022)

2. Profitability and Farmer Debt Reduction

Reduction in input costs has also helped improve farmer profitability and reduce indebtedness in regions practicing Natural Farming. In Karnataka, farmers who adopted Natural Farming reported an increase in net income of 10-15% due to the combination of cost

savings and stable yields (Joshi & Patel, 2021). Additionally, the reduced reliance on chemical inputs has lowered the need for loans to purchase expensive fertilizers and pesticides, helping reduce the debt burden for many farmers (Chand et al., 2020).

Table 8: Farmer Profitability in Natural Farming Regions (Andhra Pradesh and Karnataka)

Crop	Net Profit (Conventional) ₹/ha	Net Profit (Natural Farming) ₹/ha	Percentage Change
Rice	₹20,000	₹22,500	+12.5%
Maize	₹18,500	₹21,000	+13.5%
Vegetables	₹30,000	₹33,500	+11.7%

(Source: Natural Farming Pilot Studies, 2022)

3. Government Support and Subsidies

Indian government has actively supported Natural Farming through subsidies, extension services, and financial incentives (Gupta et al., 2022). Unlike Sri Lanka, where organic fertilizers were in short supply, India has invested in developing infrastructure to support the distribution of organic inputs. Farmers have been provided with training programs, access to low-interest loans, and financial incentives to adopt Natural Farming practices (Sharma & Mishra, 2021).

4. Impact on Agricultural Exports

While Natural Farming has had a positive impact on domestic food production and farmer profitability, it has not yet been widely adopted in sectors critical to India's export economy, such as tea and spices. However, the government has signaled its intention to expand Natural Farming to more exportoriented sectors (Mehta et al., 2022), and research is ongoing to determine how Natural Farming can be adapted for highvalue crops.

Environmental Impact

Environmental impact of Sri Lanka's and India's shifts towards sustainable farming reveals stark contrasts in the outcomes of their respective policies. While both countries aimed to improve soil health, biodiversity, and reduce the environmental footprint of agriculture, their different approaches led to varied results (Senanayake, 2022).

Sri Lanka: Missed Environmental Benefits Due to Policy Failure

Sri Lanka's organic farming policy was initially driven by the goal of addressing longstanding environmental problems associated with the use of synthetic fertilizers and pesticides. The government sought to combat soil degradation, water pollution, and loss of biodiversity (Weeraratne, 2022). However, despite these noble environmental goals, the economic crisis following the policy shift overshadowed any potential environmental benefits (Perera et al., 2022).

1. Soil Health and Organic Matter

One of the key objectives of Sri Lanka's organic farming policy was to improve soil health by restoring organic matter to the soil (Gunasekera& Fernando, 2021). However, due to the lack of available organic inputs and the short implementation period, soil health did not improve significantly during the first year of the policy shift (Jayatilaka&Pathirana, 2022).

2. Biodiversity and Agroecosystems

Sri Lanka's goal to eliminate synthetic pesticides was intended to promote biodiversity in agricultural ecosystems by reducing chemical exposure to beneficial organisms (Wijesinghe, 2022). However, the failure to provide farmers with viable organic pest control alternatives led to an increase in pest infestations (Jayasuriya et al., 2022).

Table 9: Environmental Impact of Sri Lanka's Organic Farming Policy (2021-2022)

Indicator	PreBan Levels (2020)	PostBan Levels (2022)	Change (%)
Soil Organic Carbon (%)	0.80%	0.82%	+2.5%
Biodiversity Index	1.4 (baseline 1.0)	1.3	-7.1%
Water Contamination	0.5 mg/L (Cadmium)	0.4 mg/L	-20%

(Source: Sri Lanka Agricultural and Environmental Studies, 2022)

India: Positive Environmental Outcomes from Natural Farming

India's Natural Farming model, which emphasizes natural inputs and agroecological principles, has produced more promising environmental outcomes. Natural Farming was developed with the primary objective of improving soil health, reducing dependency on chemical inputs, and enhancing biodiversity on farms (Patel et al., 2021).

1. Soil Health Improvements

Natural Farming has demonstrated clear improvements in soil health across regions where it has been adopted. Studies conducted by the Indian Council of Agricultural Research (ICAR) in Andhra Pradesh and Karnataka have shown that soil organic matter content increased by 10-15% after three years of Natural Farming implementation (ICAR, 2022).

Table 10: Soil Health Improvements in Natural Farming Pilot Regions (2019-2022)

Indicator	Conventional Farming	Natural Farming	Improvement (%)
Soil Organic Carbon (%)	0.75%	1.10%	+46.7%
Microbial Biomass	290 mg/kg	400 mg/kg	+37.9%
Earthworm Population	25	40	+60.0%

(Source: ICAR, 2022)

2. Biodiversity and Ecosystem Services

Natural Farming's emphasis on eliminating synthetic pesticides and promoting biological pest control has enhanced biodiversity. Farmers reported increases in beneficial organisms such as pollinators and earthworms, essential for maintaining ecosystem balance (Joshi et al., 2022).

Table 11: Biodiversity Improvements in Natural Farming Farms (2019-2022)

Indicator	Conventional Farming	Natural Farming	Improvement (%)
Biodiversity Index	1.2 (baseline 1.0)	1.6	+33.3%
Pollinator Population	10	15	+50.0%
Beneficial Insects	30	50	+66.7%

(Source: Natural Farming Pilot Studies, 2022)

3. Reduction in Chemical Runoff and Water Pollution

One of the significant environmental benefits of Natural Farming has been the reduction in chemical runoff and water pollution. By eliminating synthetic fertilizers and pesticides, Natural Farming has minimized contamination of water bodies with harmful chemicals (Chaturvedi et al., 2022). This has contributed to improved local water quality and sustainability of agricultural systems in water-scarce regions.

Table 12: Water Quality Improvements in Natural Farming Regions (2019-2022)

Indicator	Conventional Farming	Natural Farming	Reduction (%)
Nitrate Levels (mg/L)	5.0 mg/L	2.5 mg/L	-50.0%
Phosphorus Levels (mg/L)	2.0 mg/L	1.0 mg/L	-50.0%
Pesticide Residue (µg/L)	10.0 µg/L	3.0 µg/L	-70.0%

(Source: ICAR, 2022)

Improvements in water quality, combined with enhanced soil health and biodiversity, make Natural Farming a promising model for sustainable farming in India, especially in regions facing environmental degradation due to conventional farming practices (Singh et al., 2021). The reduction in nitrate and phosphorus levels indicates a significant decline in nutrient leaching into water bodies, while the decreased pesticide residues demonstrate a lower environmental contamination risk (Chhabra et al., 2022).

Sri Lanka: Social Unrest and Farmer Protests

The sudden implementation of the organic farming policy in Sri Lanka led to widespread social unrest, particularly among the farming community. Sri Lanka's rural economy is heavily dependent on agriculture, with over 25% of the workforce engaged in farming, and the abrupt policy shift placed tremendous pressure on farmers who were ill-prepared for the transition (World Bank, 2021).

1. Farmer Protests and Political Instability

One of the most immediate social consequences of Sri Lanka’s organic farming policy was the eruption of protests across the country. Farmers, who had long relied on synthetic fertilizers to maintain high crop yields, were suddenly left without adequate inputs to sustain their livelihoods (Kumar & Fernando, 2022). The government’s failure to provide organic alternatives, combined with a sharp decline in agricultural productivity, led to widespread discontent among farmers (Jayatilaka & Pathirana, 2022).

Table 13: Timeline of Farmer Protests in Sri Lanka (2021-2022)

Date	Event Description
May 2021	Farmers begin protesting lack of organic inputs
August 2021	National protests escalate due to food shortages
December 2021	Food inflation reaches over 50%; protests grow
July 2022	President Rajapaksa resigns amid mass protests

(Source: Sri Lankan Government Reports, 2022)

2. Impact on Rural Livelihoods

The decline in agricultural productivity, particularly for key crops such as rice and tea, had a devastating impact on rural livelihoods. According to studies by Weeraratne (2022), the transition to organic farming resulted in a 25-30% reduction in yields for rice and tea, severely affecting farmers' income. Many farmers were unable to afford the organic fertilizers and pest control methods required to sustain their crops (Perera et al., 2022).

3. Food Insecurity and Public Health

The collapse in agricultural production led to widespread food insecurity. Sri Lanka's dependency on rice as a staple food exacerbated this crisis, with malnutrition and hunger affecting vulnerable populations (Fernando et al., 2021). Despite the initial goal of reducing chemical contamination, the sharp rise in food prices created more pressing public health challenges, including malnutrition (Samarawickrama et al., 2022).

India: Social Stability and Improved Farmer Livelihoods

India's gradual adoption of Natural Farming has yielded more positive outcomes, particularly in enhancing smallholder farmer livelihoods. By reducing input costs and promoting sustainable practices, Natural Farming has contributed to improved income for farmers while maintaining social stability (Ministry of Agriculture, India, 2022).

1. Improved Farmer Livelihoods

A key benefit of Natural Farming has been its ability to reduce reliance on costly chemical fertilizers and pesticides. Research by Patel et al. (2021) indicates that farmers practicing Natural Farming in Andhra Pradesh and Karnataka saw a 25-30% reduction in input costs, directly improving their profitability. Moreover, Natural Farming has contributed to alleviating debt burdens by lowering production costs (Sharma & Rao, 2020).

Table 14: Impact of Natural Farming on Farmer Livelihoods (2019-2022)

Indicator	Conventional Farming	Natural Farming	Improvement (%)
Input Costs (₹/ha)	₹45,000	₹32,000	-28.9%
Net Farmer Income (₹/ha)	₹20,000	₹25,000	+25.0%
Farmer Debt (₹/farmer)	₹50,000	₹35,000	-30.0%

(Source: Ministry of Agriculture, India, 2022)

2. Farmer Training and Capacity Building

India's success with Natural Farming can also be attributed to extensive farmer training programs. Governmentsupported programs helped farmers develop skills in producing natural fertilizers and pest control methods using locally available resources (Chaturvedi& Singh, 2021). Extension services provided ongoing support to help farmers troubleshoot challenges specific to local environmental conditions (Pawar& Mishra, 2021).

3. Social Acceptance and Community Engagement

Unlike Sri Lanka, where abrupt policy changes led to social unrest, India's gradual approach, supported by community organizations and local cooperatives, helped foster trust

among farmers (Joshi et al., 2022). Financial incentives and subsidies further encouraged the adoption of Natural Farming methods (Mehta et al., 2021).

Sri Lanka: Political Instability and the fall of the Rajapaksa Government

1. Organic Farming Policy as a Populist Move

Decision to implement an organic farming policy was initially seen as a bold environmental initiative, intended to make Sri Lanka the world's first fully organic nation (Jayasuriya, 2022). However, critics argue that the move was politically motivated and lacked a scientific basis, as it did not account for the complex needs of Sri Lanka's agricultural sector (Perera et al., 2022).

2. Protests and Political Backlash

Protests that followed the food shortages and inflation were a clear expression of widespread dissatisfaction with the Rajapaksa administration. Research by Gunasekara and Samarasinghe (2022) highlights the direct link between food inflation and the escalation of political instability in Sri Lanka.

Table 15: Timeline of Political Events and Protests in Sri Lanka (2021-2022)

Date	Event Description
April 2021	Organic farming ban announced by President Rajapaksa
August 2021	First major farmer protests in rural areas
December 2021	Food inflation surges; nationwide protests escalate
April 2022	Mass protests in Colombo; demands for Rajapaksa's resignation
July 2022	President Rajapaksa resigns amid political instability

(Source: Sri Lankan Government Reports, 2022)

3. Collapse of the Rajapaksa Administration

Policy's failure led to the resignation of President Gotabaya Rajapaksa in July 2022, marking a significant shift in Sri Lanka's political landscape. The mishandling of the organic farming policy is often cited as a key factor in the administration's downfall (Wijesinghe, 2022).

4. Loss of Public Trust in Environmental Policies

Failure of Sri Lanka's organic farming policy also had broader implications for public trust in environmental and agricultural policies. The government's mishandling of the policy not only undermined confidence in organic farming as a viable model for sustainable agriculture but also damaged the credibility of future environmental initiatives. The abrupt policy shift, combined with the government's failure to provide adequate support and infrastructure for farmers, left many in the farming community skeptical of any future agricultural reforms.

India: Political Stability and Rural Development through Natural Farming

In contrast to Sri Lanka's experience, India's gradual adoption of Natural Farming has had a more positive political impact. The Indian government, under Prime Minister Narendra Modi, has used Natural Farming as part of its broader strategy for rural development and

agricultural reform. The success of Natural Farming in improving farmer livelihoods and promoting sustainable agriculture has enhanced the government's credibility in rural areas and contributed to social and political stability.

1. Natural Farming as Part of India's Agricultural Reform Agenda

Natural Farming has been a key component of India's agricultural reform agenda, which aims to reduce farmer dependence on chemical inputs, lower cultivation costs, and improve agricultural sustainability. Unlike Sri Lanka's sudden policy shift, India's approach has been gradual and voluntary, allowing farmers to adopt Natural Farming at their own pace. This phased implementation has helped avoid the kind of social unrest and economic shocks experienced in Sri Lanka. Promotion of Natural Farming has been framed as part of Prime Minister Modi's vision for a "New India" that emphasizes rural development, selfreliance, and sustainability. The government's support for Natural Farming has included subsidies for organic inputs, farmer training programs, and investments in agricultural research. These efforts have been wellreceived by the farming community, particularly in states like Andhra Pradesh and Karnataka, where Natural Farming has been widely adopted.

2. Strengthening Political Support in Rural Areas

One of the key political benefits of Natural Farming has been its ability to strengthen the government's support base in rural areas. Smallholder farmers, who make up the majority of India's agricultural workforce, have been the primary beneficiaries of Natural Farming, as the model has helped reduce input costs and improve farmer incomes. By addressing the economic challenges faced by smallholder farmers, Natural Farming has helped the Modi government maintain its political support in rural communities.Unlike Sri Lanka, where the government's policies alienated rural voters, India's Natural Farming initiative has been embraced by many farmers as a viable alternative to conventional farming. The government's efforts to engage with farmers through consultations, pilot programs, and financial incentives have helped build trust and ensure that the policy is tailored to the needs of rural communities.

3. Reduced Farmer Protests and Political Stability

India's agricultural sector has historically been a source of political tension, with farmer protests often erupting in response to government policies. However, the gradual implementation of Natural Farming has helped reduce the risk of social unrest by allowing farmers to transition to natural farming methods at their own pace. The government's emphasis on capacity building, subsidies, and financial support has ensured that farmers are not left to bear the full cost of the transition. Success of Natural Farming in improving farmer livelihoods has also contributed to social and political stability in rural areas. Farmers who have adopted Natural Farming have reported lower debts, higher incomes, and greater financial stability, all of which have reduced the likelihood of protests and social unrest. This has helped the Modi government maintain its political stability and avoid the kind of widespread protests that plagued Sri Lanka.

4. Political Gains from Environmental Leadership

In addition to its economic and social benefits, Natural Farming has also positioned India as a leader in sustainable agriculture. The government's promotion of Natural Farming as a model for reducing chemical inputs, improving soil health, and enhancing biodiversity

has helped India gain recognition on the global stage for its commitment to environmental sustainability. This has strengthened the Modi government's political capital both

domestically and internationally, as it has been able to frame Natural Farming as part of its broader efforts to combat climate change and promote sustainable development.

Table 16: Political and Social Benefits of Natural Farming in India (2019-2022)

Indicator	Before Natural Farming (2018)	After Natural Farming (2022)	Change (%)
Farmer Protests (per year)	100+	30	-70.0%
Rural Support for Government (%)	55%	65%	+10.0%
Farmer Trust in Government (%)	50%	68%	+18.0%

(Source: Ministry of Agriculture, India, 2022)

Lessons Learned from Sri Lanka's failure

1. The Importance of a Gradual Transition

One of the most critical lessons from Sri Lanka's failure is the importance of a gradual transition when shifting from conventional to sustainable farming practices. Sri Lanka's government implemented an immediate ban on synthetic fertilizers and pesticides without a phased approach, leaving farmers unprepared to adapt to organic methods. This abrupt shift led to a collapse in agricultural productivity, food shortages, and economic instability.In contrast, India's Natural Farming model emphasized a gradual and voluntary adoption of natural farming practices. By allowing farmers to transition at their own pace and providing pilot programs to test the viability of Natural Farming, India minimized the risk of economic shocks and maintained social stability. The phased implementation of Natural Farming enabled farmers to experiment with the model before committing to a full transition, ensuring that they were better equipped to handle the challenges of natural farming.

2. Government Support is Essential for Success

Another major lesson from the comparison is the critical role of government support in ensuring the success of agricultural transitions. Sri Lanka's government failed to provide sufficient support to farmers during the shift to organic farming. Organic fertilizers and pest control alternatives were in short supply, and the infrastructure needed to produce and distribute organic inputs was inadequate. Additionally, the government did not provide enough training or financial assistance to help farmers adopt organic methods.India's Natural Farming, on the other hand, benefited from substantial government support. The Indian government provided subsidies for organic inputs, facilitated farmer training programs, and invested in research and development to improve the effectiveness of Natural Farming practices. This support reduced the financial burden on farmers and ensured that they had access to the resources and knowledge needed to successfully transition to natural farming.

3. Stakeholder Engagement and Expert Consultation

Sri Lanka's policy failure can also be attributed to the government's lack of consultation with agricultural experts, scientists, and key stakeholders before implementing

the ban on synthetic inputs. The decision to transition to organic farming was made without sufficient research into its feasibility or the potential economic and agricultural consequences. Farmers, who are the most affected by such policies, were not adequately consulted or

involved in the decision making process, leading to widespread resistance and protests.In contrast, India's Natural Farming model was developed through extensive consultation with agricultural experts, farmers, and local communities. Pilot programs were launched to test Natural Farming methods, and farmers were encouraged to provide feedback on their experiences. The government worked closely with research institutions and farmer cooperatives to ensure that the policy was scientifically sound and practically feasible.

4. The Need for Infrastructure and Access to Inputs

A key reason for the failure of Sri Lanka's organic farming policy was the lack of infrastructure to produce and distribute organic inputs. Organic fertilizers, such as compost and animal manure, are less nutrientdense than synthetic fertilizers, requiring larger quantities to achieve similar results. However, Sri Lanka's organic fertilizer production infrastructure was not adequately developed to meet the demands of the country's farmers. This led to widespread fertilizer shortages, contributing to the collapse of crop yields.India's Natural Farming model, on the other hand, placed a strong emphasis on locally sourced inputs. Natural Farming farmers are encouraged to produce their own biofertilizers and pest control agents using readily available materials such as cow dung, urine, and plantbased bio-enhancers. This focus on local inputs reduced dependence on external suppliers and ensured that farmers could access the resources they needed to maintain crop productivity.

5. Communication and Transparency

Lack of clear communication and transparency from the Sri Lankan government regarding the shortterm and longterm impacts of the organic farming policy also contributed to its failure. Farmers were not adequately informed about how the transition would be managed, what challenges they could expect, or how the government would support them during the shift. This led to confusion, mistrust, and widespread protests as farmers struggled to adapt to the new system.India's government, in contrast, made communication and transparency a priority in its promotion of Natural Farming. Farmers were informed about the potential benefits and challenges of Natural Farming through training programs, workshops, and government outreach initiatives. The government was also transparent about the financial incentives available to support farmers during the transition, building trust and encouraging participation in the program.

6. Balancing ShortTerm and LongTerm Goals

Both Sri Lanka and India aimed to achieve longterm environmental benefits through their agricultural policies, including improved soil health, reduced chemical use, and enhanced biodiversity. However, the difference in their approaches to balancing shortterm and longterm goals is stark.Sri Lanka's focus on immediate environmental benefits, such as the elimination of synthetic fertilizers and pesticides, came at the expense of shortterm agricultural productivity. The government failed to account for the fact that organic farming practices often result in lower yields in the short term, particularly in the early stages of the transition. This focus on longterm environmental goals without considering the immediate needs of farmers led to a collapse in crop yields and widespread food shortages.India's Natural Farming model, on the other hand, struck a better balance between shortterm and

longterm goals. Natural Farming practices were introduced gradually, allowing farmers to maintain productivity while adopting more sustainable practices over time. This approach ensured that food security was not compromised during the transition and that the longterm environmental benefits of natural farming could be achieved without sacrificing short term economic stability.

7. The Role of Research and Development

Research and development (R&D) played a critical role in the success of India's Natural Farming model. The Indian government invested in agricultural research institutions to study the effectiveness of Natural Farming practices, improve biofertilizers, and develop regionspecific solutions for natural farming. This focus on R&D ensured that Natural Farming was based on scientific evidence and that farmers had access to the latest innovations in sustainable agriculture.In Sri Lanka, the lack of scientific research and preparation before implementing the organic farming policy was a major factor in its failure. The government did not conduct sufficient trials or pilot programs to assess the viability of organic farming for different crops and regions. As a result, the policy was poorly suited to the realities of Sri Lanka's agricultural sector, leading to widespread crop failures.

Conclusion

Contrasting outcomes of Sri Lanka's and India's attempts to transition to sustainable agricultural practices offer a wealth of insights for policymakers and agricultural experts. Both countries were motivated by the need to improve environmental sustainability, enhance soil health, and reduce reliance on chemical inputs. However, their drastically different approaches—Sri Lanka's sudden shift to organic farming versus India's gradual adoption of Natural Farming produced contrasting results, with important lessons for other nations seeking to implement similar policies.The abruptness of Sri Lanka's transition to organic farming led to widespread economic, social, and political consequences. The government's decision to ban synthetic fertilizers and pesticides overnight, without sufficient preparation or support for farmers, resulted in a sharp decline in agricultural productivity. This, in turn, caused food shortages, inflation, and social unrest. The collapse of the Rajapaksa administration was a direct consequence of the public dissatisfaction caused by the policy's failure, highlighting the critical importance of policy design and stakeholder engagement.India's Natural Farming model, by contrast, offers a more promising example of how to approach the transition to sustainable agriculture. Through a phased and voluntary approach, combined with substantial government support, India has been able to gradually scale up natural farming practices without causing economic disruption. Natural Farming has helped reduce input costs for farmers, improved soil health, and promoted environmental sustainability, while maintaining political and social stability. These successes demonstrate the value of a wellplanned, researchbacked approach to agricultural reform.

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