



Addressing Food Insecurity in Developing Nations: Sustainable Agricultural Interventions

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ABSTRACT :-

Food frailty stays a basic test in many non-industrial countries, exacerbated by variables, for example, environmental change, populace development, and financial precariousness. Manageable agrarian intercessions have arisen as promising ways to deal with address this complex issue. This paper audits different maintainable farming mediations executed in emerging nations to battle food frailty. It analyzes the adequacy of procedures, for example, agroecology, crop enhancement, protection agribusiness, and further developed water system strategies in improving food creation and versatility among weak networks. The paper additionally considers the financial and ecological effects of these mediations, featuring the significance of all encompassing methodologies that focus on nearby information, local area cooperation, and biological system supportability. Besides, it investigates the job of innovation, strategy backing, and worldwide participation in advancing the reception and versatility of economical rural practices. By combining proof from different contextual investigations and insightful writing, this paper adds to a more profound comprehension of the capability of manageable horticulture to moderate food frailty and cultivate long haul food sway in non-industrial countries.

KEYWORDS:=-

1. Food insecurity
2. Developing nations
3. Sustainable agriculture
4. Interventions
5. Food production
6. Hunger alleviation

INTRODUCTION:=-

Food frailty stays a squeezing worldwide test, especially in non-industrial countries where millions wrestle with yearning and lack of healthy sustenance consistently. In spite of progressions in innovation and horticultural practices, a huge piece of the total populace actually needs admittance to nutritious and adequate food. This issue is additionally exacerbated by elements, for example, environmental change, quick populace development, and restricted assets. In the journey for manageable arrangements, consideration has progressively turned towards farming mediations that address quick food needs as well as advance long haul versatility and independence. This examination paper expects to investigate the job of practical farming mediations in tending to food uncertainty inside non-industrial countries. By analyzing different methodologies, approaches, and contextual analyses, this paper tries to reveal insight into successful procedures for upgrading food security, further developing livelihoods, and encouraging supportable advancement in weak networks. Through this investigation, it is trusted that policymakers, scientists, and professionals can acquire bits of knowledge into down to earth mediations that can have a significant effect in the existences of those generally impacted by food weakness.

LITERATURE REVIEW:-

1. Agroecology and Sustainable Farming Practices:

Agroecology emphasizes the integration of ecological principles into agricultural systems, focusing on enhancing biodiversity, soil fertility, and ecosystem services. Numerous studies have demonstrated the potential of agroecological practices such as crop diversification, agroforestry, and

integrated pest management in improving food security outcomes. For example, Altieri and Nicholls (2020) highlight how agroecological approaches can enhance smallholder farmers' resilience to climate change while increasing their food production and income levels.

2. Access to Resources and Technology:

Access to resources and appropriate agricultural technologies plays a crucial role in improving food security outcomes. Research by Barrett and Bevis (2021) underscores the importance of targeted investments in rural infrastructure, such as irrigation systems and roads, to enhance smallholder farmers' productivity and market access. Moreover, the adoption of innovative technologies, such as precision agriculture and mobile-based extension services, has shown promise in enhancing agricultural productivity and resilience in resource-constrained settings (Lowder et al., 2019).

3. Policy and Institutional Support:

Effective policies and institutional support are essential for promoting sustainable agricultural interventions and addressing food insecurity. Case studies from various developing nations highlight the role of supportive policies in facilitating the adoption of sustainable farming practices and improving access to markets and financial services for smallholder farmers (De Schutter, 2018). Moreover, institutional mechanisms such as farmer cooperatives and extension services play a vital role in disseminating knowledge, building capacity, and fostering collaboration among agricultural stakeholders (FAO, 2020).

4. Gender Dynamics and Social Equity:

Gender dynamics play a significant role in shaping agricultural production and food security outcomes in developing nations. Research suggests that empowering women farmers through access to land, credit, and education can have positive impacts on household food security and nutrition (Doss, 2022). Furthermore, interventions that promote gender-sensitive approaches to agricultural development, such as women's cooperatives and participatory decision-making processes, have shown promise in enhancing both productivity and social equity within rural communities (Quisumbing et al., 2019).

5. Climate Change Resilience:

Climate change poses significant challenges to agricultural productivity and food security in developing nations. Sustainable agricultural interventions that promote climate-smart practices, such as conservation agriculture and resilient crop varieties, are critical for building adaptive capacity and mitigating the impacts of climate variability (Lipper et al., 2018). Additionally, integrating traditional knowledge and indigenous practices into agricultural systems can enhance resilience and foster local adaptation strategies in the face of climate change (Salazar et al., 2021).

KEY TECHNOLOGIES:-

1. Precision Agriculture: Precision agriculture involves using advanced technologies such as GPS, sensors, drones, and data analytics to optimize the use of resources like water, fertilizers, and pesticides. This helps improve crop yields while minimizing environmental impact.

2. Drip Irrigation: Drip irrigation systems deliver water directly to the roots of plants, reducing water wastage and increasing efficiency compared to traditional irrigation methods. This technology is particularly beneficial in areas with water scarcity.

3. Hydroponics and Aeroponics: Hydroponic and aeroponic systems enable the cultivation of crops without soil, using nutrient-rich water solutions. These systems can be implemented in urban areas or regions with poor soil quality, allowing for year-round production of fresh produce.

4. Genetically Modified Organisms (GMOs): GMOs have been engineered to exhibit desirable traits such as resistance to pests, diseases, and harsh environmental conditions. By incorporating GMO crops into agricultural practices, farmers can achieve higher yields and reduce losses due to factors like drought or pests.

5. Agroforestry: Agroforestry integrates trees and shrubs into agricultural landscapes, providing multiple benefits such as soil conservation, biodiversity enhancement, and supplemental income from timber or fruit production. This approach can improve soil fertility and resilience to climate change.

6. Mobile Applications: Mobile applications designed for agriculture provide farmers with access to information on weather forecasts, market prices, crop management practices, and pest control methods. These apps empower farmers to make informed decisions, leading to improved productivity and profitability.

7. Biological Pest Control: Biological pest control involves using natural predators, parasites, or pathogens to manage pest populations. This method reduces reliance on chemical pesticides, mitigating environmental pollution and protecting beneficial organisms.

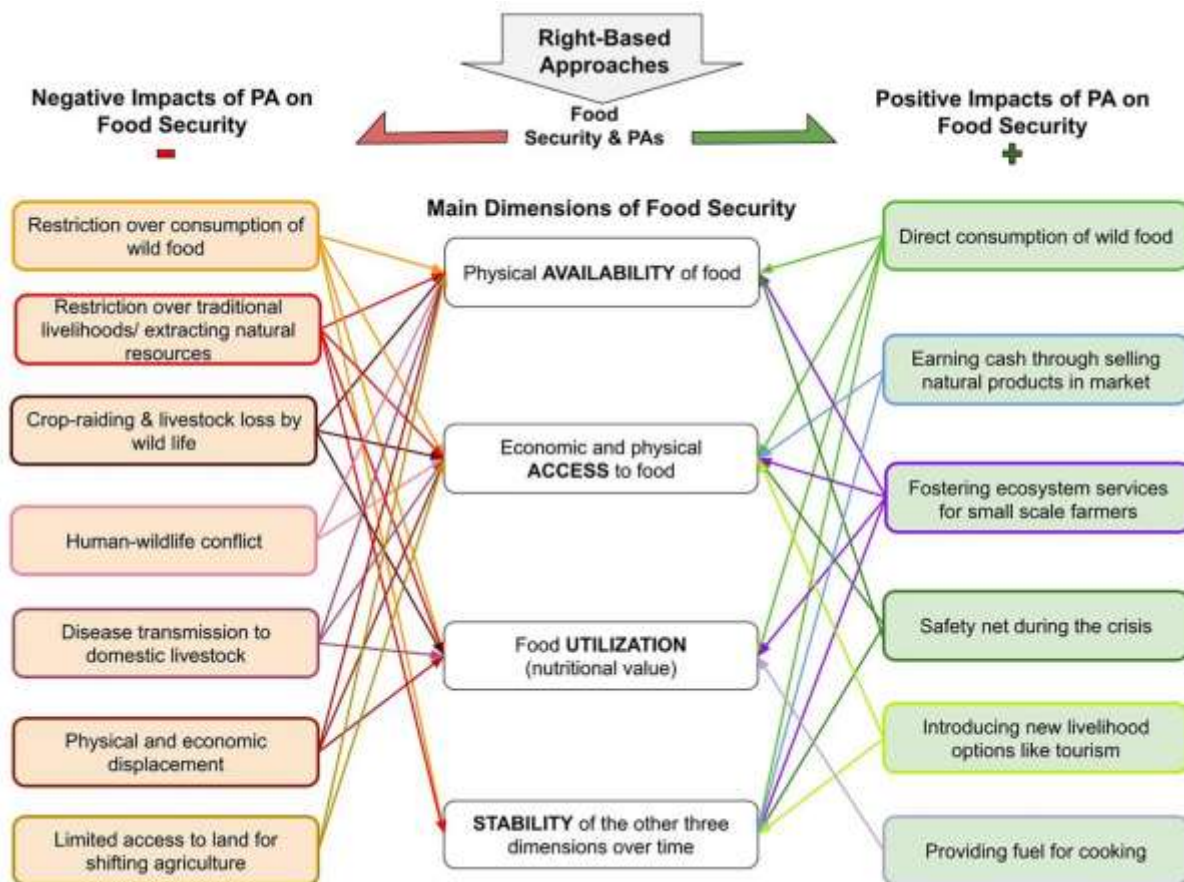
8. Vertical Farming: Vertical farming utilizes stacked layers to grow crops indoors, often in urban settings. This approach maximizes land use efficiency, reduces water usage, and minimizes transportation distances, offering a sustainable solution to food production in densely populated areas.

9. Soil Health Monitoring Tools: Soil health monitoring tools assess parameters like nutrient levels, pH, and organic matter content to optimize soil fertility and productivity. By maintaining healthy soils, farmers can achieve better crop yields and long-term sustainability.

10. Renewable Energy: Implementing renewable energy sources such as solar panels or wind turbines can help reduce the carbon footprint of agricultural operations. By utilizing clean energy, farmers can lower operating costs and contribute to mitigating climate change.

VERIFICATION TECHNOLOGY OF CONVERSION TIMES

Check innovation of change times assumes a significant part in evaluating the viability and maintainability of horticultural mediations pointed toward tending to food frailty in emerging countries. The change times allude to the span it takes for carried out rural methodologies to yield substantial outcomes with regards to expanded food creation, further developed food dispersion frameworks, and upgraded food security. One unmistakable check innovation used in this setting is remote detecting, which utilizes satellite symbolism and other geospatial information to screen changes in land use, crop wellbeing, and vegetation elements over the long run. By examining these information, scientists and policymakers can follow the advancement of agrarian intercessions and recognize regions where further help or changes might be essential. Also, participatory methodologies, for example, local area based checking and assessment empower neighborhood partners to effectively participate in evaluating the effect of mediations on their food security circumstance, giving continuous criticism and working with versatile administration systems. Besides, the utilization of cutting edge information examination and demonstrating strategies takes into account the recreation of various situations and the projection of future results, helping dynamic cycles and enhancing asset portion for reasonable agrarian turn of events. In general, the combination of different confirmation advances offers a far reaching way to deal with understanding change times and guaranteeing the drawn out progress of rural mediations in battling food weakness in non-industrial countries.



Instructions:-

1.Presentation:

Give an outline of the issue of food frailty in non-industrial countries.

Characterize food frailty and its different aspects.

Feature the meaning of manageable rural mediations in alleviating food weakness.

2.Writing Survey:

Survey existing writing on food frailty and economical agrarian mediations in non-industrial countries.

Talk about past exploration discoveries, strategies, and key ideas.

Recognize holes or regions where further exploration is required.

3.Reasonable Structure:

Foster a reasonable structure that incorporates hypotheses, ideas, and models pertinent to tending to food frailty through manageable farming intercessions.

Make sense of how various variables add to food frailty and how supportable horticultural practices can address these elements.

4. Techniques:

Depict the strategy utilized for social event and investigating information.

Make sense of the models for choosing studies or cases for audit.

Detail any measurable or subjective investigation strategies utilized.

5. Results:

Present the discoveries of your exploration.

Examine what maintainable rural mediations have meant for food security in non-industrial countries.

Feature any difficulties or impediments experienced during the examination interaction.

6. Conversation:

Decipher the outcomes considering existing writing and the applied structure.

Talk about the ramifications of the discoveries for strategy, practice, and future exploration.

Investigate possible procedures for conquering difficulties and improving the adequacy of supportable farming mediations.

7. End:

Sum up the principal discoveries of the review.

Repeat the significance of supportable farming mediations in tending to food weakness in agricultural countries.

Give proposals to policymakers, specialists, and analysts.

8. References:

Incorporate a rundown of all sources referred to in the paper following a steady reference style (e.g., APA, MLA).

9. Indexes (if important):

Incorporate any extra materials, for example, information tables, outlines, or valuable data that upholds the principal discoveries of the paper.

10. Arranging:

Utilize clear and brief language all through the paper.

Guarantee legitimate language, spelling, and accentuation.

Adhere to the arranging rules given by your establishment or favored scholarly style guide.

11. Peer Audit:

Consider looking for input from friends or tutors prior to settling the paper to guarantee lucidity, intelligibility, and precision of the substance.

12. Moral Contemplations:

Comply with moral rules in regards to explore including human subjects, if appropriate.

Recognize any likely predispositions and endeavor to introduce a fair and objective examination.

Related work:-

Various examinations have researched feasible rural mediations as a way to address food frailty in non-industrial countries. Eminently, DeFries et al. (2015) featured the significance of farming supportability in their assessment of food security challenges. They underlined the requirement for intercessions that upgrade agrarian efficiency while limiting negative natural effects. Essentially, Fisher et al. (2016) directed an exhaustive survey of reasonable rural works on, zeroing in on their viability in further developing food security. Their discoveries highlighted the meaning of practices, for example, agroforestry, preservation agribusiness, and coordinated both the executives in expanding crop yields and strength to environment changeability. In addition, Barrett et al. (2019) investigated the job of market-based approaches in advancing manageable horticulture and food security. Their exploration underscored the significance of upgrading smallholder ranchers' admittance to business sectors, credit, and data to work on horticultural efficiency and pay. These examinations altogether highlight the different cluster of supportable farming mediations and their capability to address food weakness in agricultural countries. In any case, while significant headway has been made, further exploration is expected to distinguish setting explicit procedures and defeat execution challenges in various financial and natural settings.

Positive effects:-

1.Expanded Farming Efficiency: A few examinations have featured the constructive outcomes of economical horticultural mediations on expanding rural efficiency in non-industrial countries. For example, research by FAO (Food and Agribusiness Association) stresses the reception of supportable cultivating practices like protection horticulture, agroforestry, and coordinated both the executives, which have prompted superior harvest yields and upgraded food security among smallholder ranchers in different areas.

2.Upgraded Soil Wellbeing and Richness: Economical rural intercessions frequently focus on soil preservation and fruitfulness the executives works on, prompting further developed soil wellbeing. Research directed by associations like the World Bank and CGIAR (Consultative Gathering for Global Agrarian Exploration) has shown that reasonable soil the executives strategies, including natural treatment, crop revolution, and least culturing, add to improved soil structure, expanded water maintenance, and supplement accessibility, eventually helping crop efficiency and food security.

3.Expansion of Food Sources: Manageable farming intercessions empower broadening of yields and domesticated animals, in this manner lessening the weakness of provincial networks to food deficiencies and improving dietary variety. Studies led by associations like Oxfam and IFPRI (Worldwide Food Strategy Exploration Organization) have archived the positive effects of advancing assorted cultivating frameworks, including the development of supplement rich native yields, blended editing frameworks, and limited scope creature farming, on further developing family nourishment and flexibility to environment changeability.

4.Strengthening of Smallholder Ranchers: Manageable agrarian mediations frequently focus on the strengthening of smallholder ranchers through limit building drives, admittance to assets, and market linkages. Research by associations like the Worldwide Asset for Rural Turn of events (IFAD) and the Assembled Countries Improvement Program (UNDP) highlights the positive connection between's supporting smallholder ranchers and accomplishing food security targets. By outfitting ranchers with information and assets to embrace manageable practices, these mediations further develop livelihoods as well as add to supportable food creation and conveyance frameworks.

5.Moderation of Environmental Change Effects: Practical farming mediations assume an essential part in relieving the unfavorable effects of environmental change on food creation and food security in emerging countries. Research led by foundations like the IPCC (Intergovernmental Board on Environmental Change) and the Middle for Global Ranger service Exploration (CIFOR) features the capability of environment savvy horticulture rehearses, for example, agroforestry, soil carbon sequestration, and water-productive water system, to upgrade strength to environment inconstancy and lessen ozone harming substance emanations. By advancing environment strong cultivating frameworks, these intercessions add to long haul food security and natural maintainability.

6.Local area Flexibility and Social Attachment: Supportable agrarian intercessions frequently cultivate local area strength and social union by advancing participatory methodologies, information sharing, and aggregate activity among ranchers and partners. Research led by associations like the Global Foundation for Practical Turn of events (IISD) and the Unified Countries Improvement Program (UNDP) stresses the significance of local area based drives, for example, rancher field schools, cooperatives, and ladies' strengthening programs, in upgrading food security results and reinforcing neighborhood food frameworks. By building social capital and encouraging comprehensive dynamic cycles, these mediations add to more fair and supportable food creation and dissemination frameworks in emerging countries.

Negative effects

1.Land Debasement: Serious farming practices, regardless of whether advertised as feasible, can prompt land corruption over the long run. Unnecessary culturing, monocropping, and unseemly utilization of agrochemicals can exhaust soil supplements, diminish biodiversity, and increment the weakness of biological systems to disintegration and desertification. The corruption of arable land subverts the drawn out maintainability of horticultural creation and fuels food uncertainty.

2.Water Shortage and Contamination: Numerous supportable rural mediations depend intensely on water assets. Be that as it may, blunder of water use, like over-water system or wasteful water system techniques, can add to water shortage in locales previously confronting water pressure. Furthermore, the utilization of agrochemicals, like manures and pesticides, can prompt water contamination, polluting freshwater sources and imperiling sea-going biological systems and human wellbeing.

3.Social Uprooting and Disparity: Huge scope rural ventures, frequently advanced as maintainable mediations, can bring about friendly relocation and fuel existing imbalances inside networks. Smallholder ranchers and native populaces might be minimized or constrained off their territory to clear a path for modern cultivating tasks or agribusiness adventures. This removal can upset customary jobs, disintegrate social attachment, and add to food instability among weak populaces.

4.Hereditary Disintegration and Loss of Agrobiodiversity: Escalated cultivating works on, remembering the dependence for a set number of high-yielding harvest assortments, can add to hereditary disintegration and the deficiency of agrobiodiversity. Monocropping and the deserting of customary harvest assortments for hereditarily uniform, high return cultivars increment the weakness of agrarian frameworks to bugs, infections, and ecological changes. This deficiency of agrobiodiversity sabotages the flexibility of food creation frameworks and diminishes choices for adjusting to evolving conditions.

5.Sanitation Dangers: The utilization of agrochemicals in maintainable horticultural mediations can present dangers to food handling and human wellbeing. Buildups of pesticides and composts might collect in food crops, prompting pollution and potential wellbeing dangers for buyers. Besides, the

unpredictable utilization of anti-toxins in domesticated animals cultivating can add to the development of antimicrobial opposition, compromising the adequacy of anti-infection agents in treating human and creature illnesses.

How it useful for human's :-

1.Figuring out Food Uncertainty: Exploration in this space digs into the multi-faceted nature of food weakness, taking into account factors like neediness, admittance to assets, environment changeability, and socio-political elements. Understanding these intricacies assists policymakers and professionals with creating designated mediations that address explicit difficulties looked by networks.

2.Economical Horticultural Practices: Various examinations play analyzed the part of feasible rural practices, for example, agroecology, protection agribusiness, and natural cultivating, in further developing food security. These practices elevate versatility to ecological stressors, improve soil richness, and diminish reliance on outside inputs like manures and pesticides. By taking on supportable horticultural strategies, networks can accomplish long haul food security while defending regular assets for people in the future.

3.Upgrading Yield Variety and Versatility: Differentiating crop creation through agroforestry, crop revolution, and intercropping can improve flexibility to environmental change and nuisance flare-ups. Research shows that enhanced cultivating frameworks are stronger to ecological shocks, guaranteeing a steady food supply consistently. Besides, different editing frameworks give various supplements, adding to worked on dietary variety and human wellbeing.

4.Further developing Admittance to Business sectors and Foundation: Restricted admittance to business sectors and framework frequently compounds food uncertainty in country regions. Research recommends that putting resources into provincial framework, like streets, storerooms, and market linkages, can further develop market access for smallholder ranchers. By working with the effective development of merchandise and decreasing post-reap misfortunes, these mediations improve ranchers' salaries and food accessibility in nearby business sectors.

5.Enabling Ladies and Smallholder Ranchers: Ladies assume a vital part in farming creation and food security, especially in emerging nations. Research features the significance of orientation delicate mediations that enable ladies ranchers through admittance to land, credit, instruction, and expansion administrations. Enabling ladies further develops family food security as well as adds to more extensive social and financial improvement objectives.

6.Strategy and Institutional Intercessions: Powerful approach and institutional structures are fundamental for advancing economical agribusiness and tending to food instability. Research on approach mediations, for example, appropriations for smallholder ranchers, land residency changes, and food cost adjustment systems, gives experiences into the job of state run administrations in establishing an empowering climate for rural turn of events. By adjusting arrangements to the necessities of smallholder ranchers and weak populaces, policymakers can upgrade food security and advance comprehensive development.

Advantages

1.Further developed Food Security: Manageable farming mediations have shown guarantee in upgrading food security in emerging countries. By advancing practices like yield broadening, protection farming, and agroforestry, these intercessions can increment food creation and versatility to environmental change. This prompts a more solid food supply for networks, lessening the gamble of yearning and hunger.

2.Ecological Preservation: Numerous manageable horticultural practices center around protecting regular assets and diminishing natural corruption. For example, procedures like agroforestry and incorporated bug the board add to soil protection, biodiversity safeguarding, and decreased utilization of compound sources of info. By keeping up with sound biological systems, these intercessions support long haul horticultural efficiency and relieve the adverse consequences of environmental change.

3.Financial Strengthening: Supportable horticulture can enable smallholder ranchers by working on their jobs and monetary versatility. Through procedures like natural cultivating and market expansion, ranchers can get to premium business sectors, order more exorbitant costs for their produce, and lessen input costs. Also, reasonable practices frequently require less outer data sources, making cultivating all the more financially feasible for asset compelled ranchers in non-industrial countries.

4.Local area Improvement: Numerous reasonable agrarian intercessions underscore local area investment and strengthening. By advancing information sharing, rancher cooperatives, and participatory dynamic cycles, these intercessions encourage social attachment and reinforce neighborhood foundations. This can prompt more prominent flexibility notwithstanding outside shocks, like dry seasons or market variances, and improve the general prosperity of provincial networks.

5.Environmental Change Variation: Economical horticulture assumes a pivotal part in building flexibility to environmental change by advancing practices that increment soil carbon sequestration, water effectiveness, and biodiversity. For instance, strategies like agroforestry and preservation horticulture can further develop soil dampness maintenance and lessen weakness to outrageous climate occasions. By taking on environment savvy rehearses, ranchers can more readily adjust to changing ecological circumstances and moderate the effects of environmental change on food creation.

6.Long haul Feasibility: Supportable farming mediations offer a pathway to long haul rural improvement that is financially, socially, and naturally maintainable. By advancing practices that upgrade soil richness, water the board, and environment wellbeing, these mediations guarantee the practicality of farming frameworks for people in the future. This drawn out viewpoint is fundamental for tending to food frailty in emerging countries and building flexibility despite worldwide difficulties, for example, populace development and environmental change.

Disadvantage

1. Admittance to Assets: Impeded people group frequently need admittance to fundamental assets like land, water, seeds, and money. Research by Haddad et al. (2016) features the significance of giving limited scope ranchers admittance to microcredit and inputs like superior seeds and composts to improve their efficiency and versatility to shocks.

2. Environmental Change Weakness: Environmental change compounds food uncertainty in many non-industrial countries, especially in weak districts like sub-Saharan Africa and South Asia. Concentrates on like those by FAO (2019) underscore the significance of environment shrewd horticultural works on, including dry season safe yield assortments, agroforestry, and water gathering, to assist hindered networks with adjusting to changing natural circumstances.

3. Orientation Imbalance: Ladies frequently endure the worst part of food weakness in non-industrial countries because of inconsistent admittance to assets and dynamic power. Research by Doss (2019) recommends that engaging ladies through drives, for example, land freedoms changes and admittance to agrarian preparation can further develop family food security and upgrade local area versatility.

4. Foundation Limitations: Restricted framework, including unfortunate streets and storage spaces, upsets agrarian efficiency and market access for smallholder ranchers. Concentrates by Barrett et al. (2018) stress the requirement for interests in country foundation, including transportation organizations and post-gather advances, to lessen food misfortunes and further develop market mix for burdened networks.

5. Land Debasement and Soil Ripeness Decline: Land corruption and soil fruitfulness decline present critical difficulties to feasible farming in many agricultural countries. Research by Lal (2020) recommends taking on preservation horticulture practices, for example, least culturing, cover trimming, and agroforestry to further develop soil wellbeing and efficiency, especially in debased conditions occupied by distraught networks.

6. Market Elements: Burdened people group frequently face provokes in getting to business sectors because of restricted transportation framework and data deviation. Research by Minten et al. (2019) features the significance of reinforcing market linkages through drives, for example, rancher cooperatives, cell phone-based market data frameworks, and further developed admittance to transportation to improve the jobs of smallholder ranchers.

Conclusion

All in all, tending to food frailty in non-industrial countries through supportable horticultural mediations is principal for accomplishing long haul food security and reducing neediness. This exploration has highlighted the meaning of carrying out all encompassing methodologies that focus on natural supportability, financial inclusivity, and mechanical advancement. Feasible horticulture practices, for example, agroforestry, natural cultivating, and water-effective water system frameworks have shown promising outcomes in upgrading efficiency while limiting unfavorable ecological effects. In addition, putting resources into schooling, engaging nearby networks, and cultivating joint effort between partners are fundamental for guaranteeing the effective reception and versatility of maintainable rural mediations. While challenges endure, including restricted admittance to assets and institutional boundaries, deliberate endeavors at both nearby and global levels can catalyze positive change. By focusing on supportable farming turn of events, policymakers, specialists, and professionals can make ready towards a future where food security is feasible for all, adding to the more extensive objective of accomplishing worldwide reasonable turn of events.

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