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A study on natural farming as a pathway to well-being of older peoples' households in arid regions

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Author's Note

Arid farming zone of the Thar Desert that engulfs most of Rajasthan in India, is the most suitable ecosystem for natural farming practices. The historical predilection for traditional farming practices, alongside reliance on rainwater for agricultural endeavours, renders natural farming an evident preference for cultivators within these challenging agro-climatic zones. Invasion of chemical-heavy farming in most parts of the world has certainly endangered traditional farming systems in the Thar as well. Sometimes the convenience, and very often the myth, of increased production drives farmers to unsustainable agricultural practices. Strong emphasis on natural farming through several innovative interventions by GRAVIS has brought back confidence among the farmers in this region to resort to natural farming. Support for natural and other sustainable agricultural practices, along with trainings to enhance productivity, has rekindled farmers' interest in natural farming.

Benefits of natural farming in the Thar region have transcended gender, age, and class, and all groups are benefiting from it. Natural farming practices help address the particular vulnerabilities of older people to climatic extremes. and have positive impact on their overall wellbeing because of improved food security, nutrition and non exposure to chemical fertilisers. Recognition of older peoples knowledge about traditional farming and water management systems is another important aspect of their elevated self esteem and social status.

Water, health and nutrition in the Thar (WNHT) project has effectively applied natural farming practices keeping older people at the centre of its interventions. The present report reflects on the impact of natural farming and other associated efforts made by GRAVIS through this project.

The author is extremely grateful to GRAVIS team, especially the staff engaged in ground level implementation, as well as the communities including the older people who demonstrate abundant resilience and hold hope for a better future for the farming communities in one of the most challenging climatic zones.

Neetu Sharma

Chapter 1:
Natural farming and the Thar Desert

Natural farming is an approach to farming that uses means that are free of chemicals and factors ecological balance as a key aspect of human life. Natural farming integrates crops, trees, and livestock, focusing on self-sufficiency by recycling biomass, using cow dung/urine-based formulations, mulching, and avoiding synthetic inputs, thereby restoring soil health, boosting biodiversity, reducing costs, and increasing resilience for farmers. It's rooted in indigenous practices but informed by ecological understanding, promoting natural processes for nutrient cycling and pest control. As a type of farming, which is traditionally undertaken without major external technical, scientific, or chemical inputs. It is a natural way of life and livelihood in ancient practices, and over a period of time, farming communities using organic inputs, have modified it to suit their needs and according to the resources available to them. The Thar Desert in Rajasthan represents a highly climate-stressed agro-ecological system, where agricultural practices are shaped by extreme environmental conditions and heavy dependence on rainfall. As an adaptive strategy, natural farming continues to be the most relevant pathway toward the wellbeing of rural agrarian communities in this region.

The Thar Desert

1.1 Extreme climatic conditions

Natural farming in the Thar Desert operates under severe climatic constraints, including acute water scarcity, high temperatures, erratic rainfall, and ongoing soil degradation. The arid to semi-arid climate in the Thar, particularly in western Rajasthan, makes soil moisture retention a critical challenge, compounded by frequent droughts. Intense heat adversely affects soil microbial activity and crop health, while low and

highly variable rainfall, coupled with wind erosion and high evaporation rates, weakens soil structure. Additionally, sporadic high-intensity rainfall events in some regions further accelerate land degradation. In this context, natural farming practices, such as organic mulching, cover cropping, and reduced external inputs, help moderate soil temperature, enhance moisture retention, and mitigate climatic stress. All of this directly impacts the farming activities of rural communities in the region.

1.2 Dependence of rainfed farming

Rainfed agriculture forms the backbone of the region's agrarian economy, with approximately 70–75% of cultivated land dependent solely on monsoon rainfall. Agricultural production, food security, and rural livelihoods are therefore closely tied to the temporal and spatial variability of the southwest monsoon. This creates high vulnerability, with frequent droughts and moisture stress making farming a high-risk activity, often described as a "gamble of the monsoon." Cropping patterns in these areas are dominated by drought-resistant crops such as pearl millet (bajra), pulses, oilseeds, and beans. With nearly 70% of the population engaged in agriculture and allied activities, fluctuations in rainfall significantly influence the state's Gross State Domestic Product (GSDP), with climatic factors accounting for a substantial share of variability in agricultural output. Traditional water-harvesting systems, such as farm embankments and percolation ponds, play a crucial role in optimising limited water resources. Given the inherent risks, farming systems are commonly integrated with livestock rearing, which provides an economic buffer during crop failures. Persistent instability has been one of the major characteristics of impoverished communities in rural areas of the Thar Desert.

1.3 Natural farming in the Thar Desert: Need and relevance

Although natural farming has been a way of life for most of the traditional societies, ecological challenges and the need to enhance food production in a shorter duration, along with the additional challenge of climate change, pushed rural communities. However, with the revival of natural farming, merging evidence and the affinity with traditional farming techniques, natural farming is emerging as a viable adaptation strategy in response to several structural and climatic vulnerabilities. By promoting low-input, ecologically sustainable practices - such as the use of local seeds, organic soil amendments, crop diversification, and water conservation - natural farming enhances soil health, improves moisture retention, and reduces dependence on external inputs. These practices not only increase resilience to climatic variability but also support sustainable livelihoods in the fragile ecosystem of the Thar Desert.

At the community level, the effectiveness of natural farming in the Thar Desert is strengthened through collective learning and locally grounded governance. Farmers' participatory field trials, seed banks, and community nurseries help maintain genetic diversity and reduce the risks associated with repeated crop failures. Integrating livestock with crop systems, through fodder cultivation, judicious grazing, and manure recycling, further closes nutrient loops and stabilizes household nutrition and income. In addition, practices such as mulching, contour bunding, and rainwater harvesting mitigate runoff and recharge shallow groundwater, creating microclimates that buffer heat stress during extreme summers.

However, adoption depends on accessible training, supportive policy incentives, and the availability of organic inputs and tools. When extension services work with local institutions and traditional knowledge, farmers are more likely to build confidence in new techniques and sustain them over time. With appropriate scaling and monitoring, natural farming can serve as a pathway toward long-term ecological recovery, reduced land degradation, and climate-responsive food security for the communities inhabiting the Thar Desert.

Chapter 2:
Older people in the Thar Desert: A tale of hardships and resilience

The Thar Desert presents a uniquely challenging environment where ecological fragility, climatic uncertainty, and socio-economic marginalisation intersect. Within this context, older people emerge as both a vulnerable group and a vital repository of knowledge and resilience. Despite facing multiple hardships—including declining physical capacities, limited access to services, and increasing climate stress-they continue to play a central role in sustaining household economies, preserving traditional knowledge systems, and supporting community cohesion. Their lived experiences reflect not only the cumulative impact of environmental and social challenges but also a remarkable ability to adapt, innovate, and contribute meaningfully to community survival in one of India's most demanding landscapes.

2.1 Thar : A Difficult Desert

The Thar Desert is characterised by extreme climatic conditions, including erratic rainfall, prolonged droughts, high temperatures, and frequent sandstorms. Water scarcity remains a defining feature, with limited and unreliable sources of both drinking and irrigation water. Agricultural practices are largely rain-fed, making livelihoods highly vulnerable to climate variability and environmental degradation. Soil fertility is often low, and vegetation is sparse, further constraining productive opportunities. In addition, infrastructural limitations and geographical isolation restrict access to healthcare, markets, and public services. These conditions collectively create a context of chronic vulnerability, requiring communities to rely on adaptive strategies, traditional ecological knowledge, and collective resource management systems to survive.

2.2 Older People in the Thar

Older people in the Thar Desert occupy a complex position within this challenging ecosystem. On one hand, they are disproportionately affected by poverty, health challenges, and limited access to social protection and healthcare services. Physical limitations can restrict their mobility and participation in labour-intensive activities, while social isolation may further exacerbate their vulnerability. On the other hand, they are custodians of invaluable traditional knowledge related to water conservation, livestock management, seed preservation, and climate-adaptive farming practices. Their experience in managing scarce resources and navigating environmental uncertainties makes them critical contributors to household resilience and community decision-making. In many cases, older people continue to actively engage in productive activities, support caregiving roles, and provide guidance in times of crisis, thereby reinforcing intergenerational resilience.

At the household level, this dual reality often shapes daily routines in subtle but significant ways. Older members may act as “water planners,” deciding when and where to draw from wells, how to allocate stored rainwater, and when to postpone grazing to prevent further degradation of fragile rangelands. They also tend to hold practical knowledge about shifting cultivation calendars, recognising early signs of changing

rainfall patterns, and adjusting seed choices to improve survival during drought years. Yet, these contributions are frequently undervalued by formal institutions that assume ageing automatically equals dependence rather than capability. Where social norms and land access remain unequal, older people, especially widows or those without secure tenure, may struggle to translate their expertise into meaningful influence over resource distribution.

2.3 Mobilising Older People : OPAs

Community structures can either buffer or amplify the pressures faced by rural communities. In villages where elders are respected and customary governance is functional, older people's voices carry weight in conflict resolution over pasture, seasonal migration routes, and the timing of communal work. Recognising the dual realities of vulnerability and capability among older people, the formation of Older People's Associations (OPAs) represents a strategic approach to community mobilisation and empowerment. OPAs provide a structured platform for older individuals to come together, articulate their needs, and actively participate in development processes. Through these collectives, older people are able to engage in decision-making, contribute to the planning and implementation of interventions, and advocate for their rights and entitlements. OPAs also facilitate access to information, services, and government schemes, while fostering peer support and social inclusion. Importantly, these associations leverage the knowledge and experience of older people in areas such as natural resource management, health practices, and livelihood strategies, thereby strengthening community resilience. By positioning older people as active agents rather than passive beneficiaries, OPAs play a transformative role in enhancing both individual well-being and collective development outcomes in the Thar Desert.

Chapter 3 :
GRAVIS' work with older people, drought mitigation and natural farming

Droughts and water shortage affects everyone equally, its impact on the vulnerable groups is much more excruciating. For the 76% of older people of the state living in rural areas, extreme climate, acute water shortage and lack of nutritious food, present a challenge to their very survival and maintaining good health. Gramin Vikas Vigyan Samiti (GRAVIS) has been working with older population of the Thar with a view to ensure an improved quality of life for them in the spirit of leaving no one behind.

GRAVIS' work on health and ageing has primarily revolved around following :

1. Improving the health status of older people through community-based health interventions.
2. Enhancing older peoples' leader in addressing the community issues such as water shortage.
3. Mobilsing older people into Village older people association to optimize their potential to play an active role in community life.
4. Strengthen the capacities of existing Older People's Associations created by GRAVIS and and to develop the skills of such newly formed associations of older people.
5. Document older people led water, nutrition and health interventions and advocate for replication and leverage Government resources.
6. Impart training and capacity building on natural and sustainable farming for improved livelihood and better quality of life for olde people and their families.

Adopting an integrated approach to community development, GRAVIS has been supporting the communities in the mostly densely populated desert by facilitating food security, water security, health care, and education while keeping traditional wisdom at the centre of it. Among the farming communities, the promotion of natural farming, which has been part of traditional farming practices in the Thar region, has been at the core of the interventions. It is in this context that GRAVIS is planned to revisit, analyse, assess, and document the natural farming practices and their outcomes for older people's lives. Advancing these endeavors, the project, Water, Health and Nutrition in the Thar (WNHT), was conceptualized to address the problems faced by older people in the region that get amplified by the climatic context. With a focus on interventions related to water, health, nutrition, and livelihoods, especially focusing on the older people. WNHT project was implemented in Jodhpur District in the state of Rajasthan, India. The primary goal of the WNHT extension project is to strengthen OPAs in rural desert regions to lead drought mitigation, poverty reduction, and community resilience building. The project specifically focused on improving health, nutrition, livelihoods, and living conditions for approximately 3,000 older people and other community members in these villages in the Thar Desert by ensuring sustainable access to water, food, and healthcare, and demonstrating an older-people-led development model that can be scaled further.

Specific objectives of the WNHT project were :

- Strengthen and establish Older Peoples' Associations (OPAs) as community leadership platforms across the project villages.
- Improve water security for drinking and farming through rainwater harvesting systems.
- Enhance nutrition security and food resilience through horticulture and seed banks.
- Improve community health and hygiene, with a focus on older people and vulnerable groups.
- Document and disseminate learnings to promote wider replication and influence policy.

The project placed a strong emphasis on strengthening community institutions, particularly OPAs, as key drivers of local development. OPAs were established and supported to take on leadership roles in addressing issues related to water security, nutrition, and health. Through a structured and continuous capacity-building approach, members were equipped with knowledge and skills in areas such as agroforestry, climate change adaptation, natural resource management, permaculture, and health and nutrition. Regular training sessions were conducted throughout the year to ensure sustained learning and application at the community level. In addition, the project facilitated dialogue between communities and government stakeholders to improve access to public schemes and services, while periodic OPA conventions provided platforms for collective learning, experience sharing, and strengthening community-led advocacy. Addressing water scarcity remained a central priority of the project, particularly in the context of arid and semi-arid regions where access to water is a persistent challenge. To enhance water security, the project promoted household-level rainwater harvesting systems to ensure access to safe drinking water, alongside the construction of farming structures such as khadins and farm embankments to support rain-fed agriculture. These interventions were designed not only to capture and store rainwater but also to improve groundwater recharge and soil moisture retention. All these interventions contributed to stabilising agricultural production, reducing vulnerability to climate variability, and ensuring both immediate and long-term water availability for households and farming systems.

In order to improve nutrition outcomes and strengthen agro-biodiversity, the project supported the establishment of arid horticulture units that encourage the cultivation of drought-resistant fruits and vegetables. These units enhanced access to diverse and nutritious food at the household level while also creating opportunities for supplementary income. Alongside this, community seed banks were developed to conserve, regenerate, and distribute indigenous seed varieties. By promoting traditional crops adapted to local climatic conditions, these seed systems played a crucial role in enhancing food security, preserving biodiversity, and reducing dependence on external seed markets. The project also prioritised improving health outcomes and access to safe drinking water, particularly for older people and other vulnerable groups.

A diverse range of interventions aimed at the overall wellbeing of people was implemented within the broader context of climate vulnerabilities of rural farming communities, with a comprehensive understanding of the disproportionately high impact of environmental and climate change-related

challenges on older people and their wellbeing. Natural and traditional farming, along with health-related specific interventions, was the underlying strategy that guided most of the interventions aimed at the wellbeing of older people and the community in the villages of western Rajasthan.

An OPA Training

Chapter 4 :
Leveraging natural farming interventions

This section discusses the role of natural farming as a contextually appropriate and transformative approach for rural poor communities in the Thar Desert. Situated within a fragile, rainfed agro-ecological system marked by water scarcity, climatic uncertainty, and limited access to productive resources, these communities face persistent livelihood and food security challenges. Natural farming, anchored in local resource use, traditional knowledge systems, and community-based institutions, addresses these structural constraints by enhancing productivity, reducing input dependence, and strengthening resilience. It is noteworthy that natural farming not only improves agricultural outcomes but also contributes to broader dimensions of well-being, including food and nutrition security, financial stability, and social empowerment among marginalised groups. The WNHT project interventions demonstrated significant impact across water management, agriculture, livelihoods, and community institutions in arid regions, and natural farming practices remained the fulcrum of all efforts across the activity sets.

4.1 Rainwater harvesting for farms *(Khadin / Nadi)*

Rainwater harvesting is a foundational intervention in arid regions such as the Thar Desert, where moisture availability is the primary constraint to agriculture. The programme promotes revival and construction of traditional systems such as *khadins* - the earthen embankments designed to capture and retain surface runoff-and *nadis* (village ponds) for community-level water storage. These structures enable in-situ moisture conservation, groundwater recharge, and extended soil moisture availability for post-monsoon cropping. Programme support includes technical design, community mobilisation for site selection, convergence with government schemes for rural livelihoods, and capacity-building for maintenance and equitable water use. Emphasis is placed on participatory water governance to ensure sustainability and conflict mitigation.

4.1.1 Khadin

During just one year, *khadins* supported cultivation across 500 hectares of land, with farm sizes ranging from 2 to 10 hectares and an average of 5 hectares. This intervention enabled a substantial shift in agricultural practices, with 60–65% of farmers transitioning from single-crop to multiple-crop systems and 70–75% diversifying crop varieties. Crop productivity also improved, with yields ranging from 2–3 quintals per hectare at the minimum to 8–10 quintals at the maximum, particularly for millet and chickpea. Correspondingly, farmers experienced an increase in income ranging from INR 2000 to INR 3000 per quintal. Older people played a critical role in *khadin* construction, maintenance, and monitoring, while also contributing to soil conservation practices. Their involvement enhanced their social standing and decision-making roles within households, alongside improvements in mental well-being. Women benefited through improved access to fodder, increased livestock ownership, and strengthened participation in community processes, contributing to better livelihoods and economic conditions.

Table 1 : Outreach through construction of khadins

		Total Members of households			
S. No.	Years	Total Khadin Construction	Male	Female	Total family member benefitted
1	2019 - 20	70	20	50	430
2	2020 - 21	60	15	45	368
3	2021 - 22	105	29	76	644
4	2022 - 23	80	47	33	618
5	2023 - 24	58	30	28	361
6	2024 - 25	40	-	-	-
Total		**413**	**141**	**232**	**2421**

Taku Devi, a 70-year-old woman from Bhojo Ki Bap village in Phalodi district of Rajasthan, lives with her family in the harsh ecological conditions of the Thar Desert. Having lost her husband many years ago, she has since shouldered the responsibility of sustaining her household of nine members, including her daughter, four sons, and daughter-in-law. The region is characterized by erratic rainfall, frequent droughts, and severe water scarcity, making livelihoods highly uncertain and fragile.

The family depends primarily on rainfed agriculture and limited livestock, consisting of six young goats. However, the absence of irrigation facilities and declining soil fertility have made farming increasingly unviable. With 25 bighas of unirrigated land, much of which remained underproductive, the family often struggled to meet even basic food and livelihood needs. Financial distress forced children to engage in wage labour, disrupting their education, while adult members frequently migrated in search of work—often without assured returns.

A major challenge faced by the family was the rapid loss of rainwater and topsoil during sporadic rainfall events. Strong winds, combined with uncontrolled runoff and grazing, led to soil erosion and depletion of nutrients, further reducing agricultural productivity.

Under the WNHT project implemented by GRAVIS (Gramin Vikas Vigyan Samiti), Taku Devi's family constructed *khadins*-traditional rainwater harvesting structures, across their land. These structures are designed to capture surface runoff, allowing water to percolate and moisture to be retained within the soil profile. The *khadins* have strengthened field boundaries, reduced soil erosion, and improved in-situ water conservation. Alongside this intervention, the family was introduced to natural farming practices, which are particularly well-suited to arid and resource-constrained environments. By adopting low-cost techniques such as the use of farmyard manure, crop residue mulching, and traditional drought-resistant seed varieties, the family began to improve soil organic matter and enhance moisture retention. These practices not only reduce dependence on external inputs but also restore soil health and biodiversity over time.

The synergy between *khadin*-based water harvesting and natural farming has started to transform their agricultural system. The retained moisture in the fields now supports crop growth for longer durations, even with limited rainfall. Crops such as millet, moth bean, chickpea, and cumin are expected to perform better under these improved conditions. The family anticipates a 20–25% increase in crop yields, along with improved availability of fodder for their livestock. Previously barren and dry fields are gradually becoming productive, offering the family a renewed sense of stability and hope. With improved on-farm opportunities, Taku Devi's sons are now able to spend more time cultivating their own land rather than seeking uncertain wage labour elsewhere. This shift is expected to strengthen household income and reduce distress migration.

The enhanced soil moisture and the adoption of natural farming practices are also contributing to improved ecological outcomes, including better soil structure, increased water retention capacity, and reduced land degradation. Over time, this approach is expected to build climate resilience and ensure sustainable livelihoods in a drought-prone region.

Expressing her gratitude, Taku Devi shared that the construction of the *khadin* has brought new life to their fields and hope to their family. She believes that integrating traditional water harvesting systems with natural farming can significantly improve the livelihoods of other vulnerable families in the region as well.

4.1.2 Nadi - solution for community's water needs

In the Thar Desert, *nadi* is the indigenous traditional name for a pond. It is one of the most common methods of rainwater harvesting. It is found in almost all villages. Its capacity is between 700 m^3 and 20,000 m^3- 40,000 m^3. It is a surface rainwater storage structure. It can provide water for 8 months to 1 year. The amount of water availability depends on the annual rainfall, the size of the *naadi,* and the way the *naadi* is

renovated. Such community structures build up by there for fathers and for them and their coming generation, to feed on the water, because those day people don't have any other water supply facilities in this region. All the community members depended on these traditional water bodies and systems. After a certain period, these water bodies silted up with surface soil that came with rainwater during the monsoon and during summer wind storms and resulted were silted up and their water-bearing capacities were reduced.

The desilting of *nadies* significantly enhanced water availability in project villages. These water bodies improved access to drinking water for humans, livestock, and birds, while also supporting increased livestock populations and agricultural productivity through better availability of manure. The average distance of households from *nadies* (1.5 to 2 km) was considerably lower than alternative water sources (2–5 km), reducing the burden of water access. Environmental benefits included improved groundwater recharge, increased vegetation, and enhanced biodiversity, including the return of migratory birds. Older people contributed by guiding design decisions and monitoring renovation work based on traditional knowledge, while women benefited from improved access to clean water, better livestock health, and overall improvements in household well-being.

4.2 Use of traditional seeds

Conservation, revival, and dissemination of traditional, drought-resilient seed varieties, particularly climate-smart bajra (pearl millet), pulses, and oilseeds suited to arid conditions, is an integral component of natural farming practices. Community Seed Banks (CSBs) are established and strengthened as decentralised institutions for seed storage, exchange, and multiplication. CSBs are locally managed, collective institutions that conserve, store, and distribute indigenous seeds, crucial for climate resilience, food sovereignty, and biodiversity. Primarily run by smallholder farmers, these banks protect, restore, and improve local landraces while providing low-cost access to quality seeds, especially in risky agricultural areas. WNHT project faciliatted training of farmers in establishing and managing CSBs in the project villages. Trainings focused on seed selection, treatment, storage techniques, and participatory varietal trials to enhance local adaptability were conducted. These interventions reduces dependency on external inputs, preserves agro-biodiversity, and enhances resilience to climatic variability.

GRAVIS supported CSB

The project strengthened local seed systems through the establishment of 32 community seed banks (CSBs) between 2019 and 2024, benefiting 1,732 individuals, including a substantial number of women. These seed banks, each with a capacity of 250 kg, supported 8,185 farming households by ensuring access to indigenous and traditional seed varieties. Farmers reported annual savings of ₹ 1,500–2000 due to reduced dependence on expensive market seeds, along with improved yields and seed quality. Older people played a vital role as custodians of traditional knowledge related to seed conservation. The revival of traditional crops also supported local food systems, enabling the preparation of nutritious foods such as daliya, raab, and khakhra, while crops like cluster beans and mung beans contributed to both dietary diversity and income generation.

4.3 Use of bio-fertilisers and bio-pesticides support and training

To address soil degradation and reduce chemical dependency, the programme supports the adoption of bio-fertilisers and bio-pesticides derived from locally available materials (e.g., compost, jeevamrit, botanical extracts). Farmers are trained in preparation methods, application techniques, and integrated pest management (IPM) approaches. Demonstration plots and farmer field schools are used to build practical skills and confidence. This intervention improves soil health, enhances microbial activity, and reduces input costs while maintaining ecological balance. The use of bio-fertilisers and bio-pesticides is a critical component of sustainable agriculture, aimed at reducing reliance on chemical inputs, restoring soil health, and improving crop yields.

In parallel, the project promoted a range of sustainable agricultural practices, including crop rotation, rainwater harvesting, organic manure use, intercropping, mulching, and integrated pest management. These practices were reinforced through extensive capacity-building efforts, including training programmes on health, nutrition, water management, agroforestry, and climate change adaptation. Thousands of participants, including both men and women, were trained, leading to improved understanding and adoption of natural farming techniques. These interventions helped farmers enhance soil quality, optimise water use, and transition toward more sustainable and resilient agricultural systems. Older people contributed by integrating traditional ecological knowledge with modern practices, while women actively adopted and applied these approaches, improving both agricultural outcomes and household economic status.

4.4 Arid Horticulture Units (AHUs)

Arid Horticulture Units are promoted as a diversification strategy to enhance income and nutritional security. These units typically include drought-tolerant fruit species such as ber, pomegranate, *khejri,* and drumstick, integrated with water-efficient irrigation methods (e.g., drip systems, mulching). The programme provides support for site preparation, sapling distribution, protective fencing, and technical guidance on orchard management. AHUs contribute to long-term asset creation, improve dietary diversity, and provide stable income streams even under variable climatic conditions.

These units contain about 20 fruit or vegetable-bearing plants, and each beneficiary is provided with wire mesh and stone slabs to secure the AHU with barbed wire and protect the plants from livestock and wild animals. Each AHU garden measures 65' x 80'. The AHU is properly fenced using barbed wire, stone slabs, and the provided mesh. Each AHU (Arid horticulture Unit) area is planted with a variety of trees, including 8 gunda plants (Cordia mixta), 8 ber plants (Ziziphus mauritiana), 1 drumstick plant (Moringa oleifera), 1 lemon plant (Citrus lemon), and 2 karonda plants (Carissa carandas). The planting process involves digging holes, filling them with pond sand, cow dung manure, neem cake, and bone meal, and planting the plants approximately 15'x15' apart, with a second row spaced 7.5' apart. AHU farmers can use the space between plants to grow a variety of local, seasonal vegetables, providing their families with fresh, high-quality produce.

Enhancing Nutrition and Livelihoods through Arid Horticulture and Natural Farming in Hanuwant Village, Phalodi

Koshla Ram lives with his family in a small hamlet in Hanuwant village in Phalodi district, located about 15 km from the Bap block in Rajasthan. His household comprises 10 members, including his wife, son, daughter, daughter-in-law, and grandson. The family owns 9 bighas of land, which is entirely rainfed and largely limited to the cultivation of hardy crops such as millet. Due to the arid desert conditions and chronic water scarcity, access to fresh vegetables and fruits has historically been extremely limited.

Like most households in the region, the family depends on a combination of livestock rearing, subsistence farming, and manual labour for survival. However, low agricultural productivity, lack of dietary diversity, and high dependence on distant markets located nearly 15 km away—have made both nutrition and livelihoods precarious.

With support from GRAVIS (Gramin Vikas Vigyan Samiti), Koshla Ram became part of an Older People's Association (OPA), which created a platform for collective learning and decision-making. During one such meeting, a scientist from the Central Arid Zone Research Institute (CAZRI) introduced the concept of AHUs) as a sustainable solution for improving household nutrition and resilience in desert ecosystems.

Motivated by this interaction, Koshla Ram proposed the establishment of an AHU on his land, which was approved by the association. Under the WNHT initiative, GRAVIS supported the development of the AHU by providing saplings of lemon (Citrus lemon), drumstick (Moringa oleifera), gooseberry (Carissa carandas), and plum (Ziziphus mauritiana), along with protective fencing materials to safeguard the plants from grazing animals.

Alongside horticulture, the intervention actively promoted natural farming practices through a series of trainings on skills that are particularly suited to low-resource, water-scarce environments. Through training sessions on health, nutrition, and sustainable agriculture, Koshla Ram and his family learned to utilise locally available organic inputs such as cow dung, goat manure, and urine to enrich soil fertility. Composting household organic waste and applying natural formulations helped improve soil structure, enhance microbial activity, and retain moisture in the soil.

To maximise land use efficiency, the family adopted a multi-layered natural farming model within the AHU. While fruit trees formed the upper layer, they developed small vegetable beds in between, cultivating seasonal and nutrient-rich crops such as spinach, fenugreek, coriander, and radish. Mulching with crop residues and organic matter further helped conserve soil moisture, critical in a desert ecosystem, while reducing evaporation losses. This integrated approach has significantly improved both nutrition security and livelihood resilience. The family now has regular access to fresh, chemical-free vegetables and fruits, reducing their dependence on distant markets and resulting in tangible cost savings. The diversity of produce has also contributed to improved dietary intake, particularly benefiting children and elderly members of the household. As the AHU matures, it is expected to generate surplus produce, creating opportunities for supplementary income through local sales and sharing within social networks. Importantly, the visible success of Koshla Ram's AHU has inspired other villagers to replicate similar models, demonstrating the potential for community-wide adoption.

Reflecting on the change, Koshla Ram expressed that the integration of arid horticulture with natural farming has brought both economic relief and improved well-being to his family. He acknowledged GRAVIS's long-standing commitment to supporting vulnerable communities in the Thar Desert and expressed hope that such initiatives will continue to strengthen livelihoods across the region.

Establishment of 40 Arid Horticulture Units (AHUs) during 2023–24 further diversified livelihoods and improved nutrition. Each unit, covering 65 × 80 feet and collectively spanning 1.93 hectares, included a mix of fruit-bearing plants such as ber, gunda, moringa, lemon, and karonda. These units enabled households to access fresh fruits and vegetables locally, reducing dependence on markets. Families reported monthly savings of INR 1600–2200 over a six-month period, along with additional annual income of approximately INR 12,000. Older people were actively involved in managing AHUs through pruning, irrigation, and plant care, while women experienced enhanced empowerment, greater participation in decision-making, and increased social recognition within households.

4.5 Integration with Livestock Management

Recognising the centrality of livestock in arid livelihoods, the programme promotes integrated farming systems combining crop production with animal husbandry. Interventions include improved fodder cultivation (e.g., drought-resistant grasses), pasture development, veterinary support, and training in animal health and nutrition. Livestock serve as a critical risk-buffer, providing regular income (milk, meat, wool) and organic inputs (manure) for natural farming. Strengthening this integration enhances system resilience and resource circularity.

Integrating livestock into natural farming is essential for creating a closed-loop, sustainable system that enhances soil fertility, reduces input costs, and diversifies income. It involves using cattle (particularly indigenous breeds) for manure and urine to create bio-formulations for fertilisers, alongside rotational grazing for weed management and nutrient recycling.

Livestock development emerged as a critical component of the project, given its central role in rural economies. By improving water availability through nadies and tankas and enhancing fodder availability through khadins, the project strengthened livestock management systems. This resulted in improved agricultural productivity, increased income, reduced pest incidence, and better environmental conditions. In total, 3,000 farmers directly and 20,000 farmers indirectly benefited from these interventions. Livestock also contributed to improved nutrition through access to milk and dairy products, enhancing overall household health and well-being. Older people continued to play an important role in livestock care, further reinforcing their contribution to household resilience.

Water Security and Livelihoods through Tanka and Natural Farming in Hanumant Nagar, Phalodi

Hanumant Nagar, a small village located in the Bap block of Phalodi district in western Rajasthan, faces persistent water scarcity due to its arid geography and erratic rainfall patterns. The village is home to approximately 400 families, with a total population of around 2,500 people. Livelihoods are primarily dependent on rainfed agriculture, livestock rearing, and wage labour-making the community highly vulnerable to climatic shocks.

The village's only public water source, Bero Ka Bar Nadi, is situated 3.5 kilometres away and serves as the

sole rainwater-harvesting structure maintained by the local self-government. However, both the availability and quality of water remain critical challenges. The absence of household level water storage systems further exacerbates the situation.

Mira Devi, a 55 year old widow, resides in Hanumant Nagar with her extended family of 11 members. Following her husband's sudden demise, the family experienced significant financial and social distress. Their livelihood depends on 10 bighas of rainfed agricultural land and livestock holdings consisting of one cow, four sheep, and ten goats. Due to the lack of nearby water sources, the family was compelled to fetch water daily from Bero Ka Bar Nadi, often spending several hours transporting heavy pots over long distances. This burden not only affected their health but also reduced the time available for livelihood activities and children's education.

Agriculture in the village is entirely rainfall-dependent, and frequent droughts often force families like Mira Devi's to purchase water for both household consumption and livestock, with tanker costs ranging between INR 800 and INR 1,000 per trip, an unsustainable expense. The absence of traditional water storage systems such as Tankas further deepened their vulnerability.

In addition to water scarcity, conventional farming practices-dependent on external inputs and limited soil moisture retention-yielded low productivity and increased economic risk. Recognizing these challenges, the WNHT project, implemented in collaboration with GRAVIS (Gramin Vikas Vigyan Samiti) and HelpAge International, introduced a dual approach: strengthening water security through Tanka construction and promoting natural farming practices suited to arid ecosystems.

Through community engagement and capacity building sessions, Mira Devi learned about the benefits of household level rainwater harvesting as well as low cost, sustainable agricultural practices under natural farming. She presented her concerns to the Village Elders' Committee, which approved the construction of a Tanka at her household. GRAVIS provided the necessary materials, and the structure was successfully completed.

Simultaneously, Mira Devi and her family began adopting natural farming techniques, including the use of farmyard manure, mulching, and traditional seed varieties that require less water and are more resilient to drought conditions. These practices helped improve soil moisture retention, reduce input costs, and enhance crop diversity. Integrating livestock with farming further supported nutrient cycling, reducing dependency on external fertilizers.

The construction of the Tanka has significantly transformed the family's daily life. With the ability to store rainwater for 4 to 5 months, the family no longer needs to make exhausting trips to fetch water. This has freed up time for productive activities, including better farm management and livestock care. Children are now able to attend school more regularly, and health issues associated with water collection have reduced.

Importantly, access to reliable water has strengthened the viability of natural farming practices. Improved water availability, combined with soil enhancing techniques, is expected to increase agricultural productivity and resilience. The family anticipates a 5% to 20% increase in livestock holdings due to better water access and fodder availability. Financially, the household was expected to save INR 18,000 to INR 20,000 annually by reducing expenditure on water tankers. These savings, along with reduced farming input costs under natural farming, contribute to greater economic stability.

5. Approach

More than four decades of arduous journey towards the wellbeing of rural communities in the Thar Desert and some other regions of the country have resulted in the enrichment and articulation of certain principles that GRAVIS adopts across all their projects. Design of all projects, including that of the WNHT project, is based on these principles, which lend additional impetus to the interventions and their impact. In the context of WNHT project, certain approaches adopted by GRAVIS have proven particularly beneficial for the wellbeing of older people.

5.1 Integrated community development

In the Thar Desert, where livelihoods are shaped by ecological fragility and chronic poverty, natural farming interventions are embedded within a broader integrated community development approach. Rather than addressing agriculture in isolation, the programme links soil and water conservation, livelihood diversification, nutrition, and institutional strengthening. Interventions such as rainwater harvesting, arid horticulture, pasture development, and livestock integration are designed as interdependent components of a single ecosystem-based strategy. This approach recognises that

improvements in agricultural productivity must be accompanied by enhanced access to water, strengthened local institutions, and diversified income sources to reduce vulnerability. By working at the level of the village ecosystem, the programme enables cumulative and sustained impacts on resilience, food security, and incomes among marginalised households. This approach encompasses special attention to the needs of the most vulnerable.

5.2 Community mobilisation and participation

Given the centrality of local knowledge and collective action in arid landscapes, community mobilisation is a core strategy. The programme prioritises participatory planning processes, where community members identify needs, map resources, and co-design interventions such as khadins, seed banks, and pasture lands. Village-level institutions, such as farmer groups, water user groups, and community-based organisations, are strengthened to ensure ownership, transparency, and accountability. Special emphasis is placed on including smallholders, landless households, and socially marginalised groups in decision-making processes. Continuous capacity-building, exposure visits, and demonstration models foster peer learning and behavioural change, ensuring that natural farming practices are not externally imposed but locally adapted and sustained.

WNHT project emphasised community mobilisation through the formation of village-level institutions such as Village Older People's Associations (VOPAs) and community seed banks. These institutions played key roles in beneficiary selection, monitoring of interventions, and conservation of local resources. Collectively, the interventions contributed to improved environmental sustainability through enhanced water conservation, soil health, and biodiversity; strengthened economic outcomes through increased incomes and reduced input costs; and generated positive social impacts, including women's empowerment, increased community participation, and enhanced roles for older people. Additionally, improvements in nutrition, access to water, and livelihood stability contributed to better physical and mental well-being across communities.

5.3 Gender responsiveness

In the Thar Desert context, women play a critical yet often under-recognised role in agriculture, livestock care, and household food security. The programme adopts a gender-responsive approach by actively engaging women in training, decision-making, and leadership roles within community institutions. Women's collectives are strengthened around natural farming, seed management, and nutrition-sensitive agriculture, enhancing their agency and access to resources. Interventions are designed to reduce drudgery (e.g., improved water access, local input preparation) and increase control over productive assets and income. By foregrounding women's knowledge and participation, the programme contributes to both improved agricultural outcomes and more equitable intra-household and community dynamics.

5.4 Blending science and tradition

Natural farming in the Thar Desert builds on a careful integration of traditional ecological knowledge and

scientific principles. Long-standing practices such as the use of indigenous seeds, khadin-based farming, and livestock integration, are combined with scientific insights on soil health, microbial activity, water efficiency, and climate resilience. The programme facilitates this convergence through farmer trainings, demonstration plots, and collaboration with technical experts, ensuring that traditional practices are refined, validated, and adapted to current climatic challenges. This blended approach enhances credibility, improves adoption rates, and ensures that innovations remain contextually relevant, cost-effective, and sustainable for resource-poor communities.

6. Improving the quality of life for community and older people

Adoption of natural farming practices, non chemical ways of soil management, use of traditional seeds, and water conservation, has led to increased and more stable agricultural yields, particularly under rainfed conditions. Enhanced soil fertility, better moisture retention, and reduced crop stress contribute to improved productivity of both staple and horticultural crops. Crop diversification further reduces the risk of total crop failure and supports more consistent output across seasons. Additional interventions include soil and moisture conservation techniques (e.g., contour bunding, mulching), agroforestry, crop diversification, and promotion of mixed and intercropping systems suited to arid ecologies. Capacity-building efforts focus on climate-resilient agronomic practices, efficient water use, and local knowledge integration. The programme also encourages collective action through farmer groups and producer organisations to improve access to inputs, knowledge, and markets. These practices collectively contribute to enhancing productivity, reducing vulnerability, and ensuring ecological sustainability.

6.1 Reduced physical labour

Older people have to work in the scorching sun to take care of their farms, and they are most affected by extreme climate. Natural farming practices significantly reduced the physical labour required in agriculture by minimizing dependence on intensive activities such as repeated tilling, chemical spraying, and frequent irrigation. Techniques such as mulching, intercropping, and low-till cultivation made farming more manageable for older people, enabling them to remain actively engaged in productive work despite age-related physical limitations. This facilitated continued economic participation and reduced dependency on others.

6.2 Better health outcomes with food and nutrition security

In addition, natural farming improved household-level food and nutrition security by encouraging diverse cropping systems, including millets, pulses, and vegetables. The promotion of kitchen gardens, which are relatively easy to manage, enabled older people to access fresh, chemical-free, and nutrient-rich food. This had direct implications for addressing malnutrition and enhancing health outcomes, particularly in the context of age-related vulnerabilities.

The adoption of natural farming practices also enhanced climate resilience in the arid conditions of the Thar Desert. By improving soil organic matter and moisture retention, and by promoting drought-resistant

crops such as bajra and guar, these practices reduced the risk of crop failure. When combined with traditional water conservation systems such as khadins and tankas, natural farming helped older farmers better cope with erratic rainfall and environmental stress.

Natural farming further contributed to improved health outcomes by eliminating exposure to harmful agrochemicals. Older people, who are often more susceptible to respiratory, skin, and neurological conditions, benefited from safer working environments. The shift to non-toxic farming methods supported healthier ageing and reduced health-related risks associated with conventional agriculture. Improved and diversified agricultural production has strengthened household-level food security, particularly among small and marginal farmers. Increased availability of locally grown cereals, pulses, and horticultural produce reduces dependence on external markets and buffers households against seasonal food shortages. Integration with livestock systems further ensures access to milk and other animal products, contributing to year-round food access. The shift towards diversified cropping systems, including pulses, oilseeds, and fruits from AHUs, has enhanced dietary diversity. Households increasingly consume a wider range of nutrient-rich foods, contributing to improved intake of proteins, micronutrients, and vitamins. Nutrition awareness integrated into programme activities further reinforces better food choices, particularly for women and children.

Reduced use of chemical inputs and increased consumption of diverse, chemical-free foods contribute to improved health outcomes. Enhanced nutrition, coupled with better water management and reduced exposure to agrochemicals, supports overall well-being. In addition, reduced financial stress and improved livelihood stability indirectly contribute to better physical and mental health among rural households.

6.3 Financial empowerment: through enhanced production and reduced input costs

Natural farming lowered the cost of cultivation by promoting the use of locally available inputs such as cow dung, urine, compost, and plant-based formulations. By eliminating or reducing the need for chemical fertilizers, pesticides, and expensive hybrid seeds, it decreased financial risks for older farmers, many of whom have limited or no regular income. This contributed to greater financial security and reduced the likelihood of indebtedness. Natural farming reduces dependency on costly external inputs such as chemical fertilisers and pesticides, lowering the cost of cultivation. Combined with improved yields and diversification into horticulture and livestock, this leads to increased and more stable incomes. Households gain greater financial resilience, improved savings capacity, and reduced vulnerability to debt, particularly during periods of climatic stress.

6.4 Community empowerment

Strengthening local institutions such as farmer groups, seed banks, and water user groups, enhances collective decision-making and resource management. Communities develop greater capacity to plan, implement, and sustain interventions independently. Increased participation, transparency, and shared ownership of resources contribute to stronger social cohesion and local governance. With increased

community ownership of the endeavours, older people found themselves better paces in community decisions. Their opinions are valued and they are recognised as crucial resources for overall communityd evelopment.

6.5 Women's empowerment :

Women's active participation in natural farming, seed management, and community institutions enhances their agency, skills, and decision-making power. Access to training, collective platforms, and income-generating opportunities strengthens their economic and social position. Control over productive resources and contributions to household income further shifts gender dynamics towards greater equity, while also improving outcomes related to nutrition and family well-being.

6.6 Social role of older people

Beyond economic and health benefits, natural farming strengthened the social role and status of older people within their communities. As custodians of traditional agricultural knowledge, older individuals played a key role in guiding and training others in sustainable practices. This reinforced their leadership within community institutions such as OPAs and promoted intergenerational knowledge transfer.

Finally, natural farming proved particularly suitable for small and marginal landholdings, which are common among older people in the Thar Desert. Its low-input, decentralized, and adaptable nature allowed it to be effectively practiced on small plots and homesteads with limited resources. This made it an inclusive and accessible livelihood option for older populations.

7. Further optimising natural farming for older peoples' wellbeing

Natural farming has come to be accepted as the most relevant and effective form of farming in the present day, especially considering its environmental viability and acceptability among traditional farmers. The main reason behind this acceptance is that natural farming does not rely heavily on expensive chemical inputs, which reduces the financial burden and improves long-term soil health. By maintaining a strong biological balance in the field, it helps restore soil structure, increase microbial activity, and improve water retention capacity. As a result, crops become more resilient to stress conditions such as drought, pests, and irregular rainfall, which are becoming increasingly common. It encourages the use of locally available resources and traditional knowledge, such as composting, mulching, and crop diversification. When farmers practice these methods consistently, they can reduce erosion, control weeds naturally, and enhance the overall productivity of the land without degrading the ecosystem. Health of the farmers also improves if they follow natural farming practices and combine them with other traditional and sustainable practices such as rainwater harvesting and the use of local seeds. In this way, natural farming supports both sustainable agriculture and community welfare, making it a practical solution for farmers who want to protect their environment while continuing to earn from farming.

For the farming communities, including the older people in the Thar Desert, natural farming has remained a way of life for a long time. GRAVIS emphasis on natural farming through its various projects has helped revise natural farming and other sustainable farming practices. The benefits of adopting natural farming for the desert communities are evident, and these benefits may be further augmented by placing a greater focus on it.

7.1 Reaffirmation and reinforcement of natural farming practices

Natural farming should be reaffirmed and promoted as a core climate-resilient livelihood strategy in the Thar Desert, particularly for small and marginal farmers and older people's households. Given its low-input, low-cost, and knowledge-intensive nature, natural farming aligns well with the capacities and constraints of older farmers, who often have limited financial resources and reduced physical mobility. There is a strong need to revive and strengthen traditional practices such as khadin-based farming, the use of indigenous seeds, mulching, and integrated livestock systems, while also incorporating relevant scientific advancements. Public policies and rural development programmes should explicitly recognise natural farming as a viable drought adaptation and soil restoration approach, ensuring that it is embedded within broader strategies for sustainable agriculture and climate resilience in arid regions.

7.2 Leveraging technical collaborations

Leveraging technical collaborations will be essential to enhance the effectiveness and scalability of natural farming interventions. Partnerships with institutions such as the Central Arid Zone Research Institute, agricultural universities, and agro-ecology experts can support the development of region-specific farming models tailored to desert ecosystems. These collaborations can facilitate farmer field schools, demonstration plots, and applied research on soil health, water-use efficiency, and crop resilience. Importantly, they can also help validate and refine traditional knowledge systems through scientific engagement, thereby improving the credibility, acceptance, and long-term sustainability of natural farming practices.

7.3 Drawing linkages for direct support to farmers

In order to ensure that natural farming transitions are economically viable and inclusive, it is critical to establish stronger linkages between farmers and existing government schemes, financial services, and market systems. Convergence with programmes such as the Mahatma Gandhi National Rural Employment Guarantee Act can support the construction of water harvesting structures like khadins and nadis, while linkages with the National Rural Livelihood Mission can strengthen collective enterprises and livelihood diversification. Additionally, older farmers should be supported in accessing social protection schemes, including pensions and insurance, alongside improved access to local value chains for millets, pulses, and arid horticulture produce. Such integrated support systems are necessary to ensure that natural farming contributes not only to ecological sustainability but also to improved incomes and financial security.

7.4 Extending support to other CSOs engaged in community development

Scaling natural farming across the Thar Desert will also require extending structured support to other civil society organisations (CSOs) engaged in community development. Building the capacities of grassroots organisations through training modules, technical toolkits, and exposure visits can facilitate the replication of successful models across different geographies. Providing small grants and technical backstopping will further enable these organisations to adapt natural farming interventions to local contexts. Encouraging collaboration and knowledge exchange among CSOs can create a strong ecosystem for scaling community-led, sustainable agriculture practices across arid regions.

7.5 Technical advisory committees

The establishment of multi-stakeholder Technical Advisory Committees at district and block levels can further strengthen programme design, implementation, and monitoring. These committees should include agricultural scientists, extension experts, CSO representatives, experienced farmers, including older practitioners, and relevant government officials. By bringing together diverse expertise, such platforms can help contextualise interventions, ensure technical rigour, and facilitate convergence with government schemes. They can also support adaptive management by incorporating field-level feedback into programme planning, thereby enhancing both effectiveness and sustainability.

7.6 Community support groups

Equally important is the strengthening of community-based institutions such as OPAs, farmer groups, and community seed banks, which form the backbone of sustainable natural farming adoption. These institutions should be supported through continuous capacity-building in areas such as agro-ecology, natural resource management, and climate-resilient practices. Promoting peer learning, mentoring systems, and community-led monitoring of water and soil resources can further enhance ownership and accountability. Such collective platforms are particularly valuable in enabling older people to remain active contributors to household economies and community resilience, while also fostering social inclusion and intergenerational knowledge transfer.

7.7 Encouraging women's leadership

Gender responsiveness and the promotion of women's leadership are crucial dimensions of strengthening equitable natural farming systems in the Thar Desert. It is very well known that women play a central role in agriculture, livestock care, and household nutrition, yet their contributions often remain under-recognised. Interventions should actively support women's participation and leadership within OPAs, farmer collectives, and seed banks, while also promoting women-led initiatives such as kitchen gardens and arid horticulture units. Enhancing women's access to training, financial resources, and market opportunities, along with reducing drudgery through improved water access and local input systems, will not only improve agricultural outcomes but also contribute to greater gender equity and improved household nutrition, particularly benefiting older women.

7.8 Evidence Generation and Dissemination

There is a pressing need to strengthen evidence generation and dissemination to support the scaling and institutionalisation of natural farming. Systematic documentation of programme outcomes, including changes in crop yields, income levels, soil health, and nutrition, will be essential to build a robust evidence base. Identification of the crops that suit the arid climatic conditions of the Thar is another critical and useful aspect of documentation that may be used by other farmers and project facilitators located in the same region. Longitudinal studies, cost-benefit analyses, and detailed case studies of older farmers and women leaders can further strengthen advocacy efforts. Developing policy briefs, training manuals, and knowledge products, along with leveraging digital platforms and community media, will enable wider dissemination of learning. Such evidence-driven approaches will play a critical role in integrating natural farming into broader policy frameworks related to climate adaptation, rural livelihoods, and ageing.

In the context of the Thar Desert agro-climatic zones, exploration of natural farming may take several forms and shapes. However, its utility for the wellbeing of the most climate-vulnerable groups needs to be underlined. Older people in traditional societies, despite their vulnerabilities, hold abundant potential for the overall community development as they remain the custodians of traditional knowledge systems. Alignment of natural farming with local and traditional wisdom gives them an edge to contribute further while reaping the benefits from the revival of natural farming practices.

Glossary

Khadin

Khadin is an embankment constructed on farms to prevent rainwater runoff. Constructed along the boundary of the farms, khadin helps retain moisture in the soil for a long period allowing farmers to get an increased quantity of yield from a crop and harvest more than one crop in a year.

Arid Horticulture Unit

AHU is a form of kitchen garden, modified to meet the needs of rural households in the desert. Drought-resistant vegetable plants and fruit trees are grown in AHU, which need less water and yet address household-level nutrition needs.

Nadi

Nadi is a local name for a village pond that is naturally created and holds rainwater for most part of the year. Local communities use water from nadis for household purposes and for their cattle.

Taanka

A taanka is a household level rainwater harvesting system. Through a cylindrical underground water tank connected with the water sources from roof tops and other relatively higher plains, rain water gets accumulated. With the capacity of about 20 to 25 thousand litres of water, this tank has the capacity to meet water related requirements of families for upto 6 to 8 months, depending upon the usage and size of the family. Since it's rainwater, it is safe to drink, too, after basic filtering.

Acronyms

AHU - Arid Horticulture Unit

CSB - Community Seed Bank

GRAVIS - Gramin Vikas Vigyan Samiti

OPA - Older Peoples' Association

VOPA - Village Older Peoples' Associations

WNHT - Water Health and Nutrition in Thar

NOTES

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GRAVIS is a leading Non-Governmental Organization working in rural India in the States of Rajasthan, Uttarakhand, and the Bundelkhand region of Uttar Pradesh. Since its inception in 1983. GRAVIS has worked in over 2,000 villages reaching a population of over 2.7 million and has established over 4,000 Community Based Organizations (CBOs). GRAVIS believes in participatory community development that blends traditional knowledge and modern sciences and promotes equality.

GRAVIS is registered under Rajasthan Societies Registration Act and under section 80 (G) and 12A of IT Act, 1961 of Government of India with tax exemption status.