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Assessment of constraints faced by beneficiary and non-beneficiary farmers under NGO-led agricultural interventions: Evidence from Marathwada region of Maharashtra

¹Sudarshan S Lohar, ²Sachin S More, ³Ranjit V Chavan, ⁴Digambar S Perke, ⁵Rajesh D Shelke, ⁶Prashant R Deshmukh, ⁷Shriniwas V Bharti, ⁸Ramkishan F Thombre, ⁹Dheeraj T Pathrikar, ¹⁰Tukaram B Munde

¹Ph.D. Scholar, Department of Agricultural Economics, College of Agriculture, VNMKV, Parbhani, Maharashtra, India

²Professor and Head, Department of Agricultural Economics, College of Agriculture, VNMKV, Parbhani, Maharashtra, India

³Associate Professor, Department of Agricultural Economics, College of Agriculture, VNMKV, Parbhani, Maharashtra, India

⁴Associate Dean and Principal, College of Agriculture, Dharashiv, VNMKV, Parbhani, Maharashtra, India

⁵Professor, Department of Agricultural Economics, College of Agriculture, Latur, VNMKV, Parbhani, Maharashtra, India

⁶Professor, Department of Agricultural Extension Education, College of Agriculture, VNMKV, Parbhani, Maharashtra, India

^{7, 8, 9, 10}Assistant Professors, Department of Agricultural Economics, College of Agriculture, VNMKV, Parbhani, Maharashtra, India

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Corresponding Author: Sudarshan S Lohar

Abstract

The Marathwada region is drought-prone and has a heavy burden of socio-economic, institutional and environmental challenges in agriculture. The present study is an attempt to study the problems of the beneficiary as well as non-beneficiary farmers of the Global Vikas Trust (GVT), a non-governmental organization working in Marathwada region of Maharashtra. A multistage purposive sampling technique was used to select 240 farmers (120 beneficiaries and 120 non-beneficiaries) from three districts of Marathwada region. Primary data were collected through structured interviews for the agricultural years 2019-20 and 2024-25 and Garrett's Ranking Technique was used to rank the constraints. The results show that initially the beneficiary farmers had awareness and knowledge gaps regarding adoption and later moved towards economic and market related challenges after the intervention, especially high input costs and poor farm-gate prices. On the other hand, non-beneficiary farmers remained stuck in persistent structural bottlenecks: poor irrigation, poor-quality inputs and little access to technical guidance. The study concludes that although NGO interventions make a meaningful difference to reducing informational and knowledge barriers, deeper structural challenges persist that continue to undermine farm sustainability, including market inefficiencies, credit access, labour shortages and climate variability. There is an urgent need to build stronger institutional bridges, improve market connectivity and mainstream climate-adaptive farming for the long-term agricultural sustainability of the region.

Keywords: Constraints analysis, global Vikas trust, agriculture intervention, Garrett's ranking technique, Marathwada

1. Introduction

Agriculture has been the backbone of the Indian economy and the source of livelihood for millions of rural households for long (Anonymous, 2024) ^[1]. Despite considerable progress in agricultural technology and growing government support schemes, the sector continues to face a complex set of challenges, viz- scattered landholdings, absence of irrigation, dependence on monsoon rains, stagnating productivity, rising input costs, and poor access to institutional credit (BIRTHAL *et al.*, 2005; Pretty, 2008) ^[2, 13]. These difficulties are not uniform across the country and are particularly acute in ecologically vulnerable areas such as Marathwada in Maharashtra where repeated droughts, erratic weather patterns, declining groundwater reserves and

deepening agrarian distress collectively threaten farmers' livelihoods as well as agriculture's long-term sustainability (Shiferaw *et al.*, 2014; Reddy and Mishra, 2009) ^[14, 17]. These problems are further intensified by climate variability and vulnerability in Maharashtra, particularly in drought-prone regions such as Marathwada, where agriculture remains highly sensitive to rainfall uncertainty and resource scarcity (Kavibharathi & More, 2024) ^[7]. Studies conducted in Maharashtra also highlighted that farmers in drought-prone regions continue to face serious production, technological, and institutional constraints related to quality inputs, labour scarcity, irrigation, and climate uncertainty (Khandagale *et al.*, 2024; Jadhav *et al.*, 2025) ^[6, 10]. Similarly, Kayande *et al.* (2025) ^[8] reported that lack of

awareness, inadequate technical guidance, and input-related problems significantly affected the adoption of improved agricultural technologies among farmers in Marathwada region.

Over the last few decades, Non-Governmental Organizations (NGOs) have emerged as major actors in rural and agricultural development, especially in areas lacking formal institutional support. NGOs frequently complement government efforts by developing farmers' capacities, facilitating technology transfer, connecting communities to markets, and mobilizing grassroots participation in resource conservation (Chambers, 1993; Uphoff, 2000) [4, 18]. In vulnerable regions like Marathwada, such organizations can play an important role in strengthening agricultural resilience and improving livelihood opportunities for small and marginal farmers.

The Global Vikas Trust (GVT) through its flagship initiative Global Parli is an example of such targeted intervention. GVT has been working in the Marathwada region and has a long history of watershed development, sustainable land management, natural resource conservation and farmer capacity-building. Its programmes include improved seed/planting material distribution at subsidized rates, water harvesting, training workshops and income diversification - all to equip small and marginal farmers with tools to navigate an increasingly difficult agricultural environment. Nevertheless, even in the context of such active support, farmers still face a range of production, market and institutional challenges that constrain programme outcomes (Kumar *et al.*, 2017; Chauhan *et al.*, 2023) [3, 11].

It is important to design effective and targeted policies, and knowing which constraints persist, which fade, and how the experience differs for those who access NGO support and those who do not is crucial. Therefore, the present study aims to examine and compare the constraints faced by beneficiary and non-beneficiary farmers in Marathwada

region. The study is based on data collected before and after GVT's intervention to provide a nuanced, evidence-based picture of what NGO-led programmes can and cannot address (Verma *et al.*, 2021) [19].

Objectives of the study

The study was undertaken to identify the major constraints faced by beneficiary and non-beneficiary farmers in the study area and to compare the nature and severity of these constraints before and after NGO intervention. It also aimed to examine the effectiveness of NGO-led interventions in addressing agricultural problems and improving the farming situation in the Marathwada region.

2. Methodology

2.1 Study area and sampling design

The study was conducted in the Marathwada region of Maharashtra, where the activities of Global Vikas Trust are predominantly concentrated. A multistage purposive sampling design was adopted to obtain a representative sample from the NGO's operational area. In the first stage, three districts namely Beed, Nanded, and Dharashiv were selected purposively, as these districts had the highest concentration of GVT beneficiary farmers. In the second stage, two tehsils were selected from each district. Further, four villages from each tehsil were selected based on the criterion of maximum number of beneficiaries. At the village level, simple random sampling without replacement was used to select five beneficiary and five non-beneficiary farmers from each village. Thus, a total sample of 240 farmers comprising 120 beneficiary and 120 non-beneficiary farmers was selected for the study. Primary data were collected through personal face-to-face interviews using a pre-tested structured schedule. The required information was collected for the agricultural years 2019-20 and 2024-25.



Fig 1: Maharashtra's position in India Map

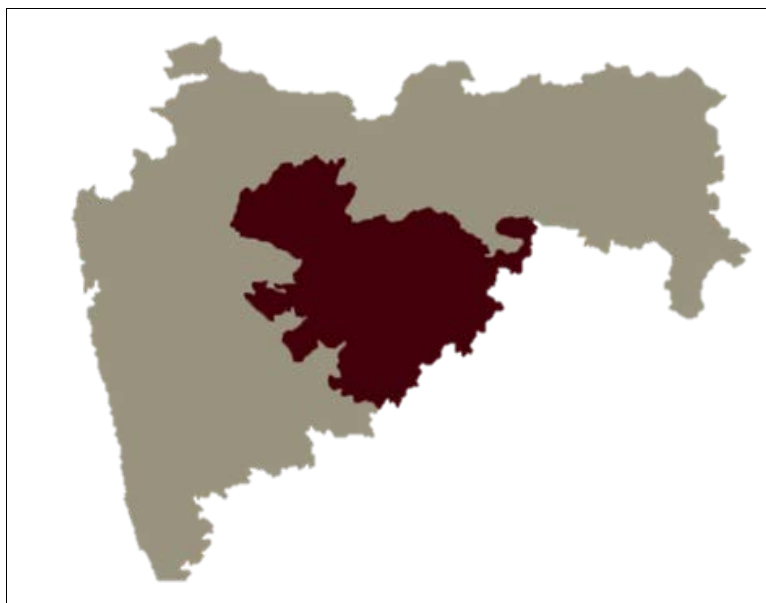


Fig 2: Marathwada's position in Maharashtra Map



Fig 3: Selected districts of Marathwada region of Maharashtra

2.2 Method of Analysis

The constraints expressed by the respondents were analyzed and prioritized using Garrett's Ranking Technique. In this technique, the respondents were first asked to identify the major constraints perceived by them in agricultural activities. After identifying the constraints, they were asked to assign ranks to each constraint according to the severity and extent of the problem faced by them. These ranks were converted into percent positions by using the following formula and then, were converted into scores using Garrett's conversion table. The mean Garrett score of each constraint was calculated for all the respondents and the constraint having the highest mean score was considered as the most severe one. In this method each respondent ranks all constraints as they see them. These ranks are converted into

percent positions as per the formula below and thereafter mapped to Garrett's conversion table to arrive at standardized scores. The average Garrett score for all respondents is used to determine the severity of each constraint; the constraint with the highest average score is considered the most severe.

The percent position was calculated using the following formula:

$$\text{Per cent position} = \frac{100 (R_{ij} - 0.5)}{N_j}$$

Where,

R_{ij} = Rank given to i^{th} constraint by the j^{th} individual and

N_j = Number of constraints ranked by the j^{th} individual (Garrett and Woodworth, 1969) [5].

3. Results and Discussion

3.1 Constraints Faced by Beneficiary Farmers

The constraints experienced by beneficiary farmers, both before and after GVT's intervention, were analyzed using Garrett's Ranking Technique. Table 1 presents the results in detail. Before the intervention, the challenge that weighed most heavily on beneficiary farmers was a simple but fundamental one: lack of awareness, which recorded the highest mean Garrett score of 66.76. This was closely followed by difficulty in accessing quality seeds and planting material (62.46), insufficient technical knowledge (58.44), labour shortages during peak agricultural seasons (55.93), high input costs (54.61), inadequate farm-gate prices (46.48), crop losses caused by wildlife (42.98), and unreliable electricity for irrigation (34.34). This pre-intervention profile collectively describes farmers caught in an informational vacuum- they are unaware of better practices, uncertain about improved technologies, and unable to access the quality inputs that would facilitate

adoption. But after the intervention, the constraint landscape changed. The main challenge was not lack of knowledge, but high cost of inputs (Garrett score: 67.92), followed by labour shortage during peak seasons (64.88), low farm produce prices (60.51), incidence of pests and diseases (58.35), marketing difficulties (50.41), crop damage from wild animals (45.85), unreliable power supply for irrigation (39.71) and climate variability (34.38). This is a big shift. This indicates that GVT's programme has succeeded in closing the awareness and knowledge gap around adoption- farmers are now more aware and willing to adopt improved practices. But this very adoption has brought them face to face with a new set of challenges- the economics of scaling up production, the volatility of markets, the unpredictability of weather, and the chronic shortage of agricultural labour. In other words, the NGO intervention helped farmers overcome initial barriers to agricultural development; however, further progress is constrained by broader structural and institutional challenges.

Table 1: Constraints faced by beneficiary farmers before and after the intervention

Sr. No.	Constraints (Before)	Mean Garrett Score	Rank	Constraints (After)	Mean Garrett Score	Rank
1.	Lack of awareness	66.76	I	High cost of inputs	67.92	I
2.	Lack of quality seed/planting material	62.46	II	Labour scarcity during peak season	64.88	II
3.	Lack of technical knowledge	58.44	III	Low prices for farm produce	60.51	III
4.	Labour scarcity during peak season	55.93	IV	Incidence of pests and diseases	58.35	IV
5.	High cost of inputs	54.61	V	Marketing constraints for farm produce	50.41	V
6.	Low prices for farm produce	46.48	VI	Crop damage due to wild animals	45.85	VI
7.	Crop damage due to wild animals	42.98	VII	Irregular electricity supply for irrigation	39.71	VII
8.	Irregular electricity supply for irrigation	34.34	VIII	Climate variability and weather uncertainty	34.38	VIII

3.2 Constraints Faced by Non-Beneficiary Farmers

In contrast, non-beneficiary farmers did not show much significant change in the character or intensity of their problems over the period of study (Table 2). The most important constraint before intervention phase was inadequate irrigation infrastructure (Garrett score: 54.22) followed closely by lack of awareness (54.02), poor availability of quality seeds and planting material (53.43), limited technical knowledge (52.89), high input costs (51.77), low produce prices (50.24), labour scarcity during peak season (49.63), lack of access to institutional credit (46.82), crop damage due to wildlife (46.43) and unreliable electricity supply (41.35). Scores across these constraints were relatively tightly grouped, indicating a broad-based

and entrenched set of disadvantages rather than one dominant problem. Among non-beneficiary farmers, the constraints remained almost the same in the after intervention period. Quality seed availability (54.94) was rated the highest, followed by technical knowledge gap (54.89), irrigation inadequacy (53.08), awareness deficits (53.01), labour scarcity (51.58), input costs (50.33), low farm-gate prices (48.88), credit inaccessibility (47.58), wildlife damage (45.68), and electricity irregularity (41.04). The Garrett scores barely moved- a clear sign that without targeted help, these farmers remained exactly where they were. This stagnation shows the self-reinforcing character of agricultural marginalization.

Table 2: Constraints faced by non-beneficiary farmers before and after intervention

Sr. No.	Constraints (Before)	Mean Garrett Score	Rank	Constraints (After)	Mean Garrett Score	Rank
1.	Inadequate irrigation facility	54.22	I	Lack of quality seed/ planting material	54.94	I
2.	Lack of awareness	54.02	II	Lack of technical knowledge	54.89	II
3.	Lack of quality seed/ planting material	53.43	III	Inadequate irrigation facility	53.08	III
4.	Lack of technical knowledge	52.89	IV	Lack of awareness	53.01	IV
5.	High cost of inputs	51.77	V	Labour scarcity during peak season	51.58	V
6.	Low prices for farm produce	50.24	VI	High cost of inputs	50.33	VI
7.	Labour scarcity during peak season	49.63	VII	Low prices for farm produce	48.88	VII
8.	Lack of institutional credit	46.82	VIII	Lack of institutional credit	47.58	VIII
9.	Crop damage due to wild animals	46.43	IX	Crop damage due to wild animals	45.68	IX
10.	Irregular electricity supply for irrigation	41.35	X	Irregular electricity supply for irrigation	41.04	X

3.3 A Comparative perspective

When we compare the experiences of beneficiary and non-beneficiary farmers, a clear story emerges about what institutional support can and cannot achieve. For beneficiary farmers, engagement with NGOs led to a noticeable change. They shifted from facing problems due to a lack of information such as ignorance of practices and lack of knowledge, to dealing with operational and economic issues. These include input costs, labor shortages, pest problems, and market uncertainties. This change is generally a good sign. It shows that farmers have adopted better practices and are trying to use them. However, they still face structural challenges that the NGO cannot address directly. In contrast, non-beneficiary farmers did not experience such a shift. Their challenges stayed largely the same over time, indicating that without external support, they remain stuck. Basic issues like poor irrigation, low seed quality, and lack of technical advice continue to be major obstacles, each one worsening the others. These findings are in close agreement with the studies conducted by Khandagale *et al.* (2024) ^[10], who reported that farmers adopting improved agricultural technologies continued to face constraints related to labour scarcity, high input costs, and technical limitations despite technological interventions. Similarly, Kayande *et al.* (2025) ^[8] observed that lack of awareness, inadequate technical guidance, and input-related problems significantly affected the adoption of improved safflower varieties among farmers in Maharashtra. Further, Jadhav *et al.* (2025) ^[6] emphasized that climate-resilient agricultural technologies improved farmers' adaptive capacity; however, economic and institutional bottlenecks still persisted in drought-prone regions of Marathwada. The findings are also supported by earlier studies of Kumar *et al.* (2017) ^[11], Prashanth *et al.* (2020) ^[12], and Chauhan *et al.* (2023) ^[3], who noted that awareness and knowledge constraints dominate during the initial stages of agricultural development, while operational and economic challenges become more important after technology adoption. Likewise, Keshri and Jahanara (2019) ^[9], Verma *et al.* (2021) ^[19], and Sheetal *et al.* (2020) ^[16] found that non-beneficiary farmers commonly suffer from poor irrigation facilities, lack of quality inputs, and weak institutional support systems, which is consistent with the present findings from Marathwada.

4. Conclusion

The study shows that NGO support played an important role in improving the farming conditions of beneficiary farmers in the Marathwada region. Before the intervention, farmers mainly faced adoption-related constraints such as lack of awareness, poor technical knowledge, and non-availability of quality seeds and planting material. After the intervention, these problems reduced considerably and the major constraints shifted towards implementation-related challenges such as high input costs, labour scarcity, pest incidence, and marketing difficulties. This indicates that NGO support helped farmers adopt improved farming practices, but difficulties related to managing and sustaining these practices still remained. In contrast, non-beneficiary farmers continued to face the same basic problems related to irrigation, quality inputs, awareness, credit access, and technical guidance throughout the study period. Overall, the study highlights that NGO interventions are effective in

reducing knowledge and adoption barriers, but long-term agricultural improvement also requires better market support, irrigation facilities, credit access, and climate-resilient farming measures.

5. Policy implications

The findings from this research convey important insights for policymakers, development workers, and NGOs operating in regions prone to drought. Firstly, it is essential to focus on post-adoption challenges with targeted policy measures. Mechanisms for input subsidies, collective purchasing systems, and enhanced agricultural supply chains can alleviate the financial strain that persists for farmers even after they adopt better practices. Secondly, access to markets remains a significant issue. Expanding farmer-producer organizations, developing rural market intelligence systems, and bolstering agricultural price support initiatives are crucial steps to ensure that farmers can receive fair compensation for their products. Lastly, the persistent issues of labour shortages and climate variability necessitate investments in farm mechanization, climate-resilient cropping methods, and integrated pest management technologies that should be made accessible and affordable for smallholder farmers. Fourth, to begin with, access to institutional credit needs significant improvement. Numerous small and marginal farmers in Marathwada find themselves outside the official credit system, compelling them to depend on moneylenders and hindering their ability to invest in superior seeds, inputs, and infrastructure. Lastly, and possibly most crucially, the disparity between beneficiary and non-beneficiary farmers underscores the transformative potential of broadly extending NGO-like support. Expanding collaborative platforms that unite government agencies, NGOs, and local institutions would enable more farmers to benefit from the awareness and technology support efforts that have clearly improved outcomes among GVT's beneficiaries.

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