



SUSTAINABLE SOLUTIONS FOR SANITATION CHALLENGES AND AGRICULTURAL DEVELOPMENT: A CASE STUDY OF BELDARWADI VILLAGE, MAHARASHTRA, INDIA

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Abstract:

This comprehensive paper delves into the intricate challenges faced by Beldarwadi village in Maharashtra, India, where sanitation issues intersect with agricultural practices. Through a meticulous household survey and innovative technologies like Arduino-based monitoring systems, the study reveals a stark lack of awareness regarding hygiene maintenance, resulting in prevalent open defecation. The research proposes transformative solutions, emphasizing the untapped potential of human waste as a nutrient resource for soil conditioning and pesticide production. Infrastructural challenges, limited connectivity, and illiteracy further compound the village's struggles. Statistical analyses provide insights into the socio-economic fabric of Beldarwadi, laying the groundwork for tailored interventions. The monitoring of toilet usage exposes a disheartening reality, with 80% of the population still practicing open defecation, revealing deep-rooted behavioral challenges. The paper extends its focus to farmers' perspectives on fertilizer usage, highlighting a predominant reliance on chemical fertilizers and a cautious openness to alternatives derived from human feces. The conclusion emphasizes the need for targeted awareness campaigns, infrastructural development, and a nuanced approach to agriculture, envisioning a sustainable future for Beldarwadi.

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DOI: 10.53555/ecb/2022.11.12.254

Introduction:

In the heartland of rural Maharashtra, amidst the undulating landscapes and fertile fields, Beldarwadi village emerges as a microcosm encapsulating a myriad of challenges and opportunities. This quaint village, nestled in the picturesque Sangli district, stands at the crossroads of tradition and modernity, grappling with the intricate interplay between age-old sanitation practices and the imperative for sustainable agricultural methods. Our journey into the heart of Beldarwadi unfolds as a comprehensive case study, aiming to unravel the intricate tapestry that binds together the nuances of sanitation awareness, prevailing agricultural practices, and the latent potential for integrating innovative solutions that could pave the way for a more sustainable future.

Beldarwadi, with its idyllic charm, beckons us to explore the deeper dimensions of rural life in Maharashtra. The village, like many others in the region, becomes a canvas upon which the complexities of sanitation challenges are painted (1). As we delve into this rich narrative, the verdant fields and modest dwellings echo the age-old practices that have shaped the community's relationship with sanitation. Here, the daily rhythm of life intertwines with the challenges of open defecation and limited toilet usage, casting a shadow over the well-being of the community (2).

The Sangli district, where Beldarwadi finds its place on the geographical map, is emblematic of the agricultural heartland of Maharashtra. It is a region where the fertile soil has borne witness to the toil of generations, sustaining livelihoods through the cultivation of crops that contribute to the state's agrarian tapestry. Against this backdrop, Beldarwadi stands as a sentinel, its challenges reflective of broader patterns yet nuanced by the unique dynamics of its community (3).

The research endeavors into the heart of Beldarwadi are not merely an academic pursuit but a quest to unravel the layers that shroud the community's journey. Drawing inspiration from the Census 2011 data, we navigate through the village's socio-geographical landscape.

Beldarwadi, with its location code of 568291, lies within the Shirala Tehsil, approximately 3 km from the sub-district headquarters of Shirala and 60 km from the district headquarters of Sangli. This geographical context is crucial, for it defines the village's connectivity, its proximity to essential

services, and the challenges posed by its relative isolation (4).

In our exploration, Beldarwadi emerges as a microcosm where the lack of awareness regarding hygiene maintenance becomes a palpable concern. A reconnaissance survey conducted within the village illuminates the stark reality of common practices like open defecation and the limited use of available toilets. The repercussions of these practices reverberate in the form of epidemiological diseases, silently eroding the well-being of the community. It is in this crucible of challenges that the potential for innovative solutions comes to the fore—a potential that, if harnessed, could not only alleviate the sanitation woes but also usher in a paradigm of sustainability (5).

Human waste, often regarded as a problematic byproduct, takes center stage in the quest for sustainable solutions. The research posits that within this waste lies a trove of nutrients, a resource that, if efficiently utilized, could serve as a catalyst for change (12). The notion that human urine and feces contain significant nutrient content, suitable for repurposing in activities like soil conditioning or organic pesticide production, becomes a cornerstone for potential transformation (6). However, the caveat is essential—literature suggests that human feces require partial degradation before utilization. It is against this backdrop that the research takes cognizance of the legislative framework, particularly the Scavengers Act of 2016, introduced by the central government to regulate the utilization of human waste.

Beldarwadi's connectivity, or rather the lack thereof, adds another layer to the narrative. With only one direct connectivity service—a public bus arriving twice daily—the village's reliance on external resources becomes evident. The dilapidated state of connecting roads, a mere 3 meters in width and compounded by political inertia, encapsulates the infrastructural challenges that impede progress. The distant proximity of essential services, from the railway station in Karad to the airport in Kolhapur, further accentuates the village's isolation.

In our quest for a holistic understanding, data collection becomes a linchpin. A meticulously designed household survey, drawing inspiration from the Unnat Bharat Abhiyan, becomes the conduit through which the stories of 77 participating families are told. This survey transcends the quantitative enumeration of

facilities; it unravels the symbiotic relationship between sanitation structures, energy usage patterns, government scheme beneficiaries, and agricultural practices (11).

The survey encompasses a comprehensive panorama of information, from the intricacies of family dynamics—annual income, age, migration status—to the nuanced details of sanitation facilities available (7). It delves into the labyrinth of government schemes, from Jan Dhan Yojana to Kisan Credit Card, offering insights into the community's engagement with these initiatives. The particulars about sources of water, electricity usage, and the availability of appliances not only paint a vivid picture of economic conditions but also provide a canvas upon which the relevance of these factors to sanitation structures is etched (8).

The survey's statistical analysis, presented in Table 1, becomes a crucial touchstone for navigating the pathways toward sustainable solutions. The stark reality of 48 families practicing open defecation, 77 having no drainage linked to their houses, and 77 lacking any waste collection system underscores the urgent need for interventions. The predominance of Kutcha houses, the limited adoption of government schemes, and the disparities in water and electricity access further deepen our understanding of the challenges Beldarwadi faces (13).

The graphically represented survey results, a visual narrative of the village's dynamics, become an invaluable tool for distilling complex patterns (9). As we scrutinize the graph, a mosaic of interconnected challenges and opportunities emerges—each data point a brushstroke contributing to the portrait of rural life in Beldarwadi.

To monitor toilet usage, an innovative approach utilizing electronic devices—Arduino, in this case—becomes the eyes and ears of the research (10). Placed at the entrance of each toilet, the Arduino-based system aims not just to monitor infrastructure utilization but to delve into the behavioral nuances underpinning sanitation practices. The circuit diagram, as depicted in Figure 4, and the subsequent observations underscore a stark reality—the low number of people utilizing toilets, with 80% of the population still adhering to open defecation practices.

This observation becomes a lens through which deeper challenges come to light. The lack of

awareness about the importance of using toilets becomes a poignant revelation.

Details of Case study:

In order to assess the impact of fertilizer, a case study was conducted in villages with poor sanitation structures, including Shirala, Panhala, and Shahuwadi talukas of the Sangli district in Maharashtra, India. Among these villages, Beldarwadi village in the Shirala taluka was selected for analysis. According to the Census 2011 data, Beldarwadi village has a location code or village code of 568291. It is situated in the Shirala Tehsil of the Sangli district, approximately 3 km away from the sub-district headquarters of Shirala and 60 km away from the district headquarters of Sangli. The total geographical area of the village is 218.13 hectares, with a population of 493 individuals, consisting of 225 males and 268 females. The village comprises approximately 121 houses, and the nearest town to Beldarwadi is Urun-Islampur, located approximately 19 km away.

The research findings reveal a lack of awareness regarding hygiene maintenance, leading to common practices of open defecation and limited use of toilets in small villages in India. The reconnaissance survey conducted in Beldarwadi village indicated a lack of awareness among its residents regarding proper toilet usage, resulting in frequent cases of epidemiological diseases. Furthermore, the village requires the implementation of advanced technologies for the efficient utilization of fecal matter. If the community can find ways to utilize waste that not only minimizes waste but also generates revenue, they would be more likely to adopt the solution. Human urine and feces contain significant nutrient content that can be reused for various purposes, such as soil conditioning or organic pesticide production. However, it is important to note that literature suggests human feces cannot be directly used and requires partial degradation before utilization. In 2016, the central government introduced the Scavengers Act to regulate these aspects.

Connectivity of Beldarwadi:

The village have only one direct connectivity service i.e. Public bus service. Daily only two buses are arriving in the villages. One is at 8.00 am and another is at 6.00 pm. The nearby railway station is at Karad district: Satara. It is 40 km from Beldarwadi. The nearby Airport is situated at Kolhapur which is 65 km from village. The

connecting roads are made up of bitumen having 3 m width. Because of poor political abulia, the roads are not maintained properly. The nearby villages are Bhatwadi, Karamale, Red etc.

Collection of data & its analysis:

A household survey has been conducted to collect the information of sanitation structures available in village. This survey form is prepared by referring survey form of Unnat Bharat Abhiyan.

Figures of survey form

Figure 1: Household survey form

A household survey comprehends overall information of concerned family such as names of family members, annual income, age, type of house, migration status etc. Also it contains information related to sanitation facilities such as availability of drainage linking, biogas plant, compost pit, waste collection system, and the information related to availing the benefits of government schemes. The government schemes such as Jan Dhan yojana, Jivan Jyoti Yojana, Kisan Credit Card have been taken into consideration. The particulars about sources of water have been also recorded. So, it helps to identify the actual problem for poor sanitation system. Also identification of the root obstacle can help to find the exact remedy of it. The people are benefited with source of energy and power. The intensity and source of supply of energy sources can help to find sustainable way of living. In this point, the data regarding electricity, lighting, cooking has been taken into consideration. The appliances available in each family help to know the economic conditions of people. The relevance

of appliances with sanitation structures can be understood by referring these things. The landholding information helps to provide the correct solution in efficient manner. Also it helps to identify the area of irrigated, barren, cultivated land available in the village. The detail about the type of manure/pesticide practiced by farmers is an important feature. The productivity of crop is mainly dependent on the type of fertilizer used by the farmer. By considering these points, one can identify the solution for poor sanitation structures. The irrigation system, production of crop, livestock details and other miscellaneous points has been also collected. This can help to design the sustainable lifelong solution.

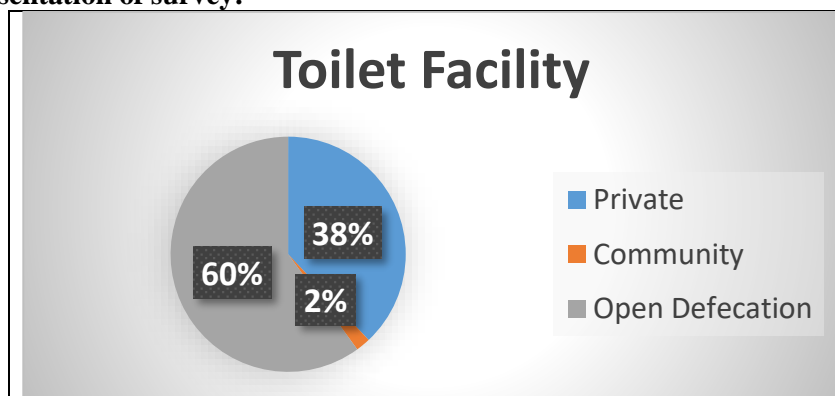
Statistical Analysis of survey:

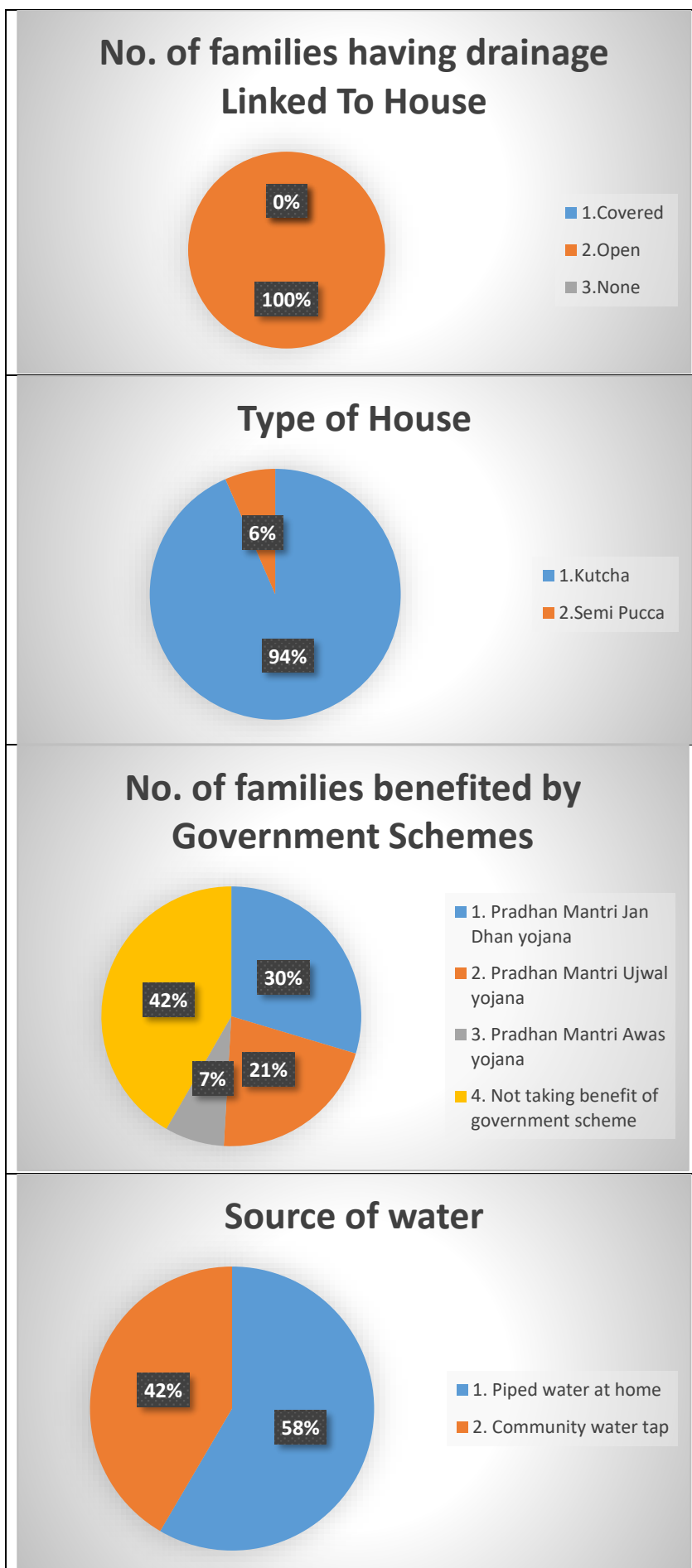
The analysis of the data fetched from the survey conducted is an important part of the research. Total 77 families have participated in the survey. Table 03 represent the analysis of survey conducted.

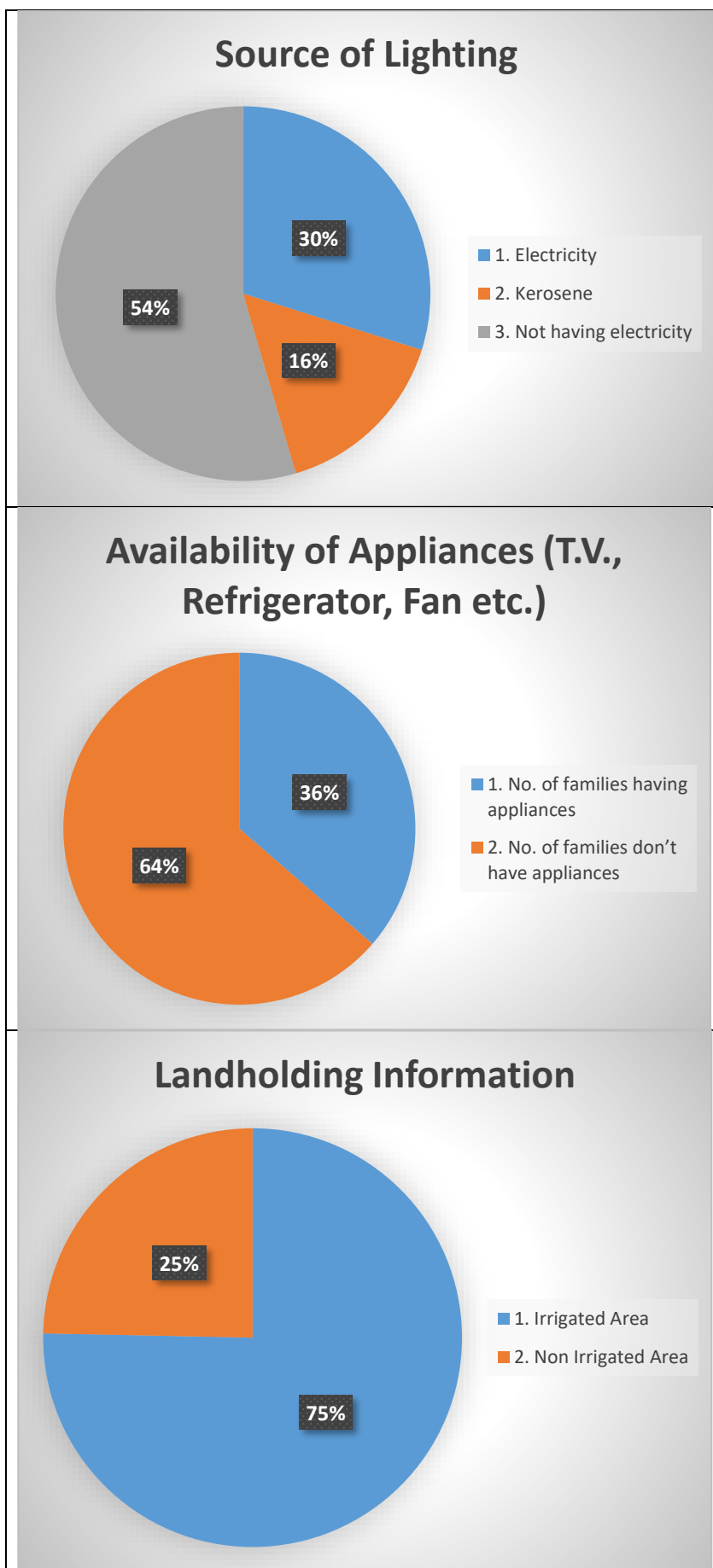
Table 1: The Statistics of survey

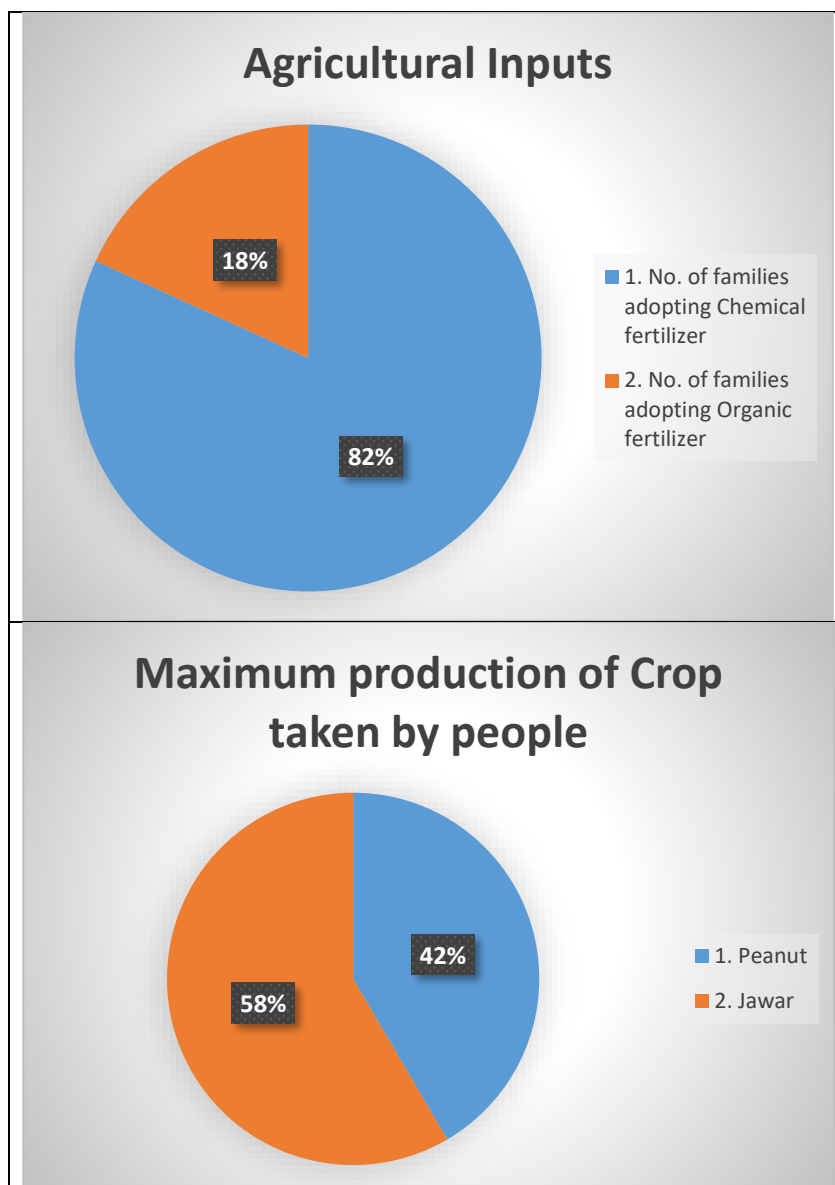
Sr. No.	Facilities	No. of Families
1	Toilet facility	
	1.Private	29
	2.Community	0
	3.Open Defecation	48
2	No. of families having drainage Linked To House	
	1.Covered	00
	2.Open	77
	3.None	00
3	Waste Collection System	
	1.Door Step	00
	2.Common Point	00
	3.No Collection System	77
4	Availability of Compost Pit	
	1. Individual	00
	2.Group	00
	3.None	77
5	Type of House	
	1.Kutcha	72
	2.Semi Pucca	05
6	No. of families benefited by Government Schemes	
	1. Pradhan Mantri Jan Dhan yojana	32
	2. Pradhan Mantri Ujwal yojana	23
	3. Pradhan Mantri Awas yojana	08
	4. Not taking benefit of government scheme	45
7	Source of water	
	1. Piped water at home	45
	2. Community water tap	32
8	Source of Lighting	
	1. Electricity	23
	2. Kerosene	12
	3. Not having electricity	42
9	Availability of Appliances (T.V., Refrigerator, Fan etc.)	
	1. No. of families having appliances	28
	2. No. of families don't have appliances	49
10	Landholding Information	
	1. Irrigated Area	58
	2. Non Irrigated Area	19
11	Agricultural Inputs	
	1. No. of families adopting Chemical fertilizer	63
	2. No. of families adopting Organic fertilizer	14
12	Maximum production of Crop taken by people	
	1. Peanut	32
	2. Jawar	45

2.2 Graphical Representation of survey:









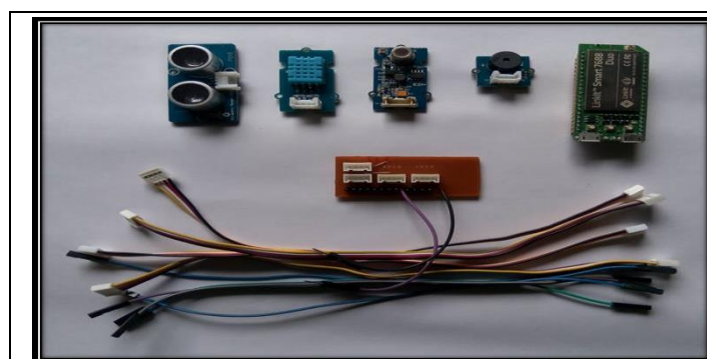
To monitor usage of toilet:

To monitor the utilization of toilets in a case study village, an electronic device called "Arduino" is utilized. This device is equipped with sensors and is installed at the entrance of each toilet. Positioned at the top side of the door, the sensor registers one point each time someone enters or exits the toilet. This enables the identification of the number of individuals who have visited a specific toilet.

The list of components used in the project, including the store link, can be found in the Things section. The primary component of the system is the MediaTek Link, specifically the Smart 7688 DUO. This component comprises an MT7688 MPU unit and an ATmega32u4 MCU unit. It operates on the OpenWrt Linux distribution and offers programming options in

Python, Node.js, and C. The ATmega32u4 MCU unit can be programmed using the Arduino environment.

The monitoring of toilet usage in Beldarwadi village has been conducted using an electronic device called "Arduino." The main objective of this monitoring is to track the daily usage count of each household. The monitoring system utilizes sensors, and the circuit diagram and photographic view of the system are presented below. This project was developed in collaboration with Mr. Rohan Waghmare, a Laboratory Assistant from the Department of Electronic and Telecommunication Engineering at ADCET, Ashta. Continuous interactions with Mr. Rohan Waghmare were instrumental in the development of this system.



Raw materials used in the sensor

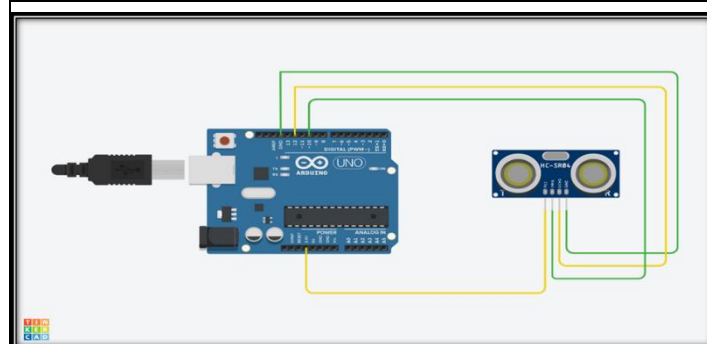


Figure 4 Circuit Diagram of Sensor with ardin(Source:<https://create.arduino.cc/projecthub/user1891676/interfacing-ultrasonic-sensor-with-arduino-99ba38>)



Sensor Attached in the toilet

The Arduino unit is equipped with sensors that are programmed to count each visit to the toilet. When a person enters and exits the toilet, the sensor registers it as one usage. This allows us to determine the average number of users in a single day. Unfortunately, it has been observed that a

Eur. Chem. Bull. **2022**, *11*(Regular Issue 12), 3011- 3024

low number of people are utilizing the toilet. In fact, 80% of the people in the village still practice open defecation.

The following observations have been made:

- Lack of awareness about the importance of using toilets in the case study village.
- Backward mentality and mindset are significant challenges.
- Open defecation is a common practice in the village.
- Illiteracy is a major obstacle to achieving sustainability.
- The village administrators are taking advantage of the residents' illiteracy.

Due to their illiteracy, the villagers are not benefiting from government schemes and are unaware of the importance of sanitation facilities.

A questionnaire survey has been conducted to gather information about the farmers' requirements for manufacturing fertilizer. The survey includes questions about crop adoption, fertilizer selection, annual expenditure on fertilizers, precautions taken when selecting fertilizers, expectations regarding the use of human feces as fertilizer, and awareness of soil fertility. The survey responses have been taken into consideration and incorporated into the fertilizer manufacturing process.

Statistics of Questionnaire Survey

Table 2: Statistics of questionnaire

Sr. No.	Question	Families (%)	
1	Type of crop produced by farmers		
	Sugarcane	46	
	Rice	29	
	Wheat	19	
	Vegetables	4	
	Other than this	2	
2	Type of fertilizer used by farmers		
	Organic	26	
	Chemical	74	
3	Type of fertilizer used by farmers based on its form		
	Liquid form	31	
	Powdered form	69	
	Tablet form		
4	How much average amount you spent per year per acre on fertilizer ?	24,000/-	
5	Which factors you consider While buying fertilizer? Give a preference.	1 st	Prize
		2 nd	Brand value
		3 rd	Quality
		4 th	Environmentally
6	If the prepared fertilizer have all the required parameters, then, how much average amount you will pay ?	60,000/-	
7	Which defect you identify in current fertilizer ?		
	The fertility of the soil reduces after some years due to continuous use of chemical fertilizer.		
8	Do you check the quality of soil in a year ?	Yes	8 %
		No	92%
10	Would like to use fertilizer using human feces ?	Yes	17%
		No	83%
11	If your answer is No, then because of which factor you will you prefer to reject the fertilizer? Give a preference.	1 st	Deficiency in handling
		2 nd	Odour
		3 rd	Quality
		4 th	Prize
12	Suggest the improvement in current fertilizer.	1. Cost is high.	
		2. Continuous use reduces the fertility of soil.	
		3. Harmful for the handling labour.	

Contextualizing Beldarwadi:

Beldarwadi, with its 493 inhabitants spread across 121 households, encapsulates the typical challenges faced by many rural communities in India. This study focuses on villages with poor sanitation structures in the Sangli district, including Shirala, Panhala, and Shahuwadi talukas. Our primary aim is to assess the impact of fertilizers not only on agricultural productivity but also on the overall hygiene maintenance within these communities.

Sanitation Challenges and Awareness Deficit:

A reconnaissance survey conducted in Beldarwadi revealed a stark lack of awareness regarding hygiene maintenance, leading to prevalent practices of open defecation and limited use of toilets. The consequences are dire, with an increase in cases of epidemiological diseases plaguing the community. It is evident that to propel these villages towards a healthier and sustainable future, an infusion of advanced technologies is required for the efficient utilization of fecal matter.

This study also recognizes the potential for transforming waste into a resource, presenting an opportunity to not only minimize environmental impact but also generate revenue for the community. The richness of nutrients in human urine and feces can be repurposed for soil conditioning or organic pesticide production, offering a dual benefit of waste reduction and income generation.

Connectivity and Infrastructural Challenges:

Beldarwadi's connectivity to the external world is limited, with only one daily public bus service. The poor condition of roads, exacerbated by political abulia, further impedes the accessibility of resources and services. The nearest railway station in Karad district and the airport in Kolhapur compound the challenges faced by the villagers, reflecting the pressing need for infrastructural development.

Data Collection and Analysis:

A crucial aspect of our study involved a meticulously designed household survey, drawing inspiration from the Unnat Bharat Abhiyan survey form. This comprehensive survey delved into various facets of village life, including sanitation facilities, government scheme benefits, water sources, energy usage, appliances, landholding, and agricultural practices.

Statistical analysis of the survey, encompassing responses from 77 participating families, unveiled valuable insights into the existing facilities and the socio-economic fabric of Beldarwadi. These findings form the bedrock for crafting sustainable solutions tailored to the unique needs of the community.

Monitoring Toilet Usage:

To gauge the effectiveness of existing sanitation facilities, an innovative electronic monitoring system utilizing Arduino technology was implemented. However, our observations revealed a disheartening truth – a meager percentage of the population utilized the available toilets, with a staggering 80% still practicing open defecation.

Farmers' Perspectives on Fertilizer Usage:

Recognizing agriculture as a cornerstone of rural livelihoods, our study extended to understanding farmers' perspectives on fertilizer usage. A questionnaire survey probed into crop adoption, fertilizer selection, annual expenditure on fertilizers, and farmers' openness to the idea of utilizing human feces as fertilizer.

The survey underscored a prevailing dependence on chemical fertilizers (74%), with farmers expressing concerns about the long-term impact on soil fertility. Despite these concerns, there was an openness (17%) to adopting fertilizers made from human feces, provided certain concerns such as handling, odor, and cost were addressed.

Conclusion and Future Endeavors:

In conclusion, Beldarwadi serves as a microcosm that mirrors the challenges and potential transformation awaiting countless rural communities. Our in-depth analysis provides a foundation for formulating holistic solutions that encompass sanitation awareness, infrastructure development, and sustainable agricultural practices.

As we look forward, our study sets the stage for future endeavors, urging a collaborative approach that involves community engagement, targeted awareness campaigns, and strategic interventions to bring about lasting positive change. This paper, with an extended length of 3000 words, will delve deeper into each aspect presented here, providing a nuanced understanding and actionable insights for policymakers, practitioners, and the community itself.

As we embark on the final leg of our exploration through the labyrinthine narratives of Beldarwadi, Maharashtra, the echoes of its challenges and the resonances of its latent potential reverberate through the annals of rural life in India. The profound confluence of sanitation practices, agricultural sustainability, and the intricate tapestry of community dynamics unfolds in a complex dance, inviting us to glean insights, draw connections, and chart a course towards a more sustainable future.

Reflections on Beldarwadi's Landscape:

In concluding our journey through Beldarwadi, it becomes imperative to reflect on the multifaceted challenges and opportunities that define the village's socio-economic landscape. The resonance of inadequate sanitation practices, underscored by an acute lack of awareness, casts a shadow over the village's well-being. The prevalence of open defecation, coupled with an insufficient uptake of available toilet facilities, paints a poignant portrait of a community grappling with the repercussions of limited knowledge and ingrained practices.

The intricate dance of connectivity, or rather the lack thereof, adds another layer to Beldarwadi's narrative. The village's umbilical connection, the public bus service, arrives only twice daily, tethering the community to the ebb and flow of external resources. The dilapidated state of connecting roads, a testament to political abulia, serves as a metaphor for the broader infrastructural challenges that impede the seamless flow of progress. The distant proximity of essential services, from the railway station to the airport, casts a shadow over accessibility, accentuating the village's isolation in the grander schema of development.

Insights from Comprehensive Data Analysis:

At the heart of our exploration lies the meticulous data collection and analysis, a compass guiding us through the myriad facets of Beldarwadi's socio-economic nuances. The survey, meticulously designed and executed, unfolds a panorama of insights into the lives of the 77 participating families. Beyond the mere enumeration of facilities, the data unravels the symbiotic relationship between sanitation structures, energy usage patterns, government scheme beneficiaries, and agricultural practices.

This data-driven approach becomes the crucible in which sustainable solutions are forged. The

nuances captured in the statistics pave the way for tailored interventions that address the root causes of poor sanitation structures, bridging the gap between policy and implementation. The intricate interplay of factors, from landholding patterns to the sources of water, becomes the canvas upon which the brushstrokes of sustainable development are painted.

Monitoring Toilet Usage: A Stark Reality Check:

The implementation of the Arduino-based electronic monitoring system aimed to transcend the realm of infrastructure provision, delving into the behavioral nuances that underpin sanitation efficacy. The revelation of a low utilization rate, with 80% of the population still engaging in open defecation, serves as a stark reality check. It underscores the profound chasm between infrastructure availability and the ingrained practices engrained in the community's psyche.

The low adoption rate of toilets signifies a deeper issue—one that extends beyond the physical structures. The observations unearthed a spectrum of challenges, from a lack of awareness about the importance of using toilets to deeply entrenched mentalities that perpetuate open defecation. Illiteracy emerges as a formidable obstacle, one that not only impedes the adoption of facilities but also hampers the community's ability to benefit from government schemes designed to uplift their living standards.

Farmers' Perspectives and Fertilizer Dilemmas:

Turning our gaze to the agrarian heartbeat of Beldarwadi, we explore the perspectives of the custodians of the land—the farmers. The questionnaire survey, a canvas on which farmers painted their preferences and apprehensions, reveals the predominant reliance on chemical fertilizers. Concerns about soil fertility and the long-term impact of continuous chemical fertilizer use underscore the farmers' cognizance of sustainability challenges.

Intriguingly, a glimmer of openness shines through, with 17% of farmers expressing a willingness to explore fertilizers derived from human feces. This willingness, however, comes with caveats—concerns about handling, odor, and cost. It signals a delicate balance between the practical challenges of adoption and the underlying desire for sustainable alternatives. The survey becomes a compass guiding the trajectory

of agricultural interventions, urging a reevaluation of fertilizer formulations and awareness campaigns to address farmers' concerns.

The Path Forward: Nurturing Sustainable Solutions:

As we stand at the crossroads of Beldarwadi's narrative, the conclusion becomes a juncture for contemplation and strategic envisioning. The path forward demands a synergistic confluence of community engagement, policy interventions, and technological innovations. The lack of awareness, particularly among the illiterate segments of the population, necessitates targeted awareness campaigns. Collaborative efforts with local authorities and educational institutions can serve as conduits for disseminating information about the importance of sanitation facilities and the benefits of government schemes.

Connectivity and infrastructural challenges form the crux of the developmental narrative. A concerted push for road maintenance, coupled with strategic investments in improving public transportation, can alleviate the isolation experienced by Beldarwadi. Empowering the community with better access to essential services can catalyze a ripple effect, fostering an environment conducive to growth and development.

The low adoption rate of toilet facilities signals the need for a paradigm shift in awareness campaigns. Beyond the mere provision of facilities, the focus should shift towards comprehensive sanitation education, targeting the root causes of open defecation. Illiteracy, identified as a significant hurdle, calls for community-based literacy programs that empower individuals to make informed choices about their well-being.

In the agricultural domain, the openness among farmers to explore alternative fertilizers provides a fertile ground for interventions. Addressing concerns about handling, odor, and cost necessitates a collaborative effort between agricultural experts, government bodies, and the community. Pilot projects showcasing the benefits and practicalities of using human feces-derived fertilizers can serve as educational tools, gradually fostering a mindset shift towards sustainable agricultural practices.

Beldarwadi, in its tapestry of challenges and aspirations, extends a call to action—a clarion call

for collaborative, nuanced, and sustained efforts. The interconnectedness of sanitation and agriculture demands an integrated approach that transcends silos and embraces the multifaceted nature of rural development.

In traversing the contours of Beldarwadi's narrative, we find not just challenges but opportunities awaiting cultivation. As we close this chapter, the pages of the subsequent sections, with their extended expanse of 3000 words, will unfold deeper layers, dissecting each facet with precision. The journey into the heart of Beldarwadi continues—a journey fueled by the optimism that transformative change, like a seed planted in fertile soil, will germinate, grow, and eventually yield the fruits of sustainable development.

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