Sand Bag Check Dam (Bora Bandh): A Community-Led Approach for Sustainable Water Conservation in Rainfed Agro-Ecosystems

1. Summary of the product/technology (maximum of 200 words)	**Conceptual framework** • **Problem Identification:** The plateau regions of Jharkhand face excessive runoff despite adequate rainfall, leading to poor water retention, low groundwater recharge, and reduced irrigation efficiency. These constraints force farmers to rely on monocropping, limiting agricultural productivity and resilience in the face of seasonal water scarcity. • **Technological Intervention:** To address water scarcity and runoff issues, Bora Bandh was introduced under the NICRA project in 2011 as a low-cost, community-based solution. It captures seasonal runoff using sandbag structures, enhancing groundwater recharge, reducing erosion, and improving irrigation access in rainfed, water-stressed rural areas. • **Design Features:** Bora Bandh structures are built by stacking sand-filled cement bags across seasonal streams. Typically, 3 meters wide and 2 meters high, they are low-cost, temporary to semi-permanent check dams. Easy to construct with local materials, they offer a simple, adaptable solution for water conservation. • **Implementation Environment:** Bora Bandh is suitable for diverse landscapes—hill slopes, plateaus, and plains—and functions effectively across agro-climatic zones like arid, semi-arid, tropical, and temperate regions. Its flexible design and ease of implementation make it ideal for community-led water conservation in rainfed, water-stressed rural areas. **Summary:** In response to severe water scarcity and runoff losses in the plateau regions, Krishi Vigyan Kendra (KVK) Gumla promoted the Bora Bandh technology as a community-led water conservation model under the NICRA initiative. This intervention involves constructing low-cost check dams using sand-filled cement bags strategically placed across seasonal streams to harvest runoff water. Implemented through participatory approaches, the technology significantly enhances groundwater recharge, reduces soil erosion, and improves irrigation potential in rainfed areas. Technical guidance and capacity-building efforts by KVK have enabled farmers to adopt the Bora Bandh model with ease and confidence. The initiative effectively addresses the challenges of water management in plateau ecosystems, while also demonstrating how low-cost, climate-resilient technologies can offer sustainable environmental benefits and enhance agricultural productivity. Recognizing the success and scalability of this intervention, state policymakers have supported its replication across distress-prone

	blocks of Jharkhand, allocating ₹25,000 per block for the procurement of cement bags to facilitate widespread adoption and long-term sustainability.
2. Is it a new technology? (Yes/No). If no, provide the details of the technology modified	Yes, this is a novel, community-based, field-level empirical technology model, developed for the first time in Jharkhand. It represents an innovative approach to decentralized water conservation, specifically designed to address runoff management and groundwater recharge in rainfed and plateau ecosystems.
3. IPR involved, if any (Patent/Copyright/ Industrial Design Registration/Variety/germplasm registration). Provide Filed/Granted number	No IPR
4. Validation procedure followed (within Institute, collaborators, multilocation/multi-site testing)	• In 2011, the Bora Bandh technology was first piloted under the NICRA project in Gunia village, Jharkhand, to address water runoff, low groundwater recharge, and irrigation inefficiency in plateau regions. • The model gained recognition due to its cost-effectiveness, community-led construction, and significant impact on water retention and agricultural productivity. Farmers experienced improved irrigation potential, enabling timely sowing and enhanced crop diversification. • As a result of its field-level success, Dr. K.D. Kokate, former DDG (Agricultural Extension), ICAR, visited the site and appreciated the intervention as a replicable water conservation model for rainfed areas. **(Annexure-VI, pp 30)** • Subsequently, the success story of Bora Bandh technology was documented by the Zonal Project Directorate, Zone-II, Kolkata, and ICAR-CRIDA, Hyderabad, and published in the year 2016–17. **(Annexure-V, pp 32-33)** • The model was scientifically monitored and evaluated by the High-Level Monitoring Committee (HLMC) formed by ICAR-CRIDA, focusing on performance indicators such as water retention, groundwater recharge, and farmer adoption • The effectiveness of the Bora Bandh model attracted the attention of state-level policymakers. Former Chief Minister, Shri Raghubar Das, acknowledged its importance, and Smt. Rajbala Verma, former Chief Secretary, conducted an on-site review. **(Annexure-IX, pp 45)**

	• Based on these validations, the model was promoted across all distress-prone blocks of Jharkhand, with a financial provision of ₹25,000 per block allocated for the procurement of empty cement bags under government support schemes
5. Brief description of research output/technology:	**Need for the Technology:** Water scarcity and surface runoff are significant constraints in the plateau and rainfed regions of Jharkhand, where, despite adequate rainfall, groundwater recharge remains poor and irrigation efficiency is low. The undulating terrain further complicates water retention, while traditional water conservation methods are often expensive and technically unsuitable for smallholder farmers. As a result, monocropping dominates, and agricultural productivity remains limited. **Technological Intervention: Bora Bandh** To address these challenges, a simple, low-cost, and community-managed water conservation model, known as Bora Bandh, was introduced under the NICRA project in 2011. This intervention involves the construction of temporary to semi-permanent check dams using sand-filled cement bags, strategically placed across seasonal rivulets and drainage lines. **Functionality and Benefits** These structures effectively reduce the velocity of flowing water, promoting infiltration into the soil, thereby enhancing groundwater recharge, reducing soil erosion, and improving irrigation availability. The adaptability, affordability, and ease of implementation make Bora Bandh a sustainable and replicable solution, particularly in resource-poor, climate-vulnerable regions, thereby supporting climate-resilient agricultural practices.
a. Objective of the product/ technology	The primary objective of the Bora Bandh technology is to conserve surface runoff water for agricultural use, particularly in water-stressed, undulating, and rainfed areas. It aims to: • Improve groundwater recharge and irrigation potential. • Enable timely sowing and crop diversification. • Provide a replicable, cost-effective solution for sustainable water resource management. • Encourage community participation in water conservation

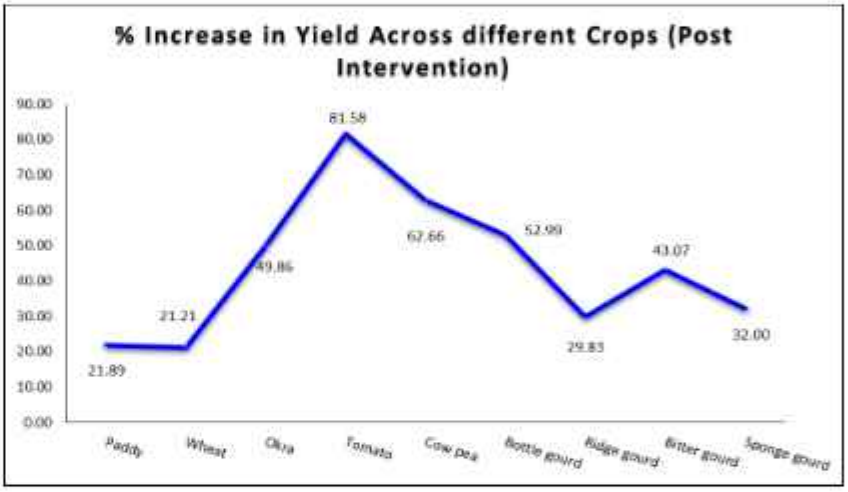
	practices.
b. Detailed methodology of the proposed product/technology	**A. Baseline Survey and Problem Identification** • A preliminary assessment was conducted by the scientists of **KVK, Gumla** to understand the constraints faced by farmers in plateau regions, particularly during the **rabi season**. • The survey revealed that despite the availability of fertile land; **lack of irrigation water** limited farmers to monocropping. • Farmers expressed strong interest in cultivating rabi crops if **water availability could be ensured** post-kharif. **B. Awareness and Capacity Building (Annexure- I Table 1, pp 18-19)** • Interactions and meetings were organized with the local villagers to discuss the problem and **introduce the concept of sand bag check dams (Bora Bandh)**. • Over a span of 12 years (2011–2022), KVK Gumla conducted extensive capacity-building activities to promote moisture conservation, groundwater recharge, timely sowing, polyculture, and crop diversification. This included 328 awareness Programmes (17705 participants), 165 trainings (3557 participants), and 10 exposure visits (333 participants) from other districts. • Farmers showed great enthusiasm and offered their **voluntary labor (shramdaan)** for implementation, showing a high level of community ownership. **(Annexure- IX, pp 45)** **C. Selection of Operational Area** • The **Mahasaria rivulet** in Gunia village was selected as the intervention site based on runoff characteristics and local dependence. • Civil engineers from **Birla Institute of Technology, Mesra** were consulted to determine the **ideal location** and **design parameters** based on **peak water flow**. **D. Material Procurement and Preparation** • **600 empty cement bags** were procured by KVK at **Rs. 2 each**. • Sand was sourced locally, and villagers were organized into groups for **filling, tying, and transporting** the sand bags.

	E. Construction of the Check Dam • The structure was laid **across the seasonal stream** in two rows, leaving a **1-meter central gap**, which was filled with sand and **trampled for compaction**. • As the bags were layered row by row, the **height of the dam gradually increased**, and water began to accumulate behind the structure. • By the end of the day, a **100 m long, 3m wide, and 2 m high** sand bag check dam was completed, holding a substantial amount of water. **F. Immediate Impact and Replication** • The next morning, **hundreds of farmers** from neighboring villages visited the site, impressed by the visible water retention. • Motivated by this success, villagers **mobilized themselves** to replicate the model, resulting in the construction of **eight more sand bag check dams** across the Mahasaria rivulet by the **end of December 2011**. **G. Outcome and Significance** • This intervention demonstrated a **low-cost, rapidly adoptable, and community-driven model** for water harvesting. • It led to **improved irrigation availability**, enabling **rabi cultivation**, and became one of the **fastest-spread water conservation practices** in Jharkhand.
c. Yield/productivity gain	**Technological Intervention: Bora Bandh** Under NICRA's Technology Demonstration Component, KVK Gumla addressed water scarcity and monocropping in tribal plateau regions by introducing a low-cost, community-based solution. In 2011, with active farmer participation, a sandbag check dam (Bora Bandh) was built in Gunia village to harvest runoff, recharge groundwater, and support rabi cultivation. The intervention proved affordable, effective, and easily replicable across similar Agro-ecological zones. **Immediate and Large-Scale Impact** The success was immediate—wheat was cultivated on **over 1000 hectares** in districts like Gumla, Lohardaga, Simdega, Latehar, and Khunti, where land was earlier left fallow post-kharif. This marked a

shift from monocropping to **double and multiple cropping**, significantly improving land productivity.

Yield and Crop Diversification

The graph illustrates the percentage increase in crop yield after intervention. Tomato exhibited the highest improvement at 81.57%, followed by okra (68.15%) and cowpea (62.66%). Bottle gourd, bitter gourd, and sponge gourd also showed substantial gains (32–53%). Cereal crops such as paddy and wheat recorded modest increases of 21.88% and 21.21%, respectively. Overall, vegetable crops demonstrated greater responsiveness to interventions, indicating higher return potential from diversification and adoption of improved practices in smallholder systems. **(Annexure- I Table 2, pp 20)**



Groundwater Recharge and Moisture Management

The Bora Bandh structures led to a **rise in the groundwater table** from **7–8 ft** to **3–4 ft**, even during peak summer. This allowed farmers to access shallow well water for irrigation and domestic use, ensuring year-round farming stability.

Recognition and Replication

The success story gained attention from district authorities, media, and state leadership. Former Chief Minister Shri Raghubar Das endorsed the model. With support from Padma Shri Ashok Bhagat Ji, the government supplied cement bags to build 70 Bora Bandhs in 2016, irrigating 3,500 acres of land.

Employment and Social Impact

The **expansion of irrigated land** created rural employment opportunities, helped curb seasonal migration, and increased rural

	incomes. This model empowered communities to manage their resources, improving resilience against climate shocks. **Awards and Recognition** KVK Gumla was honored with the Dainik Jagran Water Conservation Award and a Zonal-Level NICRA Award, recognizing Bora Bandh as a replicable and scalable model for climate-resilient, productivity-enhancing agriculture. (Annexure- VIII, pp 41-45)
d. Saving of water, labour, time and energy	**Water Harvesting Efficiency** A **100-meter long, 3-meter wide, and 2-meter-high Bora Bandh** constructed across the **Masaria rivulet** in Gunia village enabled the harvesting of approximately **60,000 m³ of surface runoff water**. This stored water was utilized effectively to provide **life-saving irrigation** during dry spells in **200 hectares of standing paddy**. **(Annexure- I Table 3, pp 22-24)** **Extended Irrigation for Rabi and Summer Crops** The same stored water facilitated successful cultivation of **Rabi and summer crops on 110 hectares**, ensuring **cropping system intensification** and reducing the area left fallow post-Kharif. The availability of timely irrigation minimized crop failure and stabilized **agronomic output** in vulnerable periods. **Reduction in Energy Consumption and Emissions** By eliminating the need for diesel-powered irrigation systems, the Bora Bandh model **saved approximately 4,800 litres of diesel**, which would otherwise be used to irrigate 200 hectares. This corresponds to an estimated **reduction of 12,864 kg of CO_2 emissions**, contributing to **climate change mitigation** and promoting **low-carbon agriculture**. **Labour and Time Savings** The use of gravity-fed water from the Bora Bandh reduced the need for labor-intensive operations such as **manual water extraction and pump operation**. Farmers saved **considerable time and labor hours**, allowing for **more efficient resource allocation** and reduced drudgery, especially for smallholders. **Improved Irrigation Frequency** Each Bora Bandh structure facilitated **at least three irrigation events** for **Rabi and summer crops across 150 hectares**, which would typically require substantial fuel, time, and manpower under conventional pump-based systems. This regular water supply improved **crop health, yields, and input-use efficiency**.
e. Conservation of soil	• Reduces surface runoff, thereby minimizing topsoil erosion in

	sloping and plateau regions. • In Gunia village, Bora Bandh structures helped conserve soil across 200 hectares, preventing an estimated 1.5–2.0 tons/ha of soil loss per year. • Promotes sediment deposition behind the structure, enriching nearby fields with nutrient-rich silt. • Enhances soil moisture retention, supporting better crop root development and microbial activity. • Reduces the need for frequent tillage, helping preserve soil structure. • Contributes to long-term soil fertility, productivity, and sustainability in rainfed agro-ecosystems.
f. Capacity	The Bora Bandh model, implemented progressively under the NICRA-TDC framework in Jharkhand, has shown remarkable growth in both physical infrastructure and agricultural impact over a span of 11 years (2011–2022). Structure Development • A total of 685 sandbag check dams were constructed across the intervention period. • Annual construction increased from 9 structures in 2011–12 to a peak of 100 in 2018–19, indicating high scalability and community acceptance. **(Annexure- I Table 3, pp 22-24)**  Water Harvesting Capacity • The cumulative volume of water harvested through these structures reached approximately 2616.58 lakh m^3 (~2.6 billion cubic meters). This massive storage enabled sustainable irrigation and moisture conservation in water-scarce, rainfed

	ecosystems. (**Annexure- I Table 3, pp 22-24**)
g. Efficiency	• Kharif Season Support: Provided supplemental irrigation to 954.40 hectares, protecting standing crops during dry spells and reducing crop failure risk. (**Annexure- I Table 3, pp 22-24**) • Rabi Crop Expansion: Enabled a shift from monocropping to double cropping, expanding Rabi cultivation from 80 hectares (2011–12) to 3,500 hectares (2019–20); total Rabi coverage reached 18,805.06 hectares over 11 years. (**Annexure- I Table 3, pp 22-24**) • Farmer Outreach: Benefitted 19,383 farmers, primarily small and marginal tribal households, enhancing livelihood resilience and promoting inclusive agricultural development. (**Annexure- I Table 3, pp 22-24**) • Upscaling of the Initiative: Impressed by KVK Gumla's efforts, Deputy Commissioner Shri Rahul Sharma sanctioned ₹89 lakh under the Integrated Tribal Development Agency for replicating the NICRA model in Majhgaon Panchayat, Dumri block. The initiative aimed to fill irrigation gaps for Rabi and summer crops. • Wider Impact and Convergence: The sandbag check dam concept spread to other villages through convergence, creating assured irrigation for over 1,000 hectares. This led to 2–3-fold increases in crop production and productivity, helping the district move toward food grain self-sufficiency.
h. **Cost effectiveness including B:C ratio** **(Annexure- I Table 2, pp 20)**	• **Significant yield enhancement** was observed across all crops post-intervention, with the highest increase recorded in tomato (Solanum lycopersicum, var. Supar Rasna) at **81.57%, followed by okra (Abelmoschus esculentus, var. Tulsi) at 68.15%.** • **Cereal crops such as paddy** (Oryza sativa, var. Sahbhagi dhan) and **wheat** (Triticum aestivum, var. PBW-343) showed modest but consistent **yield improvements of 21.88% and 21.21%, respectively.** • **High-value vegetable crops** (e.g., bitter gourd, bottle gourd, and ridge gourd) demonstrated enhanced productivity ranging from 29.82% to 52.99%, translating into substantial net returns (₹72,250–₹95,500/ha). • Net returns across crops varied from ₹17,260/ha in paddy to ₹95,500/ha in bottle gourd, with B:C ratios ranging from 1.8 to

	3.98, indicating excellent economic feasibility. • These results affirm the agronomic and economic viability of crop diversification and scientific interventions in smallholder farming systems.
i. Uniqueness of the technology in comparison to existing ones	The uniqueness of the Bora Bandh model lies in its multi-dimensional benefits as a low-cost, community-led, and climate-resilient water conservation intervention, setting it apart from conventional approaches. 1. **Cost-Effectiveness and Use of Indigenous Materials:** Unlike conventional masonry or concrete check dams, the Bora Bandh model utilizes locally available resources—primarily empty cement bags filled with sand—making it an extremely low-cost intervention suitable for resource-poor and tribal farming communities. 2. **Participatory and Community-Led Implementation:** A defining feature of the model is its community-driven execution, where local farmers contribute voluntary labour (shramdaan). This participatory approach enhances ownership, maintenance, and sustainability of the structure, which is often lacking in top-down engineered solutions. 3. **Quick Deployment and Replicability:** Bora Bandh structures can be constructed within a single day, without machinery or technical labour, enabling rapid scalability across regions. Its simple design allows easy replication even in remote and inaccessible areas. 4. **Adaptability to Varied Landscapes:** This model is particularly effective in undulating terrains and rainfed agro-ecosystems, where conventional check dams are technically and financially impractical. Its flexible design allows for customized deployment based on site-specific hydrological conditions. 5. **Temporary to Semi-Permanent Design**: The sandbag structure can be reconfigured seasonally, offering both permanence and adaptability. It ensures minimum maintenance cost and maximum functional life, depending on local needs. 6. **Multifunctional Ecosystem Services:** Besides water harvesting, Bora Bandh supports groundwater recharge, soil conservation, moisture retention, and facilitates double or multiple cropping, thereby improving land productivity and climate resilience. 7. **Policy Endorsement and Institutional Scaling:** The model's success has **drawn attention from policymakers,** resulting in

	district-level funding and state-wide replication. It stands as a scientifically sound, socially inclusive, and environmentally sustainable model for climate-resilient natural resource management.
j. Passport data of the product/technology **(Annexure- I Table 3, pp 22-24)**	**Technology Name**: Bora Bandh – Sandbag Check Dam **Category**: Climate-resilient Water Conservation Technology **Introduced under**: National Innovations on Climate Resilient Agriculture (NICRA) – Technology Demonstration Component (TDC) **Year of Introduction**: 2011 **Developed by**: Krishi Vigyan Kendra (KVK), Gumla, Jharkhand **Implemented in**: Gunia village, Dumri Block, Gumla district (Initial site) **Geographical Spread**: Replicated across **11 districts** in Jharkhand including Gumla, Lohardaga, Simdega, Khunti, and Latehar **Total Structures Constructed**: **685 Bora Bandhs** (2011–2022) **Water Harvested**: **2,616.58 lakh cubic meters** **Acreage Covered**: • Kharif supplemental irrigation: 954.4 hectares • Rabi cultivation enabled: 18,805.06 hectares **Farmers Benefitted**: **19,383 households**, mostly small and marginal tribal farmers **Livelihood Impact**: • Shift from **monocropping to multiple cropping systems** • Increase in **productivity and farm income** • Creation of **local employment** and **reduction in seasonal migration** **Support & Recognition**: • Supported by NICRA (ICAR), District Administration • Rs. **89 lakhs sanctioned** by ITDA for scaling under second-phase model • Recognized as the **Gumala Model of Water Harvesting** in Jharkhand
12. Details of relevant data generated during the	• Over a span of ten years, comprehensive data were generated through field-level implementation involving local farmers and

development/validation	stakeholders, using participatory approaches tailored to site-specific conditions. • In the next phase, this data was systematically compiled, analyzed, and interpreted to derive robust, evidence-based conclusions on the technology's effectiveness and impact.
13. Proposed stakeholders	The technology promotes **long-term sustainability** by enhancing **water conservation**, supporting **climate-resilient agriculture**, and encouraging **community ownership**. It enables improved groundwater recharge, soil moisture retention, and increased cropping intensity, contributing directly to **natural resource conservation and livelihood security**. **Alignment with Key Government Schemes** This technology aligns with several national and state-level programs aimed at sustainable natural resource management: • National Mission on Sustainable Agriculture (NMSA) • The National Innovations in Climate Resilient Agriculture (NICRA) – location-specific technologies on farmers' fields to help them adapt to climate change variability • Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) – *Watershed Development & Per Drop More Crop* • MGNREGA Scheme – for labor-intensive water conservation structures • Jal Shakti Abhiyan – Catch the Rain campaign • Integrated Watershed Management Programme (IWMP) • State-level Tribal Development Programs (e.g., ITDA Jharkhand) • Sub-Mission on Agricultural Mechanization (SMAM) – for scaling low-cost mechanized interventions **Proposed Stakeholders** • Krishi Vigyan Kendra's (KVKs) and ICAR Institutes – Technical backstopping and capacity building • State Agriculture and Rural Development Departments – Implementation and policy support • Panchayati Raj Institutions (PRIs) – Community mobilization and convergence • Farming communities, especially tribal and smallholder farmers • Self-Help Groups (SHGs) and Farmer Producer Organizations

	(FPOs) – For group-based ownership and maintenance • District Administrations & ITDA – For resource allocation and area expansion • NGOs and Development Partners – For on-ground facilitation and awareness • Private sector firms in water harvesting, irrigation services, agri-tech, and sustainable inputs • Research Institutions – For monitoring, validation, and policy research
14. Commercial potential, if any	This technology offers a scalable and replicable solution for regions facing similar challenges of water scarcity, surface runoff, and low cropping intensity. Its simplicity, affordability, and strong community ownership make it a commercially viable model for rainfed and tribal areas. **Scalability and Adaptability:** The model is highly adaptable to diverse topographies and Agro-climatic conditions, allowing large-scale replication in resource-constrained regions with minimal investment. **Livelihood and Enterprise Generation:** By increasing irrigation potential and supporting double/multiple cropping, Bora Bandh boosts farm productivity and income. It also fosters micro-enterprises around input supply, construction, and maintenance services, creating local employment opportunities. **Convergence and Funding Potential:** Its alignment with national schemes like **PMKSY**, **NMSA**, **MGNREGA**, and **ITDA** enhances prospects for convergence and institutional funding through government and CSR initiatives. **Innovation and Start-up Ecosystem:** The model opens avenues for rural start-ups offering technical services, modular kits, and capacity building, establishing Bora Bandh as a sustainable solution within the climate-resilient agriculture and natural resource management sector.
15. Publications/photos/video clipping, if any	**Publications:** **Research Paper: 02** (Annexture – II, pp 25-26) i. Jasna, V., K.; Burman, R., R.; Padaria, R., N.; Sharma, J., P.; Varghese, E.; Chakrabarty, B.; Loganandhan, N. and Kumar, S. (2016). Constraints in Adoption of Climate Resilient Technologies in Rainfed Agro-Ecosystem. *Indian Journal of Extension Education* Vol. 52 (3 & 4), pp 30-34 ii. Jasna, V., K.; Burman, R., R.; Padaria, R., N.; Sharma, J., P.;

	Varghese, E.; Chakrabarty, B.; Loganandhan, N. and Kumar, S. (2016). Institutional Role in Climate Resilience Building Process in Rainfed Agro-ecosystem. *Journal of Community Mobilization and Sustainable Development* Vol. 11(2), pp 138-144. • **e-Newsletter: 03** (Annexture – III) pp • **Success Story: 02** (Annexture – IV) pp • **Book: 02** (Annexture – V) pp Singh, V.K., Pratibha, G., Prasad, J.V.N.S., Pankaj, P.K., Prabhakar, M., Rejani R., Prasad, T. V., Anjani Kumar., Amarendra Kumar., Rajbir Singh, Gautam U.S. and Chaudhari, S.K. (Editors) 2024. Promising Climate Resilient Technologies for Jharkhand. ICAR-Central Research Institute for Dryland Agriculture, Hyderabad. p100 **Technology Expansion**: 02 (Annexture –VI) pp 34-35 **Appreciation letter:** 05 (Annexture – VII) pp 36-40 **Awards Received:** 06 (Annexture –VIII) pp 41-44 **Activity Photos:** Approx. 10 (Annexture – IX) pp 45 **Newspaper clippings:** Approx. 20 (Annexure – X) pp 46-51 **Video Link: 05** (Annexture – XI) pp 52
16. Any other information not covered above	

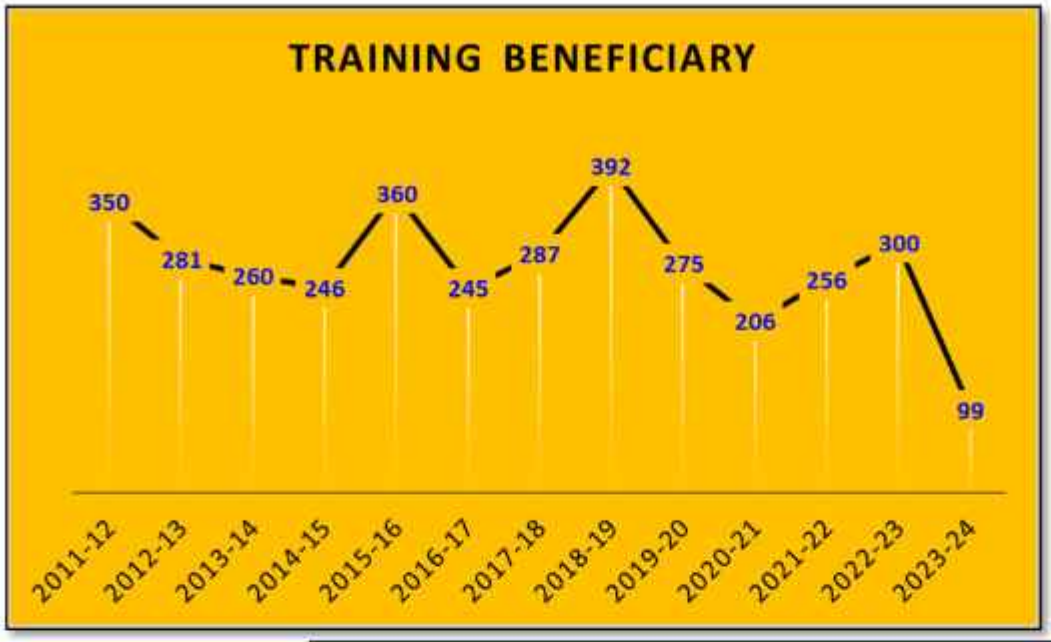
ANNEXURE DETAILS

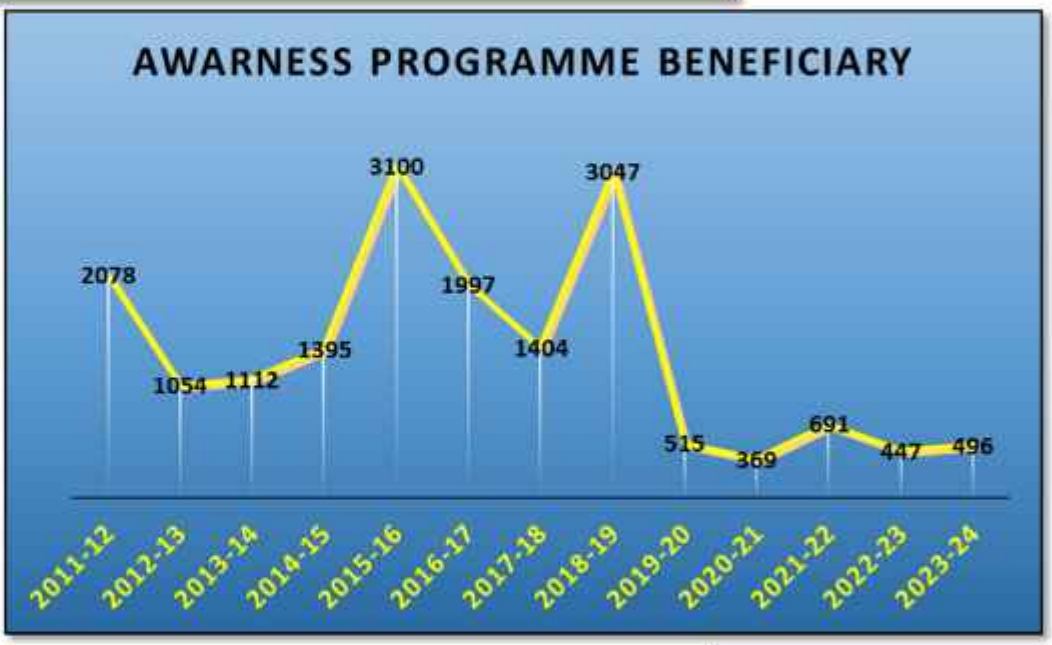
SN	Content	ANNEXURE
1.	Details of extension programmes, Performance of double cropping, Cumulative Progress	I
2.	Research Paper	II
3.	e-Newsletter	III
4.	Success Story published on ICAR website	IV
5.	Book	V
6.	Technology Expansion	VI

Annexture I

Table-1: Details of **EXTENSION PROGRAMMES** conducted for awareness creation

Year	Training		Awareness Programme		Workshop		Exposure visit	
	No. of training	No of Participants	No. of programme	No. of participants	No. of programme	No. of participants	No. of programme	No. of participants
2011-12	14	350	13	2078	-	-	03	115
2012-13	15	281	22	1054	01	350	02	39
2013-14	09	260	50	1112	02	02	02	44
2014-15	11	246	30	1395	04	05	-	-
2015-16	18	360	52	3100	02	03	-	-
2016-17	13	245	38	1997	01	139	-	-
2017-18	14	287	24	1404	-	-	02	101
2018-19	14	392	23	3047	01	120	01	24
2019-20	10	275	21	515	-	-	-	-
2020-21	13	206	18	369	-	-	-	-
2021-22	16	256	11	691	01	156	-	-
2022-23	12	300	13	447	01	140	-	-
2023-24	06	99	13	496	-	-	-	10


TRAINING BENEFICIARY
350
281
260
246
360
245
287
392
275
206
256
300
99
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19
2019-20
2020-21
2021-22
2022-23
2023-24


AWARNESS PROGRAMME BENEFICIARY
2078
1054
1112
1395
3100
1997
1404
3047
515
369
691
447
496
2011-12
2012-13
2013-14
2014-15
2015-16
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2018-19
2019-20
2020-21
2021-22
2022-23
2023-24

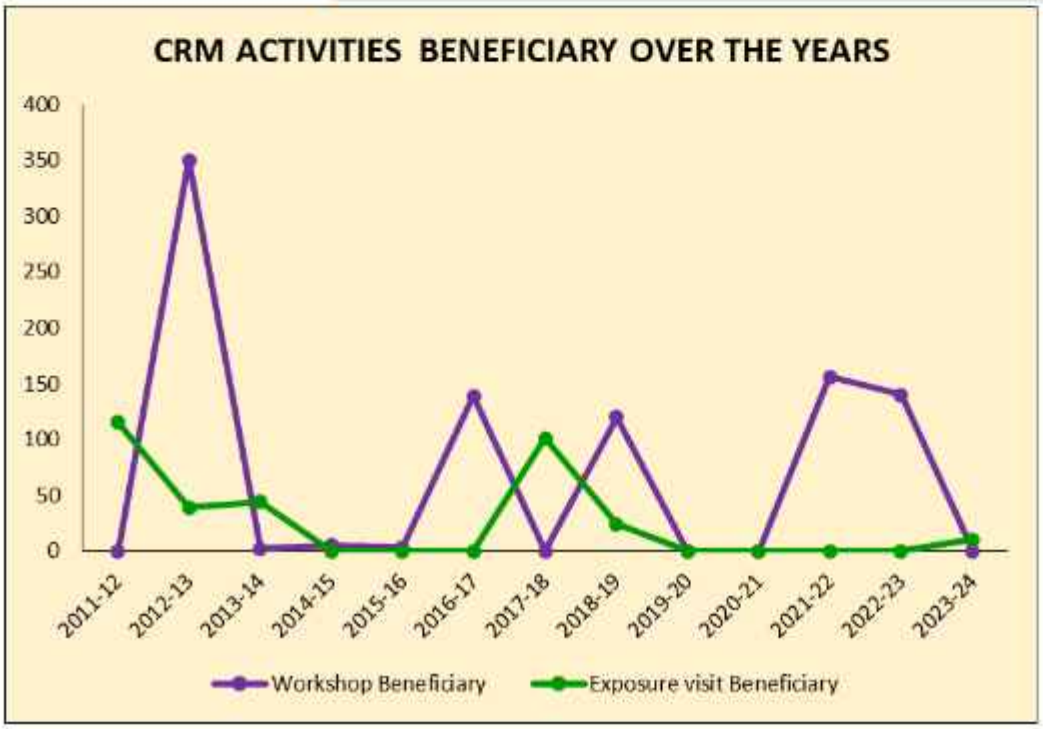
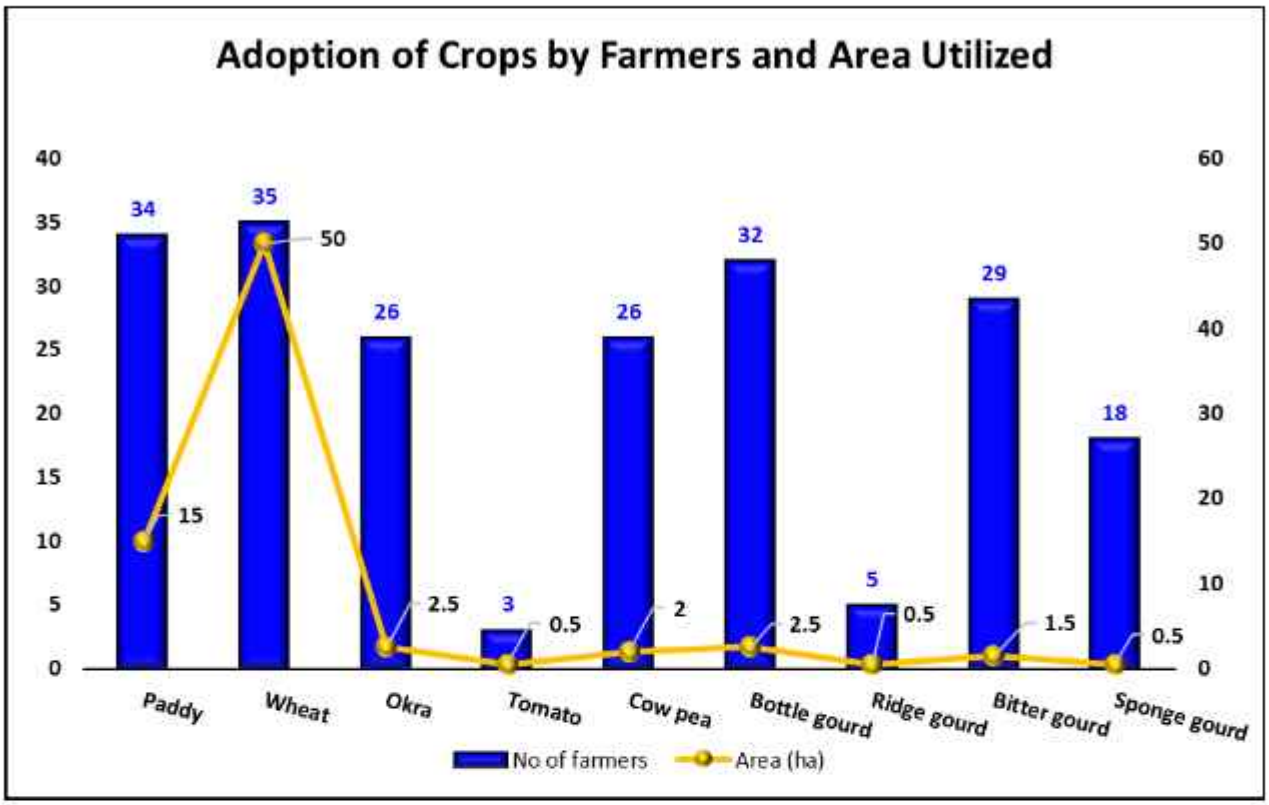

CRM ACTIVITIES BENEFICIARY OVER THE YEARS
400
350
300
250
200
150
100
50
0
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19
2019-20
2020-21
2021-22
2022-23
2023-24
Workshop Beneficiary
Exposure visit Beneficiary

Table-2: Performance of Different Crops under Bora Bandh Intervention: **Yield and Economic Impact** across Participating Farmers

Crop	Variety	No of farmers	Area (ha)	Yield q/ha		% increase	Economics (Rs/ha)			
				Before Intervention	After Intervention		Gross cost	Gross return	Net return	B:C
Paddy	Sahbhagi dhan	34	15.0	26.50	32.30	21.88	21500	38760	17260	1.80
Wheat	PBW-343	35	50.0	26.40	32.00	21.21	17300	35200	17900	2.03
Okra	Avinash	10	0.75	89.60	128.29	43.18	25500	76974	51474	3.01
	Tulsi	10	0.75	95.40	160.42	68.15	30000	96252	66252	3.20
	Arka Avinash	06	1.00	94.60	130.32	37.76	25500	78192	52692	3.06
Tomato	Supar Rasna	03	0.50	118.60	215.35	81.57	40000	129210	89210	3.23
Cow pea	Ravina	26	2.00	35.30	57.42	62.66	30000	91872	61872	3.06
Bottle gourd	Gaurav	32	2.50	85.30	130.50	52.99	35000	130500	95500	3.72
Ridge gourd	Dharidar	05	0.50	80.30	104.25	29.82	32000	104250	72250	3.25
Bitter gourd	Chaman	20	1.00	75.60	106.15	40.41	32000	127380	95380	3.98
	Selection Kathi no.-1	09	0.50	55.40	81.27	46.69	31200	97524	66324	3.12
Sponge gourd	Jhalak	18	0.50	87.30	115.24	32.00	32500	115240	82740	3.54


Adoption of Crops by Farmers and Area Utilized
40
35
30
25
20
15
10
5
0
60
50
40
30
20
10
0
34
35
26
3
26
32
5
29
18
15
50
2.5
0.5
2
2.5
0.5
1.5
0.5
Paddy
Wheat
Okra
Tomato
Cow pea
Bottle gourd
Ridge gourd
Bitter gourd
Sponge gourd
No of farmers
Area (ha)

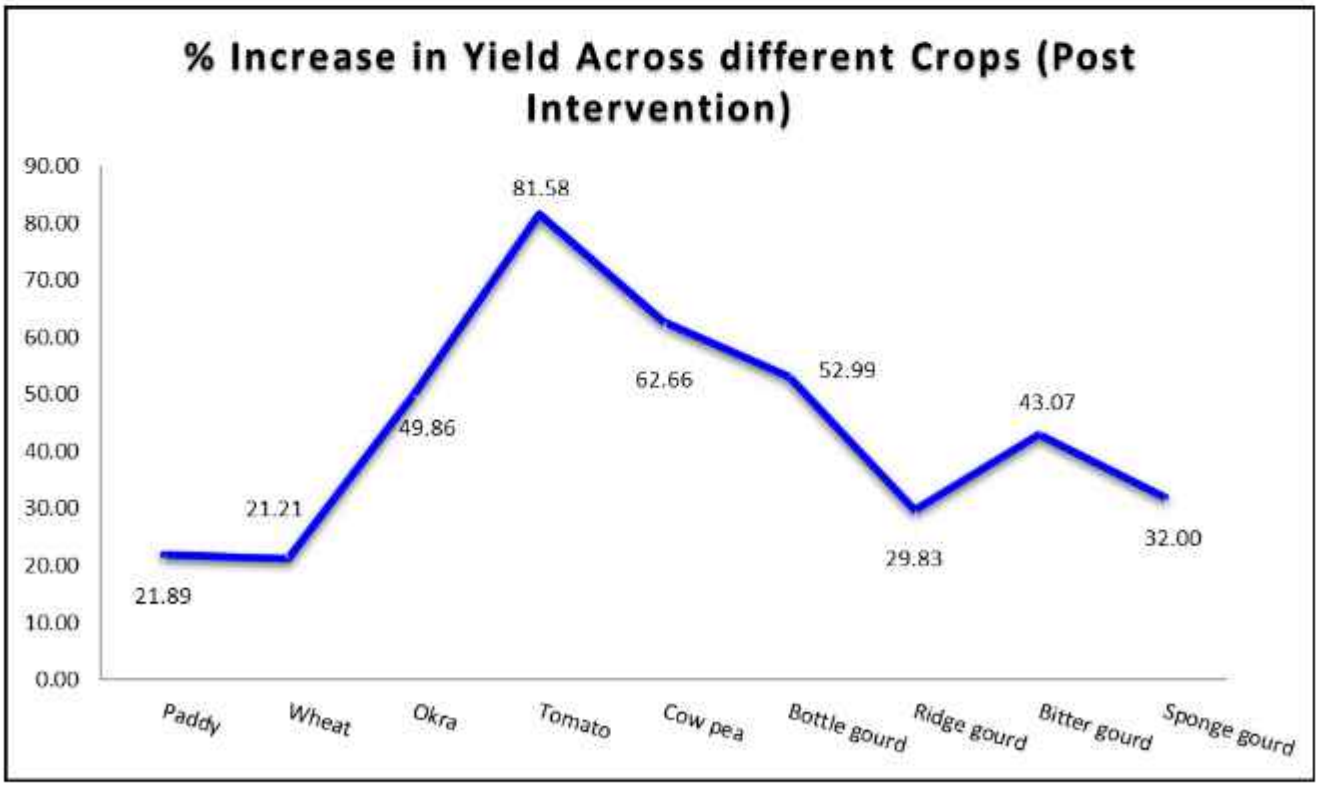
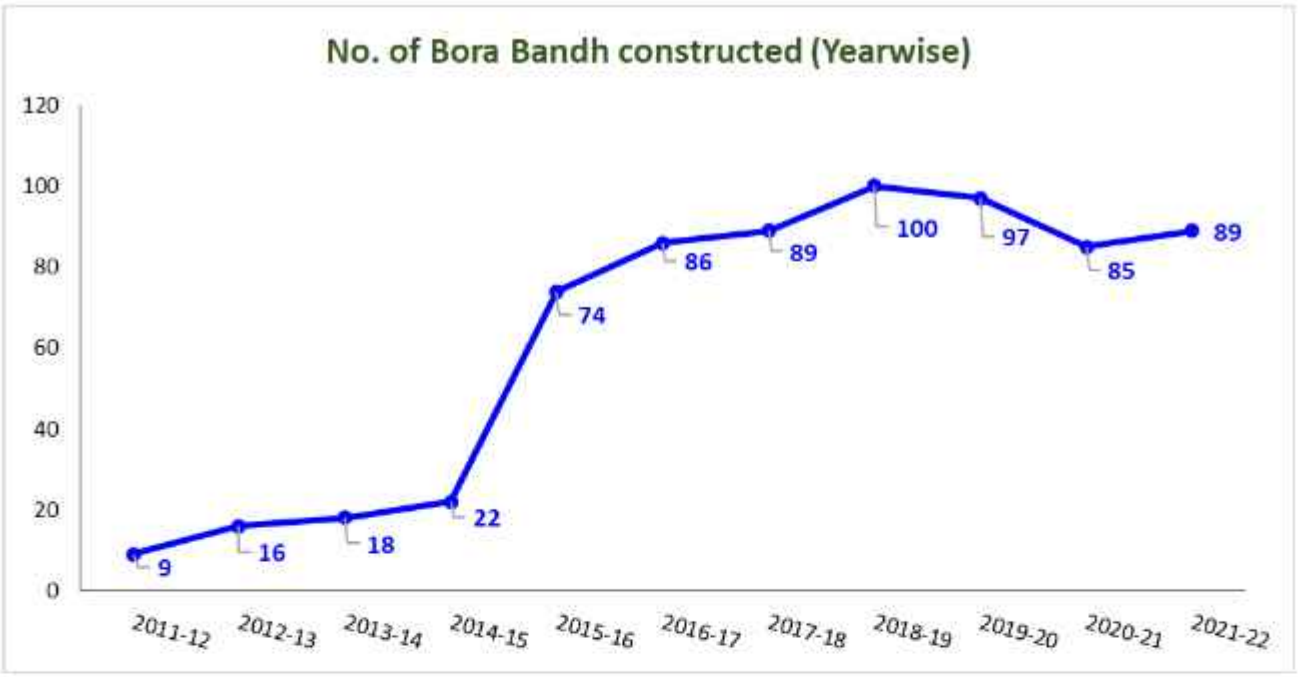
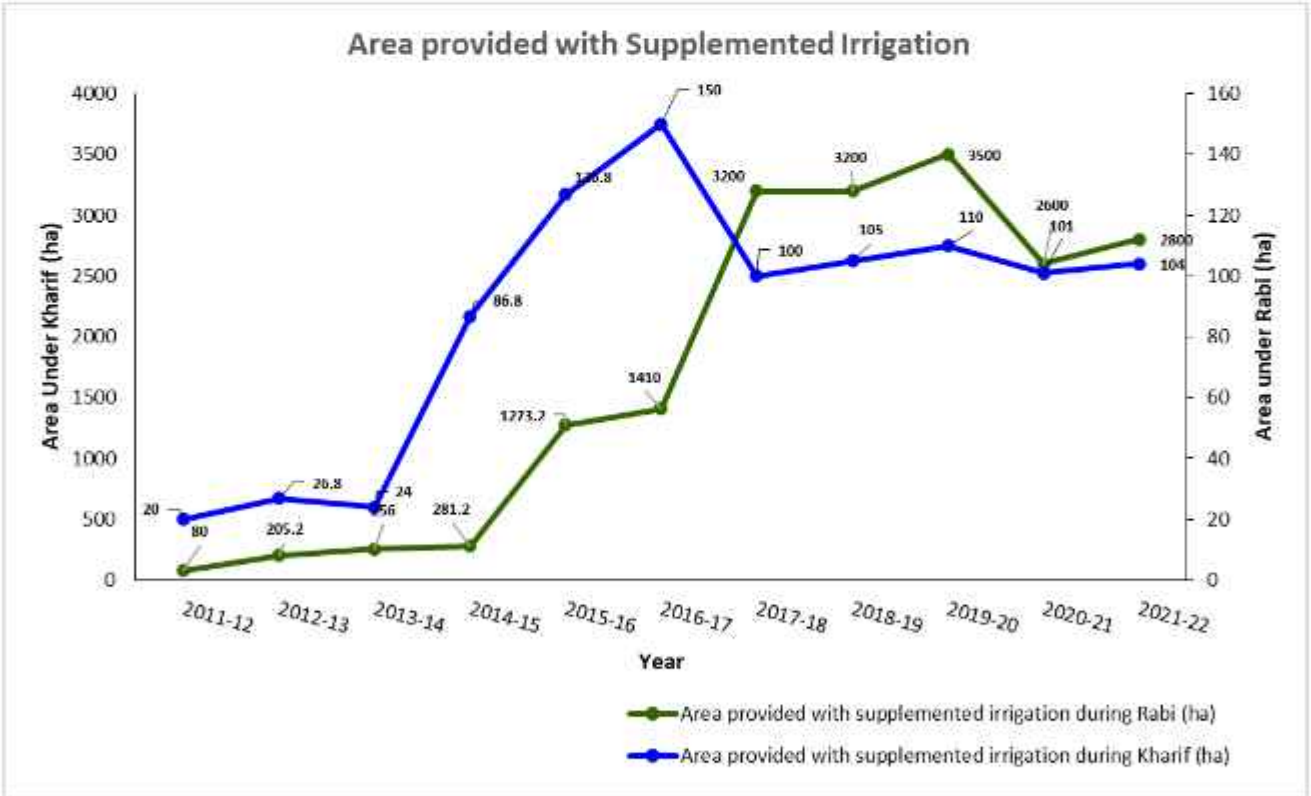
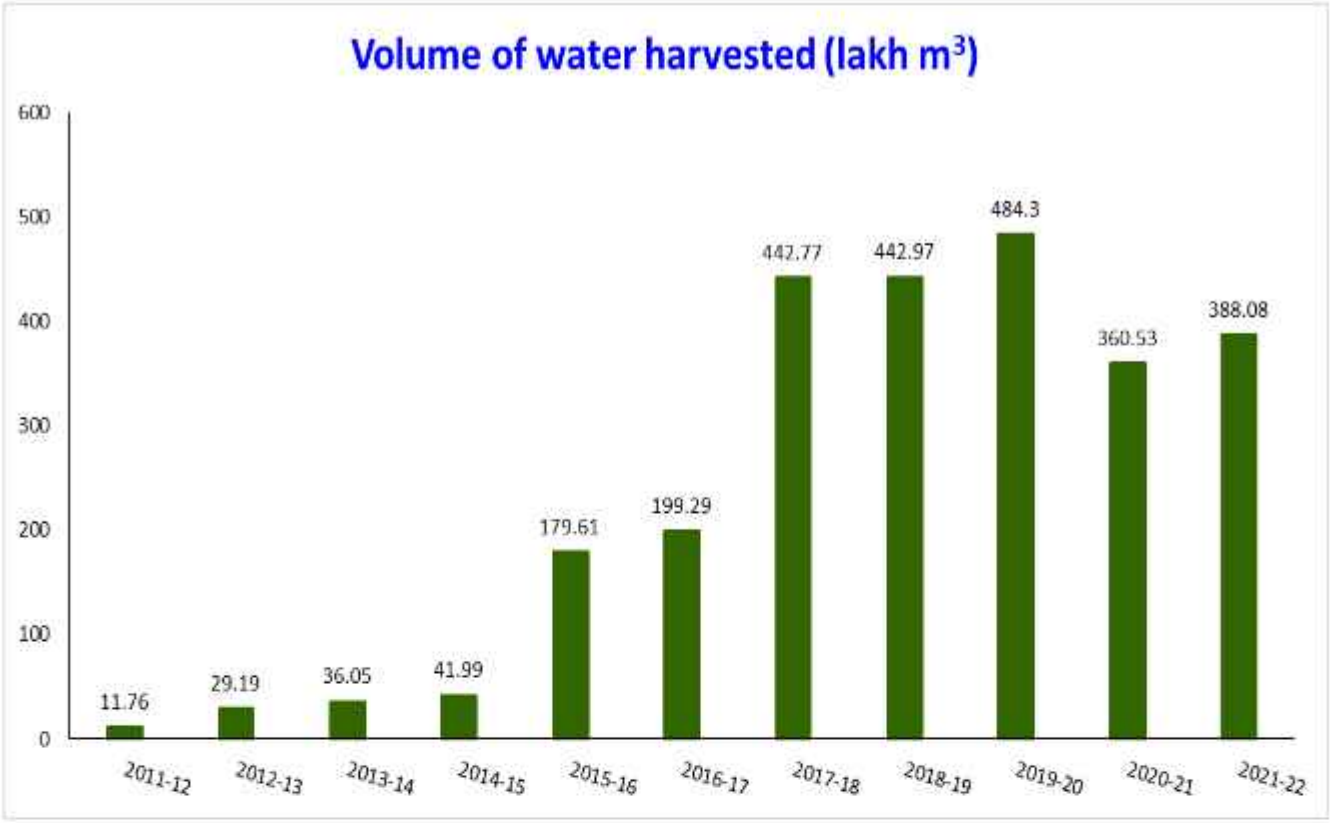

% Increase in Yield Across different Crops (Post Intervention)
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
21.89
21.21
49.86
81.58
62.66
52.99
29.83
43.07
32.00
Paddy
Wheat
Okra
Tomato
Cow pea
Bottle gourd
Ridge gourd
Bitter gourd
Sponge gourd

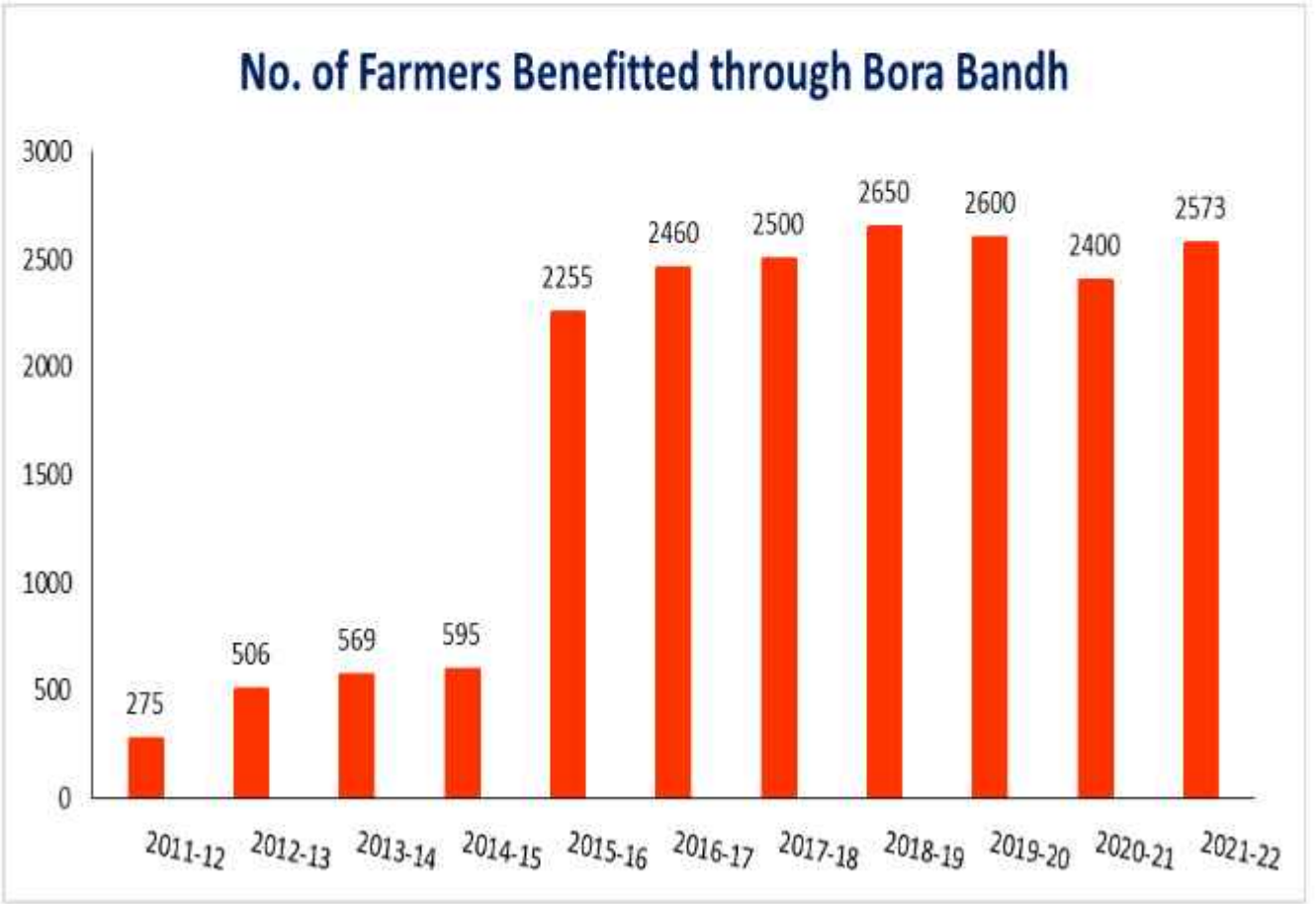
Table: 3 Cumulative Progress of Sandbag Check Dams and Their Agro-Hydrological Impact in KVK Gumla Operational Area (2011–2022)

Structures/ Years of construction	Category	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Sandbag Check dam (No.)	Constructed No.	9	16	18	22	74	86	89	100	97	85	89	685
	Volume of water harvested (lakh m^3)	11.76	29.19	36.05	41.99	179.61	199.29	442.77	442.97	484.30	360.53	388.08	2616.58
	Area provided with supplemented irrigation during Kharif (ha)	20	26.8	24	86.8	126.8	150	100	105	110	101	104	954.40
	Area brought under Rabi cultivation (ha)	80	205.2	256	281.2	1273.2	1410	3200	3200	3500	2600	2800	18805.06
	No. of farmers benefited	275	506	569	595	2255	2460	2500	2650	2600	2400	2573	19383


No. of Bora Bandh constructed (Yearwise)
120
100
80
60
40
20
0
9
16
18
22
74
86
89
100
97
85
89
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19
2019-20
2020-21
2021-22


Area provided with Supplemented Irrigation
Area Under Kharif (ha)
Area under Rabi (ha)
Year
4000
3500
3000
2500
2000
1500
1000
500
0
160
140
120
100
80
60
40
20
0
20
26.8
24
86.8
150
100
105
110
101
104
80
205.2
281.2
1273.2
1410
3200
3200
3500
2600
2800
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19
2019-20
2020-21
2021-22
Area provided with supplemented irrigation during Rabi (ha)
Area provided with supplemented irrigation during Kharif (ha)


Volume of water harvested (lakh m3)
600
500
400
300
200
100
0
11.76
29.19
36.05
41.99
179.61
199.29
442.77
442.97
484.3
360.53
388.08
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19
2019-20
2020-21
2021-22


No. of Farmers Benefitted through Bora Bandh
3000
2500
2000
1500
1000
500
0
275
506
569
595
2255
2460
2500
2650
2600
2400
2573
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19
2019-20
2020-21
2021-22

Annexture II

Journal of Community Mobilization and Sustainable Development Vol. 11(2), 138-144, July-December, 2016

Institutional Role in Climate Resilience Building Process in Rainfed Agro-ecosystem

V.K. Jasna, R. Roy Burman, R.N. Padaria, J.P. Sharma, Eldho Varghese, Bidisha Chakrabarty, N. Loganandhan[1] and Sanjay Kumar[2]

ICAR-Indian Agricultural Research Institute, New Delhi; [1]Head, KVK, Tumkur and [2]Head, KVK, Gumla

ABSTRACT

Krishi Vigyan Kendras (KVKs) are the main implementing agency of National Initiative on Climate Resilient Agriculture (NICRA). They were actively involved in technology demonstration component. KVK activities were at grassroots level in disseminating the technologies and making it familiar to NICRA farmers. Village Climate Risk Management Committees (VCRMCs) were founded in each village constituting representatives from all farmers' categories. VCRMC was involved in all activities for finalizing NICRA interventions, target farmer selection, target area selection, in liaison with gram panchayat and local elected representatives. Custom Hiring Centre (CHC) is innovative institutional mechanism for providing timely access to farm machinery for sowing, harvesting etc, which are imperative elements of adaptation strategy. The research findings substantiated based on farmers' perception that input delivery (mean rank of 7.21) from these institutions was highly useful. Farmers perceived financial assistance was the least useful service (mean rank 1.76) followed by marketing services (mean rank=1.88). Farmers got highest satisfaction from trainings undertaken on climate resilience (mean rank=6.43) and they considered that marketing services were providing least satisfaction (mean rank=1.86).

Keywords: Resilience building, Institutions, NICRA, KVK, VCRMC, CHC etc

INTRODUCTION

The imbalanced growth and short sighted developments threw off the essence of relationships and interdependencies established among various ecological, demographic and climatic entities. These imbalances are exerting ominous pressure on farming system and its dependents. Acting in this foreground, the onus of regaining the balances by establishing sustainable interrelations is on the state and the civil society. The herculean attempt to build resilience of Indian agriculture and the farming community instigated ICAR social and human capital development and strengthened institutional systems (Adger *et al.*, 2003). Mongi *et al.* (2010) suggested that there is a need for multi-level interventions on adaptation to climate change and variability taking into account of involvement of wide range of stakeholder. Institutionalising resilience mechanism is inevitable for NICRA success. Institutions are a set of formal (laws, contracts, political systems, organizations, markets, etc.) and informal (social norms, traditions, customs, etc.) legal ground rules that establish the basis for production, exchange

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Constraints in Adoption of Climate Resilient Technologies in Rainfed Agro-Ecosystem

Jasna V. K.[1], R. Roy Burman[2], R. N. Padaria[3], J. P. Sharma[4], Eldho Varghese[5], Bidisha Chakrabarty[6], N. Loganandhan[7] and Sanjay Kumar[8]

ABSTRACT

Climate change and food security are the two daunting present day agrarian challenges. Adaptation through climate resilience is an undebatably accepted solution to better respond to these challenges. National Innovations in Climate Resilient Agriculture (NICRA) is an Indian Council of Agricultural Research (ICAR) initiative launched with a focus on making most vulnerable districts of the nation climate resilient. Since the inception of the project, a number of climate resilient technologies have been demonstrated across the country. The present investigation was undertaken with an objective to isolate the constraints in adoption of these technologies in rainfed agro-ecosystem. The results showed thatOfficials evaluated technical constraints, and labour and economic constraints as the most severe than that by the farmers. Among different technical factors, 'inadequacy of inputs' stood first with mean rank 3.87 in hindering adoption as regarded by the farmers. But officials considered 'poor availability and accessibility of short duration drought tolerant crop varieties' as the most severe one (mean rank is 3.3). Among labour and economic constraints, 'longer gestation period (mean ran k=3.74) to get the returns from adopted intervention' and 'shortage of owned resources'(mean rank = 3.95) were major constraints as per the opinion of farmers and officials, respectively. 'Resistance to change the conventional practices' was considered as the most severe by both farmers(mean rank =3.99) and officials (mean rank = 4.05) in social and personal constraints. The findings will help in redesigning the already implemented interventions to ensure a higher adoption by managing the constraints.

Key words: Climate resilience, climate resilient technologies, nicra, adoption, constraints

Annexure-III

NICRA *News*

Monthly e-Newsletter

on

Climate Resilient Agriculture

December 2011

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www.nicra-icar.in

From the Research Front

The second meeting of High-level Monitoring Committee of National Initiative on Climate Resilient Agriculture (NICRA) was held at NASC, New Delhi during 13-14th December 2011 to review the progress of the projects. The meeting was chaired by Dr S. Ayyappan, Secretary (DARE) and Director General (ICAR) and co-chaired by Dr VP Abrol, Chairman of NICRA Technical Expert Committee (Sponsored & Competitive Grants).

In this meeting all the Deputy Director Generals/ their representatives, Zonal Project Directors of all the zones, PIs of all strategic and competitive grants project under NICRA participated. Dr Ayyappan in his remarks outlined the importance of NICRA project and shared his experiences of having attended the recent workshops of Technology Demonstration Component in the KVKs at Uttarakhand and Nanaknkal. He emphasized that NICRA platform can be an effective tool to build partnerships to respond to the farmers needs. Over all 20 presentations were made under the strategic research component. Even in his New Year message the DG has accorded high importance to NICRA as a platform for enabling science based agriculture in the climate change backdrop (click here to see DG's message).

Besides, the Fifth meeting of the NICRA Technical Expert Committee (Sponsored/ Competitive Grants Component) was held at Seminar Hall, NASC, New Delhi on 23rd December, 2011 to review the progress of Sponsored projects. The meeting was chaired by Dr VP Abrol and co-chaired by Dr AK Singh, DDG (NRM).

The following points were discussed by the committee:

1. **Action taken report on proceedings of the 4th meeting of Expert Committee held on 4th August, 2011.**
2. **Technical and financial review of the Sponsored Projects - Presentations by respective PIs of the project.**
3. **Consideration of revised / new projects under Sponsored/Competitive Grants Component.**

Presentations were made by PIs of the eleven sponsored projects, followed by discussions and comments by the experts. In addition to the technical programme review, administrative and financial issues were also discussed.

R. Venkateswarlu
Director
CRIDA

Special Focus

Check Dam by Shramdaan on Masharia Rivulet, KVK Gumla, Jharkhand

Farmers in Gunia village, Ghaghara block, KVK Gumla, Jharkhand were not able to cultivate rabi crop due to non availability of any water source. However a rivulet Masharia that flows by the village is also seasonal and dries up soon after monsoon. If this flow is arrested, large quantity of water can be stored for irrigating the nearby fields during rabi. Based on this, KVK Gumla organized a "Shramdaan" of the villagers in which nearly 150 persons participated for two days. During the "Shramdaan" the villagers built a sand bag check dam across the rivulet. The KVK facilitated purchase of empty cement bags in which sand was filled by the villagers and built the check dam. Over 550 bags were placed one above the other and the cost of each bag ranged between Rs two to three. Community lunch was organized on both the days. In all around Rs 13000 (Rupees thirteen thousand only) was spent in mobilizing the community "Shramdaan". As a result of this check dam, a large quantity of water has been impounded and the villagers are very happy with this intervention.

Within a short period the villagers have realized that the water levels in their wells have raisen considerably. Apart from this, it has become an attraction for many neighboring villages from where people are visiting to see this sand bag check dam. They areenquiring if the project could assist in building a similar one for their villages as well.

Sand bag check dam built by shramdaan

National Initiative on Climate Resilient Agriculture
Central Research Institute for Dryland Agriculture, Hyderabad-500 059

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From the Research Front

During the month two important meetings were held at the partner institutes one each at BHR (first week of the month) and NDRI (last week of the month), to review the progress of work and discuss plan of work for the XII Plan. All the Co-PIs of Strategic Research Component of different ongoing themes at BHR participated in the review. During the review experiment fields were visited and a stock of progress on development of major facilities like Phenotron, CTGC and FATE was also reviewed. The visiting team also interacted with the scientists involved in various experiments in the projects at BHR. Some of the significant outcomes of the meeting are to study staggered flowering behavior along with physiological disorders in relation to climatic variability in flowering phenology of mango, to emphasize NRM aspects in all themes and to link the outcomes of experiments with weather parameters to prevent yield loss, savings in water, fertilizers, pesticides; to work on molecular markers for abiotic stress tolerance; to develop allometric equation for mango and geo-referenced map of mango for the country; to include onion and chilli under NICRA for XII Plan; to conduct all basic work on controlled climatic conditions using Phytotrons, CTGC and FATE, etc., in the mandate crops at BHR and to convene a meeting of relevant ICAR Institutes working on mango, onion & garlic and banana.

The NDRI review meeting was mainly to finalize the procurement of important equipment like animal calorimeter and the experiments planned by making use of the equipment. The issues in procuring this crucial equipment were discussed and a roadmap was arrived at to expedite its procurement and installation. This being the state-of-the-art equipment will strengthen the capacity of the system to take up experiments related to livestock-vis-a-vis climate change.

D. Vijayakumar
Director, CRIDA

From across the KVKs

In a way this month saw revival of monsoon in many parts of the country generating new hope at least for rabi season. It also brought floods in many parts of Andhra Pradesh, Rajasthan and Assam. By and large, the rainfall deficit with which most districts were suffering was more or less made up. Despite this, some districts have seen no improvement in the situation what so ever, particularly in north interior Karnataka and parts of Maharashtra. It was painful to see vast stretches of lands in Bijapur district of Karnataka without any crop.

Nevertheless, this revival has raised the hope of reasonably good inflows into major reservoirs of the country. This also has ensured that the fear of the hydrological drought has mostly been abated. During the month, a new initiative was started to bring the TOT work of core NICRA partner institutes into review mechanism. Although the technology transfer domain/units of the 7 core partner institutes are implementing technology demonstration component, a comprehensive view of how the core institutes are addressing climate variability concerns was not available. During a meeting held at BHR during the first week of the month, a stock of the progress was taken and several important implementation decisions were arrived at. Besides, it also provided an opportunity for the participating core institutes to know each others work and build on the strengths of other institutes.

Dr.K.Srikanth, DDG (Hort.) visited the NICRA village Gunja in Gumla district, Jharkhand and assured keen interest in the progress of the project. He interacted with the farm families to get their feedback. Such visits by the leaders of the programme give strength and credibility to the endeavors of NICRA.

This issue of the NICRA News also features climate resilient practices adopted across several KVKs in areas such as fisheries, natural resource management through community initiatives, water efficient agriculture in floodplains, homestead development, fodder development etc. I hope readers will get a flavour of the diversity of activities addressed by this programme and will enrich the knowledge base of the project by providing their constructive feedback.

Samuelh Dixit
Coordinator
Technology Demonstration Component

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NICRA News

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March, 2013

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FROM THE RESEARCH FRONT

One of the major activities of NICRA is to understand the impact of climate variability on pollinator species of different annual (crops) and perennial (orchard) systems. In this direction investigations were carried out on the impact of climate variability on activity of pollinator population across various locations in the country. Some significant attempts are made in standardizing, sampling, monitoring and foraging behaviour of different pollinator species.

1. Historical meteorological data analysis indicated that changes in date of blossom shower which is important for flowering in coffee was shifted by almost a month which in turn impacted pollinator population of bees.
2. Habitat distribution maps were prepared for two climatic scenarios viz., a) Present using FAO data and b) Future using DIVA- GIS.
3. Pollinator fauna and supporting weed flora were documented from an undisturbed mango orchard. Twenty eight insect species belonging to four orders were recorded. Of them, 18 species were found foraging on mango flowers indicating the importance of off-season conservation.
4. Population dynamics revealed that pollinator density was positively influenced by the extent of flowering. Among different abiotic factors, maximum temperature had significant impact on pollinators. A decline in activity of *Apis florea* was observed at temperatures beyond 32°C while that of dipterans was not significantly affected.
5. An artificial diet and a protocol for multiplication of diptteran insect, *Chrysomya megacephala* was developed, through which the pollinators can be multiplied in large numbers and released in the field to augment the natural populations. Surveys indicated that natural pollinator populations are very low and hence this technology will be very useful.

I hope this work will further strengthen and continue in future plan period and so that farmers be guided on conserving and augmenting the pollinator population even under climate change conditions.

B Venkateswarlu
Director, CRIDA

Fallow Lands brought under Cultivation through Rainwater Harvesting and Utilization

The KVK, Gumla is implementing the Technology Demonstration Component (TDC) of the National Initiative on Climate Resilient Agriculture (NICRA) in Gumla village. The major climatic variability faced in the village during 2011-12 was less number of rainy days coupled with high intensity rainfall events. Before implementation of the project, farmers of Gumla and adjoining villages were compelled to follow mono-cropping due to scarce water resources. After assessing the available water resources in the area, the KVK mobilized the villagers to store water by building a sandbag dam locally called "Bora-bandi" across the seasonal rivulet Mahsaria. This changed lives of Gumla villagers and opened up the opportunity for double and triple cropping by providing source for irrigation during rabi and summer seasons. In addition, 11 farm ponds (jalkund) were constructed on selected farmers' fields. Three existing farm ponds were renovated by cleaning and plugging of seepage losses. As a result, water storage capacity of farm ponds was increased by 60% and seepage losses were reduced by 80%.

Construction of Sand Bags Check Dam by Villagers

Home

Field Day on Summer Paddy Cultivation

Summer paddy cultivation was taken up in 10 ha after Bora-bandi on Mahsaria rivulet. Necessary inputs including seeds as an improved variety 'Angad' and fertilizers were made available by the KVK. Regular follow-up and advisory services were provided through training and farmer-scientist interaction. A grain yield of about 30-35 q/ha was obtained ensuring food security to the farmers. A net return of Rs 12600 and benefit: cost ratio of 1.7 was recorded with paddy cultivation during summer.

Earlier farmers cultivated wheat in 2 to 3 ha area only. After the Bora-bandi about 50 ha area was brought under wheat cultivation. Further, after creation of water resources, demonstrations on off-season vegetable cultivation were conducted in 10 ha involving 85 farmers. This included cultivation of okra, tomato, vegetable cowpea, bottle gourd, ridge gourd and bitter gourd by using stagnant water of the rivulet. All the vegetables were grown by ridge & furrow method, which enhanced water use efficiency.

A 'Wheat Day' was organized on 20 March, 2013 at village cluster Burhu to create awareness among farmers about the potential of rainwater harvesting in enhancing cropping intensity and farm productivity. About 500 farmers from different villages participated in the programme.

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Community nursery helps adapt to delayed onset of monsoon

The farmers generally sow the seeds of paddy in the nursery and transplant them when the monsoon sets in. However, farmers in Baran, Bihar observe that during the past few years, the onset of monsoon is delayed by one week to ten days. As a result of this, farmers are forced to transplant over aged seedlings (40-45 day old). Transplanting of aged seedlings leads to low tillering resulting in poor crop yield. In order to address this problem, KVK, Baran encouraged farmers of Atthaur village to go in for community nurseries with staggered dates of sowing. This enabled farmers to access seedlings as and when needed by them and as per the progress of monsoon. This helped farmers to cope up with delayed monsoon without compromising on the tillering ability and yield. Besides this, farmers were also facilitated with seeds of short duration paddy varieties like Prabhat, Rajendra Bhagwati, Sahbhagi were introduced that escaped dry spell very efficiently. These interventions have helped farmers to limit losses due to climate variability to a considerable extent and ensured that every farmer in the village is able to take up paddy cultivation irrespective of raising the nursery of his own.

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Annexure-IV

Indian Council of Agricultural Research

भाकृअनुप
ICAR

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Community Approach to Cultivation Yield High Return

Gumla (Jharkhand), 3rd August, 2012

Dr. K.D. Kokate, Deputy Director General (Agriculture Extension), ICAR visited Gunia village, adopted by KVK Gumla under NICRA project. Water storage device '*Bora* bunding' was specially praised by the DDG (AE) in enhancing cropping intensity of the village through assured irrigation. Other accomplishments of KVK Gumla in NICRA village, Gunia, like, 'jalkund', agronomic management practices like intercropping of pulse and maize, mixed cropping, *in situ* moisture conservation; rainwater harvesting and development of seed bank were also appreciated by him.

The Deputy Commissioner of Lohardaga, Zonal Project Director, Zone-II, Dr. A.K. Singh, Director of Extension Education, Birsa Agricultural University, Ranchi, line department officials and KVK staff participated in the meeting.

(Source: ZPD II, Kolkata)

News

Round the Year Water Availability through Public Participation

Gunia is a small village in Gumla district of Jharkhand. The village is dominated by tribal population having agriculture their main livelihood. Earlier, the village did not have any source of irrigation except three nearly defunct ponds and cultivation of crops was restricted to wheat for 5-7 hectare, vegetables for 2-3 hectare and sugarcane for only 0.5-1 hectare. Hence, agriculture was totally rainfed and mono-cropped in nature and production was far below the required quantity. However, abundant natural resource in the form of a rivulet, Mahsaria (perennial in nature), flows across the village but utilization of river water for irrigation purpose was never given a comprehensive thought.

Implementation of NICRA

In implementing the NICRA project in Gunia village (affected by severe and regular drought), KVK, Gumla critically assessed the available resources to develop a workable plan of action towards improving agricultural situation of the village. Apart from human resources, the KVK also identified the abundant flow of river water which later became the prime source of development. Detailed and frequent interaction with the villagers finally convinced them to offer free labour (Shram Daan) in constructing check dam on the river to impound water with sand bags. It was also decided to partially arrest the river water at the end of monsoon by making sand bag check dam in the rivulet. Voluntary participation of 350 villagers was ensured for two days to build a sand-bag check dam for impounding river water at a minimal cost. The temporary sand-bag check dam helped in impounding large quality of water for its use during post-kharif and entire rabi season.

Unique method of constructing temporary check dam across the river with sand bags created opportunity to take up agricultural activities in Gunia village with renewed vigour. Besides, water table in the village has risen by 44% followed by area expansion under off-season vegetable cultivation in 10.0 hectare, summer paddy cultivation in 10.0 hectare, wheat cultivation in 50.0 hectare and safe harvesting of standing paddy in 30.0 hectare during acute scarcity of rainwater.

Inspiration for Neighboring Villages

The success did not confine only in Gunia village, farmers of adjoining villages and *janpratinidhi* extended their support in constructing such *bora bandi* in eight different places on the same river. The cumulative efforts resulted in large production of wheat crop in 125 acres of land beyond the imagination. The paramount success has attracted farmers, NGOs, elected members and administrators to find out efficient management and conservation of water in a mutually benefitting way. Initiative has been taken by Minor Irrigation Department of Jharkhand for constructing series of pucca check dam at the cost of Rs.3.94 crore to arrest water on a perennial basis for irrigation purpose round the year. Deputy Commissioner, Gumla district sanctioned a sum of Rs. 89.0 lakh for implementing 'Micro Economic Socio Organization Project' in the adjacent Dumri block to develop second model of check dam with help of KVK.

Apart from ensuring round the year irrigation availability, expanding cultivable area and enhancing cropping intensity, construction of sand-bag check dam has also created an example of convergence among all the stakeholders to take up development issue in the form of joint venture. The tribal community in particular has been immensely benefitted out of this effort.

(Source: Zonal Project Directorate, Zone-II, Kolkata) Refrence: - http://www.icar.org.in/en/node/7578

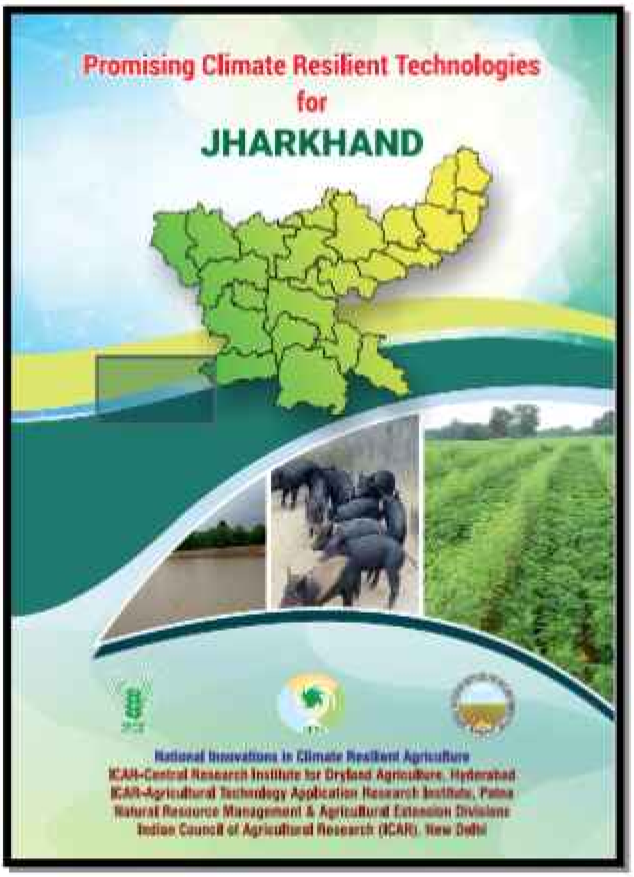
Annexure-V

Sand Bag Check Dam

a case of successful mobilization of community resources against climate variability

Zonal Project Directorate, Zone-II
Indian Council of Agricultural Research
Bhumi Vihar Complex, Sector-III
Block GB, Salt Lake, Kolkata-700 097

Zonal Project Directorate, Zone-II
Indian Council of Agricultural Research
Bhumi Vihar Complex, Sector-III
Block GB, Salt Lake, Kolkata-700 097



1.2.4 Gumla

Gumla district is located between 22° 43' and 23° 36' N latitude and 84° 00' and 85° 30' E longitude with an altitude of 650 m above MSL. The district is categorized into moderately to gently sloping Chhotanagpur Mahanadi basin hot moist/dry humid transitional eco sub region (ICAR), Eastern plateau and hills region (Planning Commission) and Western plateau zone (NARP). The district is bounded in the North by the Lohardaga and Latehar districts, in the East by Ranchi district, in the South by Simdega district and in the West by the Chhattisgarh state (Fig 12). The geographical area

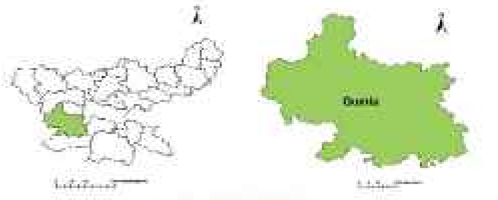
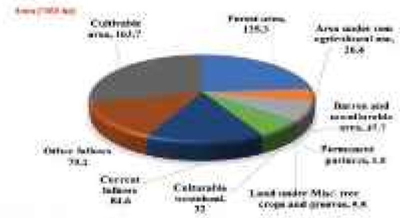


Fig. 12: Location map of Gumla district

of the district is 5.3 lakh ha, out of which cultivable area and forest area are 1.63 lakh ha and 1.35 lakh ha, respectively and different land use pattern of the district are indicated in Figure 13. The gross cropped area of the district is 1.65 lakh ha out of which 1.31 lakh ha is net sown area and 0.23 lakh ha area is double-cropped area (sown more than once). The area under rainfed and irrigated situations is 1.5 lakh ha and 0.1 lakh ha. The sources of irrigation in the district are open wells, bore wells, lift irrigation schemes and other sources. Rice, wheat, maize, red gram, chickpea and other horticulture crops like guava, mango, banana and vegetables like brinjal, bhindi and tomato are the major crops grown in the district (Table 1.4). The average annual rainfall of the district is 1300 mm (Fig. 14). The predominant soils in the district are Inceptisols, Entisols and Alfisols.



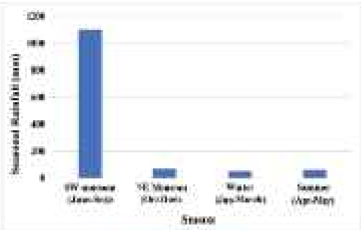


Fig. 14: Season wise rainfall (mm)

Table 1.4: Area, production and productivity of major crops in Gumla district during 2021-22

Major crops	Area (ha)			Production (t)			Productivity (t ha⁻¹)	
	Kharif	*Rabi*	Total	*Kharif*	*Rabi*	Total	*Kharif*	*Rabi*
Red gram	15784	-	15784	22255	-	22255	1.41	-
Chickpea		10485	10485		10693	10693		1.02
Groundnut	3000	-	3000	3430	-	3430	1.49	-
Horsegram	840	-	840	336	-	336	0.4	-
Linseed		1679	1679		690	690		0.41
Maize	8200	920	9020	20980	2820	29528	3.32	
Mustard	-	3092	3092	-	2798	2798	-	0.9
Greengram	1160		1160	1037		1037	0.77	
Other rabi pulses	-	958	958	-	407	417	-	0.44
Other kharif pulses	2147	-	2147	1106	-	1106	0.52	-
Peas & beans (pulses)		9518	9518		9024	9024		0.96
Ragi	1580	-	1580	1959	-	1959	1.22	-
Rapeseed & mustard	-	10452	10452	-	4828	4828	-	0.42
Rice	187390		187390	405744		405744	3.11	
Black gram	8000	-	8000	9592	-	9592	1.2	-
Wheat	-	10560	10560	-	14805	14805	-	1.4
Niger	857		857	75		75	0.11	

Annexure-VI

परियोजना कार्यालय मेसो क्षेत्र, गुमला।
पत्रांक 226 / मेसो

प्रेषक,

परियोजना पदाधिकारी,
मेसो क्षेत्र, गुमला।

सेवा में,

श्री संजय कुमार,
कृषि विज्ञान केन्द्र,
गुमला। (विकास भारती)

गुमला दिनांक– 29/4/11

विषय– प्रोटोटाईप योजना फेज–IV के कार्यान्वयन के संबंध में।

महाशय,

उपर्युक्त विषय के संदर्भ में कहना है कि आपका पत्र सं0–11 जो इस कार्यालय को प्राप्त हुआ है, के संदर्भ में उपायुक्त महोदय द्वारा प्रोटोटाईप योजना फेज – IV के अन्तर्गत दुमरी प्रखण्ड में 1 यूनिट जल संग्रयन, सिंचाई एवं भूमि विकास के कार्यान्वयन हेतु स्वीकृति प्रदान की गई है।

अतः आपको निदेश दिया जाता है कि दो दिन के अन्दर मेसो कार्यालय में आकर योजना से संबंधित एकरारनामा प्रस्तुत करें साथ ही निम्न बिन्दुओं पर कार्य करना सुनिश्चित करें–

1. योजना का कार्यान्वयन कल्याण विभाग, झारखण्ड राँची के मार्गदर्शन के अनुसार कराना सुनिश्चित करेंगे।
2. सभी कार्यान्वयन एजेंसी/स्वयंसेवी संस्था योजनाओं से संबंधित कॉर्डीनेटर नियुक्त करेंगे जो उस क्षेत्र में योग्यताधारी हो तथा 2 (दो) फील्ड वर्कर (जो स्थानीय हो) की भी नियुक्ति करेंगे।
3. कार्यान्वयन एजेंसी/स्वयंसेवी संस्था संबंधित प्रखण्ड विकास पदाधिकारी से सम्पर्क स्थापित कर उनके मार्गदर्शन में पंचायत एवं ग्रामों का चयन करेंगे। यह कार्य कलस्टर में होगा।
4. वैसे लाभुकों का चयन करेंगे जो गरीब हो तथा अनुसूचित जन जाति के सदस्य हो साथ ही उन्हें पूर्व से किसी तरह की सरकारी सहायता नही मिली हो।
5. संबंधित चयनित ग्राम में संबंधित प्रोटोटाईप से संबंधित योजनाओं का स्वयं सहायता समूह का गठन करेंगे जिसमें एक अध्यक्ष एवं सचिव एवं एक कोषाध्यक्ष का चयन किया जायेगा तथा लाभुक समिति का नामकरण होगा जिसके नाम से बैंक में खाता खोला जाएगा।
6. योजनाओं के कार्यान्वयन के पूर्व संबंधित भूमि का सत्यापन प्रतिवेदन संबंधित अंचल अधिकारी से प्राप्त करना होगा।
7. संस्था को योजनाओं के कार्यान्वयन हेतु राशि संबंधित लाभुक समिति के खाते में हस्तान्तरित करनी होगी।
8. योजनाओं के कार्यान्वयन पर्यवेक्षण कार्यान्वित एजेंसी सुनिश्चित करेंगे।
9. प्राक्कलन के अनुरूप योजना एवं कार्यान्वयन कार्यान्वयन कराने की जिम्मेवारी कार्यान्वयन एजेंसी की होगी।
10. योजनाओं की प्रगति के अनुरूप राशि की माँग अधोहस्ताक्षरी से की जाएगी।
11. योजनाओं एवं वित्तीय एवं भौतिक प्रगति प्रतिवेदन प्रत्येक माह के दूसरी तारीख तक अधोहस्ताक्षरी के कार्यालय को निश्चित रूप से देना होगा।
12. योजना के कार्यान्वयन में किसी प्रकार की राशि की अनियमितता एवं गुणवत्ता के अनुरूप नही पाये जाने पर कार्यान्वयन एजेंसी/स्वयं सेवी संस्था की सारी जवाबदेही होगी तथा नियमानुसार कार्रवाई की जाएगी।
13. अंकेक्षण दल द्वारा पृच्छा करने पर उसका अनुपालन करना सुनिश्चित करेंगे।

29/4/11
परियोजना पदाधिकारी,
मेसो क्षेत्र, गुमला।

Construction Work of Series Check Dam on Ghaghri Nala, Bansari Nala and Gomat Nala In Block-Ghaghra

Minor Irrigation Division

Gumla - Jharkhand - India

Executive Engineer of Minor Irrigation Division, Gumla, Jharkhand invites tenders notice for construction work of series checkdam on Ghaghri Nala, Bansari Nala and Gomat Nala block-Ghaghra at district-Gumla. Tender document can be collected / downloaded from Gumla.

- **Notice Type**

  Tender Notice

- **Tender Scope**

  Domestic

- **Tender Value**

  INR 3,94,72,402/-

- **Project Period**

  335 Days

- **Category**

  Civil Construction Works

- **Products**

  Construction Work

- **Tender Due Date**

  23-Feb-2012

Office of the Executive Engineer
MINOR IRRIGATION DIVISION, GUMLA
e-Procurement Notice
Tender Reference No. : WRD/MID GUMLA/IFB-21/2011-12

1.	Name of the Work	Construction of series Checkdam on Ghaghri Nala, Bansari Nala and Gomat Nala Block- Ghaghra, Distt.- Gumla.
2.	Estimated Cost (Rs.).	**Rs. 3,94,72,402.00** (Rupees Three Crore Ninety Four Lacs Seventy Two Thousand Four Hundred Two)
3.	Time of Completion	335 days
4.	Last Date/Time for Submission of Bids	23.02.2012 upto 5.00 P.M.
5.	Date of Publication of Tender on Website	09.02.2012 at 1.30 P.M.
6.	Name & Address of Office Inviting Tender (e-Procurement Officer)	Executive Engineer, Minor Irrigation Division-Gumla, Karamtoli Road, Gumla.
7.	Contact No. of e-Procurement Officer	06524-222100
8.	Helpline number of e-Procurement Cell	0651-2214784

Note :- Only e-Tenders will be accepted.
Further details can be seen on website **http://jharkhandtenders.gov.in**

Executive Engineer
Minor Irrigation Division
Gumla

PR No. PR - 49124(Irrigation)11-12

Reference:-

1. http://www.jharkhandtenders.gov.in
2. http://2.imimg.com/data2/LN/PN/HTT-947/947_2012-02-11_1328937783.jpg
3. http://tenders.indiamart.com/details/864833975/

Annexure-VII

परियोजना कार्यालय मेसो क्षेत्र, गुमला।
स्वीकृत्यादेश

दिनांक 06.09.2011 को सम्पन्न परियोजना कार्यान्वयन समिति की बैठक में लिये गये निर्णययानुसार दो वर्षीय प्रोटोटाईप योजना फेज –II की अवशेष राशि 127.31 लाख रूपये से तीन वर्षीय प्रोटोटाईप योजना फेज–IV के अन्तर्गत जल संचयन, सिंचाई एवं भूमि सुधार योजना के कार्यान्वयन हेतु कृषि विज्ञान केन्द्र, गुमला विकास भारती, विशुनपुर को डुमरी प्रखण्ड में एक युनिट जल संचयन, सिंचाई एवं भूमि विकास के कार्यान्वयन हेतु स्वीकृति दी गई है। इनके द्वारा डुमरी प्रखण्ड के पंचायत मझगॉव के ग्राम महुआडीह, कोठी, लट्ठाटोली, डहुकूल, टाटी, बन्दुआ, नौगाई, मझगॉव, बरटोली एवं काजी आदि गॉवों के योजना कार्यान्वयन हेतु चयन किया गया है। इन्होने जल संचयन, सिंचाई एवं भूमि सूधार योजना कार्य हेतु राशि विमुक्त करने का अनुरोध किया है। योजना के कार्य में प्रगति लाने हेतु उपायुक्त, गुमला द्वारा दिये गये स्वीकृति के आलोक में 20.00 (बीस) लाख रूपये मात्र अग्रिम भुगतान की स्वीकृति दी जाती है। साथ ही आदेश दिया जाता है कि सरकार द्वारा प्राप्त मार्गदर्शिका के आधार पर एवं इस कार्यालय के आदेश ज्ञापांक 08 दिनांक 16.06.2010 में विनिर्दिष्ट निर्देश के आलोक में कार्यान्वयन करेंगें। साथ ही विहित प्रपत्र में योजना का वित्तीय एवं भौतिक प्रतिवेदन प्रत्येक माह के 30 तारीख तक कार्यालय में उपलब्ध करायेंगे।

एजेंसी का नाम	योजना का नाम	प्रखण्ड	प्रा0 राशि	पूर्व में विमुक्त राशि	वर्तमान में विमुक्त राशि	कुल विमुक्त राशि
1	2	3	4	5	6	7
कृषि विज्ञान केन्द्र, गुमला, विकास भारती, विशुनपुर	जल संचयन सिंचाई एवं भूमि सुधार योजना 01 (एक) यूनिट	डुमरी	89.89 लाख	0.00	20.00 लाख	20.00 लाख
कुल	–	–	–	–	–	**20.00 लाख**

परियोजना पदाधिकारी,
मेसो क्षेत्र, गुमला।

ज्ञापांक 148 दिनांक 17/3/12

प्रतिलिपि:– कार्यक्रम समन्वयक, कृषि विज्ञान केन्द्र, गुमला, विकास भारती, विशुनपुर को सूचनार्थ एवं आवश्यक कार्रवाई हेतु प्रेषित।

16/3/12

परियोजना पदाधिकारी,
मेसो क्षेत्र, गुमला।

सुदर्शन भगत
संसद सदस्य, लोकसभा
लोहरदगा, झारखंड
अध्यक्ष: भारतीय खाद्य निगम सलाहकार समिति, झारखंड राज्य
सदस्य: विज्ञान तथा प्रौद्योगिकी, पर्यावरण और वन संबंधी संसदीय समिति
सदस्य: संसदीय प्राक्कलन समिति

06 गुरुद्वारा रकाबगंज रोड,
नई दिल्ली–110001
फोन नं. : 011–23354151
फैक्स नं. : 011–23354152
ई मेल : s.bhagat@sansad.nic.in
office.sbhagat@gmail.com

दिनांक:11 दिसम्बर,2019

प्रशंसा प्रमाण पत्र

कृषि विज्ञान केन्द्र, गुमला, विकास भारती बिशुनपुर वर्ष 2005 से गुमला जिले में आधुनिक कृषि तकनीकी का विस्तार, किसानों के कृषि से संबंधित समस्याओं का आकलन, तदनुसार निराकरण,नई–नई कृषि तकनीकी अनुप्रयोग एवं गुणवत्तायुक्त कौशल विकास प्रशिक्षण के माध्यम से छोटे एवं मंझोले किसानों, खासकर, ग्रामीण युवाओं एवं युवतियों के बीच कृषि को एक उद्यम के रुप में सामने लाया है जिससे यहाँ के किसान कृषि एवं कृषि आधारित आयामों में रुचि के साथ खेती कर अपनी आय में निरंतर बढ़ोत्तरी करने में सक्षम हुए हैं, एवं कृषि उन्हें आकर्षित की है। जिससे यहाँ के युवा किसानों के पलायन में अप्रत्याशित कमी आई है। इसको बढ़ावा देने के लिए केन्द्र आर्या (युवाओं के कृषि के प्रति आकर्षित करना एवं बनाए रखना) परियोजना जो कि भारत सरकार की एक महत्वकांक्षी परियोजना है, का संचालन प्रभावी तरीके से कर रहा है। केन्द्र के द्वारा निकरा परियोजनान्तर्गत जल संचयन, खासकर बोरा–बाँध पहल, राज्य ही नही वरन् राष्ट्रीय स्तर पर केन्द्र को एक नई पहचान दी है। मूल्य संवर्धन एवं परंपरागत फसल प्रभेदों, साथ–साथ वन औषधीय, संगंधीय एवं गैर–इमारती उत्पादों के संरक्षण को भी बढ़ावा दे रहा है। जिससे किसान अपनी परम्परागत संपदा का संरक्षण एवं बढ़ावा, जैविक खेती को अपनाकर कर रहें हैं। पोषण सुरक्षा के क्षेत्र में केन्द्र कम पानी उपयोग वाले फसलों (मोटे अनाज) के उन्नतशील प्रभेदों के साथ–साथ मशरुम की खेती को बढ़ावा दिया है। जिला आज धान एवं अन्य फसलों के उत्पादन एवं उत्पादकता के क्षेत्र में काफी सम्मानजनक स्थिति में आया है और यह सब संभव हो सका है केन्द्र के द्वारा बीज बदलाव दर में बढ़ोत्तरी के कारण जो कि सहभागिता आधारित बीज उत्पादन से संभव हुआ है। बागवानी एवं पशुधन खासकर सूकर के उन्नत नस्लों को बढ़ावा देकर केन्द्र यहाँ के किसानों को एक नई पहचान दी है। कृषि विज्ञान केन्द्र, गुमला का सहयोग एवं समन्वयन जिले के कृषि से संबंधित विभागों, केन्द्र एवं राज्य के Flagship कार्यक्रमों के क्रियान्वयन में अति उत्साह के साथ प्राप्त होता है।

कृषि विज्ञान केन्द्र, गुमला, विकास भारती बिशुनपुर के सकारात्मक उत्कृष्ट सतत प्रयास के लिए मैं व्यक्तिगत रुप से प्रशंसा के साथ–साथ इसके उज्जवल भविष्य की कामना करता हूँ।

(सुदर्शन भगत)

समीर उराँव
संसद सदस्य
(राज्य सभा)

सदस्य :
• कोयला एवं इस्पात संबंधी स्थायी संसदीय समिति
• परामर्शदात्री समिति : पर्यावरण, वन और जलवायु परिवर्तन, विज्ञान और प्रौद्योगिकी एवं पृथ्वी विज्ञान मंत्रालय

प्रशंसा प्रमाण पत्र

कृषि विज्ञान केन्द्र गुमला विकास भारती बिशुनपुर वर्ष 2005 से गुमला जिले में आधुनिक कृषि तकनीकी का विस्तार , किसानो के कृषि से सम्बन्धित समस्याओं का आकलन तदनुसार निराकरण नई-नई कृषि तकनीकी अनुप्रयोग एवं गुणवक्तायुक्त कौशल विकास प्रशिक्षण के माध्यम से छोटे एवं मंझोले किसानो खासकर ,ग्रामीण युवाओं एवं युवतियों के बीच कृषि को एक उद्यम के रूप में सामने लाया है जिससे यहाँ के किसान कृषि एवं कृषि आधारित आयामों में रूचि के साथ खेती कर अपनी आय में निरंतर बढ़ोत्तरी करने में सक्षम हुए है एवं कृषि उन्हें आकर्षित की है। जिससे यहाँ के युवा किसानो के पलायन में अप्रत्याशित कमी आई है। इसको बढ़वा देने के लिए केंद्र आर्या (युवाओ के कृषि के प्रति आकर्षित करना एवं बनाए रखना)परियोजना जो की भारत सरकार की एक महत्वाकांक्षी परियोजना है, का संचालन प्रभावी तरीके से कर रहा है। केंद्र के द्वारा निकरा परियोजनान्तर्गत जल संचयन, खासकर बोरा-बांध पहल, राज्य ही नहीं वरन राष्ट्रीय स्तर पर केंद्र को एक नई पहचान दी है। मूल्य संवर्धन एवं परम्परागत फसल प्रभेदों ,साथ -साथ वन औषधीय ,सुगंधीय एवं गैर -इमारती उत्पादों के संरक्षण को भी बढ़ावा दे रहा है। जिससे किसान अपनी परम्परागत सम्पदा का संरक्षण एवं बढ़ावा ,जैविक खेती को अपनाकर कर रहे है। पोषण सुरक्षा के क्षेत्र में केंद्र कम पानी उपयोग वाले फसलों (मोटे अनाज) के उन्नतशील प्रभेदों के साथ -साथ मशरूम की खेती को बढ़ावा दिया है। जिला आज धान एवं अन्य फसलों के उत्पादान एवं उत्पादकता के क्षेत्र में काफी सम्मानजनक स्थिति में आया है और यह सब संभव हो सका है केंद्र के द्वारा बीज बदलाव दर में बढ़ोत्तरी के कारण जो की सहभागिता आधारित बीज उत्पादन से संभव हुआ है। बागवानी एवं पशुधन खासकर सूकर के उन्नत नस्लों को बढ़ावा दे कर केंद्र यहाँ के किसानों को एक नई पहचान दी हैं। कृषि विज्ञान केंद्र ,गुमला का सहयोग एवं समन्वयन जिले के कृषि से सम्बंधित विभागों ,केंद्र एवं राज्य के Flagship कार्यक्रम के क्रियान्वयन में अति उत्साह के साथ प्राप्त होता है।

कृषि विज्ञान केंद्र गुमला ,विकास भारती बिशुनपुर के सकारात्मक उत्कृष्ट सतत प्रयास के लिए मै व्यक्तिगत रूप से प्रशंसा के साथ -साथ इसके उज्जवल भविष्य की कामना करता हूँ।

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उपायुक्त, गुमला

Shashi Ranjan, I.A.S.
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प्रशंसा पत्र

कृषि विज्ञान केन्द्र, गुमला, विकास भारती बिशुनपुर गुमला जिले में आधुनिक कृषि तकनीकी का विस्तार, किसानों के कृषि से संबधित समस्याओं का आकलन, तदनुसार निराकरण, नई–नई कृषि तकनीकी अनुप्रयोग एवं गुणवत्तायुक्त कौशल विकास प्रशिक्षण के माध्यम से छोटे एवं मंझोले किसानों, खासकर, ग्रामीण युवाओं एवं युवतियों के बीच कृषि को एक उद्यम के रुप में सामने लाया है जिससे यहाँ के किसान कृषि एवं कृषि आधारित आयामों में रुचि के साथ खेती कर अपनी आय में निरंतर बढ़ोत्तरी करने में सक्षम हुए हैं, एवं कृषि उन्हें आकर्षित की है। जिससे यहाँ के युवा किसानों के पलायन में अप्रत्याशित कमी आई है। इसको बढ़ावा देने के लिए केन्द्र आर्या (युवाओं के कृषि के प्रति आकर्षित करना एवं बनाए रखना) परियोजना जो कि भारत सरकार की एक महत्वकांक्षी परियोजना है, का संचालन प्रभावी तरीके से कर रहा है। केन्द्र के द्वारा निकरा परियोजनान्तर्गत जल संचयन, खासकर बोरा–बाँध पहल, राज्य ही नही वरन् राष्ट्रीय स्तर पर केन्द्र को एक नई पहचान दी है। मूल्य संवर्धन एवं परंपरागत फसल प्रभेदों, साथ–साथ वन औषधीय, सगंधीय एवं गैर–इमारती उत्पादों के संरक्षण को भी बढ़ावा दे रहा है। जिससे किसान अपनी परम्परागत संपदा का संरक्षण एवं बढ़ावा, जैविक खेती को अपनाकर कर रहें हैं। पोषण सुरक्षा के क्षेत्र में केन्द्र कम पानी उपयोग वाले फसलों (मोटे अनाज) के उन्नतशील प्रभेदों के साथ–साथ मशरुम की खेती को बढ़ावा दिया है। जिला आज धान एवं अन्य फसलों के उत्पादन एवं उत्पादकता के क्षेत्र में काफी सम्मानजनक स्थिति में आया है और यह सब संभव हो सका है केन्द्र के द्वारा बीज बदलाव दर में बढ़ोत्तरी के कारण जो कि सहभागिता आधारित बीज उत्पादन से संभव हुआ है। बागवानी एवं पशुधन खासकर सूकर के उन्नत नस्लों को बढ़ावा देकर केन्द्र यहाँ के किसानों को एक नई पहचान दी है। कृषि विज्ञान केन्द्र, गुमला का सहयोग एवं समन्वयन जिले के कृषि से संबधित विभागों, केन्द्र एवं राज्य के **Flagship** कार्यक्रमों के क्रियान्वयन में अति उत्साह के साथ प्राप्त होता है।

कृषि विज्ञान केन्द्र, गुमला, विकास भारती बिशुनपुर के सकारात्मक उत्कृष्ट सतत प्रयास के लिए मैं व्यक्तिगत रुप से प्रशंसा के साथ–साथ इसके उज्जवल भविष्य की कामना करता हूँ।

12/12/19

उपायुक्त
गुमला

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डॉ. विनोद कुमार सिंह
निदेशक
Dr. Vinod Kumar Singh
Director

प्रशंसा प्रमाण पत्र

F.No. PME/CRIDA/221
Dated : 24-12-2024

कृषि विज्ञान केन्द्र गुमला, विकास भारती बिशुनपुर, गुमला जिले में आधुनिक कृषि तकनीकी का विस्तार, किसानों के कृषि से संबंधित समस्याओं का आकलन, तद्नुसार निराकरण, नई-नई कृषि तकनीकियों के अनुप्रयोग एवं गुणवत्तायुक्त कौशल विकास प्रशिक्षण के माध्यम से छोटे एवं मझोले किसानों, खासकर, ग्रामीण युवाओं एवं युवतियों के बीच कृषि को एक उद्यम के रुप में सामने लाया है जिससे यहाँ के किसान कृषि एवं कृषि आधारित आयामों में रुचि के साथ खेती कर अपनी आय में निरंतर बढ़ोत्तरी करने में सक्षम हुए हैं, एवं कृषि की ओर आकर्षित हुए हैं। जिससे यहाँ के युवा किसानों के पलायन में अप्रत्याशित कमी आई है। इसको बढ़ावा देने के लिए केन्द्र आर्या (युवाओं को कृषि के प्रति आकर्षित करना एवं बनाए रखना) परियोजना जो कि भारत सरकार की एक महत्वकांक्षी परियोजना है, का संचालन प्रभावी तरीके से कर रहा है।

केन्द्र के द्वारा निकरा परियोजनान्तर्गत जल संचयन, खासकर बोरा-बाँध पहल, राज्य ही नही वरन् राष्ट्रीय स्तर पर केन्द्र को एक नई पहचान दी है। मूल्य संवर्धन एवं परंपरागत फसल प्रभेदों, साथ-साथ वन औषधीय, संवहनीय एवं गैर-इमारती उत्पादों के संरक्षण को भी बढ़ावा दे रहा है। जिससे किसान अपनी परम्परागत संपदा का संरक्षण एवं बढ़ावा, जैविक खेती को अपना रहे हैं। पोषण सुरक्षा के क्षेत्र में केन्द्र कम पानी उपयोग वाले फसलों (मोटे अनाज) के उन्नतशील प्रभेदों के साथ-साथ मशरुम की खेती को बढ़ावा दिया है। जिला, आज धान एवं अन्य फसलों के उत्पादन एवं उत्पादकता के क्षेत्र में काफी सम्मानजनक स्थिति में आया है और यह सब संभव हो सका है केन्द्र के द्वारा बीज बदलाव दर में बढ़ोत्तरी के कारण जो कि सहभागिता आधारित बीज उत्पादन से संभव हुआ है। बागवानी एवं पशुधन खासकर सूकर के उन्नत नस्लों को बढ़ावा देकर केन्द्र ने यहाँ के किसानों को एक नई पहचान दी है। कृषि विज्ञान केन्द्र, गुमला का सहयोग एवं समन्वयन जिले के कृषि से संबंधित विभागों, केन्द्र एवं राज्य के सर्वोत्कृष्ट कार्यक्रमों के क्रियान्वयन में अति उत्साह के साथ प्राप्त होता है।

कृषि विज्ञान केन्द्र गुमला, विकास भारती बिशुनपुर के सकारात्मक उत्कृष्ट सतत प्रयास के लिए मैं व्यक्तिगत रुप से प्रशंसा के साथ-साथ इसके उज्जवल भविष्य की कामना करता हूँ।

(डॉ विनोद कुमार सिंह)

निदेशक / DIRECTOR
भा.कृ.अ.प. - केंद्रीय बारानी कृषि अनुसंधान संस्थान
ICAR -Central Research Institute for Dryland Agriculture,
संतोषनगर / Santoshnagar, हैदराबाद / Hyderabad-500 059

District Agriculture Office, Gumla

Letter No. : ...1152..... **Date :- 08/12/21**

From ,

District Agriculture Officer
Gumla

To,

The Director
ICAR-Agricultural Technology Application Research Institute Patna, Zone-IV
Central Potato Research Station
PO-Sahaynagar, Patna-801506
Bihar

Sub :- Successful implementation of Projects at KVK, Gumla – reg

Sir,

I would like to congratulate the team involved in successfully running NICRA, ARYA, Bio-Tech KISAN Network, GKMS, DRMR, AICRP Niger, NARI, FPOs, Organic Farming, Empowerment of women through Mushroom Cultivation (under Aspirational District Programme) Projects at KVK, Gumla Vikas Bharti Bishunpur funded by ICAR, The centre is providing New Agricultural Technologies to farmers through Trainings, FLDs, OFTs and various Awareness programmes.

You and your team deserve appreciation for successfully establishing and running the CHC in KVK and NICRA village. I hope the centre will succeed in retaining youths in village through creating employment & opportunities and also help in increasing productivity for doubling farmers income in the District.

Once again, I congratulate the following team members of the project.

1. Dr. Sanjay Kumar, Senior Scientist & Head, KVK Gumla
2. Dr. Anjani Kumar, Director ICAR-ATARI, Patna
3. Sunil Kumar, Subject Matter Specialist, Horticulture
4. Dr. Neeraj Kumar, Subject Matter Specialist, Soil Science
5. Atal Bihari Tiwari, Subject Matter Specialist, Plant Protection
6. Er. Eno Rai, Subject Matter Specialist, Agriculture Engineering
7. Dr. (Mrs.) Nisha Tiwari, Subject Matter Specialist, Home Science
8. Dr. Binod Kumar, Subject Matter Specialist, Animal & Veterinary Science
9. Mr. Rajeev Kumar Singh, Farm Manager
10. All Programme Assistants

With regards

08/12/21

District Agriculture Officer
जिला कृषि पदाधिकारी
गुमला

Annexure-VIII

National Initiative on Climate Resilient Agriculture

BEST NICRA KVK AWARD
(2011-14)

This is to recognize & appreciate the collective efforts of **KVK, Gumla, Jharkhand** in implementing climate resilient practices & technologies under the Technology Demonstration Component (TDC) of the NICRA project sponsored by the Indian Council of Agricultural Research (ICAR). KVK, Gumla is adjudged as the **BEST NICRA KVK** in Zone II for the period April, 2011 to March, 2014.

Zonal Project Director
Zone II

Director
CRIDA

Deputy Director General
NRM & Extn. Divisions, ICAR

November, 2014

राष्ट्रीय जलवायु समुत्थान कृषि में नवप्रवर्तन

National Innovations in Climate Resilient Agriculture

ICAR - Central Research Institute for Dryland Agriculture
Hyderabad - 500 059

सर्वश्रेष्ठ निक्रा कृषि विज्ञान केंद्र पुरस्कार - 2019
BEST NICRA KVK AWARD - 2019

Krishi Vigyan Kendra, Gumla District of Jharkhand State is adjudged as the best NICRA-KVK of the ATARI Zone IV for the year 2019 in recognition and appreciation of its best efforts in implementing the NICRA - Technology Demonstration Component of Indian Council of Agricultural Research.

4th June, 2019
Hyderabad

(G. Ravindra Chary)
Director (Acting)

ICAR- Agricultural Technology Application Research Institute
Zone- IV Patna

आजादी का अमृत महोत्सव

Certificate of Honour

ICAR- Agricultural Technology Application Research Institute, Zone- IV Patna recognizes the contribution made by Dr. SANJAY KUMAR and his/her team, from KVK, GUMLA in the field of Transfer of Technology under NICRA project on ocasion of 5th Annual Zonal Workshop of KVKs, ICAR-ATARI- Zone IV, Patna held at RICC, Rajgir, Nalanda (Bihar) from 6-8th August 2022.

Principle Scientist
Co-organizing Secretory

Director
Organizing Secretory

दैनिक जागरण

सम्मान-पत्र

10

श्री/श्रीमती/सुश्री डॉ. संजय पांडेय को कृषि

क्षेत्र में विशिष्ट योगदान के लिए दैनिक जागरण समूह की ओर से सम्मानित किया जाता है।

दैनिक जागरण आपके उज्ज्वल भविष्य की कामना करता है।

सुनील गुप्ता
निदेशक

सरोज अवस्थी
मुख्य महाप्रबंधक

कमलेश रघुवंशी
स्टेट हेड

Indian Council of Agricultural Research

Certificate

PANDIT DEENDAYAL UPADHYAY RASHTRIYA KRISHI VIGYAN PROTSHAHAN PURASKAR–2019

(Zone IV)

is presented to

Krishi Vigyan Kendra, Gumla

Jharkhand

16 July, 2020
New Delhi

(T. Mohapatra)
Secretary (DARE) &
Director General (ICAR)

(Narendra Singh Tomar)
Agriculture & Farmers Welfare Minister, GoI
& President, ICAR Society

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

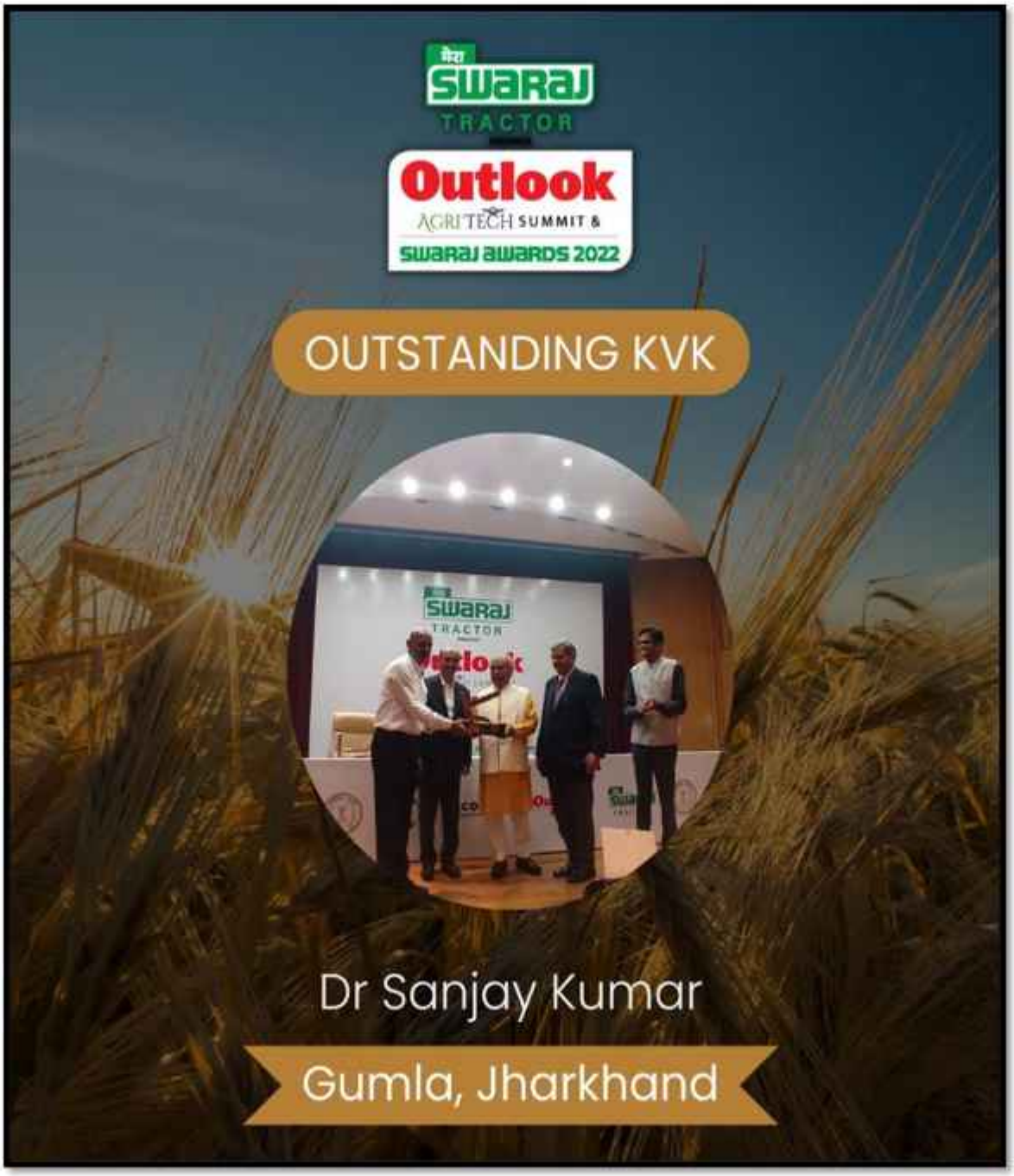
PANDIT DEENDAYAL UPADHYAY RASHTRIYA KRISHI VIGYAN PROTSHAHAN PURASKAR 2019 (NATIONAL/ZONAL)

(Zone-IV)

KRISHI VIGYAN KENDRA, GUMLA, JHARKHAND

CITATION

KRISHI VIGYAN KENDRA, GUMLA, JHARKHAND has been awarded Pandit DeenDayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar-2019 for Zone IV.Since beginning KVK Gumla has made tremendous work in agricultural technology transfer through rigorous efforts in term of assessing the real time farmer's farming problem and finding the way to solve their solution as per available resources in tough areas of Gumla. KVK has succeeded not only in educating the tribal farmers of the district but handholding skills for entrepreneurship development too. Which resulted in achieving the higher productivity, profitability and sustainability in almost all the major crops. "Bora-Bandh" is one of the most vibrant initiative of KVK, which has not only opened the eyes of the planners but farmer's too, to know how the low cost initiative change the shape of farming and succeeded in enhancing the area under Rabi and Summer crop. This way the cropping intensity has increased and farmer's has succeeded in achieving the double or triple fold income. KVK has also succeeded in empowering women through skilling in value addition and development of market channel.In past thirteen year KVK has left no stone unturned to find a sustainable solution for forest dweller tribal farmers in bringing the gross happiness on their faces.


SWARAJ
TRACTOR
Outlook
AGRI TECH SUMMIT &
SWARAJ AWARDS 2022
OUTSTANDING KVK
Dr Sanjay Kumar
Gumla, Jharkhand

Annexure-IX

Villagers meet during launch workshop

Villagers fill empty cement sacks with sand

Jubilant villagers after accomplishing the mission

Diverting water for check dam

Channels carrying water

Creation of Bora-Bandh by the villagers

Follow up of NICRA Activities by Chief Secretary Jharkhand

Canal Renovation

Annexure-X

JHARKHAND 6 THE TELEGRAPH CALCUTTA MONDAY 11 JUNE 2012

Sandbags check rivulet water to turn parched fields green in Gumla village

A dam idea that changed lives

SANTOSH K. KIRO

Residents of Gumla build a temporary barrier with sandbags on the rivulet in December last year and a paddy grower in the village.

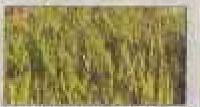
हिन्दुस्तान 3

रांची • गुरुवार • 21 मार्च 2013

कृषि विज्ञान केंद्र के प्रयास और निकरा परियोजना की पहल से जागरूक हुए किसान, मसरिया नदी पर बनाया बांध

घाघरा के बुरुहू में 120 एकड़ में लहलहा रही गेहूं की फसल

गुमला | प्रतिनिधि



TIMES CITY

रांची 21 मार्च 2013 गुमला जागरण

Wheat farming debut in Gumla

निकरा परियोजना से आई गेहूं क्रांति : धुनई

प्रभात खबर

गुमला

रांची, सोमवार, 22 अक्टूबर, 2012 04

श्रमदान कर रेत बांध का निर्माण किया

तीस हेक्टेयर में लगी धान की फसल बरबाद होने से बचेगी

प्रतिनिधि ■ गुमला

श्रमदान करते लोग.

रांची, सोमवार

4 मार्च, 2013

06

प्रभात खबर गुमला-सिमडेगा

श्रमदान कर नहर की सफाई की

घाघरा ■ कृषि विज्ञान केंद्र गुमला व विकास भारती बिशुनपुर के सहयोग से निकरा परियोजना के तहत बेलागड़ा गांव के ग्रामीणों ने श्रमदान कर मसरिया नहर की सफाई की. गांव के किसानों ने 1500 मीटर नहर की सफाई की. नहर में घास व अन्य पौधों के उग जाने से नहर से जलापूर्ति नहीं हो रही थी. 1500 मीटर नहर से सफाई होने से करीब एक सौ एकड़ खेतों में पानी आसानी से पहुंचे. मौके पर कृषि वैज्ञानिक अटल बिहारी तिवारी, किसान प्रभु उरांव, जितराम उरांव, रामकिशुन भगत, सिद्धेश्वर उरांव, विष्णु उरांव, लोदरो भगत, मनिया उरांव, इंदुवा उरांव सहित बड़ी संख्या में ग्रामीणों ने श्रमदान किया.

सफाई अभियान में शामिल ग्रामीण. फोटो। प्रभात खबर

दैनिक भास्कर गुमला

हौसले को सलाम | नदी में रोके गए पानी से खेती करने का लिया निर्णय

सिंचाई की सुविधा नहीं मिलने पर बनाया बांध

बांध बांधने में सैकड़ों ग्रामीणों ने बहाया पसीना

दैनिक जागरण

रांची, 30 जनवरी 2013

कृषि के लिए वरदान साबित हुआ जल संरक्षण

गुमला के गुनिया गांव में ग्रामीणों द्वारा बोरा से बनाया गया बांध।

उपेंद्र कुमार पांडेय, गुमला

कृषि विज्ञान केंद्र की पहल ने दिखाया असर

गुमला जागरण

कम वर्षा से खेती प्रभावित : उपायुक्त

हिन्दुस्तान • रांची • मंगलवार • 05 मार्च 2013 4

ग्रामीणों ने मसरिया नहर की सफाई की

गुमला जागरण रांची ... दैनिक जागरण 5

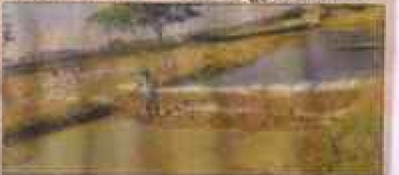
बोरा बांध जल संचयन के लिए कारगर योजना

-गुमला प्रभात खबर 26.12.2016 07

70 गांवों में बन रहा बोरा बांध 1400 एकड़ जमीन होगी सिंचित

गुमला जागरण

ड्राई जोन क्षेत्र में जल संचयन का अनूठा प्रयास



लोहरदगा

ग्रामीणों ने श्रमदान से कोयल नदी में बनाया बांध

60

175

Villagers reviving rivers, changing lives with Bora Bandh

सीएस ने लिया योजनाओं का जायजा, लोगों को किया प्रोत्साहित

बोरा बांध की सराहना व सूखा पालन के लिए प्रोत्साहित किया

श्रमदान कर बनाया बोरा बांध बचेगी 50 एकड़ में लगी फसल

70 गांवों में बन रहा बोरा बांध 1400 एकड़ जमीन होगी सिंचित

राजधानी जागरण

सामूहिकता से नौ सौ एकड़ खेत उगलने लगे सोना

हिन्दुस्तान

जल संकट से गांवों को उबारने की विकास भारती की कवायद

सामुदायिक शुरूआत

उम्मीदें 20

06

प्यास

जल है तो कल है

जल संरक्षण की देसी तकनीक बोरा बांध किसानों के लिए वरदान

2018 की उम्मीद जगाए हुए है बोरा बांध, जिला कृषि विज्ञान केंद्र का प्रयास ला रहा रंग

4,000

97.5%

2.5%

2,120

200 स्थानों पर जल संरक्षण करने का है लक्ष्य

Gumla farmers embrace climate-resilient practices

K A Gupta | TNN

Facing change in weather patterns witnessed in recent years, a section of farmers in the agriculture-dominant region of Gumla are adopting climate-resilient farming practices, aiming to cut losses due to insufficient rain and save money, time, and labour. Agriculture in the region has long relied on the monsoon, leaving farmers vulnerable to losses during periods of insufficient rainfall.

Farmers here have now adopted improved water management practices and are trying to preserve water for use during dry periods, using short-duration seeds and fertilizers.

Krishi Vigyan Kendra (KVK) in Gumla's Bishunpur block has trained several farmers on appropriate farming methods to adapt in response to the changing climate. "In face of changing weather patterns, farmers have changed their farming methods. They have started adopting water conservation techniques by using dobhas (small water bodies), ponds, farm bundings and drip irrigation system," said KVK Gumla agro-scientist Atal Bihari, adding, "They are using short duration drought-tolerant variety of seeds also."

A small reservoir boundary made up of sand bags in Gumla.

Farmers have also adopted water-saving practices such as direct-seeded rice (DSR), aerobic rice, and ridge and furrow methods. These strategies have been embraced by farmers in NICRA cluster villages in Gumla, with approximately 25,000 farmers endorsing one or more of these strategies to combat climate vulnerabilities and ensure sustainable income generation and livelihood, said Bihari, adding there are around 1 lakh farmers in the district. "One more important change in farm technology is intercropping (growing multiple crops together in the same field. It improves resource use, soil health, pest management, biodiversity, and reduces crop failure risks, leading to higher yields and income)," he said.

Under the National Innovation in Climate Resilient Agriculture project of Indian Council of Agriculture Research, KVK Gumla has focused on crop diversification to minimize the risks of crop failure. This includes implementing intercropping, shifting from low-volume low-income crops to high-volume-high-income crops, and using drought-tolerant, short-duration rice varieties such as Anjali, DH 64 (DRT), Sahbhagi Dhan, and Lalat; finger millet variety like GPU-28; groundnut variety BG-3 and niger variety Birsa Niger-1.

Farmer Bulbudra Gope told TOI, "In response to poor rainfall, we are growing short-duration paddy seeds."

Another farmer Biri Oraon of Gumla village said, "We have opted for hybrid seeds which grow in a short period and require less water as compared to the old local varieties of seeds."

जन चेतना... जल संरक्षण के सामूहिक प्रयास से बदल रहे हालात

खूंटी में 270 से अधिक बोरीबांध, खेती के लिए मानसून पर कम हो रही किसानों की निर्भरता

बोरी से हौसले की बांध

12 गांवों में 174 एकड़ में सालों भर हो रही खेती

गुमला जागरण 7

बोरा बांध व डोभा निर्माण से जलस्तर में होती है वृद्धि

कृषि विज्ञान केंद्र में विश्व जल दिवस पर [illegible] का किया गया आयोजन, किसानों को जल संरक्षण के विषय पर दी गई विस्तृत जानकारी

विश्व जल दिवस

गुमला जिले में जल संरक्षण पर हो रहा बेहतर काम

दैनिक भास्कर | गुमला

एक बच्चे के जन्म पर एक पौधा लगाने का निर्णय

पर्यावरण के संरक्षण के लिए जानकारी देते महेंद्र उरांव व मौजूद अन्य लोग।

गुमला। विकास भारती बिशुनपुर द्वारा संचालित निकरा परियोजना के तहत बुधवार को घाघरा के कुम्बा, बिशुनपुर के सेरेंगदाग, नवाटोली, टिरटोली, जाहुप कोल्केटोली व डुमरी प्रखंड के मझगांव बरटोली में विश्व पर्यावरण दिवस मनाया गया। मौके पर संकल्प लिया गया कि एक परिवार में एक बच्चा पैदा होने पर एक पौधा लगाया जाएगा। साथ ही उगाने वालों को बचाने का निर्णय लिया गया। विकास भारती के वरीय अधिकारी महेंद्र उरांव ने कहा कि भारतीय कृषि अनुसंधान परिषद द्वारा जलवायु परिवर्तन को देखते हुए 2010 में एक परियोजना आरंभ की गई, जो पूरे भारत में 100 स्थानों पर चल रही है। झारखंड राज्य में यह परियोजना पांच जिलों में चल रही है। इनमें एक कृषि विज्ञान केंद्र गुमला विकास भारती बिशुनपुर है। कृषि विज्ञान केंद्र द्वारा घाघरा प्रखंड के कुम्बा कलस्टर में यह योजना संचालित है। इस परियोजना को जलवायु समुत्थानशील कृषि पर राष्ट्रीय पहल निकरा नाम दिया गया है। इस परियोजना का मकसद जलवायु परिवर्तन द्वारा कृषि क्षेत्र में उत्पादन में गिरावट के लिए जिम्मेवारी उपाय पर शोध व अनुसंधान कर कृषि क्षेत्र में उत्पादकता व उत्पादन को बढ़ावा देना है। उन्होंने कहा कि पर्यावरण संरक्षण एवं संवर्धन के साथ साथ आने वाले चुनौतियों को ग्रामीणों तक पहुंचाना व जागरूक करना है। इस परियोजना से कम दिनों में ज्यादा फसल उत्पादन होती है। मौके पर प्रभारी सोनम, कृषि विज्ञान केंद्र के तकनीकी डॉक्टर नितेश कुमार, नीरज कुमार वैद्य, मृत्युंजय सिंह, राजू सिंह, अटल बिहारी तिवारी, डॉक्टर राहुल कुमार, मोहन गोप, अनजू गोप, लक्ष्मण गोप, जीतराई उरांव, प्रभु उरांव, सागर मांझी, विजय उरांव सहित कई लोग थे।

1. https://www.youtube.com/watch?v=mXjc9B6geA8&t=121s
2. https://www.youtube.com/watch?v=UJrfP3IU2AA&t=316s
3. https://www.youtube.com/watch?v=aUd-8q16hVY&t=529s
4. https://youtu.be/AzcHDaX95AE
5. https://youtu.be/w06Rmf8k448