

Technical Report

Training of BlackCountry Agronomist and Farmers on Rice Seed Production and enhanced agronomic techniques at Ogonmeri community Edo State from 29th July – 1st August 2025



Group photograph of AFPI Training facilitator, BlackCountry Farm Manager, Agronomists, and Farmers

PART A: First training visit (15th June – 21st June 2025)

Background

Rice (*Oryza sativa* L.) is one of the most important staple food crops in Nigeria, providing both food security and livelihood opportunities for millions of households. In recent years, Nigeria has made significant progress in domestic rice production; however, yield gaps and low-quality seed availability remain major challenges affecting productivity. Access to improved rice seed production technologies is therefore critical in bridging this gap and achieving sustainable yield enhancement.

This report presents a technical overview of rice seed production technologies tailored for BlackCountry Farmers and agronomists in Ogonmeri community, Edo State. The focus is on yield enhancement strategies, seed production standards, and good agronomic practices that can transform rice farming into a profitable enterprise while ensuring high-quality seed availability for future planting seasons.

Overview of BlackCountry farms limited

BlackCountry Farms Limited is an initiative of the BlackCountry management team to increase rice paddy production through good agronomic practices (GAP) and , implemented in collaboration with Agriculture and Food production Initiative (AFPI), to enhance agricultural value chains and improve the livelihoods of smallholder farmers. The major focus is on developing the rice value chains for business commercialization in Ogonmeri community, Edo State. In this view, involving the rural community in rice transformation are critical for food security and rural livelihoods in Nigeria. The training program aims to build the capacity of BlackCountry Agronomist in seed and paddy production, boost productivity, strengthen market linkages, and promote income generation. Key components of the program is the involvement of farmers in the community, with a strong emphasis on youth engagement and gender equality.

Capacity Development of Agronomist of Youths and Farmers

Youth involvement in agriculture is critical for ensuring sustainable food systems and addressing rural unemployment in Nigeria. Recognizing this, BlackCountry has prioritized the capacity development of youths within the community. The program provides tailored training and practical exposure to equip farmers and young people with the skills and knowledge needed to thrive in modern agricultural practices, with a specific focus on rice production technologies.

Main objective

The main objectives of the training program on rice seed production technologies are to build the capacity of agronomist, farmers, youths (male and female) in modern agricultural practices and value chain development to increase paddy yield, farmers income and livelihood in Ogonmeri community, Edo state.

Specific objectives

1. Enhance participants' understanding of PowerPoint as a tool for knowledge transfer.
2. Provide practical, hands-on experiences to complement theoretical learning.
3. Equip farmers with knowledge and practical skills on quality rice seed production technologies.
4. Improve farmers' understanding of certified seed standards and practices for seed enterprise development.
5. Promote best practices for increasing seed yield, purity, and quality.
6. Encourage the adoption of modern seed production modules for agribusiness scaling.

7. Strengthening linkages between seed producers, seed companies, and public sector stakeholders.

Participants

A total of two Agronomist and 30 BlackCountry-supported rice farmers from Ogonmeri community participated in the training.

Methodology

- Sessions were interactive, incorporating quizzes, Q&A segments, and case study analyses of the training.
- Videos were embedded in the presentations to enhance comprehension and learning through viewing.

Training Modules

The training covered eight technical modules designed to provide a step-by-step understanding of rice seed production systems as presented in table 1 below.

Table 1. Training modules: Rice seed/paddy production technologies

Serial No.	Description	Training contents
Module 1	Description and importance of quality seed	[Importance of Seed; Requirement for Rice seed/paddy production; Rice Ecology (rice production system); Physical Requirement for Rice seed production; Rice Seed/Paddy Quality; Benefit in Planting Quality Seed/Paddy; Characteristics of Poor Seed Quality; Seed Purity; Characteristics of Good Quality Seed; Good Seed/Paddy handling Environment; Key Steps for Good Seed/Paddy Production; Factors Affecting Seed/Paddy Quality; Sources of Seed; Classes of Seed]
Module 2	Seed/Paddy Health	[Seed Health; Disease Development; Importance of Seed/Paddy Health; Seed Health Management – Field; Seed Health Management Post-Harvest; Assessment of Seed Health; Seed Testing; Importance of Seed Test]
Module 3	Developmental Stages in Rice Seed/Paddy Production	[Developmental Stages and Basis for Quality seed/paddy; Seed/Paddy Development; Growth Stages; Vegetative Phase; Reproductive Phase; Ripening Phase]
Module 4	Field Practices in the Production of Quality Seed	[Site Selection; Factors for Land Selection; Nursery Bed Establishment; Land Preparation; Transplanting]
Module 5	Field and Pest Management for Seed/Paddy Production	[Water Management; Benefit of Water Management; Nutrient Management; Weed Management; Pest and Disease Management – Management Options for Rice Insect (Integrated Pest Management)]
Module 6	Varietal Quality Maintenance and Practice	[Varietal Maintenance; Seed/Paddy Quality Attributes (Physical, Physiological, Genetics); Off-types; Requirements for Seed Certification]
Module 7	Harvest and Post-Harvest Processes in Seed/Paddy Production	[Harvesting; Factors that Determines Harvesting Processes; Harvesting Methods; Tips for Optimizing Harvesting; Threshing; Steps to undertake during Threshing Exercise; Losses During Threshing; Drying; Seed/Paddy Drying Methods; Drying Facilities; Cleaning and Winnowing; Cleaning Process]

Module 8	Rice Seed/Paddy Storage	[Purpose of Storage; Pre-conditions for Storage; Storage Systems; Seed Packaging and labelling; Storage hygiene; Seed/Paddy Deterioration]
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Classroom PowerPoint presentations and field practical sessions

1. Classroom Training

- **Objective:** To impart theoretical knowledge and foundational concepts related to modern agricultural practices, particularly rice production technologies.
- **Approach:** Structured PowerPoint presentations are delivered by agricultural experts and scientists. Topics covered include land preparation, seed selection, nursery establishment, transplanting, pest and disease management, irrigation techniques, post-harvest handling, and storage.
- **Materials:** Training manuals are used to enhance understanding and engagement. The PowerPoint presentations are interactive, allowing participants to ask questions and discuss real-life challenges and progress in rice seed and paddy production.



Arrival and Registration of Trainees



Trainees in classroom session during PowerPoint presentations





Trainees in classroom session during PowerPoint presentations, and Q & A.

2. Field practical sessions

- To provide hands-on experience and reinforce theoretical knowledge gained during classroom sessions. Hands-on the job training through practical sessions in addition to the classroom teaching was organized for the trainees, including Agricultural Production Officers and their assistants. These sessions provided real exposure and hands-on experience in agricultural practices.

Practical activities

1. **Overview of Rice Seed Systems in Nigeria:** Seed classes, certification, and seed value chains development approach.
2. **Land Preparation and Agronomic Practices for Seed Production:** Site selection, soil fertility, and land management. Demonstrations on plowing, leveling, and soil testing to optimize field conditions for rice cultivation.
3. **Nursery management:** Establishment and maintenance of rice nurseries, including seed treatment and spacing techniques.
4. **Transplanting:** Practical sessions on proper transplanting methods to ensure healthy crop establishment.
5. **Seed selection and varietal purity maintenance:** Selection of parental materials and field inspection guidelines.
6. **Good Agricultural Practices (GAP) in Rice Seed Production:** Planting techniques, spacing, irrigation, and weed management.
7. **Water management:** Guidance on irrigation systems, water scheduling, and drainage techniques.
8. **Fertilizer application:** application of fertilizer to optimize yield
9. **Pest and Disease Management in Seed Fields:** Integrated pest management (IPM) strategies and recommended chemicals. Identification of common pests and diseases, along with the application of eco-friendly control measures.
10. **Harvesting, Processing, and Post-Harvest Handling:** conducted practical training on timely harvesting, drying, threshing, and storage of seeds.
11. **Seed certification and quality assurance protocols:** Roles of National Agricultural Seed Council (NASC), tagging, and documentation.
12. **Seed marketing and agribusiness opportunities:** Business models, market linkages, pricing, and seed entrepreneurship

Field Locations

- Training sites were strategically selected within BlackCountry rainfed and irrigated lowland rice fields Ogonmeri community, Edo State, to provide participants with exposure to farmers level rice production.

Training facilitation

- Experienced scientists facilitated the sessions, guiding participants through step-by-step processes.
- Participants were grouped into teams to foster collaboration and peer learning during the classroom and practical sessions.
- Construction of nursery bed during the practical sessions by trainees
- Land preparation methods using power tiller

Training assessment

- Pre- and post-training assessments were conducted to evaluate knowledge transfer and skill acquisition.
- Feedback from participants highlighted significant improvements in their understanding of value chain processes and practical farming techniques.
- Well-coordinated training modules gave a wide understanding on seed production technologies



Rainfed and irrigated lowland production system in Ogonmeri community, Edo State



Establishment of Rice Nursery beds and seeding by BlackCountry Agronomist and Trainees



Seed emergence on the nursery bed after 5 days of seeding



Practical field operations: establishment of demo plot and transplanting



Photos of basal fertilizer application after transplanting and establishment of demo plot

Output

- ✓ Participants gain a solid understanding of scientific and technological advancements in rice farming, preparing them for practical applications.
- ✓ Demo plot to showcase improved technology established

Outcomes

- ✓ BlackCountry Agronomist expressed positively on the new knowledge and technologies
- ✓ Participants acquire practical skills that can be directly applied to their farms, increasing productivity and profitability.
- ✓ Increased technical knowledge among participants on certified rice seed/paddy production practices.
- ✓ Strengthening capacity of BlackCountry-supported farmers to produce high-quality seeds.
- ✓ Enhanced collaboration among farmers, and seed/paddy sector stakeholders.
- ✓ Participants expressed commitment to applying skills acquired to scale seed production in their respective farms.

Impact of rice seed production training for BlackCountry Agronomist and farmers in Ogonmeri community

1. Technical capacity of farmers enhanced

- Farmers gained practical and theoretical knowledge on quality rice seed production including land selection, seed selection, agronomic practices, harvesting, processing, and storage.
- Exposure to eight rice seed production modules empowered farmers with modern technologies and best practices to improve seed purity and yield.

2. Strengthening of local seed systems

- The training contributed to building a pool of trained community-based seed producers who can supply certified and quality seeds to other rice farmers within and outside their communities.
- This supports sustainable seed systems within participating States by reducing dependence on external seed sources.

3. Agribusiness development and income

- Trained farmers were equipped to treat seed production as a commercial venture, promoting seed entrepreneurship.
- Improved knowledge in seed production provides new income streams beyond grain production.

4. Contribution to food security and productivity

- Availability of high-quality seed leads to increased rice productivity, better resistance to pests and diseases, and enhanced resilience to climate variability.
- This directly supports household food security and contributes to state and national rice production targets.

5. Strengthened collaboration and networking

- The training fostered collaboration among farmers between the participants, encouraging shared learning, innovation exchange, and potential cross-state farm ownership.
- Farmers from the community had the opportunity to showcase their indigenous knowledge while learning from others, and this was imperative.

6. Gender and youth empowerment

- Inclusion of women and youth in the training expanded their roles in the rice value chain, equipping them for economic participation in seed/paddy production businesses.

7. Economic impact

- The program will contribute to the establishment of thriving agribusinesses, boosting the local economy and creating job opportunities.

8. Social impact

- Empowerment of willing women and youth that are ready to work through targeted interventions will foster inclusivity and reduce rural poverty.

9. Environmental impact

- Promotion of sustainable farming practices will reduce environmental degradation and enhance resilience to climate change.

10. Sustainability

- By involving youths, the program ensures the long-term viability of Nigeria's agricultural sector and reduces rural-urban migration. The community farmers are ready to work with BlackCountry Farms limited

11. Support to Ogonmeri community development Objectives

- The training aligns with BlackCountry goal of promoting inclusive, resilient, and market-driven agricultural development, by increasing the adoption of good agricultural practices that enhances rice yield, promote the use of quality certified seeds for improved rice yield and performance.

Challenges of farmers during the training and recommendations

Challenges

Despite the successful execution of the training and valuable knowledge gained, two major challenges that may affect the full use of the learning experience of some farmers are:

- Some expressed concerns about limited financial capacity to immediately implement improved seed production technologies in their communities.
- Climate variability poses risks to crop yields and overall productivity; this should be included in the future plans of Black Country Farms to support trainees with water pump for supplementary irrigation due to erratic rainfall patterns and for use in dry season seed/paddy production.

Recommendations

- Scale up mechanization support and ensure equitable distribution of farm equipment.
- Invest in rural infrastructure development to facilitate seed and paddy production.
- Strengthen climate adaptation strategies to mitigate risks associated with climate change.
- Create business agreements with farmers directly by giving each farmer 1-2 hectare of land, supply input and buy back from them. This will ensure sustainability in seed/paddy production.

Key Achievements

1. Capacity building:

- More than 30 farmers including BlackCountry Farm Agronomist, gained knowledge and skills essential for enhancing agricultural productivity.

2. Improved agricultural practices:

- Participants demonstrated proficiency in adopting innovative farming techniques, this leading to increased efficiency and output.

3. Enhanced knowledge transfer:

- The use of PowerPoint presentations enabled effective communication of complex concepts, ensuring better retention among participants.

4. Strengthened value chains:

- The training will contribute to the development of robust value chains for rice, positively impacting rural livelihoods.

Conclusion

The rice seed production training organized for BlackCountry Agronomist and farmers in Ogonmeri community, marked a significant milestone in the efforts to strengthen Nigeria's rice value chain. The training provided a comprehensive platform to equip farmers with technical expertise, practical skills, and agribusiness knowledge required for quality rice seed and paddy production.

Over the course of the program, farmers were exposed to eight critical modules covering the end-to-end process of seed production: from varietal selection, land preparation, agronomic practices, rouging, harvesting, seed processing, packaging, to seed certification standards. These modules were delivered through a mix of classroom instruction, practical field demonstrations, and group learning activities, ensuring deep understanding and hands-on experience for all participants.

The training not only improved the technical competencies of farmers but also empowered them to see seed production as a viable business enterprise. This aligns with the overall objectives of BlackCountry Farm Limited to promote inclusive, climate-smart, and market-driven agricultural development. By strengthening local capacity in seed multiplication, the training created a network of community-based seed producers who are well-positioned to meet the growing demand for certified seeds in Nigeria's rice-producing regions.

The participation of women and youth in the training further enhanced the inclusivity and sustainability of the intervention, enabling these groups to contribute meaningfully to seed systems and agribusiness ventures.



Photos of trainees with their certificates at the end of the classroom training and practical sessions

PART B: Second field visit after training and establishment of demo plot at vegetative stage (29th July – 1st August 2025

Introduction

Capacity building through training is a critical step in improving agricultural productivity and seed quality; however, its impact is best realized when it is complemented by effective follow-up. At Black Country Farms, the Africa Rice training team has provided knowledge and skills on the production of good-quality rice seeds. However, to ensure that this knowledge translates into sustainable practice, follow-up and the maintenance of demonstration plots are essential.

Field observation

Through a follow-up assessment, it was observed that the demo plot established with quality breeder seed was performing well, even after experiencing about 10 days of water stress following transplanting. The fields established by the BlackCountry team after the training, both transplanted and broadcast, were well managed. No signs of pests or diseases were recorded across the inspected fields. Water levels in the irrigated fields were adequate and effectively managed, while the soils in the upland fields retained sufficient moisture to support strong crop performance.

It is important to note that although the company employs mechanization, certain operations still require manual labor. Some rice fields were not entirely free of weeds, despite the farm manager’s report of both pre- and post-emergence herbicide applications. This indicates the need for additional labor to complete effective weed control. Furthermore, the company should take urgent measures to control bird infestations, as one of the fields has already reached the heading stage.

Activities during the second field visit

- Maintenance of the demonstration field through rouging off-types, removing unwanted plants from bunds, and applying first split dose of urea fertilizer to both the demo plot and the adjacent BlackCountry transplanted field.
- Re-training of staff and volunteers lead farmers on proper techniques for uprooting rice seedlings from the nursery and ensuring correct transplanting practices, which are critical for good crop establishment and higher yields.
- Field visits to all BlackCountry rice fields include broadcasted, transplanted, and direct-seeded plots to provide professional guidance and operational advice to the farm manager and agronomist. This includes recommendations on appropriate insecticides, herbicides, as well as fertilizer types, application rates, and methods



Demonstration field at vegetative stage and application of first dose of Urea fertilizer during the visit



Photo of the scientific team with some of the trainees and the staff of BlackCountry farm on techniques for uprooting seedlings from the nursery

Recommendations

- **Use of insecticides:** Apply *Lambda-cyhalothrin* or *Cypermethrin* to avoid phytotoxicity and ensure effective pest control.
- **Herbicide management:** Regularly rotate the sources of total herbicides (e.g., glyphosate) to maintain quality standards and enhance effectiveness.
- **Weed control:** Adopt *Orizo-plus* as a post-emergence selective herbicide for effective weed management.
- **Fertilizer application:** Apply NPK (15:15:15) as a basal dose at 200 kg/ha, and Urea at 100 kg/ha, split between three weeks after transplanting and at panicle initiation.
- **Labor supervision:** Ensure close supervision of casual workers to achieve optimal field operations.
- **Field sanitation:** Avoid leaving standing trees or shrubs in the middle of fields, as they provide nesting sites for birds that may damage paddy during the reproductive and maturity stages.

Conclusion

The field visit to the demonstration plot at the vegetative stage in Ogonmeri community, Edo State, was highly insightful, offering a clear perspective on the farm's operations, achievements, and areas that require improvement. The team acknowledges and commends the farm manager's efforts in managing the fields

effectively. Moving forward, continuous technical support and guidance will be provided to strengthen productivity, ensure quality seed and paddy production, and promote long-term sustainability.

PART C: Third field visit after training and establishment of demo plot at reproductive stage (26th August – 28th August 2025

Field Visit Report to BlackCountry Farm, Ogonmeri Community, Edo State

Focus: Reproductive Stage Crop Management in Rice Production

A field visit was conducted to BlackCountry Farm in Ogonmeri community, Edo State, to assess the crop management practices implemented during the reproductive stage of rice growth. The visit provided an opportunity to evaluate ongoing field operations, identify strengths, and recommend best practices to sustain high yield and seed quality.

- 1. Water Management:** The farm has maintained appropriate water levels across the rice fields, ensuring that the crop receives adequate moisture critical for flowering and grain filling. Controlled irrigation practices were observed, which is vital in preventing both drought stress and excessive flooding during the reproductive stage. Proper drainage structures were also noted, reducing the risk of waterlogging and associated yield losses.
- 2. Fertilizer management:** Nutrient application at this stage was reviewed, with emphasis on nitrogen top-dressing to support panicle initiation and grain development. The farm team demonstrated good timing in fertilizer application, with recommendations provided on ensuring balanced nutrient management (nitrogen, phosphorus, potassium, and micronutrients) to optimize grain yield and avoid lodging.
- 3. Pest management (Leafhoppers and other insect pests):** Incidences of leafhopper infestation were observed during the field walk. The farm has adopted chemical control measures through the timely application of recommended pesticides. This intervention helps to prevent hopper burns and the spread of viral diseases such as rice tungro. Farmers were advised to follow integrated pest management (IPM) practices by combining chemical control with field sanitation and monitoring to minimize pesticide resistance.
- 4. Roughing to maintain genetic purity:** Roughing practices were carried out diligently to remove off-types and diseased plants from the seed production fields. This is an essential step in maintaining the genetic purity of rice varieties under multiplication. The importance of conducting roughing at different growth stages including tillering, panicle initiation, and flowering was emphasized to ensure the delivery of high-quality seed to farmers.



Photo of roughing operation at reproductive stage



Photo of roughing operation at reproductive stage



Photos demonstrating roughing techniques operation at reproductive stage to agronomist and trained farmers



Photo of second split dose of Urea fertilizer at reproductive stage



Pathologist identified leaf hopper flies destroying the newly transplanted plots in BlackCountry Farm



Photo of spraying insecticide to avoid widespread spread leaf hopper to the entire field

Conclusion

The field visit highlighted the commitment of BlackCountry Farm to adopting the best practices in rice reproductive stage management. The farm's efforts in water and fertilizer management, pest control, and genetic purity maintenance are recommended. Continued adherence to these practices, alongside technical support and monitoring, will strengthen the farm's capacity to produce high-quality rice seeds and contribute to sustainable rice production in Edo State and beyond.

PART D: Fourth field visit after training and establishment of demo plot at harvesting stage

(9th – 11th October, 2025)

Focus: Harvesting Stage in Rice Production

A field visit was conducted to BlackCountry Farm in Oghomere community, Edo State, for pre-harvest management and harvest practices implemented during the maturity stage of rice growth. This exercise is essential to ensure the genetic purity and overall quality of the harvested seeds. The visit also provided an opportunity to assess the ongoing harvesting operations and to recommend the best practices aimed at sustaining high yield and seed quality.

Rouging: Before harvesting, rouging was carried out to remove undesirable or off-type rice plants. This exercise is essential to ensure the genetic purity and quality of the seeds.

Harvesting and post-harvest processing: These are critical stages in paddy (rice) production that determine both the quantity and quality of the final yield. Proper management of these stages ensures that the efforts invested during cultivation translate into profitable and marketable produce.

Harvesting was done at full maturity with the aid of a sickle when 80% of the field had turned golden yellow. Harvesting was done manually as a result of breakdown of BlackCountry combine harvester. Timely harvesting helps in reducing post-harvest losses, maintaining grain quality and ensuring optimum grain yield, leading to an improved market value and the profitability of the farm.



Photo of matured paddy rice



Photos conducting final techniques operation at the maturity stage before harvesting



Manual harvesting of paddy rice with the aid of a sickle



Demonstration of post-harvest techniques to agronomists and trained farmers





Yield determination and calculation: These are essential for assessing the productivity and performance of a paddy field. This activity helps to evaluate the effectiveness of agronomic practices and management inputs during the growth stages.

The following Steps were considered for yield estimation

a. Selection of Sampling Area: A representative plot of 5 m × 5 m (25 m²) was selected from the demo field, while border rows and uneven areas were avoided.

b. Harvesting: All panicles within the marked area were carefully harvested to reduce losses. Unfilled grains and off-type plants were rogued before harvesting.

c. Threshing and winnowing: The harvested panicles were threshed to separate the grains. Winnowing was done to remove chaff, dirt, and immature seeds

d. Determination of Moisture Content: The grain moisture content (MC) was determined using a moisture meter.

e. Weighing: Weigh the clean grains to get the fresh weight (Wf) at the measured moisture content (MCf).

Yield Calculation Formula

To convert the yield to a standard 14% moisture content and express it per hectare:

$$\text{Adjusted Yield (ha)} = \frac{Wf \times (100 - Mcf)}{(100 - 14)} \times \frac{10,000}{A}$$

Where:

- Wf = fresh weight of grain (12.5kg)
- MCf = measured moisture content (10.7%)
- A = harvested area (25 m²)
- 10,000 = area conversion factor from m² to hectares

$$\text{Adjusted Yield} = \frac{12.5 \times (100 - 10.7)}{(100 - 14)} \times \frac{10,000}{25}$$

Adjusted Yield at 14% McF = 5.2 tons/ha

$$\text{Yield at 10.7\% McF} = \frac{Wf \times 10,000}{A}$$

$$\text{Yield at 10.7\% McF} = \frac{12.5 \times 10,000}{25}$$

Yield at 10.7% McF = 5.0 tons/ha

Recommendation:

- **Timely harvesting:** Harvest of paddy rice at the right time ensures both good quality and higher yield, especially when 85% of the paddy field has turned golden-yellow
- **Rewetting:** Threshing paddy on the day of harvest prevents rewetting and moisture reabsorption, which are critical for maintaining grain quality.
- **Winnowing:** Seeds should be winnowed promptly after threshing to remove lightweight impurities and maintain seed quality and purity.

Conclusion:

Harvesting and post-harvest processing are not merely concluding steps but crucial determinants of success in paddy production, influencing the economic returns of the BlackCountry Farm. The yield realized in both adjusted and storage moisture content was 5.2 and 5.0 metric tons per hectare respectively. This result has demonstrated that good agronomic practices, capacity building of BlackCountry agronomist and farmers with good seed quality, we can realize rice yield above the yield potential indicated for FARO 44.