

Midline evaluation

Potato interventions in Meru, Nandi and Nakuru counties

Implementation period: 2017–2026

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List of acronyms

ADC	Agricultural Development Corporation
DAC	Development Assistance Committee
DLS	Diffused Light Store
DSM	Decentralized Seed Multiplier
FGD	Focus Group Discussion
GAP	Good Agronomic Practices
KII	Key Informant Interview
KEPHIS	Kenya Plant Health Inspectorate Service
MSD	Market Systems Development
OECD	Organization for Economic Co-operation and Development
PPS	Probability Proportional to Size
PRACs	Potato Rooted Apical Cuttings
QDS	Quality Declared Seed
VBA	Village-Based Advisor
WAO	Ward Agricultural Officer

Executive summary

This Mid-Line Evaluation assessed the performance, outcomes and emerging systemic effects of the FIPS Africa Potato Programme implemented across Nakuru, Meru and Nandi counties between 2017 and 2026. Using a participatory convergent mixed-methods design, the evaluation combined household surveys, FGDs, KIs and case studies with Market Systems Development (MSD), contribution analysis and OECD-DAC criteria. A total of 673 respondents were reached across the three counties, enabling assessment of farmer adoption, seed-system transformation, enterprise viability, institutionalization, inclusion, sustainability and scaling potential. The findings demonstrate that FIPS has contributed to a significant transition from predominantly informal, recycled and distant seed sources toward a decentralized, commercially oriented seed system anchored in Potato Rooted Apical Cuttings (PRACs), Decentralized Seed Multipliers (DSMs) and Village-Based Advisors (VBAs). In Nakuru, 73.8% of farmers in supported networks source seed through VBAs/DSMs, while reliance on recycled seed has declined to 12.1%, compared with 52.7% among comparison farmers. Adoption of improved varieties reached 91.9%, while 81.7% of supported farmers reported expanding land under potato production. The differentiated county trajectories provide complementary evidence of systemic change where Nakuru demonstrates active scaling and commercialization; Meru demonstrates persistence and sustainability under substantially reduced direct programme support; and Nandi demonstrates re-emergence and replication potential following interrupted implementation. Collectively, the evidence indicates that the PRAC-DSM-VBA model is addressing a critical last-mile seed constraint while simultaneously creating local enterprises, strengthening advisory systems and stimulating private-sector and institutional crowding-in.

The evaluation concludes that the programme is entering a new phase in which the principal constraints are increasingly institutional, regulatory, and market-coordination related rather than primarily technological. Quality assurance, formal recognition of decentralized seed producers, operationalization of appropriate QDS mechanisms, reliable early-generation planting material, storage, aggregation and structured markets remain critical to sustainable scale. The programme also provides a strong platform for inclusive rural enterprise, with substantial participation of women, while greater deliberate attention is required to position youth within commercially attractive opportunities such as PRAC production, greenhouse management, aggregation, logistics, digital services and DLS fabrication.

These conclusions were strongly corroborated during the Stakeholder Validation, Learning and Co-Creation Workshop of 18-19 August 2026, which combined direct field validation with technical interrogation by government, regulators, research institutions, counties, private sector, finance, development agencies and potato-sector actors. Stakeholders affirmed both the continuing structural shortage of quality seed and the relevance of decentralized multiplication as a complementary pathway to the formal certified seed system, while emphasizing that future expansion must be accompanied by proportionate quality assurance, soil and disease surveillance, stronger traceability, professionalization of DSMs/VBAs and commercially viable PRAC production. The validation also reinforced the need to integrate increased seed and potato

production with storage, aggregation, market information, structured off-take, processing, and value addition.

The evaluation therefore recommends that FIPS consolidate the model through institutionalization and partnership-led scaling rather than direct geographic replication alone. Priorities include strengthening performance measurement and learning; expanding localized PRAC and mother-material systems; advancing QDS and quality assurance; strengthening downstream markets; and developing deliberate gender and youth pathways. Three additional priorities emerging from validation are particularly strategic especially establishing a NITA-KEPHIS competency and Recognition of Prior Learning pathway to professionalize VBAs/DSMs; developing a KALRO-led research, quality-assurance and innovation partnership around PRACs, varietal performance, soil health, disease risks and decentralized seed systems; and establishing a commercial financing and scaling platform with financial institutions, development agencies, counties and market actors to connect technically competent enterprises with finance, markets and co-investment.

Overall, the evaluation concludes that FIPS has established a high-potential and scalable model for decentralized potato seed and market-system transformation. The strategic task is now to institutionalize the standards, competencies, evidence, financing and partnerships required to protect quality while enabling scale. With FIPS increasingly positioned as a technical, evidence, capacity-development and partnership facilitator, the model has strong potential to evolve from successful county-level implementation into a more inclusive, resilient, commercially sustainable and nationally scalable potato seed system.

1.0 Background

This Midline Evaluation Report presents a rigorous, evidence-based assessment of the FIPS Africa potato programme across Meru, Nandi, and Nakuru counties, covering the implementation period 2017–2026. The programme is designed and implemented as a market systems intervention aimed at transforming Kenya’s potato seed system, with a strong focus on improving smallholder productivity, incomes, and resilience through decentralized seed multiplication (DSM), deployment of Potato Rooted Apical Cuttings (PRACs), strengthening of Village-Based Advisors (VBAs), varietal diversification and adoption, and policy engagement around Quality Declared Seed (QDS). The intervention was implemented through a collaborative ecosystem of research, development, public sector, and private sector partners. FIPS Africa worked closely with the International Potato Center (CIP), which played a critical role in introducing and promoting innovative seed technologies including apical cuttings and improved potato germplasm. The programme further benefited from partnerships with county governments, the National Agricultural and Rural Inclusive Growth Project (NARIGP), USAID-supported initiatives. These partnerships contributed to technology dissemination, farmer training, seed system strengthening, enterprise development, and policy engagement, creating an enabling environment for broader sector transformation.

This midline evaluation adopts a contribution analysis framework anchored in OECD-DAC evaluation criteria and a Market Systems Development (MSD) lens, enabling the assessment to move beyond attribution of outputs and outcomes to examine systemic change, institutionalization, enterprise viability, crowding-in effects, sustainability, and scaling readiness. Evidence emerging across the three counties points to differentiated but converging pathways of transformation. Nakuru demonstrates rapid consolidation of decentralized seed and market systems under active programme support; Meru provides evidence of sustainability, post-project diffusion, and institutional ownership several years after direct implementation ended; while Nandi illustrates an emerging transition system where foundational investments are beginning to stimulate commercialization, varietal diversification, and market development. Collectively, these experiences provide valuable insights into how decentralized seed systems can evolve into sustainable and scalable market-led solutions capable of attracting public investment, private sector participation, and development partnerships.

1.1 Purpose of the midline evaluation

The purpose of this midline evaluation is to generate independent, credible, and actionable evidence on programme relevance, effectiveness, efficiency, sustainability, and emerging systemic impacts, while providing investable insights to inform scaling, partnership mobilization, and adaptive management. Specifically, the evaluation assesses

- i. The extent to which good quality seeds, PRACs, improved varieties, and Good Agricultural Practices are being adopted and delivering measurable gains;
- ii. The commercial viability and scalability of DSM and VBA-led enterprise models;

- iii. The degree of seed system transformation through diffusion, crowding-in, and market development;
- iv. The institutionalization of regulatory frameworks such as QDS; and
- v. The key leverage points and bottlenecks shaping scale and sustainability.

1.2 The scope of the evaluation

The scope of this midline evaluation spans farm-level outcomes, enterprise performance, institutional arrangements, and system-level transformation processes, deliberately integrating evidence across counties at different stages of programme maturity to generate a comprehensive and policy-relevant learning architecture. Specifically, Meru County where FIPS implementation was initiated in 2017 and effectively phased out by 2022 is treated as a mature system, providing impact-level evidence on sustainability, post-project diffusion, and long-term market and seed system evolution. In contrast, Nakuru County represents a high-intensity, midline context, characterized by active multi-network implementation, strong VBA/DSM density, and accelerated system consolidation, thereby offering robust insights into pathways of rapid transformation and scaling under ongoing programme support.

Meanwhile, Nandi County reflects an early-stage, re-emerging system, shaped by interrupted implementation and current re-engagement, and is therefore analytically positioned to illuminate transitional dynamics, early adoption behavior, and constraints to system deepening in preparation for expansion. This deliberate cross-county differentiation enables the evaluation to move beyond static assessment toward a dynamic, comparative understanding of system evolution across the programme lifecycle, positioning the report as a strategic decision-support instrument for resource partners, policymakers, and implementation partners seeking to design, finance, and scale resilient, market-integrated seed systems within the potato value chain.

2.0 Methodology and sampling design

The midline evaluation adopted a participatory, convergent mixed-methods design, combining quantitative household surveys with qualitative inquiry (KIs, FGDs, and case studies) to enable both statistical measurement and systems-level interpretation, consistent with the seed and market systems development approach. A stratified, multi-stage Probability Proportional to Size (PPS) sampling design was applied across the three counties to ensure representativeness of potato-producing households while enabling exposure-based comparison (direct, spillover, and comparison groups). The achieved sample distribution is presented in **Table 1** below, showing both absolute numbers and proportional representation, allowing for clear comparison across counties and respondent categories.

Table 1: Sample distribution by county, respondent type, and gender

County	Total Sample (n)	% of Total Sample	Supported Networks (n)	Comparison Farmers (n)	VBAs/DSMs (n)	Female (%)	Male (%)
1. Nakuru	494	73.1%	419	75	85	45.6%	54.4%
2. Meru	97	14.8%	97	-	15	50%	50%

County	Total Sample (n)	% of Total Sample	Supported Networks (n)	Comparison Farmers (n)	VBA/DSMs (n)	Female (%)	Male (%)
3. Nandi	82	12.1%	62	9	11	60.3%	39.7%
Total	673	100%	568	84	112	52%	48%

This distribution reflects both programme intensity and analytical weighting, with Nakuru receiving a larger share of the sample due to its multi-network implementation and higher concentration of programme activities, while Meru and Nandi provide balanced representation for impact-level and transitional analysis respectively.

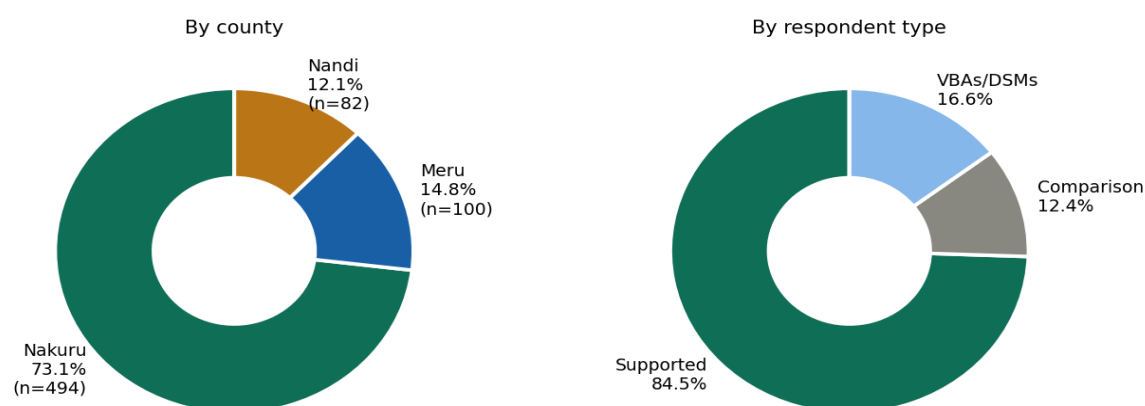


Figure 1: Sample distribution by county (left) and respondent type (right)

Field data collection was implemented sequentially, commencing in Nakuru, followed by Meru and then Nandi, allowing the evaluation team to iteratively refine probing techniques, and field protocols without compromising data quality in earlier sites. Enumerator training was conducted collaboratively with FIPS technical field teams in Molo, including tool pretesting and calibration to local contexts, ensuring methodological consistency across counties. During fieldwork, FIPS field teams played a facilitative role in mobilizing respondents and validating sampling frames, but did not participate in interviews or discussions to preserve independence and minimize response bias. However, selected technical staff were engaged as Key Informant Interview (KII) respondents, contributing critical insights on programme design, implementation dynamics, and system-level changes. Field operations were further strengthened through regular debriefings with the programme team in Nairobi, enabling sharing of high level findings, real-time quality assurance, issue resolution, and alignment with evaluation objectives.

Data analysis was conducted independently for each county, recognizing their distinct programme maturity levels and contextual dynamics, with inter-county comparison applied selectively to systemic change indicators and programme evolution pathways to avoid analytical distortion. This approach ensured that findings from Meru (mature/impact stage), Nakuru (active scaling/midline peak), and Nandi (early transition stage) were interpreted within their appropriate developmental contexts, while still enabling synthesis of cross-cutting insights relevant for scaling and policy

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engagement. The combined methodological rigor anchored in probabilistic sampling, exposure stratification, mixed-method triangulation, and context-sensitive analysis provides a credible and robust evidence base for the findings presented in this report. A detailed account of the methodological framework, sampling procedures, instruments, and analytical techniques is provided in the annexes for further reference.

The midline evaluation findings

3.0 Nakuru County findings

The Nakuru County mid-line results present a coherent and compelling picture of a rapidly transforming potato production and seed system, with strong evidence of behavioral change, enterprise emergence, and early-stage systemic reconfiguration. The analysis is grounded in a dataset of 494 respondents, including 67% (n=333) and 15.4% (n=75) ordinary farmers from project network and non-project comparison areas respectively and 18% (n=85) VBAs/DSMs, enabling rigorous comparative assessment across actor categories within the seed system. Gender distribution within the sample was relatively balanced, with female respondents accounting for 46.8% (n=231) and male respondents 53.2% (n=263), while spatial coverage spans nine networks, with the largest concentration in Kuresoi North (29.96%), followed by Amalo (10.53%), Kamara (10.32%), and Neissuit (11.13%). The analytical approach follows a contribution analysis framework, triangulating quantitative patterns with qualitative insights to establish plausible links between programme interventions and observed outcomes, while acknowledging the broader market and policy context within which change is occurring.

Table 2: Respondents distribution in Nakuru networks

Network	Farmers in comparison areas		Farmers in supported networks		Total Respondents	Proportion
	Female	Male	Female	Male		
1. Amalo	-	-	33	19	52	10.53%
2. Kamara	5	3	23	20	51	10.32%
3. Keringet	-	-	12	31	43	8.7%
4. Kuresoi North	35	32	35	46	148	29.96%
5. Kuresoi South	-	-	22	28	50	10.12%
6. Mauche	-	-	1	13	14	2.83%
7. Molo	-	-	23	26	49	9.92%
8. Muache	-	-	11	21	32	6.48%
9. Neissuit	-	-	31	24	55	11.13%
Total	40	35	191	228	494	100.0%

Mid-line evaluation results show that across the county, potato has consolidated its position as a commercially significant crop, with 77.7% (n=384) of households identifying it as their primary income source and 85.2% (n=421) reporting increased importance over the past three years. This structural shift provides a critical backdrop to interpreting programme outcomes. That FIPS Africa intervention is not focused on a marginal livelihood activity, but rather on a core income-generating system, thereby amplifying both the scale and significance of observed changes.

“Before FIPS project, many of us had abandoned potato farming for tea and dairy because we were getting low returns. Farmers were getting as low as 5 bags per acre which was very discouraging. Now many of us have returned to potatoes because the new varieties are high-yielding, we get quality seed easily, and the training from VBAs has helped us tremendously improve our yields and productivity.” (FGD with Farmers, Nakuru County)

3.1 Adoption, productivity change, and behavioural transformation in Nakuru

3.1.1 Production reorientation and land allocation

The comparative mid-line evidence provides robust, proportion-based validation of significant program-induced shifts in both seed systems and production behavior, clearly distinguishing outcomes between project-supported and comparison farmers. While potato production remains present across both groups, its economic importance and scale have diverged markedly, reflecting differential access to improved seed systems and advisory services. Specifically, 91.6% (n=383) of farmers in project-supported networks report that potato farming has become more important over the past five years, compared to only 50.0% (n=37) among comparison farmers, representing a 41.6 percentage point differential. This substantial shift indicates that potato has transitioned from a secondary, risk-prone crop to a primary livelihood and commercial enterprise within supported areas. This reorientation is further corroborated by land allocation patterns, where 81.7% (n=330) of supported farmers report increasing land under potato cultivation, compared to 45.8% (n=27) among comparison farmers, yielding a 35.9 percentage point differential. These proportions provide strong evidence of behavioral change in production decisions, signaling increased farmer confidence in the profitability and reliability of potato farming.

3.1.2 Seed system transition

This production reorientation is directly underpinned by a structural transition in the seed system, which has shifted from an informal, low-productivity equilibrium to a decentralized, quality-driven system anchored by VBAs/DSMs. The study shows that before FIPS intervention (baseline), by 49.2% of farmers reported that the seed system was dominated farmer-to-farmer exchange and recycled seed (26.7%), with only 8.7% accessing certified seed, reinforcing a cycle of degeneration, low yields, and weak market incentives. At midline, however, 56.22% (n=235) of farmers within supported networks identify access to improved seed and better varieties as the primary driver of increased production, compared to 37.3% (n=28) among comparison farmers, while 55.02% (n=230) attribute expansion to improved productivity and profitability, versus 24.0% (n=18) in non-supported areas.

In addition, 30.7% (n=124) of supported farmers report accessing their main seed through localized VBA systems, compared to non-in comparison areas, demonstrating the effectiveness and exclusivity of decentralized seed delivery mechanisms within project networks. These shifts confirm that the intervention has relaxed a critical binding constraint of access to quality seeds thereby altering the production function and enabling productivity gains.

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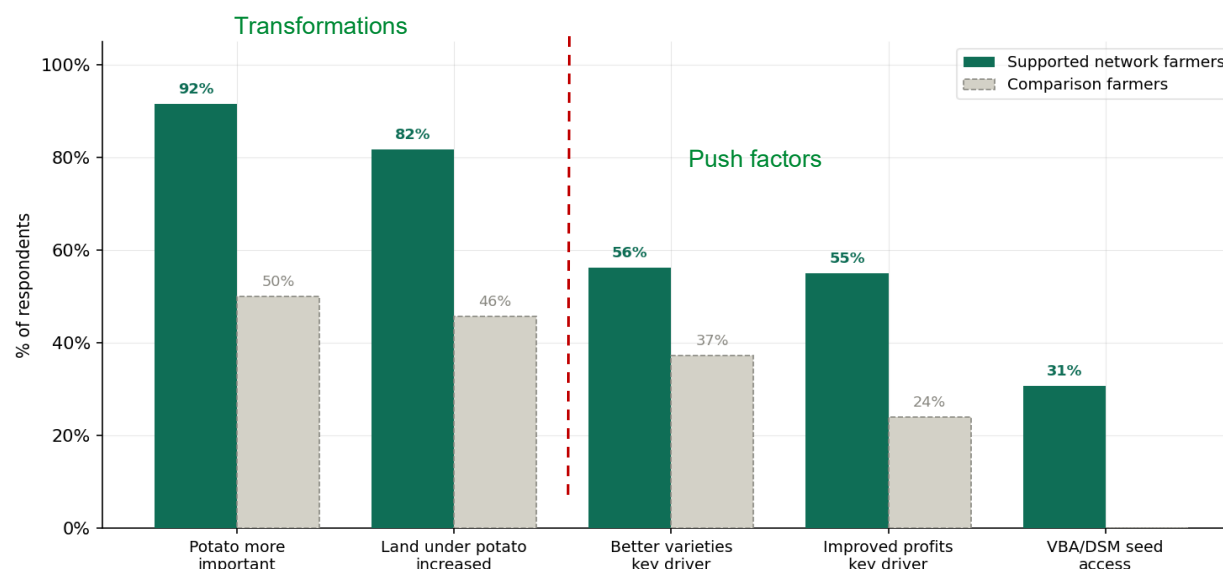


Figure 2: Farmer potato investment transformations and the push factors

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Table 3: Seed system transition comparative outcomes

Indicator	Project Farmers	Comparison Farmers	Difference in Difference	Interpretation
Households reporting potato farming has become more important (last 5 years)	91.63% (n=383)	50.0% (n=37)	+41.6 pp	Strong shift toward commercialization and livelihood prioritization in project areas
Households reporting increase in land under potato production	81.7% (n=330)	45.8% (n=27)	+35.9 pp	Significant program-induced expansion in production scale linked to improved seed access
Primary driver 1: Access to better varieties and quality seed (PRACs/VBAs)	56.22% (n=235)	37.3% (n=28)	+18.9 pp	Seed system intervention is a key causal driver of change
Primary driver 2: Improved productivity & profitability	55.02% (n=230)	24.0% (n=18)	+31.02 pp	Reflects improved returns to potato farming in project areas
Current access to MAIN localized seed through VBAs/DSMs	30.7% (n=124)	0.0%	+30.7% pp	Demonstrates effectiveness of decentralized seed systems

From an evaluation and systems perspective, the convergence of indicators in **Table 3** provides strong quasi-experimental evidence of programme contribution, consistent with Difference-in-Differences (DiD) logic. The magnitude of change across multiple outcome variables consisting

of importance of potato farming, land expansion, and seed-driven production decisions demonstrates that farmers in supported areas are not merely increasing production but strategically reallocating resources toward higher-return enterprises. This is consistent with microeconomic theory, where improved input quality and reduced uncertainty increase expected returns and drive investment behavior. In contrast, comparison farmers who remain embedded in informal seed systems exhibit lower levels of expansion and weaker livelihood prioritization, underscoring the persistence of structural constraints in seed access, varietal quality, and advisory services.

The implications for resilience, income, and market systems are substantial. First, the findings confirm that seed system strengthening is a high-leverage intervention, capable of triggering downstream effects on productivity, land allocation, and livelihood transformation. Second, the observed divergence between supported and comparison farmers highlights the additionality of the intervention, effectively serving as a counterfactual demonstration of what the system would resemble in its absence. Third, the rapid expansion in production within project areas signals both opportunity and risk in that while increased output reflects improved income potential, it also necessitates parallel strengthening of ware potato markets, including aggregation, storage, and structured market linkages, to prevent price volatility. Finally, the results reinforce the central role of VBAs/DSMs as systemic change agents, whose continued support, formalization, and integration into regulatory frameworks will be critical for sustaining and scaling these gains. In conclusion, the mid-line evidence demonstrates that the FIPS intervention has delivered visible, quantifiable, and system-level transformation, shifting potato farming from a low-return, risk-prone activity to a commercially viable and increasingly dominant livelihood pathway within targeted networks in Nakuru County, while non-project areas remain constrained by legacy inefficiencies in the seed system.

3.2 Adoption of improved varieties, farmer preferences, and seed sourcing dynamics

3.2.1 Varietal transformation in Nakuru County

The study established that prior to the intervention, both groups operated within a homogeneous, low-efficiency varietal regime dominated by Shangi (76%), Tigoni (4%), Stephen (9%), Dutch Robin (1%) and characterized by 9% of farmer reliance on undefined *kienyeji* (local mixed) landraces, with varietal choice driven primarily by availability rather than performance or market demand.

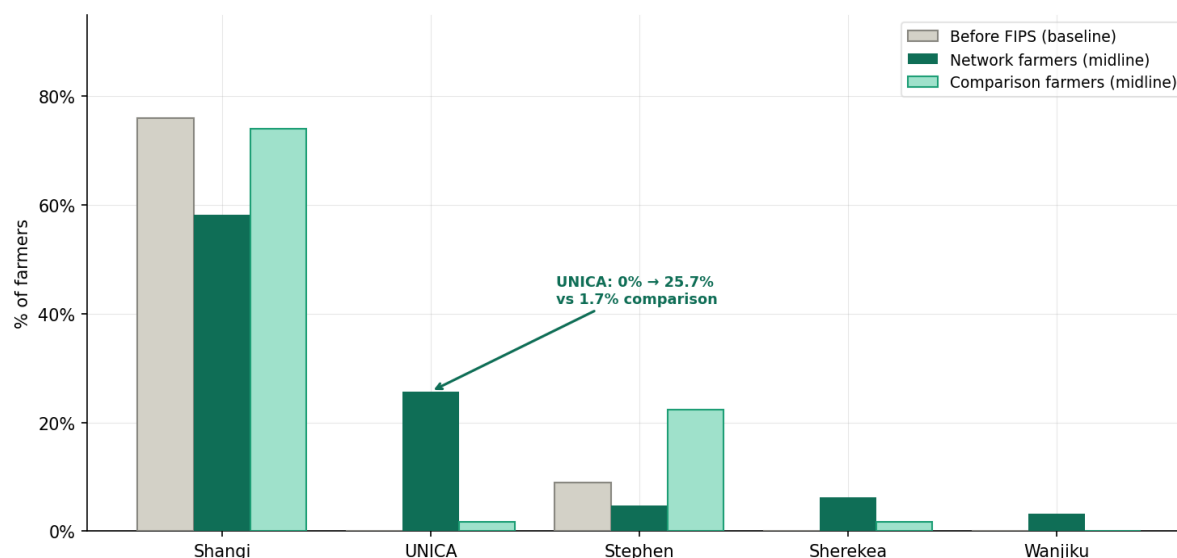


Fig. 3: Nakuru – varietal adoption rates before FIPS vs midline 2026 (network and comparison farmers).

The mid-line evaluation provides clear evidence of a significant transformation in varietal systems within project-supported networks, compared to minimal change in non-FIPS supported villages. This structure was driven primarily by availability of seed rather than yield performance or market demand, resulting in widespread varietal degeneration, non-uniform tuber quality, and weak market differentiation, as consistently validated through KILs. At midline, however, 91.9% of farmers in supported networks report adoption of improved varieties signaling a fundamental shift in the biological and economic foundations of production. When asked about the main variety grown in the most recent season, 74.1% of comparison farmers continue to rely on Shangi, compared to a reduced 58.2% among supported farmers, indicating a 14.9 percentage point differential shift away from legacy dominance within project areas as presented in **Table 5** below. It should be noted that all the new varieties promoted by FIPS Africa are generally CIP/ KALRO released varieties and are bred for moderate-good to very good blight disease tolerance.

Table 4: Proportion of farmers adopted improved variety in the most recent season

Main variety	Before FIPS intervention	At midline2026		Difference in Difference (% points)
		Network farmers	Comparison farmers	
1. Shangi	76%	58.2%	74.1%	+14.9 pp
2. UNICA	0%	25.7%	1.7%	+22 pp
3. Stephen	9%	4.7%	22.4%	-8.7 pp
4. Sherekea	0%	6.2%	1.7%	+4.5 pp
5. Wanjiku	0%	3.2%	0%	+3.2 pp

This transition is most strongly reflected in the rapid emergence of improved, market-aligned varieties, particularly UNICA, Sherekea and Wanjiku. Based on respondents' retrospective recall, UNICA was not reported among the principal varieties grown before the intervention, compared

with 25.7% among supported farmers at midline and 1.7% among comparison farmers, representing a positive 22 percentage point differential effect, while Sherekea has reached 6.2% among supported farmers versus 1.7% in non-supported areas. These pre-intervention figures should therefore be interpreted as recall estimates rather than formal baseline measurements. In contrast, varieties such as Stephen which was previously at 9% have declined to 4.7% among supported farmers, while remaining higher (22.4%) among comparison farmers, indicating more rapid varietal rationalization within project networks. These findings constitute strong evidence of programme contribution to varietal diversification, upgrading, and market-oriented diversification within the potato system. Importantly, the results should not be interpreted as a replacement of Shangi by newer varieties, but rather as an expansion of farmers' varietal portfolios and decision-making options. While Shangi remains the dominant variety among both supported and comparison farmers due to its well-established market acceptance, rapid maturity, and familiarity among traders and consumers, the emergence of UNICA, Sherekea, and Wanjiku among supported farmers demonstrates that farmers are increasingly selecting varieties based on specific agronomic and market attributes rather than relying on a single dominant variety. This diversification creates greater resilience within the production system by reducing dependence on one variety while enabling farmers to respond to different market segments, production environments, disease pressures, storage requirements, and seasonal demand patterns.

“Many potato varieties imported from Europe perform poorly under Kenyan smallholder conditions because they were bred in environments with lower disease pressure, particularly for late blight and aphid-transmitted diseases. In contrast, the varieties promoted through the programme are largely derived from CIP and KALRO breeding programmes and were specifically selected for their moderate to high disease tolerance. Consequently, farmers' varietal preferences are not simply driven by yield potential but by the ability of varieties to perform under local production conditions with manageable disease control costs.”

– FIPS Technical Team.

From a market systems perspective, the most significant outcome is therefore not varietal substitution, but the development of a more dynamic and responsive varietal ecosystem. Farmers in supported networks are increasingly making informed choices based on yield potential, disease tolerance, market preferences, maturity characteristics, and access to quality seed. The rapid emergence of UNICA alongside the continued importance of Shangi suggests that the intervention has expanded choice rather than constrained it, allowing multiple varieties to coexist and serve different market functions. This evolution is a hallmark of a maturing seed system, where farmer demand, market signals, and localized seed enterprises increasingly determine varietal adoption patterns. Importantly, the magnitude of these shifts captured through clear proportion differentials between supported and non-supported farmers provides compelling evidence that the intervention is delivering high-impact, scalable results by addressing a binding constraint in the seed system. Sustaining and amplifying these gains will require strategic partnerships to expand access to clean seed, strengthen quality assurance frameworks, and deepen market linkages, ensuring that varietal upgrading translates into long-term competitiveness, income growth, and resilience within the potato value chain

3.2.2 Drivers of varietal adoption in Nakuru County

The mid-line evaluation indicates that drivers of varietal adoption in Nakuru County are strongly differentiated between farmers in supported networks and those in comparison areas, reflecting the influence of improved seed systems, advisory services, and deliberate farmer outreach strategies. Among supported farmers, varietal choice is predominantly performance and market-driven, with 82% of respondents citing high yields, 33% strong market demand, 22% short maturity, and 20% disease tolerance as key determinants. These preferences are reinforced by improved seed access and advisory support, with over 92.8% of farmers agreeing that access to quality seed has improved, and over 89% affirming that VBAs have made seed access easier and more reliable.

“New varieties promoted through the programme are largely derived from CIP and KALRO breeding programmes and were selected for a combination of agronomic and market-relevant attributes, including yield potential, disease tolerance and, for some varieties, tolerance to heat and moisture stress”. – KII, FIPS

Critically, KIIs with the FIPS technical team highlight that farmer field days have been a central catalytic mechanism in shaping these preferences, providing platforms for farmers to directly observe varietal performance, compare attributes, and make informed decisions. This effect has been significantly amplified using local FM radio, particularly Chamgei FM (Royal Media Services) which has expanded awareness beyond project areas, driving high turnout at field days and generating demand for improved varieties, with reports of farmers making inquiries from as far as Tanzania. This integrated approach of demonstration-based learning and mass media mobilization has functioned as a powerful behavioral change lever, accelerating adoption and aligning farmer preferences with market and agronomic performance.

“One of the things we can say contributed to many farmers getting to know the new varieties was through field days. In the last 2 years we have been conducting interactive radio talk shows with a local vernacular FM station, Chamgei FM, that has generated a lot of interest among farmers. We have seen farmers come from as far as Bomet, Kericho, Elgeyo Marakwet, Uasin Gishu, Narok to attend these field days organized in our networks”. - (KII with FIPS Technical Team)

The evaluation further shows that the evolving seed system anchored by VBAs/DSMs and increasingly complemented by emerging seed producers continues to shape varietal choices. Approximately 40% of VBAs report the emergence of new (non-VBA) seed producers, with 68.75% perceiving this as strengthening seed availability and competition, albeit with concerns around quality consistency. In contrast, farmers in non-supported areas exhibit weaker alignment to these drivers, with only 61% expressing agreement that access to quality seed has improved, and a substantial 39% reporting neutral or negative perceptions, including over 20% explicitly disagreeing. Similarly, while 89% of supported farmers affirm the role of VBAs in easing access to seed, this drops to less than 55% among comparison farmers, many of whom report limited awareness or no perceived improvement.

Additionally, comparison farmers report lower levels of agreement on reduced production risk at 58% against 88% among supported network farmers and weaker confidence in planning at 63% compared to 91%, indicating that the seed system in these areas remains unreliable, less predictable, and weakly integrated with advisory and market systems. This weaker alignment is further reflected in decision-making drivers, where comparison farmers from non-supported areas

show lower attribution to market demand at less than 10%, disease tolerance less than 5%, and advisory support at 1% as determinants of varietal choice, compared to significantly higher shares among farmers in supported networks at 33%, 20%, and 11% respectively

“You see these lorries here are very specific about the varieties they buy because their market dictates it. For example, those supplying warmer areas like Busia prefer Sherekea or Wanjiku due to their longer dormancy, while traders targeting Nairobi and restaurants go for Shangi and UNICA because they are better for making chips.” - KII with Ware Traders, Seguton Town, Nakuru County

These findings provide robust evidence that varietal adoption is being actively shaped by a combination of improved seed access, use of PRACs as starter materials, embedded advisory systems, and strategic demand creation mechanisms, particularly field demonstrations and mass communication. The strong response to field days and radio mobilization indicates that information asymmetry which was previously a major constraint has been significantly reduced, enabling farmers to transition from passive, availability-driven choices to informed, performance and market-oriented decisions. Importantly, it should be noted that FIPS does not decide which varieties DSMs should grow but rather, DSMs decision are guided by market demand.

3.3 Main seed sourcing channels and crowding-in for improved varieties in Nakuru County

The mid-line findings demonstrate a fundamental restructuring of seed sourcing behavior in Nakuru County, particularly within project-supported networks, where the system has shifted from informal, availability-driven channels to decentralized, VBA-mediated supply systems. Retrospective pre-intervention data show remarkably similar dependence on recycled seed across the two groups where 76.1% of comparison farmers (49.2% from neighbors and 26.9% own recycled seed) and 75.3% of supported-network farmers (49.1% from neighbors and 26.2% own recycled seed). Only 8.7% respondents reported accessing formal certified suppliers. This similarity provides an important contextual reference for interpreting the divergence observed at midline. At the midline, this has transitioned to 73.8% of farmers in supported networks sourcing from VBAs/DSMs, alongside 33.1% engaging in own multiplication of clean seed, indicating both direct access and endogenous regeneration of quality planting material.

Table 5: Sources of seeds before and FIPS intervention

Main Source(s) of seed potato	Before FIPS Project		At Midline (2026) ¹	
	Comparison	Network farmers	Comparison	Network farmers
i. Formal certified seed suppliers	8.5%	8.9%	1.72%	4.2%
ii. Neighbor farmers (recycled)	49.2%	49.1%	43.4%	2.3%
iii. Own recycled seed	26.9%	26.2%	9.3%	9.8%
iv. Local market “seed” traders (brokers) or ware potatoes sold in local markets	15.4%	15.8%	1.0%	0.4%
vi. DSM/VBA within village or nearby villages	-	-	3.4%	73.8%

¹Midline numbers here intentionally do not add up to 100% because many of the Network farmers used two mechanisms (eg DSMs and clean seed multiplied by self).

Main Source(s) of seed potato	Before FIPS Project		At Midline (2026) ¹	
	Comparison	Network farmers	Comparison	Network farmers
vii. Clean seed multiplied by self	-	-	20.7%	33.1%

This pattern further diverges significantly where among farmers in supported networks, reliance on degenerated, non-clean recycled seed has reduced to 12.1%, while in comparison areas it remains high at 52.7%. At midline, only 3.4% of comparison farmers reported accessing their main seed from VBAs indicating persistence or worsening dependence on low-quality seed sources in the absence of structured interventions. This contrast provides strong indicative evidence that the programme has displaced reliance on poor-quality seed, shifted farmer behavior toward cleaner and more reliable sources, and reduced exposure to seed degeneration risks, thereby laying a foundation for improved productivity and market-oriented production systems.

Notably, the decline in reliance on formal certified suppliers within supported networks from 8.6% to 4.2% suggests that VBAs have effectively substituted both informal and formal channels by providing more accessible and timely seed supply. These shifts are reinforced by perception data, where 92.7% of supported farmers report improved access to quality seed compared to only 22% strong agreement among comparison farmers, and 75.9% of non-supported farmers express a preference for VBA-sourced seed, indicating strong latent demand beyond current coverage. Collectively, the evidence confirms that the intervention has reconfigured farmer trust, preferences, and participation in the seed system, driving a transition toward a semi-commercial, decentralized seed economy, while also highlighting emerging risks related to quality control and potential degeneration as own multiplication expands without formal regulatory oversight.

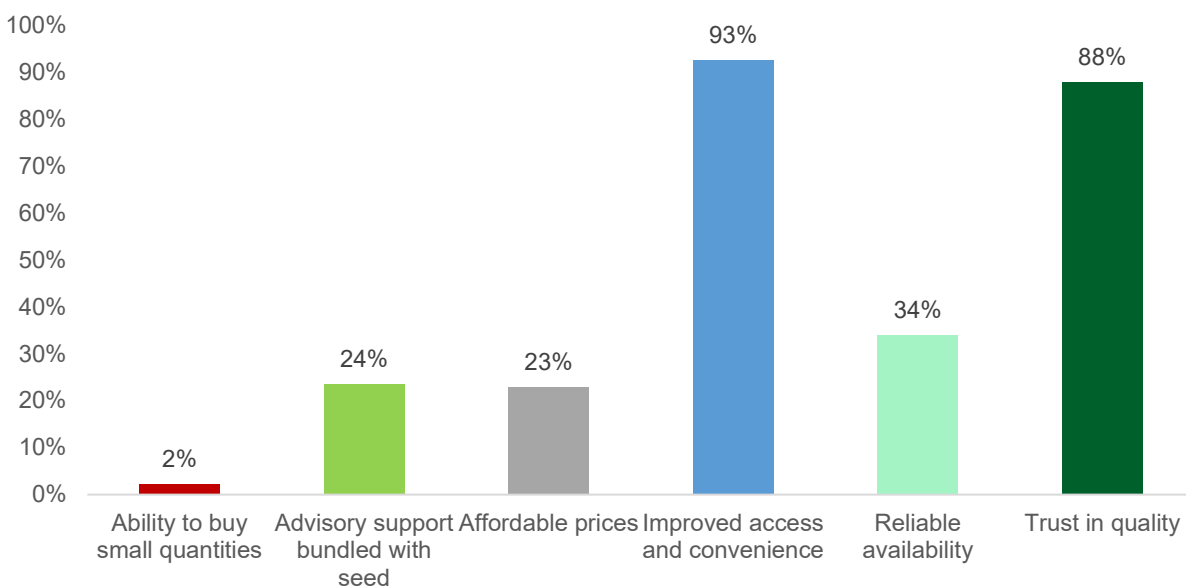


Figure 3: Reasons for VBAs/DSMs as the preferred seed source

As illustrated in Figure 3 above, farmer preference for VBA/DSM seed is driven particularly by improved access and convenience, trust in seed quality, reliable availability and the additional advisory support associated with localized seed supply. The functional implications of this transition are reflected in production stability and decision-making confidence, where 88% of supported network farmers report reduced production risk due to trust in quality, and 91% report improved ability to plan production, compared to markedly lower confidence levels among comparison farmers. These outcomes confirm that VBA-led systems are delivering timely, reliable, and proximate access to quality seed, thereby reducing uncertainty and enabling more predictable production cycles. At the same time, the data reveal early-stage market deepening and crowding-in effects, with 40% of VBAs reporting the emergence of new non-VBA seed producers and 68.75% perceiving this as strengthening the system. While this expansion signals increased supply responsiveness and scalability of the seed market, it also introduces systemic risks in the long run, including quality dilution, varietal misidentification, and erosion of trust and integrity of local seed production, particularly in the absence of formal quality assurance mechanisms. This dual dynamic underscores that the system is transitioning from project-led coordination to market-driven expansion, but without fully developed governance structures.

“In the village, farmers trust VBA seed MORE than certified seed than brokers from outside because they can inspect the VBA farm and confirm there are no signs of infested or diseased plants. They also have personal relationships with the VBA. If the VBA sells them bad seed, they can show up at the VBA’s house and complain. The VBA values their local reputation and relationships with their neighbors which is a strong incentive to ensure the supply quality seed.” –
(KII, FIPS technical staff)

This transformation is underpinned by a highly integrated seed delivery architecture, where 91.8% of VBAs sourced their initial starter material from FIPS (primarily PRACs), enabling localized multiplication and rapid diffusion of improved varieties across networks. As a result, farmers in the supported networks show a strong and consistent preference for VBA/DSM-based sourcing channels, citing quality assurance, proximity, and embedded advisory services as key decision drivers, in contrast to the fragmented and availability-driven preferences observed among comparison farmers.

Discussions with KIIs and VBAs further indicate emerging horizontal diffusion pathways, including farmer-to-farmer redistribution and cross-county seed flows into regions such as Narok and Bomet, pointing to the evolution of a decentralized, semi-commercial seed market system. From a market systems perspective, these findings confirm that VBAs have reached critical mass as last-mile seed enterprises, reconfiguring seed distribution and enabling varietal upgrading at scale. However, sustaining this momentum will require formalization within QDS and regulatory frameworks, strengthened quality assurance across all seed actors, and tighter integration with ware potato markets to ensure that increased supply of improved seed translates into stable, quality-differentiated, and remunerative market outcomes.

3.4 VBA/DSM model as a last-mile extension and technology diffusion system in Nakuru

The mid-line evaluation confirms that VBAs/DSMs have evolved into a high-coverage, last-mile extension and technology diffusion system, with measurable impacts on physical access to quality

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seeds and advisory services. The study found that supported farmers generally access quality planting material locally, often within 1-3 km, whereas comparison farmers reported substantially longer travel distances, frequently exceeding 10 km. Qualitative interviews further indicated that some farmers historically travelled considerably greater distances, including to established seed suppliers outside Nakuru County, underscoring the transaction-cost reduction associated with localized VBA/DSM supply. This reduction in distance is not trivial as it directly translates into lower transaction costs, improved timeliness of access, and reduced dependency on distant and unreliable seed sources. Complementing this, 91.8% of VBAs report regularly providing advisory services, with 54.2% supporting more than 100 farmers and 12.9% supporting 51-100 farmers, demonstrating high outreach density and spatial coverage. These findings are reinforced by perception data, where over 89% of supported farmers agree that VBAs have improved access to seed and advisory services, and 91% report improved ability to plan production, indicating that proximity has not only improved access but also enhanced reliability and predictability of agricultural decision-making. KIIs with County Department of Agriculture further confirm that Ward Agricultural Officers (WAOs) are actively leveraging VBA networks for farmer mobilization, training, and field demonstrations, effectively integrating VBAs into a decentralized, hybrid extension system that extends the reach of public services into previously underserved areas.

“The VBAs in my ward have become my practical extension arm at the village level. We have even used them to support distribution of other farm inputs from the county government. Without them, reaching most farmers consistently would be extremely difficult given our logistical constraints.” - Ward Agricultural Officer, Nakuru County

Beyond physical access, the VBA model has significantly strengthened technological diffusion and private sector crowding-in and engagement at the last mile, positioning VBAs as critical intermediaries within the agricultural innovation system. In-depth KIIs with project staff reveal that private sector actors such as Bayer East Africa Ltd, AgRevive Africa Ltd and GreenLife Crop Protection Africa Ltd previously absent at farmer level are now actively engaging through VBA platforms, joining them to conduct field days, farmer trainings, and product demonstrations. These firms are also channeling product distribution through some VBAs, effectively embedding commercial input supply within local advisory systems. The reduction in farmer-to-service distance, combined with high VBA outreach, has enabled faster and wider diffusion of agronomic innovations, pest and disease management practices, and improved input use, particularly in hard-to-reach areas. From a systems perspective, this represents a crowding-in of private sector investment into last-mile delivery, driven by the reduced cost of reaching farmers through established VBA networks.

“Before the project, agro-chemical companies mainly sold through agrovet shops in major trading centres in Molo Town. Now, firms like Bayer East Africa and GreenLife are working directly with us, joining our farmer field days to train VBAs and farmers on pest and disease management and are using VBAs as last-mile distributors, offering commissions or discounted products for resale.” (KII, FIPS Field Staff, Nakuru County)

Collectively, the evidence demonstrates that VBAs have achieved critical mass as last-mile service providers, significantly compressing spatial barriers and transforming access dynamics within the seed and advisory system. The combined effects of reduced distance to inputs, high advisory coverage, and increased private sector engagement indicate that the intervention has successfully addressed one of the most binding constraints in smallholder systems, last-mile

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access. However, as the model scales, there is a need to institutionalize and standardize service delivery, ensuring consistent technical quality and accountability. This includes strengthening VBA technical capacity, formal recognition within extension systems, and integration into regulatory and quality assurance frameworks. Doing so will ensure that the current gains in access and diffusion translate into sustained productivity improvements, efficient input markets, and a resilient, inclusive agricultural innovation system.

3.5 VBA/DSM seed potato enterprise and commercial viability in Nakuru

3.5.1 Emergence and structure of seed potato enterprises

The mid-line results indicate that seed potato production has transitioned into a widely adopted enterprise activity among VBAs/DSMs, with 94.1% of VBA respondents reporting that they produced seed potato for sale in the most recent season. This demonstrates that seed multiplication is no longer incidental but constitutes a core livelihood and business function within project-supported networks. In terms of enterprise scale, 34.1% of VBAs allocate between 0.5 -1 acre to seed production, 25.9% allocate 1-2 acres, and 15.3% cultivate more than 2 acres, indicating that over 41% of VBAs operate at or above one acre, a threshold consistent with emerging commercial orientation. These proportions reflect early-stage enterprise expansion and suggest that seed potato production is evolving from a supplementary activity into a specialized input supply business.

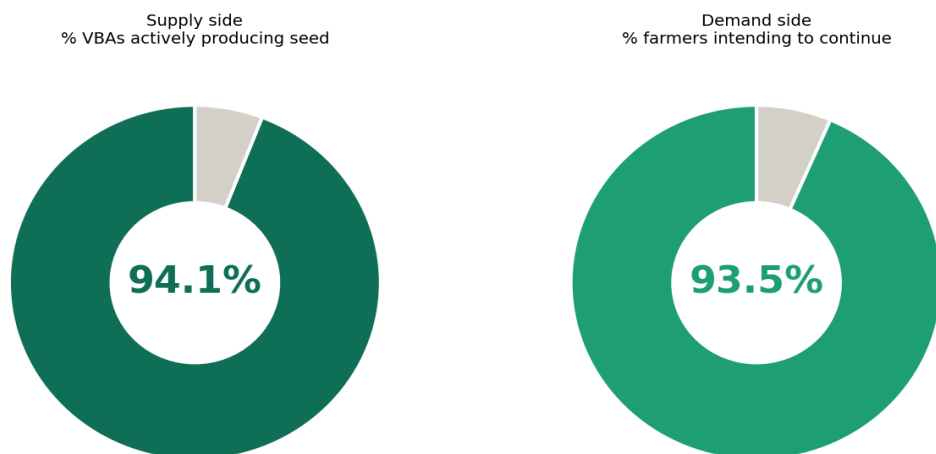


Figure 4: Improved quality supply vs demand architecture in Nakuru.

3.5.2 Production economics and profitability

The enterprise model is underpinned by strong profitability signals, as reflected in respondent perceptions. 80.0% of VBAs report that seed potato production is “much more profitable” than ware potato, while an additional 12.5% consider it “more profitable”, bringing the total proportion perceiving a profitability advantage to 92.5%. Only 1.3% of respondents indicate that seed production is less profitable, confirming broad-based economic viability. In terms of production

performance, average output levels indicate that VBAs are producing and selling seed at meaningful scale, with a majority reporting up to three (3) consistent seasonal sales across multiple buyers. Importantly, 97.5% of VBA respondents indicate their intention to continue seed production, demonstrating strong forward-looking confidence in the enterprise and reinforcing its sustainability potential.

The findings on seed potato commercialization among VBAs in Nakuru County demonstrate a remarkably strong level of female participation in the emerging decentralized seed economy, with only marginal differences between male and female VBAs in active market engagement. The evaluation shows that 87% of female VBAs reported selling seed potato to other farmers during the most recent season compared to 98% of male VBAs, reflecting a remarkably narrow gender differential in active participation within the seed business. This near parity is particularly significant within rural contexts where access to productive resources, especially land ownership and control over agricultural assets, has traditionally been heavily skewed toward men through inheritance systems, cultural norms, and patriarchal tenure arrangements. The findings therefore suggest that the VBA/DSM model is helping to reconfigure traditional pathways of participation in the potato economy by reducing dependence on large land ownership as the primary determinant of commercial engagement and instead elevating knowledge, technical skills, embedded farmer networks, trust-based advisory relationships, and localized seed multiplication capacities as key drivers of competitiveness. Female VBAs appear to be successfully leveraging these relational and knowledge-based assets to participate meaningfully in commercially oriented seed systems despite prevailing structural inequalities in rural asset ownership. This demonstrates the transformative potential of decentralized seed systems not only as agricultural productivity interventions but also as mechanisms for women's economic inclusion, agency, enterprise participation, and gradual repositioning within local agricultural market structures.

The gross margin computation when the opportunity cost of the 25 seed bags (KES 100,000) provides a more realistic economic gross margin. Even under a more conservative and rigorous costing, the enterprise generates a gross margin of KES 552,000 per acre, and over 300% return on investment. This confirms that seed potato production is not only profitable but economically resilient and scalable, providing strong incentives for VBAs to reinvest, expand acreage, and attract new entrants.

Table 6: Gross margin estimate for 1 acre seed potato enterprise in Nakuru County

Cost / Revenue Item	Units	Unit cost (KES)	Amount (KES)
Cost of PRACs/cuttings	1,000 cuttings	10	10,000
Cost of producing first 25 bags (seed multiplication)	Includes land preparation, labor, inputs	<i>estimate</i>	8,000
Imputed cost of 25 seed bags used for planting (opportunity cost)	25 bags of 50-kilo	KES 4,000	100,000
One-acre seed production cost	Land prep, fertilizer, labor, chemicals	<i>estimate</i>	50,000
Total economic cost			168,000
Seed yield from 1 acre	180 bags of 50 kg	<i>Lump sum</i>	9,000 kg
Selling price per bag	KES 4,000 per 50 kg bag		—

Cost / Revenue Item	Units	Unit cost (KES)	Amount (KES)
Gross revenue	180 bags	KES 4,000	720,000
Gross margin (economic)			552,000
Cost per bag		(168,000 ÷ 180)	933
Gross margin per bag		(552,000 ÷ 180)	3,067
Return on cost		(552,000 ÷ 168,000 × 100)	328.6%

3.5.3 Market linkages and sales channels in Nakuru

The mid-line evaluation shows that seed enterprise activities among VBAs/DSMs are predominantly localized but exhibiting early-stage expansion and market integration dynamics. Specifically, 63.8% of VBAs/DSMs sell seed within their own village, while 42.5% extend sales to neighboring villages, and a smaller but growing proportion transact with buyers beyond their immediate networks, including farmers from neighboring counties such as Bomet and Narok. In terms of market structure, 65.0% of VBAs transact with 1-10 buyers per season and 25.0% with 11-25 buyers, confirming a broad but fragmented customer base typical of nascent market systems. These proportions demonstrate that VBAs have successfully established themselves as decentralized seed distribution nodes, enabling last-mile access and facilitating horizontal diffusion of improved seed. However, KIIs with the project team and VBAs consistently reveal that while FIPS intervention has been highly effective in building seed production capacity, it has been comparatively weaker in strengthening entrepreneurial capabilities, structured market linkages, and access to alternative sources of starter planting materials. As a result, the current system, though functionally active, remains transactional rather than commercially coordinated, with limited aggregation, weak vertical integration, and constrained bargaining power among VBAs/DSMs.

"We have not been very intentional in formally linking VBAs with buyers. During field days we try to connect farmers and producers, but such linkages have remained informal. We are seeing strong demand from counties like Bomet, with emerging seed traders specifically sourcing for UNICA variety from the VBAs/DSMs, but our role so far has largely been to connect them on a case-by-case basis rather than through a structured project mechanism." (KII with FIPS Technical Team)

Further evidence from FGDs with VBAs/DSMs highlights critical bottlenecks in post-harvest handling and storage, particularly for seed potato, which directly affects quality preservation and market timing. While the project has initiated a cost-sharing model for acquisition of Diffused Light Stores (DLS), uptake remains limited to a small proportion of DSM/VBAs (17.5%), leaving the majority exposed to possible post-harvest losses, seed quality deterioration, and forced sales under sub-optimal conditions. From a market systems perspective, these constraints underscore a structural gap in the mid-stream and downstream segments of the value chain, where insufficient investment in storage, aggregation, and market coordination are likely to limit the full realization of gains achieved at the production level. The implication is clear; while the seed system has reached a critical threshold of functionality and scale, its sustainability and commercial viability will depend on strategic partnerships to strengthen enterprise development, expand access to finance and infrastructure (e.g., DLS), formalize market linkages, and diversify upstream starter material seed sources. Such partnerships are essential to transition the system

from a fragmented, localized market to an integrated, competitive, and resilient value chain, capable of supporting sustained growth, quality assurance, and regional market expansion.

3.5.4 Institutional status and formalisation in Nakuru

Despite strong enterprise performance and widespread adoption, the mid-line findings confirm that the VBA/DSM-led seed system remains largely informal and structurally under-recognized within the national regulatory framework, creating a critical bottleneck to sustainability and scale. While 94.1% of VBAs are actively producing seed and 73.8% of farmers rely on them as primary seed sources, these actors operate outside formal certification systems. This institutional gap is particularly significant given that KEPHIS currently recognizes only fully certified seeds, effectively excluding VBA-produced clean seed from formal market channels despite its demonstrated adoption and performance. This creates a structural disconnect between functional system performance (high adoption, improved yields, strong farmer demand) and institutional recognition, limiting VBAs' ability to access formal markets, structured finance, and enforceable quality assurance mechanisms. The risk is further amplified by the emergence of non-VBA seed producers (reported by 40% of VBAs), which, in the absence of regulatory oversight, increases exposure to quality inconsistency, varietal misidentification, and erosion of genetic integrity, potentially undermining farmer trust in locally VBA-produced quality seeds and long-term system credibility. Discussions with project KIIs showed that FIPS recognizes this challenge and has made efforts to address it.

"The biggest challenge with this decentralized seed multiplication system is the lack of a clear regulatory framework to anchor it. FIPS has facilitated stakeholder meetings involving NPCK, KEPHIS, KALRO, MoA and County Governments that prepared draft regulations and actively pushed for recognition of Quality Declared Seed (QDS), where trained inspectors can validate the seed, and we had progressed to the point where the Attorney General was set to gazette the regulation. Unfortunately, the process is now stalled following the court striking down parts of the Seed Act. We have already trained inspectors and they are recognized under the KEPHIS framework. We remain hopeful that this impasse will be resolved to allow VBA-produced seed to be formally recognized and certified under QDS." (KII with Project Technical Team)

This effort by FIPS to address the constraint through advocacy for the Quality Declared Seed (QDS) Regulations 2024 represents a strategically appropriate pathway for formal recognition of clean quality seed systems. However, the role of the trained -private seed inspectors, including county staff, remains largely advisory, as county governments have not enacted enabling legislation to operationalize inspection and compliance enforcement. This results in a regulatory gap where quality assurance capacity exists but lacks legal mandate and enforcement power. From a market system's perspective, the decentralized seed multiplication system has outpaced the enabling regulatory and policy architecture and this misalignment risks constraining scale and exposing the system to degradation with new entrants outside program reach. Addressing this will require continued bilateral follow-through and targeted partnerships with NPCK, KEPHIS, county governments, and policy actors to operationalize QDS or equivalent frameworks, formalize decentralized inspection systems, and align regulatory mechanisms with the realities of smallholder seed systems, thereby enabling the transition from an effective but informal model to a fully institutionalized, scalable, and resilient seed system.

3.6 Strategic implications of VBA model for seed and market systems sustainability in Nakuru

When respondents were asked whether they would continue using improved seed (PRACs/clean/certified) and recommended practices if FIPS or partner support ceased, a substantial majority represented by 92.6% of farmers in supported networks expressed willingness to continue, demonstrating deep behavioral anchoring of improved seed use. This willingness is consistent with earlier results showing that 92.7% of supported farmers report improved access to quality seed, and 91% report improved planning capacity, suggesting that adoption is not superficial but grounded in perceived economic and production benefits. However, discussions with farmers during FGDs also indicate that some farmers expressed conditional willingness, citing concerns around future access, affordability, and reliability of seed supply particularly in the absence of organized VBA systems. This highlights that while adoption is high, sustainability is contingent on the continued functionality and maturity of decentralized seed markets, rather than being fully independent of them.

The VBA enterprise findings provide further insight into system sustainability. Among VBAs, 94.1% are actively producing seed for sale, and 92.5% report that seed production is more profitable than ware potato, with 80% indicating it is “much more profitable.” This strong profitability signal is directly linked to forward-looking investment behavior where 97.5% of VBAs report willingness to continue seed production over the next three years, and a significant proportion have already expanded or plan to expand acreage under seed production. This alignment between farmer demand defined by high willingness to continue using improved seed and VBA supply response about high profitability and investment intention indicates the emergence of a self-reinforcing, market-driven seed system. However, this same expansion dynamic introduces systemic risks, as 40% of VBAs report the emergence of new (non-VBA) seed producers, often operating outside formal quality assurance systems. Combined with existing constraints in storage (limited access to Diffused Light Stores), weak market linkages, and limited enterprise capacity, this suggests that while the system is transitioning toward sustainability, it remains vulnerable to quality dilution, coordination failures, and market inefficiencies.

These findings imply that the intervention has successfully triggered both demand-side adoption and supply-side commercialization reinforced by positive market system outcomes of crowding in of market actors, positioning the seed system on a credible pathway toward sustainability. However, to fully consolidate these gains and ensure long-term resilience and income growth, there is a strong case for strategic partnerships to;

- (i) Formalize VBAs and emerging producers under QDS and regulatory frameworks,
- (ii) Expand access to finance and storage infrastructure to support enterprise scaling, and
- (iii) Strengthen vertical market linkages to align increased seed and ware production with stable and remunerative markets.

Without these complementary investments, the system risks partial reversion or uneven growth, given that institutional arrangements for marketing have remained weak.

3.7 Implications of the seed and market systems finding for FIPS Africa project in Nakuru County

The mid-line findings confirm a clear structural break in the seed system and associated production economy, with strong, proportion-based evidence of system-wide transformation. The intervention has disrupted the pre-existing cycle of seed degeneration where farmers relied on informal and recycled seed and replaced it with a decentralized, quality-driven seed system anchored by VBAs, through which 73.8% of supported farmers now access planting material. This transition is reinforced by high perception and behavioral indicators with 92.7% of farmers report improved access to quality seed, reduced production risk, and 91% report improved planning capacity. Critically, this has translated into measurable production outcomes, with 81.7% of supported farmers expanding land under potato cultivation and 91.63% reporting increased livelihood importance, compared to significantly lower levels among comparison farmers. These shifts demonstrate that the observed production expansion is not awareness-driven but reflects a rational reallocation of land and resources in response to improved expected returns, underpinned by higher yields, improved varietal performance, and stronger market alignment. **In MSD terms, the programme has successfully activated a self-reinforcing pathway** where improvements in input systems (seed quality and access) and supporting functions (VBA-led advisory services) are driving endogenous growth in production systems. However, the findings also point to a critical transition phase requiring strategic consolidation to sustain and scale gains, particularly in the remaining phases of the project.

- i. First, the strong shift toward quality-driven seed demand evidenced by 75.9% of non-supported farmers expressing preference for VBA-sourced seed signals significant untapped market potential but also necessitates robust quality assurance systems to maintain trust as the system scales.
- ii. Second, while decentralized seed systems have effectively broken last-mile access barriers, the emergence of non-VBA seed producers introduces governance risks, including quality dilution and loss of varietal integrity.
- iii. Third, the rapid adoption of improved varieties at 91.9% adoption and strong uptake of UNICA (25.7%) and Sherekea (6.2%) is beginning to reshape ware markets, creating opportunities for varietal segmentation, price differentiation, and stronger alignment with buyer preferences, as confirmed by trader behavior.

However, this production-side transformation is advancing faster than market development, with evidence of fragmented sales channels, limited aggregation, and storage constraints, which could expose farmers to price volatility and post-harvest losses. Taken together, these findings position the seed system as a high-leverage entry point for broader value chain transformation but also highlight the need for targeted partnerships and investments in mid and downstream market functions. For the next phase, priority actions should focus on.

- (i) Formalizing VBAs/DSMs and emerging seed producers within QDS and regulatory frameworks to ensure quality and traceability;
- (ii) Strengthening enterprise capacity and access to finance, including scaling of storage solutions such as Diffused Light Stores;

- (iii) Developing structured market linkages with aggregators, processors, and institutional buyers to align increased production with stable demand; and
- (iv) Deepening private sector engagement to sustain input delivery and advisory systems beyond project support.

In summary, the Nakuru evidence demonstrates that **FIPS has successfully unlocked a binding constraint, access to quality seed, and catalyzed a transition toward a productive, commercially viable, and market-responsive potato system.** The strategic imperative now is to institutionalize, regulate, and integrate this system within broader market structures, ensuring that productivity gains translate into sustained income growth, resilience, and scalable impact across the value chain.

4.0 Findings in Meru County

The Meru County midline evaluation requires a different evaluative interpretation from Nakuru and Nandi because it represents the earliest implementation geography of the FIPS potato intervention. The project started in Meru in 2018 and largely ended in 2022, meaning the 2026 mid-line assessment is not simply measuring short-term outcome change, but interrogating post-project persistence, diffusion, commercial viability, and systemic impact. In this sense, Meru functions as the evaluation's strongest learning site for understanding what remains after direct project intensity declines determining whether farmers continue using quality seed and cuttings (PRACs) and practices, whether VBAs remain commercially active, whether seed systems continue to function, and whether the model has generated durable changes in household livelihoods and local potato market systems.

The Meru analysis is based on 97 respondents, comprising 82 ordinary potato farmers and 15 VBAs representing 84.5% and 15.5% of respondents respectively, with a near-balanced gender profile of 49.5% female and 50.5% male respondents. The sample covered Buuri, Central Imenti and South Imenti, with most respondents concentrated in Buuri (62.9%), followed by Central Imenti (20.6%) and South Imenti (16.5%). **The key interpretation emerging from Meru is that the FIPS intervention has left behind a functioning but unevenly consolidated seed and advisory ecosystem.** Potato remains a major livelihood enterprise, VBAs continue to provide advisory services and sell seed, and improved varieties are still being multiplied. However, the system also shows clear risks around certification, supply consistency, and the ageing profile of seed actors.

Table 7: Respondents distribution in Meru networks

Network	Supported networks		Total Respondents	Proportion
	Female	Male		
Abothuguchi West	15	4	19	19.6%
Kibirichia	13	14	27	27.8%
Kiirua	15	19	34	35.1%
Nkuene	5	12	17	17.5%
Total	48	49	97	100.0%

4.1 Adoption, productivity change, and livelihood transformation in Meru

The Meru data demonstrate that potato farming has become a deeply embedded livelihood enterprise several years after direct project implementation. The study shows that 80.4% of respondents identify potato farming as their primary income activity, while only 15.5% classify it as a secondary income activity, 3.1% as seasonal, and 1.0% as minor. This suggests that potato farming has retained strong economic significance even after the project's core implementation period ended. Importantly, all sampled VBAs, both female and male reported potato as a primary income activity, compared with 72.1% of female ordinary farmers and 82.1% of male ordinary farmers.

When asked how important potato farming is compared to three years ago, 74.2% of respondents reported that potato farming has become more important, while 10.3% reported no change and 15.5% reported that it has become less important. The impact signal is strongest among VBAs where 93.3% of VBAs reported that potato farming has become more important, compared to 70.7% of ordinary farmers. This confirms that actors closest to the seed system continue to experience stronger economic attachment to potato. At impact level, this is significant because it suggests that the intervention did not merely generate short-term adoption during active implementation but rather, it contributed to a durable reorientation of household production strategies, particularly among VBAs who have converted seed access and advisory roles into continuing livelihood functions.

Table 8: Potato livelihood importance in Meru County

Indicator	Ordinary Farmers	VBAs
i. Respondents identifying potato as primary income activity	76.8%	100.0%
ii. Respondents reporting potato is more important than three years ago	70.7%	93.3%
iii. Respondents reporting potato is less important than three years ago	18.3%	0.0%

The persistence of potato as a primary livelihood activity several years after the end of direct implementation is a strong impact-level signal. The especially strong VBA results show that the project created a cohort of local actors whose livelihood incentives remain aligned with sustaining the potato seed system.

4.2 Seed system transition and post-project persistence in Meru

The Meru seed system before the project was dominated by informal and weakly quality-assured channels. Respondents reported that, before FIPS, 55.3% sourced seed from other farmers, 20.0% relied on own recycled seed, 10.6% used formal certified seed suppliers, 10.6% sourced from local seed traders or brokers, and 2.4% used ware potatoes sold in local markets. The main reasons for using these sources were local availability (36.5%), affordability (29.4%), and absence of alternatives. This confirms that the pre-project seed system was primarily availability-driven rather than quality-driven, exposing farmers to seed degeneration, varietal mixing, disease carryover, and uneven yields.

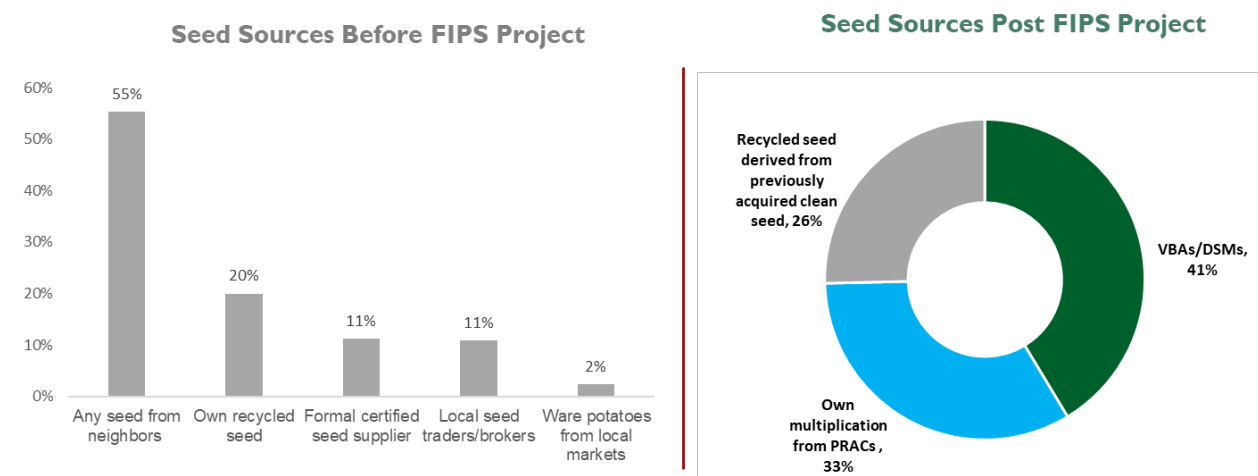


Figure 5: Seed source transformation in Meru

At impact level, the key finding from Meru is that the project has generated a more durable and localized seed system, but one that is now operating in a mature post-project environment. All sampled VBAs reported that their first starter material came from FIPS Africa, and their starter material included clean seed (66.7%), certified basic seed (60.0%), and cuttings/PRACs (26.7%). This is analytically important because it shows that FIPS created the foundational seed stock and technical pathway for local multiplication. However, unlike Nakuru where the system is still expanding under active project support, Meru now tests whether the seed system can continue under reduced external facilitation. The continued presence of active VBAs and seed sales suggests persistence, but the relatively small number of active VBAs points to the need for a stronger renewal and succession strategy.

4.3 Varietal transformation and current multiplication patterns

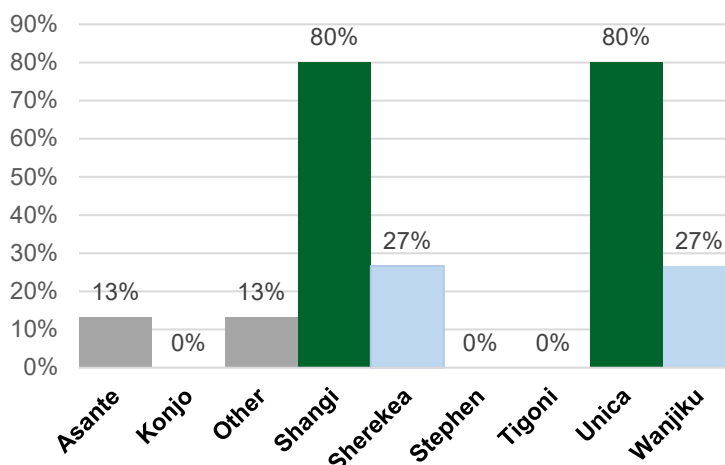


Figure 6: Varieties currently produced by VBAs/DCMs

The Meru findings show that improved varieties remain embedded in the seed system several years after the project's main implementation period. Among VBAs, the varieties

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currently multiplied or promoted are concentrated around Shangi and Unica, each reported by 80.0% of VBAs, followed by Sherekea and Wanjiku, each reported by 26.7%, and Asante at 13.3% as presented in **Figure 6**. This suggests that the system has retained both legacy demand for Shangi and continuing demand for improved, market-aligned varieties such as Unica. **The current VBA multiplication portfolio demonstrates an important impact-level evolution showing that farmers and VBAs no longer operate purely around inherited local preferences; rather, VBAs are maintaining a portfolio that responds to both farmer demand and market performance.**

At the farmer level, earlier reliance on Shangi remains visible, with 48.2% reporting Shangi as the main variety relied on before the project, followed by “other” varieties (18.8%), Sherekea (7.1%) and Tigoni (3.5%). The reasons for varietal preference were largely pragmatic and market-linked: market demand/trader preference (35.3%), good yields (32.9%), early maturity (31.8%), familiarity/tradition (29.4%) and taste/household preference (24.7%). The persistence of Unica in the VBA seed portfolio is particularly important. It shows that improved varieties introduced through the programme are not merely project artifacts; they continue to be commercially relevant and technically valued in the post-project period. **This strengthens the case that Meru has transitioned from basic adoption to an impact-level varietal ecosystem, where local seed actors actively sustain and reproduce improved genetics.**

4.4 Seed sourcing channels and crowding-in for improved varieties in Meru

The study evidence from Meru County demonstrates a sustained and systemically embedded transition toward quality-assured planting materials, persisting several years after the cessation of direct project support. In the most recent cropping season, 43.5% of farmers reported sourcing clean seed directly from DSMs/VBAs, while 35.3% relied on own multiplication from PRACs originally sourced from DSNs, and 27.1% utilized recycled seed derived from previously acquired clean seed. These patterns indicate that over 62% of farmers continue to operate within a clean locally seed-derived system, either through direct acquisition or endogenous regeneration. This represents a strong impact-level outcome, confirming that the intervention has effectively shifted farmer behavior from reliance on informal, degenerated seed systems to performance-oriented seed use grounded in yield improvement, disease resistance, and market responsiveness. The persistence of this pattern underscores the durability of knowledge transfer and the internalization of seed quality principles within farmer decision-making processes.

The structure of seed sourcing in Meru reflects the emergence of a hybrid decentralized seed system, combining DSM-led supply with farmer-led multiplication, thereby enhancing both accessibility and resilience of planting material. FGDs and KIIs indicate that the widespread use of PRACs has been enabled by strong farmer awareness of the value of early-generation seed, coupled with the continued presence of active DSMs supplying cuttings locally. However, while this system has successfully reduced dependency on external seed markets and enabled scalable access, it also introduces a critical systems-level risk. The increasing reliance on recycled seed from clean sources, in the absence of formal quality assurance mechanisms and periodic renewal of early-generation material, may lead to gradual degeneration, varietal

dilution, and inconsistency in seed quality over time. This positions the Meru seed system at a critical consolidation stage, where maintaining quality integrity will require deliberate institutional and technical reinforcement.

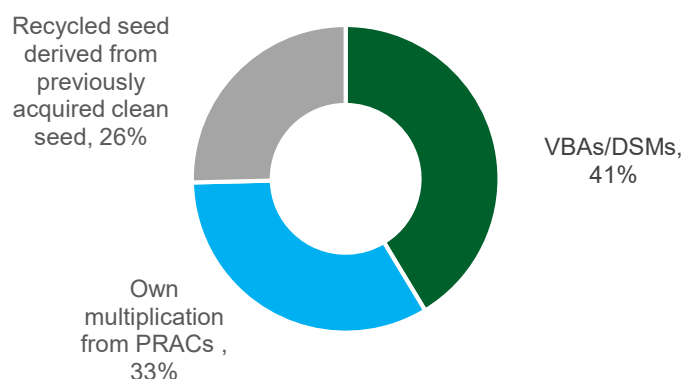


Figure 7: The structure of seed sourcing in Meru

Case study: Paul Munene – the face of sustainability in decentralised seed systems

Paul Munene's journey represents the strongest evidence of sustainability and commercial viability of **Decentralized Seed Multiplier model**. A former driver with no formal agricultural training, Paul entered the FIPS programme in 2019 and established a modest PRAC greenhouse using locally available materials. Building on technologies originally introduced through collaboration between FIPS Africa and CIP, and subsequently refined through extensive FIPS-led learning on quality control, infrastructure design, and commercialization pathways, Paul steadily transformed a small pilot enterprise into a thriving business. Following the formal handover of the PRAC propagation unit by FIPS in 2022, he assumed full ownership and management responsibility, investing his own land, water, labor, and entrepreneurial resources. Today, his enterprise produces approximately **300,000-400,000 PRACs** annually, generating an estimated **KES 3 - 4 million** in annual revenue, with customers drawn from potato-growing regions across the country. Paul now considers PRAC production the most profitable enterprise on his farm, outperforming dairy, coffee, fish farming, bananas, and macadamia production, and remarks that he would never return to formal employment because the business has become his primary livelihood.

Beyond its commercial success, Paul's enterprise demonstrates what genuine market systems sustainability looks like. Unlike many externally supported agricultural projects that decline once donor funding ends, Paul's business has continued to expand entirely on the strength of market demand. Through radio programmes, television appearances, farmer field days, and demonstration events, he has become a nationally recognized promoter of PRAC technology and quality seed systems, driving adoption far beyond the original project footprint. His success has also attracted continued investment and support from county government and other sector actors, illustrating powerful crowding-in effects. Paul is therefore more than a successful farmer; he is evidence that decentralized seed systems can evolve into self-sustaining rural enterprises capable of scaling technology dissemination, stimulating private investment, and sustaining impact long after direct project support has ceased. His experience provides compelling proof that PRAC technology is not merely a development intervention, but a viable agribusiness opportunity with the potential to transform local seed systems and rural livelihoods at scale.

4.5 VBA model as a last-mile advisory and technology diffusion system in Meru

The Meru VBA system remains active several years after the project exited. Among sampled VBAs, 80.0% regularly provide advice or sell seed, 13.3% do so occasionally, and only 6.7% are no longer active in this role. In terms of reach, 85.7% of active VBAs support more than 100 farmers on potato production or GAP practices. This indicates that the VBA model has persisted as a last-mile advisory and seed diffusion system after direct implementation. The training cascade also remains visible. VBAs reported having received FIPS training on improved varieties and Good Agronomic Practices (GAPs). Among VBAs who cascade training, 100.0% reported training farmers on improved varieties and correct spacing, 92.3% on crop rotation and fertilizer management, and 76.9% on integrated pest management, 59% maintained hilling and ridging. This confirms a durable knowledge-transfer mechanism where FIPS trained VBAs, and VBAs continue to transmit technical knowledge into farmer networks.

This shows that the VBA model has outlasted direct project implementation and continues to function as a community-based extension infrastructure. However, the system is also vulnerable because the VBA cohort is relatively small and ageing, 60.8% of respondents are over 50 years old, and among male VBAs, 90.0% are over 50 years old. This raises a strategic sustainability issue in that the model has proven its impact, but it now requires youth succession, enterprise upgrading, and institutional anchoring if it is to remain resilient over the coming years.

4.6 DSM enterprise continuity and scale

The study findings in Meru indicate that seed potato production has persisted as a commercially viable enterprise, with 80.0% of VBAs respondents reporting that they produced seed potato for sale in the most recent season, and among these, 83.3% reporting that they have undertaken more than six multiplication cycles since initial exposure through FIPS. In terms of scale, 58.4% of seed-producing VBAs allocate at least one acre to seed multiplication, while 91.7% allocate at least half an acre, confirming that production has transitioned from demonstration-level activity to commercially meaningful enterprise engagement. Output and sales data further reinforce this position, with female VBAs producing an average of 81 bags in half an acre and selling 64.5 bags, and male VBAs producing 96.75 bags and selling 49.62 bags, indicating that both male and female VBAs are actively participating in and deriving income from seed markets. These proportions demonstrate that the intervention has successfully embedded sustained production capacity and market-oriented behavior within the local system. Overall, 33.3% of VBAs produce seed on between 1-2 acres of which female 40% and men 30%;

"Before I started this business of producing PRACS with FIPS Africa, I was a driver at the Kenya National Union of Teachers (KNUT), Meru branch. If KNUT offered me my old driving job today, I would not take it. In fact, I am now looking for a driver to work for me."- (Kil, Paul Munene, PRAC Entrepreneur, Meru County)

However, the distribution of enterprise advancement is uneven. Discussions during FGD with VBAs indicate that while a majority of VBAs are engaged in seed production, a significant

proportion are constrained from participating in higher-value PRAC production, primarily due to lack of formal registration for certification and limited access to specialized inputs such as coco peat, trays, and greenhouse infrastructure. During the project period, some VBAs operated under FIPS institutional registration, enabling temporary participation in PRAC production; however, this arrangement was not transitioned to individual actors. As a result, the system has evolved into a two-tier structure, where a small number of actors, most notably Mr. Paul Munene dominate PRAC production, while the majority remain confined to clean seed multiplication.

KIs further suggest that implementation alongside county government programmes influenced VBA perceptions of seed enterprise development, with some respondents associating seed-related activities with public support rather than private investment opportunities. This has implications for entrepreneurial behavior, as it may have reduced incentives for independent investment in seed enterprises, particularly in capital-intensive activities such as PRAC production. In addition, the findings indicate that the project did not fully implement a structured exit strategy to support enterprise formalization, including pathways for registration, access to inputs, and business development services. Consequently, while demand for clean and early-generation seed remains high, the ability of VBAs to respond to this demand is constrained by regulatory and input access limitations. FGD with VBAs confirmed that VBAs continue to meet this demand by continuously buying PRACs and clean seed from Mr. Paul Munene.

These findings suggest that Meru County has achieved strong outcomes in enterprise continuity and commercial viability, but remains partially constrained in terms of inclusive enterprise scaling and system-wide commercialization. The high proportion of VBAs engaged in seed production confirms the viability of the model, while the concentration of advanced production functions among a limited number of actors indicates incomplete system deepening. To sustain and scale these gains, there is a need to strengthen formalization pathways, input supply systems, and market-oriented enterprise support, ensuring that a broader proportion of VBAs can transition into higher-value segments of the seed system.

4.7 Profitability and demand signals

The clearest commercial viability indicator is profitability. Among active seed-producing VBAs, 100.0% reported that seed potato production is “much more profitable” than ware potato production. Demand has also strengthened where 50.0% reported demand for Sherekea, Wanjiku and Unica seed as “higher” than three years ago, while 50.0% reported it as “much higher.” The main demand drivers were higher yields from improved seed (83.3%), training and awareness by VBAs (33.3%), and market demand for improved varieties (25.0%).

Table 9: Meru VBA seed enterprise performance indicators

Indicator	Proportion
i. VBAs producing seed potato for sale	80.0%
ii. Seed-producing VBAs who have multiplied seed more than six times	83.3%
iii. VBAs allocating ≥1 acre to seed multiplication	58.4%
iv. VBAs reporting seed potato as much more profitable than ware potato	100.0%
v. VBAs reporting demand for improved seed is higher/much higher	100.0%

Indicator	Proportion
vi. VBAs intending to continue seed production	100.0%

These results represent one of the strongest impact-level signals in Meru County. The project appears to have generated a commercially rational seed enterprise segment whose continuation is driven by profitability and demand rather than direct project subsidy. The strongest remaining bottlenecks are therefore not adoption or willingness, but enterprise upgrading, finance, formal certification, and structured market linkages.

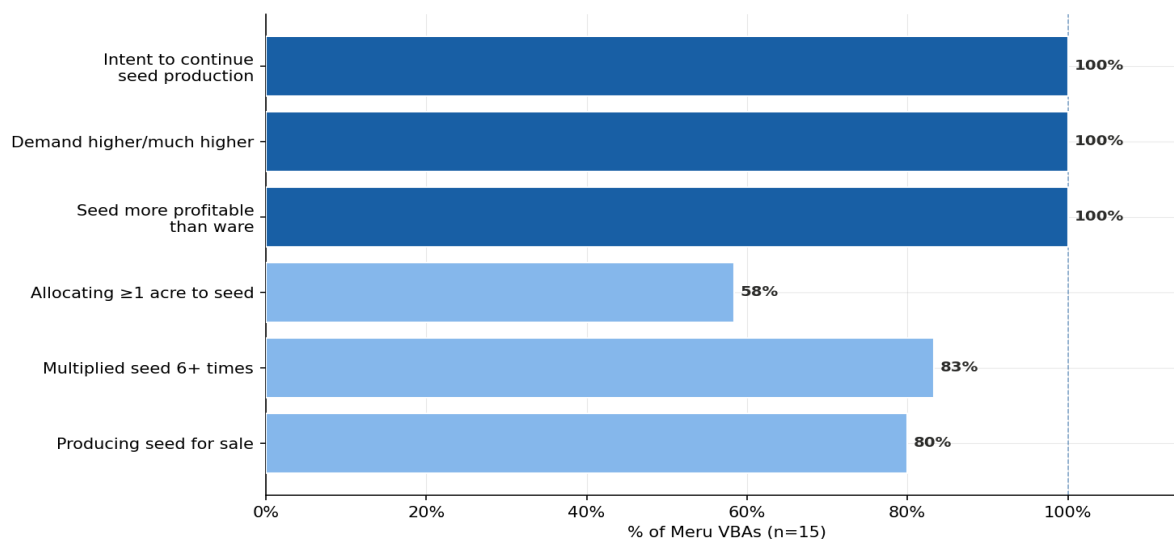


Figure 8: DSM/VBA seed enterprise performance indicators in Meru

4.8 Seed market linkages, sales channels and crowding-in

The evaluation findings in Meru shows that seed market linkages remain predominantly localized but are exhibiting clear signs of outward diffusion, reflecting both the strengths and limitations of the decentralized seed system. Among seed-selling VBAs, 91.7% report selling to farmers within their own village, and 83.3% to farmers in neighboring villages, while more limited engagement is observed with broader market actors, including 16.7% selling to other VBAs/DSMs and 8.3% to farmer groups, cooperatives, or traders. In terms of market reach, 50.0% of VBAs serve between 1-10 buyers per season, 33.3% serve 11-25 buyers, and 16.7% reach 51-100 buyers, indicating that while the system is commercially active, it remains fragmented and characterized by small, localized transactions. This market reach is consistent with the findings in Section 4.4, where 62.4% of farmers reported continuous production of own clean seeds derived from PRACs procured earlier. However, KII evidence highlights emerging exceptions to this pattern, particularly in the case of Mr. Paul Munene, whose PRAC enterprise has expanded beyond local markets through radio and television outreach, enabling him to receive and fulfill orders from farmers across multiple counties. This demonstrates that, where capacity and visibility are present, the seed system can extend into national-level market linkages, pointing to significant untapped commercial potential.

The study further provides strong evidence of crowding-in within the seed system, with 83.3% of seed-producing VBAs reporting that other farmers have begun producing seed potato for sale after observing the success of VBAs/DSMs. Of these, 50.0% indicate that “a few” new entrants have joined the market, while 33.3% report that “many” farmers have entered seed production, confirming that the model is influencing behavior beyond the original trained cohort. This represents a key systemic outcome, as it demonstrates that the intervention has stimulated endogenous market expansion and replication of seed enterprise models. However, perceptions regarding the effects of this expansion are mixed with 58.3% of VBAs perceiving new entrants as strengthening the seed system, while 25.0% believe they weaken it, reflecting concerns similar to the Nakuru scenario around quality control, varietal integrity, and the absence of structured regulation.

From an evaluation perspective, these findings illustrate both the promise and the emerging risks of post-project diffusion. On one hand, the evidence confirms that the seed system has become self-replicating and commercially attractive, with new entrants responding to visible economic opportunities. On the other hand, the expansion of seed production outside structured frameworks introduces the risk of reversion to informal practices, including poor-quality seed, varietal mixing, and weak traceability, challenges that the intervention initially sought to address. The experience of high-performing actors such as Mr. Munene underscores the potential for scaling seed enterprises into broader markets; however, realizing this potential at system level will require deliberate institutionalization of quality assurance mechanisms, formal market linkages, and regulatory integration. In this regard, the next phase of intervention must focus on converting organic diffusion into a coordinated, quality-assured, and market-integrated seed system, capable of sustaining both growth and integrity.

4.9 Institutional status and formalisation

Study findings show that the Meru VBA system is functionally active but institutionally fragile. Most VBAs are recognized through FIPS, with more than 92.9% of them not formally recognized, only 7.1% linked to county government extension, and none affiliated through cooperatives or farmer groups. This indicates that the operational seed system is still largely project-originated rather than fully institutionalized under county or national seed systems.

This has important impact-level implications. In Meru, the model has survived after project completion, but not because it is fully embedded within regulatory systems; it survives because of local profitability, farmer trust, VBA experience, and continued seed demand. That is a strong sustainability signal, but also a policy risk. Without QDS operationalization, county inspection mechanisms, or stronger cooperative anchoring, the system will continue functioning informally but remain unable to access formal markets, or formal quality assurance pathways.

4.10 Seed system perceptions and remaining constraints

Farmer perceptions show that Meru respondents still prefer decentralized seed delivery. When asked which seed system works best, 58.8% selected the decentralized DSM/VBA model, compared to 22.4% for centralized certified seed suppliers and 18.8% for farmer-to-farmer recycled seed. This shows that even after direct implementation ended, farmers still recognize

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the value of localized seed access. However, constraints remain significant. The main reported weaknesses in the current formal seed system were inconsistent quality (35.3%), high seed prices (34.1%), lack of information/training (20.0%), limited availability at peak planting time (17.6%), and poor regulation/inspection (5.9%). These results confirm that the seed system has moved beyond the old low-quality equilibrium, but has not yet reached a mature regulated market. Farmers value the decentralized system, but they are also signaling quality, affordability, information, and availability gaps that must be addressed for long-term resilience.

4.11 Institutional arrangements and cooperative development in Meru County

The study shows that the project contributed to strengthening local institutional arrangements through the establishment and support of the Meru Tamu Potato Cooperative Society, implemented in partnership with CIP's AVCD and later the Government's NARIG programme. Evidence from FGDs and KIs with cooperative leadership shows that the cooperative has progressively evolved beyond its initial project-supported mandate, demonstrating strong organizational growth and autonomy. The cooperative has successfully crowded in additional development partners, expanded its asset base, and transitioned into a multi-service provider, including acquisition of farm equipment such as tractors, which are hired out to farmers at market rates for non-members and subsidized rates for members. This reflects a shift toward a member-driven, commercially oriented service model, enhancing access to mechanization services and reducing production costs for participating farmers. Importantly, the cooperative's forward-looking strategy includes plans to invest in value addition infrastructure, particularly potato processing (e.g., crisps), aimed at creating assured markets and capturing higher value within the chain.

From an evaluation perspective, the evolution of the cooperative represents a strong example of institutional sustainability and crowding-in effects, where an initially supported structure has transitioned into a self-propelling entity capable of attracting investment, expanding services, and driving local economic activity. The cooperative is increasingly functioning as a market anchor, with the potential to stabilize prices, enhance aggregation, and strengthen farmer bargaining power. However, it is notable that the cooperative is not currently engaged in seed production, which creates a disconnect between the input (seed) and output (market) segments of the value chain. This gap presents both a limitation and an opportunity. While the cooperative is well-positioned to support downstream market development and value addition, integrating seed system functions either directly or through partnerships with VBAs/DSMs could significantly enhance vertical coordination, quality consistency, and overall value chain efficiency. Most/all VBAs were founding members of the cooperative and several hold offices within the cooperative. However, the current demand structure is such that VBAs/DSMs sell all seed potatoes to immediate neighbors (many of whom are also cooperative members) thereby incurring no transactional cost and as such may be disinterested in transporting seeds to cooperative stores. Future interventions should explore pathways to link decentralized seed producers with cooperative-led aggregation and processing systems, thereby consolidating gains across both upstream and downstream segments of the potato market system.

4.12 Strategic impact of FIPS potato project for Meru County

The Meru findings present a powerful impact-level story. Unlike Nakuru, where the intervention is still generating visible mid-line momentum, Meru shows what happens several years after active project support declines. The evidence indicates that FIPS left behind a persistent seed enterprise and advisory system since VBAs continue to sell seed and provide training; improved varieties remain in multiplication; farmers still identify potato as a primary income source; demand for improved seed is higher than three years ago; and new seed producers have crowded in. These are not short-term outputs but signs of institutionalized behavioral and market change.

At the same time, Meru provides critical lessons for the remaining project phases. First, seed system transformation can persist after project exit when it is built around clear commercial incentives. The fact that 100% of active seed-producing VBAs report seed as much more profitable than ware potato explains why the system continues. Second, post-project systems need renewal mechanisms considering that Meru's VBA cohort is small and ageing, and the system may weaken without youth entry and enterprise succession. Third, market expansion without regulation creates risk where the emergence of non-VBA seed producers demonstrates diffusion, but also raises concerns over quality, inspection, and varietal integrity. Finally, Meru findings highlights the importance of moving beyond seed production into midstream and downstream systems storage, aggregation, finance, certification, buyer linkages, and ware market coordination.

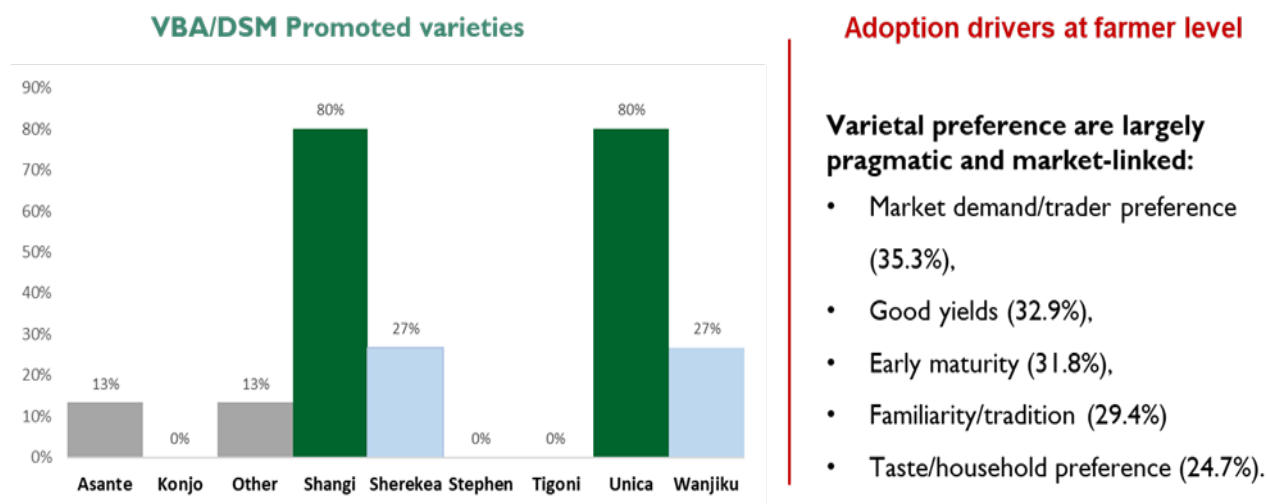


Figure 9: Current multiplication patterns and adoption drivers in Meru

4.13 Implications for remaining phases and partnerships

The study findings for Meru demonstrates that the FIPS model is impact-capable because it has generated post-project persistence, commercially viable seed enterprises, decentralized advisory systems, and farmer-level livelihood transformation. The next phase should therefore not treat Meru County as an implementation site requiring the same intensity as newer geographies, but as a mature learning and consolidation site. Its strategic value lies in showing what must be institutionalized before exiting in other counties.

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The priority partnership agenda for Meru County should focus on four areas. First, seed quality assurance and regulatory integration through QDS, KEPHIS-aligned inspection, and county recognition of trained inspectors. Second, enterprise upgrading, including business skills and working capital for VBAs. Third, market linkage development, connecting seed producers and ware farmers to aggregators, processors, cooperatives, and institutional buyers. Fourth, succession and inclusion, deliberately recruiting and mentoring youth and women seed entrepreneurs to prevent the model from ageing out. In summary, Meru confirms that the FIPS intervention has moved beyond adoption into impact; the remaining challenge is to institutionalize, regulate, and commercialize the gains so that the system remains resilient without project dependency.

5.0 Findings in Nandi County

The Nandi County case reflects a longitudinal seed system development pathway initiated as early as 2018, with support phase under CIP/USAID (2018-2020) and renewed investment under Seed of Change (2024-present). As such, the current midline should be interpreted not as an early-stage outcome, but as a reassessment of a historically exposed system, where foundational elements of decentralized seed production, varietal upgrading, and VBA-led extension were introduced earlier but experienced partial disruption before reactivation. This positioning is analytically important because it allows differentiation between initial adoption effects, system persistence, and current performance under renewed support.

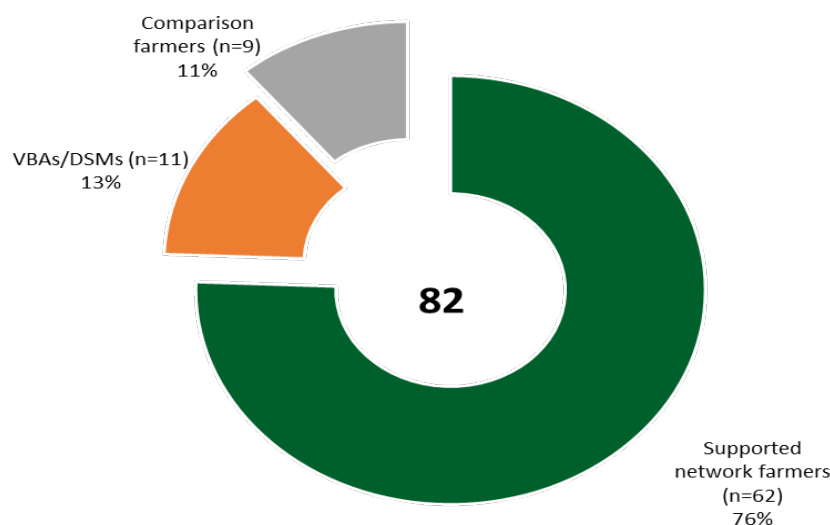


Figure 10: Respondent type in Nandi

The Nandi County midline results present a transitional but progressively evolving potato seed and production system, characterized by partial adoption of improved practices, emerging seed enterprises, and localized system restructuring. The analysis is based on a total sample of 82 respondents, comprising 75.6% (n=62) supported farmers, 13.4% (n=11) VBAs/DSMs, and 11.0% comparison farmers (n=9), allowing for proportionate comparison across intervention and non-intervention groups. Within supported networks, the sample is female-skewed (60.3%)

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compared to 39.7% male, while comparison farmers are predominantly male (77.8%), suggesting differential programme penetration and potential gendered access to seed and advisory services. Spatially, the intervention is concentrated within Lessos network (Nandi Hills and OI Lessos wards), implying that observed outcomes reflect cluster-level transformation rather than county-wide diffusion.

From a livelihood perspective, potato farming remains a central economic activity, with 87.7% of supported respondents engaged primarily in farming, and 39.7% identifying potato as a primary income source, alongside an additional 39.7% treating it as a seasonal or secondary income stream. Notably, 75.3% of supported farmers report that potato farming has become more important over the past three years, indicating a clear upward shift in economic relevance, albeit less pronounced than Nakuru where potato has transitioned into a dominant commercial crop. Insights from FGD with VBAs shows that prior to FIPS intervention, farmers in Lessos network had limited awareness of potato varieties, no clear varietal preferences, and minimal orientation toward commercialization, with most farmers planting any available seed primarily for subsistence consumption rather than market production. This combined evidence confirms that the pre-intervention system was not only input-constrained but also knowledge and market-constrained, limiting both productivity and commercial potential. This provides a critical analytical baseline, confirming that the intervention is operating within a system of growing importance, where improvements in seed access and productivity have direct implications for household income and resilience.

5.1 Production dynamics in Nandi

The production system in Nandi is characterized by smallholder intensification within moderately sized landholdings, with farmers from the supported network reporting average farm sizes of 5.7 to 6.3 acres, compared to 4.8 acres among comparison farmers, indicating relatively stronger asset bases among programme participants. However, potato cultivation itself is concentrated on small plots, with the majority of farmers allocating less than $\frac{1}{4}$ acre where clean seed is used and similarly small areas to recycled seed, reflecting a system driven more by intensification than expansion.

Despite these constraints, there is evidence of production reorientation in favor of potato. When farmers were asked whether their area under potato production had changed over the past five years, 57.8% of supported respondents reported an increase, compared to 44.4% of comparison respondents, indicating a higher likelihood of production expansion within supported networks. When further probed on the reasons for this change, 67.6% of supported farmers attributed the increase to improved yields and profitability, while 54.1% cited market demand, and 54.1% reported improved access to quality seed. In contrast, among comparison farmers, a notable proportion (33.3%) attributed changes to climate-related factors, suggesting that production decisions in non-supported areas remain more externally driven and less influenced by structured market and input systems. Compared to Nakuru, where acreage expansion is more pronounced and strongly linked to seed system transformation, Nandi reflects a moderate but positive production response, constrained by land and system maturity.

5.2 Seed system transition in Nandi County

The midline evidence shows that the seed system in Nandi has undergone a partial but meaningful transition from informal to semi-structured systems, though not yet at the level of consolidation observed in Nakuru. When farmers were asked where they sourced seed potato before the FIPS intervention, responses indicate a largely homogeneous, fragmented and informal system across both supported network and comparison groups, with 40.6% of respondents reporting reliance on local ware potato traders, 28.1% on recycled seed from other farmers, and 15.6% on own recycled seed, reflecting a system driven primarily by availability rather than quality.

However, a partial but meaningful transition toward structured seed systems is evident, particularly among VBA-linked actors. All VBAs (100%) report sourcing their initial starter material from FIPS, primarily as clean seed (90.9%), with subsequent multiplication cycles undertaken locally. Furthermore, 81.8% of VBAs produce clean seed, and 36.4% produce PRAC-derived seed, indicating that early-generation seed pathways have been internalized within the system. Equally, 43.8% of respondents from supported networks reported sourcing clean seed from VBAs/DSMs, while 12.5% reported using self-multiplied quality clean seed, indicating increased access to improved planting material. However, 34.4% of supported respondents still reported reliance on recycled seed, demonstrating that while progress has been made, informal practices persist.

When asked about their perception of seed access, over 45% of farmers from supported networks reported that access to quality seed had improved, compared to a smaller proportion among comparison farmers, confirming that improvements in seed access are more pronounced within supported networks but not yet universal. These findings are proof that the intervention has improved seed access and initiated system upgrading, but the seed system remains hybrid, with persistent reliance on informal channels, unlike Nakuru where VBA-mediated systems have achieved dominance.

5.3 Production reorientation and economic signalling

The midline findings indicate a clear production reorientation toward potato as a commercially viable enterprise, though with moderate intensity relative to more mature systems. Among respondents, 45.1% report potato as a primary income source, while an additional 35.4% consider it a seasonal income activity, demonstrating its centrality to household livelihoods. Importantly, 78.1% respondents report that potato farming has become more important, signaling a strong shift in perceived economic value.

The drivers of production change are predominantly performance and market-based, with yield and profitability accounting for the largest share (38%), followed by access to improved seed (29%) and market demand (27%). This distribution confirms that farmer decision-making is increasingly aligned with expected economic returns, rather than subsistence or availability considerations. However, the relatively balanced distribution of drivers also suggests that the system has not yet reached the level of strong market pull observed in Nakuru, where market demand plays a more dominant role. Consequently, Nandi remains in a transitional production

phase, where both input-side improvements and emerging market signals jointly shape farmer behavior.

5.4 Varietal transformation

The evaluation findings, expressed as proportions of respondents, indicate that prior to the FIPS intervention, varietal use in Nandi County was highly undifferentiated, weakly understood, and largely disconnected from both market and performance considerations. When farmers were asked which varieties they planted before the project, 57.6% of respondents reported using local unnamed (*kienyeji*) varieties and 41.1% reported Shanghi. However, this quantitative distribution must be interpreted with caution. FGDs with VBAs and KIIs with County Department of Agriculture officers consistently confirmed that prior to FIPS entry in 2018, there were no clearly preferred or widely recognized potato varieties in the Nandi Hills and Ol Lessos wards, and farmers largely planted any available seed without varietal distinction or commercialization intent. The prominence of Shanghi in recall responses is therefore likely influenced by recall bias, potentially exacerbated by the disruption of programme activities around 2020, which may have blurred farmers' ability to accurately attribute varietal introduction timelines. As such, it is analytically sound to interpret the baseline as a homogeneous, availability-driven varietal system with limited varietal identity, rather than one characterized by true dominance of any specific improved variety.

"Before the FIPS intervention, most of us did not know the different potato varieties. Farmers planted whatever seed was available without understanding the differences and mostly relied on the appearance like color. However, as VBAs, we are now able to clearly identify improved varieties such as Shanghi, Wanjiku, UNICA, and Sherekea even though some of them have very similar physical appearance. In fact, while many farmers prefer Shanghi, a large number continue to rely on us as VBAs to correctly distinguish between varieties and guide their choices."- (FGD with VBAs, Nandi County)

At midline, the evaluation shows a clear but incomplete process of varietal transformation, with farmers from supported network demonstrating greater diversification and stronger alignment to performance and market attributes compared to non-supported farmers. When respondents were asked about the varieties planted in the most recent season, 54.6% of supported farmers reported Shanghi, while 48.4% also reported sherekea, indicating the emergence of improved varieties alongside traditional ones. In contrast, 77.8% of comparison farmers continue to rely predominantly on Shanghi, with only 11.1% reporting Wanjiku and UNICA, suggesting slower varietal diversification outside supported networks. When further asked about the main variety planted, 51.6% of supported farmers reported either Shanghi or Sherekea, compared to 77.8% of comparison farmers reporting Shanghi, confirming that varietal concentration remains higher in non-supported areas. Critically, when farmers were asked about drivers of their current varietal choice, 57.8% of supported respondents cited disease tolerance, 54.7% cited market demand, and 46.9% cited taste and consumer preference, compared to comparison farmers where 55.6% cited market demand but largely in relation to Shanghi dominance, indicating partial but uneven transition toward market-responsive varietal selection.

The shift in varietal decision-making is further reflected in seed and planting material preferences. When farmers were asked about the main planting material used in the most recent season, 35.9% of supported farmers reported clean seed from VBAs/DSMs, compared to 0% among

comparison farmers, while 29.7% of supported farmers continued to use recycled seed, indicating persistence of informal practices. When asked why they preferred their current planting material, 59.4% of supported respondents cited higher yields, 40.6% cited availability at the right time, and 40.6% cited lower disease risk, compared to comparison farmers where 66.7% cited availability as the primary factor, confirming that decision-making in non-supported areas remains largely availability-driven. Additionally, when farmers were asked about preferred future sources, 48.4% of supported farmers expressed preference for VBAs/DSMs, compared to 0% among comparison farmers, further demonstrating divergence in system orientation. These findings collectively indicate that while supported farmers are increasingly transitioning toward performance-based and advisory-informed varietal systems, comparison farmers remain embedded in informal, low-information environments.

From an evaluative perspective, these results demonstrate that Nandi has undergone a partial varietal transformation, characterized by increased awareness, diversification, and alignment to agronomic and market drivers among supported farmers, but with persistent residual informality across the broader system. Compared to Nakuru where improved varieties such as UNICA and Sherekea have achieved strong dominance and clearer displacement of legacy varieties, Nandi reflects an earlier stage of transformation, where improved varieties coexist with traditional ones rather than fully replacing them. The persistence of recycled seed use and continued dominance of Shanghi among comparison farmers indicates that the system has not yet reached a tipping point of full varietal upgrading. However, the strong shift in decision drivers among supported farmers away from availability and toward yield, disease resistance, and market demand signals that the foundational conditions for systemic varietal transformation are in place, requiring further strengthening of seed systems, advisory services, and market linkages to consolidate and scale these gains.

5.5 VBA/DSM system functionality and advisory penetration

Study findings indicate that the VBA/DSM model in Nandi is functionally active but operating at moderate scale and intensity, with notable gendered participation dynamics. When VBAs were asked about their advisory role, 72.7% reported providing advisory services regularly and selling seed potato, while a further 27.3% reported providing both advisory and seed sales occasionally, confirming that all VBAs are engaged in some level of farmer support. In terms of knowledge diffusion, 81.8% of VBAs reported regularly cascading key Good Agricultural Practices (GAP) such as spacing, pest and disease management, hilling and crop rotation to farmers. It further shows that all female VBAs and 66.7% of male VBAs reported providing advisory regularly, indicating a stronger consistency of engagement among female VBAs, while 33.3% male VBAs show occasional advisory roles. In terms of outreach scale, 70% VBAs reported supporting between 1-50 farmers, with only a small proportion (less than 10%) reaching more than 100 farmers, indicating limited advisory density compared to more mature systems.

The role of VBAs as primary agents of innovation diffusion is strongly corroborated by both VBA and farmer responses. When VBAs were asked who typically introduces new varieties and practices in the area, 70% identified VBAs/DSMs themselves as the main source, compared to significantly lower attribution to county extension or other actors. This confirms that the VBA

system is functioning as the primary last-mile conduit for both knowledge and technology diffusion. However, when benchmarked against Nakuru where a larger proportion of VBAs support over 100 farmers and where other sector actors actively leverage VBA networks the Nandi system reflects lower advisory reach, and limited private sector engagement, suggesting that while the model is operational, it has not yet achieved the scale required for systemic impact.

From a gender and systems perspective, these findings carry important implications. The relatively strong participation of women in advisory roles combined with their comparable or higher consistency in service delivery suggests that the VBA model in Nandi is inherently inclusive and presents a viable pathway for strengthening women's roles in extension and local agri-service delivery systems. However, the overall limited scale of outreach (predominantly 1-50 farmers per VBA) implies that the system is not yet delivering the level of coverage required to drive system-wide behavioral change, particularly among non-supported farmers who remain outside structured advisory networks. The low outreach coverage could also be attributed to the large distance VBAs cover to reach farmers. Consequently, scaling the VBA model in Nandi will require targeted investment in expanding the number of active VBAs, strengthening their technical and facilitation capacity, and formalizing linkages with both public extension and private sector actors, while also leveraging the demonstrated effectiveness of female VBAs to enhance outreach, inclusivity, and sustained adoption of improved practices.

5.6 Seed enterprise performance and market development

The midline findings provide strong evidence that seed potato enterprise in Nandi has achieved full uptake and high perceived commercial viability at the actor level, with 100% of VBAs reporting active engagement in both seed production and sales, confirming complete adoption of the enterprise model. Profitability signals are equally robust, with 81.8% of VBAs indicating that seed production is “much more profitable” than ware potato and a further 9.1% reporting it as “more profitable”, demonstrating that over 90% of respondents perceive clear and sustained economic incentives for continued investment. Demand-side dynamics reinforce this trajectory, as 63.6% of VBAs report that demand for improved seed is “much higher” than three years ago, signaling strengthening farmer preference for quality planting materials. Importantly, FGDs with VBAs reveal emerging crowding-in effects beyond the immediate project ecosystem, with input service providers such as Tupande-One Acre Fund beginning to supply improved seed potato varieties as part of bundled input credit packages. This development is analytically significant, as it indicates that the commercial viability and demonstrated performance of improved varieties and quality seeds have de-risked the market sufficiently to attract external actors, thereby accelerating varietal diffusion and expanding access pathways beyond VBA-led systems. From a market systems perspective, this represents a critical inflection point where project-induced innovation is beginning to be internalized and scaled through independent market actors, enhancing the prospects for broader system transformation.

However, despite these strong enterprise and demand signals, market development in Nandi remains highly localized and structurally shallow, limiting the full realization of scaling potential. The study shows that 100% of VBAs sell seed to farmers within or near their communities, with no reported engagement with cooperatives, aggregators, or formal market actors, indicating weak

vertical integration within the seed value chain. Transaction volumes remain modest, with 81.8% of VBAs serving between 1-25 buyers per season, reflecting a fragmented and spatially constrained customer base. This creates a structural paradox whereby enterprise viability and varietal demand are strong, yet market systems remain underdeveloped, constraining opportunities for scale, specialization, and sustained growth relative to more advanced systems such as Nakuru and Meru. While the entry of actors like One Acre Fund signals positive crowding-in and provides alternative distribution channels for improved varieties, the absence of coordinated aggregation, quality assurance, and structured market linkages risks creating parallel systems with limited coherence. The implication is that Nandi is at a critical transition stage, where deliberate investments in market integration, enterprise upgrading, and coordination mechanisms will be essential to convert localized commercial success into a scalable, competitive, and systemically embedded seed market ecosystem.

5.7 System-level transitional midline dynamics

From a midline evaluation standpoint, the Nandi system is best characterized as a re-established but only partially consolidated decentralized seed system, where foundational elements of transformation are present but have not yet coalesced into a fully functional market system. The proportional evidence shows strong uptake of seed enterprise among VBAs and high perceived profitability (>90%), alongside moderate diffusion of improved seed among farmers (43.8% accessing clean seed through VBAs/DSMs). However, this diffusion remains spatially and functionally constrained, with 34.4% of farmers within supported network still relying on recycled seed and a significant share of decision-making still influenced by availability rather than fully internalized quality and market signals. This indicates that while the intervention has successfully initiated behavioral change and relaxed key input constraints, it has not yet achieved the critical mass required to displace legacy practices at system level.

In addition, while seed enterprises demonstrate clear micro-level economic viability, the absence of structured market integration, evidenced by 100% reliance on localized farmer-to-farmer transactions and 81.8% of VBAs selling to only 1-25 buyers per season reveals a system that remains commercially shallow and weakly embedded within broader value chains. Compared to Nakuru, where VBA-led systems have evolved into semi-commercial, demand-responsive seed markets with stronger vertical linkages, Nandi remains in a transitional equilibrium, characterized by partial adoption, limited enterprise scaling, and weak coordination across system actors. From a systems perspective, this reflects a situation where technical success has outpaced market system development, creating a risk that without further investment, the system may plateau or revert to informal dynamics rather than progressing toward sustained, large-scale transformation.

5.8 Strategic implications for the next phase in Nandi

The Nandi findings point to a clear need for system-deepening interventions that go beyond technical adoption to address structural and institutional bottlenecks constraining scale and sustainability. While there exists strong enterprise uptake among VBAs and growing demand for quality seed (63.6% reporting increased demand), KIIs with County Department of Agriculture officials indicate that commercialization of the potato sector is still at an emergent stage, despite

the existence of county-level legislation intended to regulate the industry. Critically, KII with county potato value chain coordinator noted that while the regulatory framework has been established, the county lacks operational partnerships and enforcement mechanisms to implement these regulations effectively, creating a governance gap that limits the formalization of seed systems and broader market coordination. This institutional vacuum is further compounded by programme factors, including the geographical concentration of interventions within the Lessos network, which may have constrained diffusion and limited the spread of market system changes across the county. In contrast to Nakuru where multi-network coverage has enabled wider system effects, Nandi's localized implementation has resulted in strong but spatially confined transformation, with limited spillover into non-supported areas.

At the enterprise and input system level, FGDs with VBAs reveal critical supply-side constraints that are likely to impede further system growth if unaddressed. VBAs observed that they do not have access to a local PRACs (cuttings) production hub, and instead rely on intermittent supply from the Nakuru network through the FIPS project, creating both timing and reliability challenges. This dependency not only constrains enterprise scaling but also limits the responsiveness of the seed system to local demand, particularly given that 81.8% of VBAs operate within small, localized markets. VBAs further emphasized the need to establish localized PRACs production systems and formal linkages with suppliers of mother planting materials, which would enable decentralized early-generation seed production and reduce systemic bottlenecks in seed availability. Additionally, the temporary interruption of programme activities in Nandi between 2020-2023 appears to have disrupted VBA momentum and weakened engagement with key stakeholders, contributing to slower diffusion and reduced integration with both public and private sector actors.

From an evaluation perspective, these findings suggest that while the intervention has successfully established foundational elements of a decentralized seed system, its progression toward a fully functional market system is constrained by gaps in spatial scale, and upstream input systems. Addressing these constraints will require a deliberate shift toward systemic strengthening interventions, including;

- (i) Fast tracking expansion of geographical coverage beyond Lessos to accelerate diffusion and achieve critical mass;
- (ii) Operationalizing county legislation through strategic partnerships with regulatory bodies (KEPHIS), private sector actors, and certification agencies;
- (iii) Investing in localized PRACs production infrastructure and upstream supply chains; and
- (iv) Reactivating and strengthening VBA-led Nandi Hills Potato Cooperative Society to rebuild momentum and deepen engagement across the value chain.

Without these targeted investments, the system risks remaining in a localized, transitional equilibrium, whereas with them, Nandi has the potential to transition toward a scalable, resilient, and market-integrated seed system comparable to the trajectory observed in Nakuru.

6.0 Gender and youth inclusion

The evaluation findings indicate that the FIPS intervention has achieved meaningful participation of women within potato production and seed enterprise systems, though youth inclusion remains comparatively limited and structurally constrained. Across the study counties, women constituted a substantial proportion of respondents, including approximately 45.6% of supported respondents in Nakuru and 60.3% in Nandi, demonstrating that women are actively engaged in potato production systems. In Meru, evidence further shows that female VBAs are commercially active in seed enterprise, with women producing and selling significant quantities of seed potato, confirming that the decentralized seed model is accessible to female producers where enabling conditions exist. Qualitative findings also suggest that women farmers particularly value the VBA/DSM model because it reduces travel distance and improves localized access to seed and advisory services, thereby lowering mobility and transaction constraints that often disproportionately affect female farmers. These patterns indicate that the intervention has contributed to enhancing women’s participation within productive and commercial dimensions of the potato value chain, particularly at farm and community levels.

48% Female respondents overall	43% Youth (18 – 35 yrs) involved
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The evaluation findings indicate that women and youth constituted a substantial proportion of programme participants across the three counties, accounting for approximately 48% and 43% of respondents respectively, based on random sampling from the FIPS beneficiary database. These participation levels suggest that the intervention has achieved broad demographic reach within target communities. However, the study did not establish the existence of explicit programme targets, inclusion benchmarks, or structured strategies specifically designed to promote youth participation as VBA/DSMs. Consequently, while the observed representation is notable, the evaluation cannot conclusively interpret these participation rates as evidence of deliberate or transformative inclusion, but rather as an outcome of broader community-level participation within the intervention areas.

However, the evaluation also reveals that inclusion outcomes have emerged more as a by-product of decentralized delivery systems rather than through deliberate inclusion strategies, particularly in relation to youth. FGDs with VBAs consistently showed that the selection of VBAs was largely conducted through Chiefs’ barazas, where farmers elected individuals perceived as “champion farmers” and those with visible land ownership and farming experience. While this approach enhanced local legitimacy and trust, it inadvertently favored older and asset-owning farmers, thereby systematically disadvantaging many youth who often lack access to land and productive assets. As a result, youth participation within the core VBA/DSM architecture remains limited despite the growing commercialization of the sector. This finding is analytically significant for Nakuru and Nandi because it demonstrates that while the programme successfully established technically competent community-based systems, the criteria used for actor selection

inadvertently reproduced structural barriers to youth inclusion, particularly within seed production enterprise roles.

The evaluation nonetheless identifies substantial opportunities for intentional youth integration within emerging segments of the seed and market systems. Discussions with VBAs and project stakeholders indicate that youth are particularly well-positioned to engage in technology-intensive and service-oriented functions, including PRAC production within greenhouse systems, fabrication and commercialization of Diffused Light Stores (DLSs), aggregation and logistics services, digital marketing, and data-driven advisory support. These functions require relatively lower land ownership but higher technical, entrepreneurial, and digital capabilities, making them more accessible to youth. In counties such as Nandi, where the absence of localized PRAC production hubs remains a critical bottleneck, deliberate investment in youth-led greenhouse enterprises could simultaneously address system constraints while generating employment and enterprise opportunities. Similarly, the growing need for structured aggregation and market coordination creates space for youth engagement in logistics, digital brokerage, and market intelligence functions, particularly as the system transitions toward commercialization.

Future phases should therefore prioritize: (i) targeted recruitment and incubation of youth-led PRAC and aggregation enterprises; (ii) gender-responsive financing and business support for female VBAs and seed entrepreneurs; (iii) integration of youth and women indicators within the programme performance tracking framework; and (iv) partnerships with TVET institutions, youth enterprise funds, and women enterprise financing platforms. From a market systems perspective, such an approach would not only improve equity outcomes but also strengthen system resilience by diversifying the actor base and embedding innovation capacity within the next generation of agricultural entrepreneurs.

7.0 Overall OECD-DAC evaluation assessment

The evaluation findings across Nakuru, Meru, and Nandi counties provide strong evidence that **the FIPS potato intervention is evolving beyond a conventional agricultural productivity programme into a broader market systems transformation initiative**, with differentiated but converging outcomes across contexts of varying programme maturity. Using the OECD-DAC evaluation framework, the assessment **reveals a programme that is highly relevant, demonstrably effective, increasingly catalytic in driving systemic change, and strategically positioned for scaling** through strengthened institutionalization, learning systems, and partnership architecture. However, the evaluation also identifies emerging constraints related to governance, market integration, regulatory formalization, and performance tracking, which now define the next frontier for programme consolidation and sustainability.

7.1 Relevance

The evaluation establishes that the FIPS potato intervention is highly relevant to both the structural constraints within Kenya's potato value chain and the broader national and county-level agricultural transformation agenda. At national level, the programme is strongly aligned with the National Potato Council of Kenya National Potato Strategy 2021-2025, whose strategic priorities

include strengthening seed systems, increasing potato productivity, promoting varietal development, strengthening market coordination, enhancing participation of women and youth, and improving commercialization of the potato industry. The programme's emphasis on decentralized seed multiplication (DSM), Potato Rooted Apical Cuttings (PRACs), varietal upgrading, VBA-led advisory systems, and advocacy for Quality Declared Seed (QDS) directly responds to the strategy's identified bottlenecks around limited access to clean seed, weak extension systems, low productivity, and fragmented market systems. The intervention is equally aligned with the Ministry of Agriculture, Livestock, Fisheries and Cooperatives Agricultural Sector Transformation and Growth Strategy (ASTGS) 2019-2029, which prioritizes commercialization of agriculture, private sector participation, decentralized extension systems, youth and women inclusion, value chain competitiveness, and county-led implementation frameworks. In addition, the intervention contributes directly to Kenya Vision 2030 and the Bottom-Up Economic Transformation Agenda (BETA) through its focus on agricultural productivity, rural enterprise development, food security, and inclusive livelihoods.

At county level, the programme demonstrates strong contextual alignment with evolving county-specific agricultural and potato development priorities. In Meru County, the intervention strongly complements the emerging Meru County Potato Strategy 2024-2029 and related county agricultural development frameworks, which prioritize access to quality seed potato, market linkages, structured coordination, post-harvest management, irrigation, and value addition. The programme's support to decentralized seed systems, cooperative strengthening, and PRAC dissemination directly address these priorities while complementing county investments under programmes such as NARIGP/NAVCDP. In Nakuru County, where potato commercialization is already highly developed, the intervention aligns with county priorities around commercialization, agro-processing, climate-smart agriculture, farmer aggregation, and strengthening of agricultural extension and market systems. The integration of VBAs into extension delivery and emerging partnerships with private sector actors strongly supports Nakuru's broader agenda of modernizing agricultural value chains and promoting private sector-led growth. In Nandi County, the programme is highly relevant to the county's ongoing transition toward commercialization and agro-processing, particularly given county efforts to strengthen regulation within the potato industry and develop structured agricultural value chains. The intervention's emphasis on decentralized seed systems, varietal upgrading, and localized enterprise development therefore directly addresses county-level constraints around productivity, seed access, and commercialization readiness.

The evaluation further confirms that the programme remains highly relevant from a systems perspective because it addresses not only farm-level production constraints, but also the underlying institutional and market failures that have historically limited growth within the potato sector. **The intervention's focus on localized seed systems, advisory penetration, private sector crowding-in, cooperative development, and regulatory engagement reflects a sophisticated Market Systems Development (MSD) logic that is responsive to the realities of smallholder agriculture in Kenya.** Importantly, the findings show that these interventions are generating strong demand signals among farmers, counties, private sector actors, and development partners, confirming that the programme is not operating in isolation but responding to real and evolving sectoral opportunities. This high degree of policy and market alignment

significantly enhances the programme's strategic positioning for scaling, partnership mobilization, and long-term institutional sustainability.

7.2 Coherence

The evaluation findings demonstrate a strong level of internal coherence between programme components and the broader systems change logic underpinning the intervention. The integration of seed multiplication, advisory support, varietal upgrading, farmer demonstrations, field days, radio mobilization, and policy engagement created mutually reinforcing pathways of change, enabling improvements in seed access to trigger wider behavioral, enterprise, and market transformations. **The VBA/DSM architecture functioned not merely as a distribution mechanism, but as a coordinated last-mile system linking farmers to seed, information, demonstrations, input suppliers, and emerging markets. This internal coherence explains why improvements in seed access translated into broader outcomes such as land expansion, commercialization, profitability, and crowding-in effects.**

Externally, the programme also demonstrates increasing coherence with county government priorities, private sector engagement models, and emerging policy reforms. In Meru, implementation alongside county-supported initiatives and cooperative structures strengthened institutional embedding and post-project continuity, while in Nakuru the engagement of agrochemical firms through VBA platforms demonstrates alignment with private sector distribution incentives. However, the evaluation also identifies areas where coherence remains incomplete, particularly between decentralized seed systems and national regulatory frameworks. Despite strong functional performance, VBA/DSM-produced seed remains weakly integrated into formal certification and regulatory structures due to delayed operationalization of QDS frameworks. This institutional incoherence creates a disconnect between system functionality and institutional legitimacy, constraining scalability and access to formal markets and finance. It is however noteworthy that FIPS is working with partners including KEPHIS and National Potato Council of Kenya (NPCK) to facilitate partners to upgrade the QDS frameworks.

7.3 Effectiveness

The programme demonstrates a high level of effectiveness in achieving intended outcomes related to seed system transformation, varietal upgrading, advisory penetration, and enterprise development. **The evidence from Nakuru is particularly compelling, with 73.8% of supported farmers sourcing seed from VBAs, 91.9% adopting improved varieties, and 81.7% expanding land under potato production. Similar patterns of sustained adoption and enterprise viability are evident in Meru, where implementation formally ended in 2022 yet over 60% of farmers continue to rely on clean seed systems, confirming durable post-project effects.** In Nandi, despite interrupted implementation, the programme has successfully re-established decentralized seed systems and stimulated strong demand for improved seed and seed enterprise participation.

The intervention has also proven highly effective in generating behavioral and economic change. Farmers increasingly perceive potato as a commercially viable enterprise rather than a subsistence crop, while VBAs consistently report seed production as significantly more profitable

Small Farms, Big Futures

than ware potato production. The programme has further succeeded in catalyzing technology diffusion through field demonstrations, FM radio outreach, and localized extension systems. The emergence of crowding-in effects including new seed producers, private agro-input engagement, and external factors such as Tupand-One Acre Fund integrating improved seed into their models provides strong evidence that programme influence is extending beyond direct beneficiaries into broader market systems. Collectively, the findings confirm that the intervention is achieving not only output-level success, but also meaningful systemic outcomes.

7.4 Efficiency

The evaluation identifies strong evidence of operational efficiency in relation to the programme's decentralized delivery architecture, particularly the use of VBAs/DSMs as low-cost, high-reach last-mile service providers. **The VBA model significantly reduced transaction distances, lowered access barriers, and expanded advisory reach into underserved rural areas, thereby enabling high levels of farmer outreach without reliance on expensive centralized extension systems.** The use of farmer field days, localized demonstrations, and vernacular FM radio further enhanced cost-effectiveness by accelerating information diffusion and varietal awareness at scale. **The programme also leveraged strategic complementarities with county governments, cooperatives, and other private sector actors,** thereby maximizing outreach and diffusion effects beyond direct project investments.

However, the assessment of efficiency is constrained by the absence of a fully institutionalized Monitoring and Evaluation (M&E) framework anchored on a structured indicator tracking table, clearly defined baseline values, performance targets, and longitudinal performance monitoring systems. While the evaluation was able to generate robust evidence through retrospective reconstruction, comparative analysis, and mixed-method triangulation, the lack of a dynamic performance management architecture limits the precision with which efficiency gains, cost-effectiveness ratios, and attributable returns on investment can be systematically quantified over time. Similarly, the absence of continuously updated farmer databases constrains adaptive management and limits the programme's ability to track progression pathways, enterprise trajectories, and system maturation. These gaps do not diminish the strong observed outcomes, but they do highlight the need for a more structured performance and learning system to optimize future resource allocation, evidence generation, and scaling efficiency.

7.5 Impact

The evaluation provides compelling evidence of emerging and sustained impact at multiple levels of the potato market system. At farm level, the intervention has contributed to increased productivity, commercialization, varietal upgrading, improved planning confidence, and enhanced economic importance of potato farming. At enterprise level, the programme has catalyzed the emergence of commercially viable decentralized seed enterprises with strong profitability signals and expanding demand. At system level, the intervention has triggered structural shifts from informal, degenerative seed systems toward decentralized, market-responsive seed economies characterized by increasing private sector participation, crowding-in, and endogenous diffusion.

The strongest evidence of impact is observed in Meru, where post-project continuity demonstrates that the intervention has generated durable institutional and market effects beyond active programme support. The persistence of clean seed systems, expansion of cooperative activities, emergence of commercial PRAC enterprises such as Mr. Paul Munene's model, and continued county government investment in demonstrations and infrastructure collectively confirm that the programme has achieved meaningful systemic anchoring. In Nakuru, rapid commercialization and strong diffusion effects indicate high transformative potential, while Nandi demonstrates that even within transitional contexts, the intervention is capable of reactivating localized market systems and stimulating new forms of private sector engagement. Importantly, the intervention is also beginning to reshape broader market relationships, creating new demand for aggregation, storage, logistics, and processing functions. These impacts position the programme as a highly investable platform for scaling resilient and inclusive agricultural market systems.

7.6 Sustainability

The evaluation findings indicate strong prospects for sustainability, particularly because the intervention has successfully aligned farmer incentives, enterprise profitability, and market demand within a self-reinforcing system. High willingness among farmers to continue using improved seed, combined with strong VBA intentions to continue seed enterprise activities, demonstrates that adoption is driven by perceived economic returns rather than dependency on project subsidies alone. In Meru, the persistence of decentralized seed systems and continued commercialization after project exit provide particularly strong evidence of sustainability. Similarly, **the emergence of crowding-in effects and private sector participation suggests that the system is increasingly capable of sustaining growth through endogenous market incentives.**

Nevertheless, sustainability remains contingent on addressing several emerging structural risks. These include weak regulatory formalization, insufficient quality assurance systems, fragmented market linkages, limited storage and aggregation infrastructure, and inadequate institutionalization of learning and performance tracking systems. The evaluation also highlights the absence of structured exit and transition strategies in some contexts, particularly around PRAC production systems and formal registration of decentralized producers. Without strengthened governance mechanisms, the rapid expansion of decentralized systems may expose the market to quality dilution and coordination failures. The next phase therefore requires strategic investment in institutional anchoring, QDS operationalization, cooperative strengthening, localized PRAC hubs, dynamic data systems, and structured learning architectures to ensure that current gains evolve into durable, scalable, and nationally integrated market systems.

8.0 Lessons learned

A cross-cutting observation emerging from the evaluation is that, despite the programme demonstrating significant system-level outcomes, the study did not establish the presence of a structured learning agenda or institutionalized knowledge management framework to

systematically capture, analyze, and utilize implementation lessons across counties and phases of programme evolution. While substantial experiential learning clearly occurred, evidenced by adaptive approaches to VBA deployment, PRAC dissemination, and partnership engagement, these learnings appear to have remained largely tacit, field-driven, and insufficiently codified into a formal programme learning architecture. This has important implications for programme scalability and strategic positioning. In the absence of a structured learning framework, critical insights on what works, for whom, under what conditions, and at what stage of system maturity risk remaining fragmented or localized, limiting opportunities for evidence-driven adaptation, replication, and policy influence. Furthermore, the differentiated trajectories observed across Nakuru, Meru, and Nandi demonstrate that the programme has generated a rich body of practical evidence on decentralized seed systems, commercialization pathways, and system transition dynamics, which could provide significant value for donors, policymakers, and scaling partners if systematically synthesized and communicated.

8.1 Seed system transformation is a high-leverage entry point for value chain change

Across all three counties, the evidence consistently shows that addressing access to quality seed unlocks multiple downstream effects, including productivity gains, land reallocation, commercialization, and income growth. In Nakuru, for instance, the shift to 73.8% reliance on VBA-sourced seed and over 90% improved variety adoption triggered widespread production reorientation and increased economic importance of potato. Similarly, in Meru, sustained use of clean seed systems post-project demonstrates that seed system interventions can generate durable, self-sustaining impacts. This confirms that seed systems are not merely an input constraint but a catalytic leverage point for broader agricultural transformation, capable of shifting farmer behavior and market structures when effectively addressed.

8.2 Decentralised seed systems (VBAs/DSMs) are effective but require institutional anchoring

The VBA/DSM model has proven to be a highly effective last-mile delivery mechanism, significantly improving access to both seed and advisory services while reducing transaction costs. However, as the system scales, it transitions from access-constrained to governance-constrained, with risks emerging around quality assurance, traceability, and regulatory compliance. The lack of formal recognition of VBA-produced seed under existing frameworks (e.g., absence of operational QDS) highlights the need for institutional integration and policy alignment. The lesson is that decentralized systems can drive rapid uptake and diffusion, but sustainability at scale requires formalization within regulatory and institutional structures.

8.3 Enterprise viability drives adoption and sustained system growth

A critical driver of success across counties is the strong commercial viability of seed potato enterprise, with over 90% of VBAs reporting higher profitability compared to ware potato production. This alignment between farmer demand (willingness to pay for quality seed) and enterprise incentives (high margins) creates a self-reinforcing market dynamic, reducing dependency on project support. The persistence of seed enterprises in Meru after project exit and expansion of VBA activity in Nakuru demonstrate that when interventions are economically viable,

they transition naturally into market-led systems. The key lesson is that sustainability is driven not by continued support, but by strong underlying business cases for actors within the system.

8.4 Market system development must keep pace with production growth

While the programme has successfully stimulated ware potato production through improved seed access, market development has lagged behind, resulting in localized markets with limited aggregation, and inadequate storage infrastructure. This imbalance introduces risks of oversupply, price volatility, and reduced profitability, particularly during harvesting periods as adoption scales. The experience across Nakuru, Meru, and Nandi demonstrates that input system strengthening alone is insufficient for full value chain transformation; it must be complemented by parallel investments in midstream and downstream functions, including aggregation, processing, and structured market linkages. The lesson is that balanced system development is essential to sustain and scale productivity gains.

8.5 Scale and continuity of engagement are critical for systemic change

The comparative analysis across counties highlights the importance of programme intensity, geographical coverage, and continuity in driving system transformation. Nakuru, with its multi-network, high-intensity implementation, shows rapid consolidation and widespread diffusion, while Nandi which is characterized by interrupted implementation and concentration in a single network (Lessos) exhibits slower, more localized transition. In contrast, Meru demonstrates that well-established systems can sustain and even expand after project exit, provided foundational elements are strong. This underscores that systemic change requires both scale (to achieve critical mass) and continuity (to reinforce behavior and market dynamics). Fragmented or intermittent engagement risks slowing momentum and limiting system-wide impact.

The findings therefore underscore the importance of transitioning from implementation-focused delivery toward a more deliberate learning-oriented systems programme, where evidence generation, adaptive management, and strategic reflection are embedded within programme operations. Establishing a structured learning agenda linked to the proposed performance tracking framework would enable FIPS to better document systemic changes, crowding-in dynamics, inclusion pathways, and sustainability outcomes over time, while strengthening its positioning as a technical leader in decentralized seed systems. The lessons outlined below should therefore be interpreted not only as retrospective observations from the midline evaluation, but also as foundational insights for designing a more adaptive, scalable, and evidence-driven next phase of programming.

9.0 Conclusions

The evaluation findings provide compelling evidence that the FIPS potato programme has evolved into far more than a conventional agricultural productivity intervention. It has become a catalytic market systems transformation initiative capable of reshaping the structure, incentives, and functionality of decentralized seed and potato market systems in Kenya. Across Nakuru, Meru, and Nandi counties, the programme successfully addressed two of the most binding constraints within the potato value chain characterized by limited access to quality seed and localized advisory systems and in doing so triggered a broader transition from low-productivity, risk-prone,

and informal production systems toward increasingly commercialized, decentralized, and market-responsive seed economies. The evidence is particularly compelling in Nakuru, where 73.8% of farmers in supported networks now source seed from VBAs/DSMs, while reliance on degenerated recycled seed declined to 12.1% compared to 52.7% in comparison areas. Similarly, over 91.9% of supported farmers reported adoption of improved varieties, while 81.7% reported expansion of land under potato production. These patterns confirm that when farmers gain reliable access to clean planting material, trusted advisory systems, and market-oriented varietal options, they respond rationally through increased investment, commercialization, and sustained adoption. The intervention therefore validates the strategic proposition that seed system transformation can function as a high-leverage entry point for broader agricultural and livelihood transformation.

The differentiated trajectories observed across the three counties provide particularly important lessons for scaling and partnership development. Nakuru demonstrates what a mature, high-intensity decentralized seed system can achieve under sustained programme engagement, including rapid varietal diffusion, enterprise emergence, and strong commercialization signals. Meru, where direct implementation ended in 2022, provides particularly powerful evidence of post-project sustainability, with over 62% of farmers continuing to rely on clean seed systems either directly through VBAs or through self-multiplied clean seed, while 100% of active VBAs reported continued engagement in seed production and sales. Furthermore, 83.3% of VBAs in Meru indicated that they had multiplied seed more than six times since initial introduction, confirming that seed enterprise has become embedded within the local rural economy rather than remaining project-dependent. In Nandi, despite interruptions in implementation, the programme has successfully re-established localized seed systems, with 100% of VBAs actively engaged in seed production, and over 90% reporting seed potato enterprise as more profitable than ware potato production. Collectively, these county trajectories position the programme as a uniquely evidence-rich platform for understanding how decentralized seed systems evolve across different levels of market maturity and programme intensity.

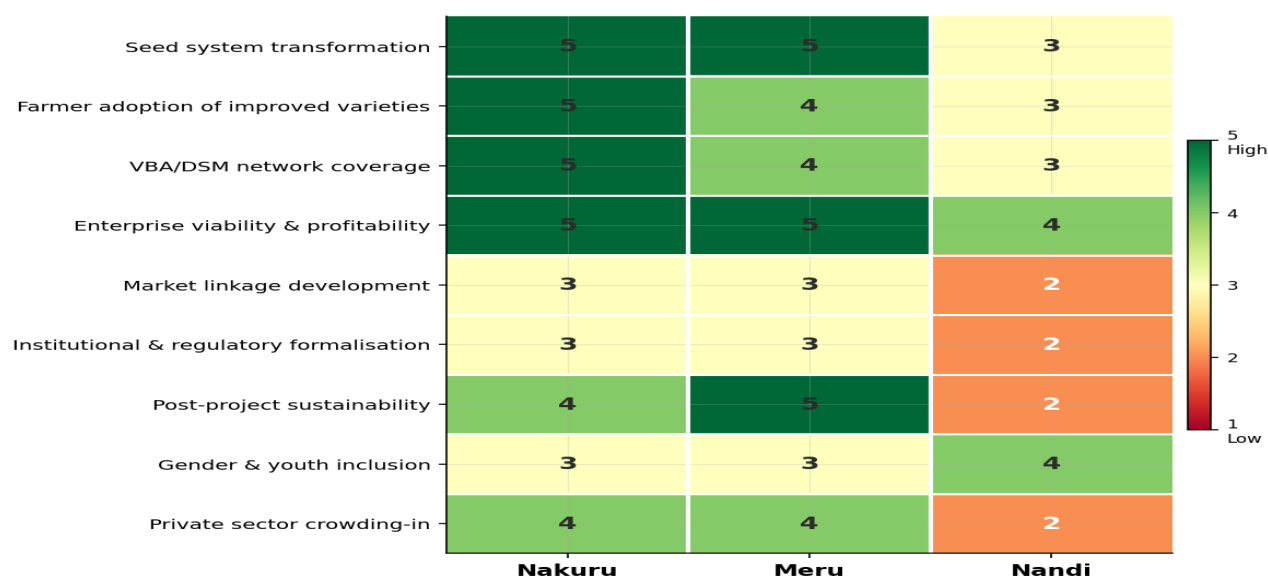


Figure 11: Programme maturity heatmap

The Stakeholder Validation, Learning and Co-Creation Workshop held on 18-19 August 2026 provided an important additional layer of validation to these conclusions. Following direct field observation of seed multiplication enterprises, farmer and VBA/DSM interactions and PRAC greenhouse operations, participants drawn from national and county governments, regulatory agencies, research and academia, potato-sector institutions, private sector, finance, development organizations and producer groups broadly endorsed the principal findings of the evaluation. Rather than fundamentally altering the conclusions, the validation process confirmed their practical relevance while sharpening the institutional and technical conditions necessary for sustainability and responsible scaling.

Of particular significance was the strong stakeholder consensus that inadequate access to quality clean seed remains a structural constraint within Kenya's potato sector and that decentralized seed multiplication through the PRAC–DSM–VBA architecture provides an important complementary pathway for expanding access. The validation discussion therefore reinforced the evaluation's conclusion that the future of the model should not be framed as a choice between formal certified seed and decentralized seed multiplication. Rather, the strategic challenge is to establish a credible interface through which decentralized producers can progressively operate within an appropriate quality-assurance, regulatory and traceability framework. Strong interest from counties outside the current programme geography, including Narok, Bomet and Uasin Gishu, further reinforced the perceived relevance and replication potential of the model.

Perhaps the most significant finding of the evaluation is that the programme has now entered a new phase of systemic evolution where the principal constraints are no longer primarily technical or production-related, but increasingly institutional and market-coordination related. The intervention has already demonstrated that decentralized seed systems can generate strong farmer demand, commercially viable enterprises, and endogenous market responses. Across counties, more than 90% of farmers expressed willingness to continue using improved seed even in the absence of project support, while large proportions of VBAs indicated plans to expand seed production and acreage. Strong spill-over and crowding-in effects were also observed, including the emergence of new seed producers, increasing private sector engagement, and integration of improved seed into external input delivery systems such as One Acre Fund in Nandi. However, the evaluation also identified critical structural gaps around quality assurance, aggregation systems, storage infrastructure, and regulatory integration. The delayed operationalization of QDS frameworks and the absence of formal recognition for VBA/DSM-produced seed creates a disconnect between strong functional performance and institutional legitimacy, limiting access to formal markets, certification pathways, and structured finance. In effect, the programme has successfully created a functioning decentralized seed economy; the next challenge is institutionalizing and integrating that economy within broader agricultural market systems.

The evaluation additionally highlights the programme's significant potential as a platform for inclusive rural enterprise and innovation. Women constituted substantial proportions of programme participants, including approximately 45.6% of respondents in Nakuru and over 60% in Nandi, while female VBAs in Meru demonstrated strong commercial engagement in seed enterprise. At the same time, the evaluation identified important opportunities to more deliberately integrate youth within technology-intensive and service-oriented nodes such as PRAC production,

greenhouse management, aggregation, logistics, digital marketing, and fabrication of Diffused Light Stores (DLSs). The programme's ability to attract engagement from county governments, cooperatives, agro-input firms, and private sector actors further demonstrates growing market legitimacy and partnership potential. Importantly, the observed crowding-in effects indicate that the intervention is increasingly influencing actors beyond direct beneficiaries, a critical marker of systemic change and scalability.

The validation workshop strongly corroborated this conclusion while adding greater technical specificity to the institutionalization agenda. Stakeholders emphasized the need to integrate soil health, soil testing and surveillance of Potato Cyst Nematode (PCN) and other soil- and seed-borne risks into decentralized seed multiplication; strengthen traceability and proportionate quality assurance; and establish clearer registration and competency pathways for VBAs/DSMs. The workshop also identified Recognition of Prior Learning (RPL) and competency-based training through NITA, in collaboration with FIPS and aligned with KEPHIS requirements, as a potential pathway for professionalizing experienced decentralized seed producers whose practical competencies may not currently be supported by formal agricultural qualifications.

The workshop similarly reinforced the importance of strengthening the commercial foundations of PRAC and DSM enterprises. While the evaluation establishes strong profitability and continuity signals, participants recommended more comprehensive enterprise modelling that captures greenhouse capital costs and depreciation, technical supervision, mother-plant and substrate costs, quality assurance, capacity utilization, demand forecasting and distribution. This additional evidence will become increasingly important as FIPS moves from demonstrating enterprise viability toward supporting larger-scale commercial investment and structured finance.

The evaluation additionally highlights the programme's significant potential as a platform for inclusive rural enterprise and innovation. Women constitute substantial proportions of programme participants and demonstrate strong commercial engagement in seed enterprises. At the same time, opportunities remain to more deliberately integrate youth within technology- and service-intensive nodes such as PRAC production, greenhouse management, aggregation, logistics, digital marketing and fabrication of Diffused Light Stores. The programme's ability to attract engagement from county governments, cooperatives, agro-input firms and private-sector actors further demonstrates growing market legitimacy and partnership potential. The observed crowding-in effects are particularly important because they indicate that the intervention is increasingly influencing actors beyond its direct participants, a critical marker of systemic change and scalability.

The validation process further strengthened the evaluation's conclusion that production and seed-system expansion must increasingly be connected to downstream market development. Participants particularly emphasized storage, alongside aggregation, market information, structured off-take, logistics, processing and value addition. As improved seed access contributes to increased potato production, these downstream functions will become progressively more important in protecting farmer returns and preventing production gains from creating new market bottlenecks.

Overall, the evaluation concludes that the FIPS potato programme represents a high-potential, scalable and strategically investable model for agricultural market systems transformation in *Small Farms, Big Futures*

Kenya. The intervention has generated credible evidence of productivity enhancement, decentralized enterprise development, market stimulation, persistence of programme-induced changes and endogenous diffusion of improved seed systems. The stakeholder validation process substantially corroborated this conclusion while clarifying that the next stage of scale must be quality-assured, institutionally anchored, commercially viable and partnership-driven.

Realizing the programme's full transformational potential will therefore require the strategic shift already identified by the evaluation toward institutionalization, structured market integration, localized PRAC production systems, strengthened learning and performance management, and deeper partnerships with government, research institutions, regulators, counties, private-sector actors, cooperatives and financial institutions. The validation workshop gives this recommendation additional practical force: KALRO, KEPHIS, NITA, county governments, financial institutions, research organizations and commercial actors represent potential institutional pathways through which research, quality assurance, skills development, finance, market access and geographic scaling functions can increasingly be embedded beyond FIPS itself.

10.0 Strategic recommendations for scaling and partnership mobilisation

The midline evidence across Meru, Nakuru, and Nandi points to a programme that has successfully de-risked decentralized seed systems and demonstrated strong commercial viability, but now requires targeted, system-level investments to consolidate gains and scale impact through partnerships. The following recommendations are deliberately position FIPS as a platform for partnership-driven expansion, rather than a stand-alone implementer.

10.1 Development of a performance indicator tracking framework

To consolidate system gains, strengthen adaptive management, and position the programme for results-based partnerships and scaling finance, FIPS should institutionalize a comprehensive Performance Indicator Tracking Table (PITT) aligned to its Market Systems Development (MSD) theory of change and OECD-DAC criteria. The current evidence base demonstrates strong progress in seed system transformation; however, the absence of a structured, longitudinal performance framework limits the programme's ability to track systemic change, demonstrate attribution/contribution, and communicate impact in a standardized, decision-ready format. A well-designed PITT will enable FIPS to transition from episodic evaluation to continuous performance management, integrating real-time monitoring with strategic learning and reporting.

The proposed framework should be multi-tiered, capturing indicators across four interlinked domains: (i) Input System Performance (seed access, PRAC supply, varietal adoption); (ii) Enterprise and Market Development (VBA commercialization, volumes, buyer diversity, profitability); (iii) Systemic Change (crowding-in, diffusion, private sector engagement, institutional linkages); and (iv) Inclusion (gender and youth participation in production and enterprise roles). Each indicator should be clearly defined with baseline, midline, and endline values; annual targets; disaggregation (gender, youth, geography); data source; frequency of collection; and

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responsible unit. Critically, the framework should include leading and lagging indicators, enabling FIPS to track both early signals of system change (e.g., emergence of new seed producers, private sector partnerships) and long-term outcomes (e.g., sustained adoption, income shifts, market integration).

To maximize utility, the PITT should be digitized and integrated into existing data systems (e.g., Kobo/ODK dashboards or Power BI), enabling real-time visualization and decision-making. Importantly, FIPS should embed regular review cycles (quarterly and annual performance reviews) where programme teams interrogate indicator trends, identify bottlenecks, and adjust implementation strategies accordingly. Strategically, the adoption of a robust performance tracking system will position FIPS to credibly demonstrate systemic impact, attract co-investment, and engage in results-based financing mechanisms, while strengthening internal accountability and learning. It transforms monitoring from a compliance function into a strategic asset for scaling, partnership building, and policy influence, ensuring that the programme's demonstrated success in seed system transformation is measured, communicated, and leveraged at scale.

10.2 Establish a structured learning agenda

FIPS should establish and institutionalize a formal Learning Agenda and Knowledge Management Framework as a strategic pillar of the next phase of programme implementation, positioning learning not as a by-product of delivery, but as a core function for scaling, adaptation, and partnership mobilization. The evaluation demonstrates that the programme is generating rich and differentiated evidence across counties at varying stages of system maturity ranging from early transition in Nandi, rapid consolidation in Nakuru, to sustained post-project impact in Meru, yet much of this learning remains tacit, fragmented, and insufficiently codified for strategic use. A structured learning agenda would enable FIPS to systematically interrogate critical questions such as; *What drives sustained adoption of clean seed systems? Under what conditions do VBAs evolve into viable commercial enterprises? How do crowding-in and spill-over dynamics emerge? What factors influence system sustainability after project exit?* Such a framework should integrate routine performance tracking, periodic learning reviews, case study documentation, outcome harvesting, and cross-county comparative analysis, linked directly to programme adaptation and donor reporting processes. Importantly, the learning agenda should include clear learning questions, indicators, responsibilities, dissemination pathways, and feedback loops, ensuring that evidence generated at field level informs strategic decisions, policy engagement, and scaling models in real time.

To maximize value, FIPS should position the learning agenda as a multi-stakeholder platform for sector influence and co-learning, engaging county governments, KEPHIS, research institutions, private sector actors, cooperatives, and resource partners in joint reflection and evidence generation. This would strengthen the organization's role not only as an implementer, but as a thought leader and technical convener in decentralized seed systems and potato market development. The framework should further support the development of learning products including policy briefs, technical notes, innovation case studies, investment briefs, and system transition pathways to communicate programme evidence to policymakers, and scaling partners. Embedding a strong learning architecture will significantly enhance FIPS' ability to attract

partnerships and investment, improve adaptive management, and scale evidence-based interventions, while ensuring that lessons generated across diverse county contexts are systematically translated into institutional knowledge and national-level influence.

10.3 Strengthen gender and youth inclusion

To strengthen inclusivity and enhance long-term system resilience, FIPS should develop and operationalize a deliberate Gender and Youth Inclusion Strategy that moves beyond passive participation toward targeted economic empowerment within the potato value chain. Future programme phases should intentionally position women and youth within high-growth and technology-intensive nodes of the system, including PRAC production, greenhouse management, fabrication and commercialization of Diffused Light Stores (DLSs), aggregation, logistics, digital marketing, and data-driven advisory services. Given that the current VBA selection model largely based on land ownership and community recognition through Chiefs' barazas may inadvertently exclude many youth, alternative incubation pathways should be established to support youth-led enterprises that are less dependent on land access but strongly aligned to emerging market opportunities. In parallel, FIPS should strengthen women's commercial participation through gender-responsive business training, access to finance, and leadership support within cooperatives and seed enterprises. This strategy should be supported by partnerships with youth and women enterprise funds, digital service providers, and private sector actors, while integrating clear gender- and age-disaggregated indicators into the programme's performance tracking system. Such an approach would not only enhance equity outcomes but also expand the programme's innovation base, strengthen succession within decentralized seed systems, and position the potato sector as a viable pathway for inclusive rural employment and enterprise development.

10.4 Database management and dynamic farmer tracking systems

FIPS should establish a dynamic, performance-oriented farmer and VBA database management system to strengthen targeting, monitoring, adaptive management, and long-term system accountability. The evaluation established that the current farmer database remains largely static and historically anchored to beneficiaries who initially received starter packs, with limited evidence of systematic updating, performance tracking, graduation pathways, or exit criteria. As a result, the database functions primarily as a historical beneficiary registry rather than a strategic management tool capable of supporting real-time programme decision-making and market systems analysis. This creates significant limitations in understanding farmer progression, sustained adoption, enterprise growth, attrition, spill-over effects, and the evolution of VBA networks over time. It also constrains the programme's ability to differentiate between active, high-performing, dormant, and exited actors, thereby reducing the precision of targeting, partnership engagement, and resource allocation.

To address this gap, FIPS should transition toward a digitized, continuously updated Management Information System (MIS) that captures longitudinal data on farmer and VBA performance, including indicators such as seed sourcing behavior, varietal adoption, acreage under seed and ware production, enterprise profitability, market participation, advisory reach, gender and youth

inclusion, and progression pathways. The system should incorporate unique farmer identifiers, geolocation data, and periodic profiling updates, enabling cohort analysis and tracking of system transformation over time. Importantly, the database should evolve beyond programme compliance to become a strategic intelligence platform that supports adaptive management, impact measurement, learning, and investor/donor reporting. Integration with digital tools (e.g., Kobo, ODK, Power BI dashboards) would further enable real-time analytics, segmentation of actors, and identification of emerging champions, high-potential enterprises, and areas requiring technical support. Establishing such a dynamic database architecture will significantly strengthen FIPS' ability to manage scaling pathways, demonstrate impact credibility, and position itself for data-driven partnerships and results-based financing opportunities.

10.5 Establish localised PRAC production hubs linked to certified mother plant supply chains

The absence of localized early-generation seed systems particularly in Nandi where VBAs depend on PRACs sourced from Nakuru represents a critical bottleneck to scaling decentralized seed enterprises. FIPS should prioritize the establishment of county-level PRAC production hubs, anchored through strategic partnerships with research institutions and certified in vitro laboratories (e.g., KALRO, private tissue culture labs) to ensure reliable access to disease-free mother planting materials. These hubs should be structured as commercially viable, semi-autonomous enterprises, potentially operated by high-capacity DSMs or cooperatives, and integrated with VBA networks for last-mile distribution. This intervention will reduce supply constraints, lower production costs, enhance system responsiveness, and unlock scalable seed multiplication pathways, particularly in emerging systems like Nandi.

10.6 Broker structured partnerships with private sector input and off-take actors to drive market integration

Emerging evidence of crowding-in such as One Acre Fund integrating improved seed into input credit packages and agro-input firms like Bayer EA leveraging VBA networks demonstrates strong private sector interest. FIPS should proactively transition into a market facilitator role, brokering formal partnerships with input companies, financial service providers, aggregators, processors, and institutional buyers. This includes co-developing bundled service models (seed + inputs + advisory + finance) and structured off-take agreements aligned to varietal demand. Such partnerships will shift the system from localized transactions to demand-driven value chains, enabling VBAs and seed enterprises to operate within predictable, scalable market ecosystems.

The Meru experience demonstrates that cooperatives can evolve into powerful aggregation and service delivery platforms but currently remain disconnected from seed system functions. FIPS should support the strategic strengthening and repositioning of cooperatives to play dual roles in seed and ware potato markets, including aggregation, bulking, quality assurance, mechanization services, and eventual value addition (e.g., processing). This requires targeted investment in governance, business management, asset acquisition (storage, grading, transport), and structured market linkages, while integrating cooperatives into VBA/DSM networks. Replicating and adapting this model in Nakuru and Nandi will bridge the current gap between production and

markets, ensuring that increased productivity translates into stable and remunerative outcomes for farmers.

10.7 Institutionalise quality assurance through QDS pathways and regulatory partnerships

As decentralized seed systems expand and new actors enter the market, the risk of quality dilution, varietal misidentification, and system fragmentation increases. FIPS should intensify advocacy and technical support for the operationalization of Quality Declared Seed (QDS) frameworks, while simultaneously building partnerships with KEPHIS, county governments, and accredited inspectors to create a tiered, enforceable quality assurance system. This includes training and deploying more private and county-based seed inspectors, establishing traceability protocols, and integrating VBAs/DSMs into formal regulatory pathways. Institutionalizing quality assurance is essential to protect farmer trust, sustain demand for improved seed, and maintain genetic integrity as the system scales.

10.8 Scale and densify VBA/DSM networks as commercial service providers, not just extension agents

While VBAs have proven effective as last-mile advisory agents, their role must now evolve into full-fledged agri-service entrepreneurs embedded within market systems. FIPS should invest in enterprise upgrading of VBAs, including training in customized seed business management, aggregation, marketing, financial literacy, and digital tools, while expanding their geographical coverage to achieve higher advisory density and market reach. Special emphasis should be placed on scaling female VBA participation, given their demonstrated effectiveness in service delivery. Strengthened VBA networks will serve as the backbone of decentralized seed and input systems, enabling both horizontal scaling (farmer outreach) and vertical integration (linkages with markets and suppliers).

10.9 Establish a competency-based professionalisation and recognition pathway for VBAs/DSMs

FIPS should establish a structured partnership with NITA and KEPHIS to professionalize VBAs/DSMs through competency-based training and Recognition of Prior Learning (RPL). The validation workshop demonstrated that many decentralized seed producers possess substantial practical experience but may lack the formal agricultural qualifications or recognized competencies needed to progress effectively through seed-producer registration and quality-assurance processes. The partnership should assess and formally recognize existing competencies, provide targeted upgrading in seed multiplication, varietal integrity, disease management, traceability, quality assurance and enterprise management, and align certification with KEPHIS requirements. FIPS should also explore accreditation as a training and/or assessment partner, creating a scalable pathway from practical experience, RPL and competency upgrading, recognized certification, regulatory readiness and professional decentralized seed enterprise.

10.10 Establish a strategic potato seed research, quality assurance and innovation partnership

FIPS should formalize a strategic research and innovation partnership with KALRO, KEPHIS, Egerton University and other relevant research institutions to strengthen the scientific and quality-assurance foundations of decentralized seed-system scaling. The partnership should prioritize applied research on PRAC productivity, clean mother material, varietal performance, seed degeneration, soil health and PCN, decentralized quality-assurance protocols, PRAC/DSM enterprise economics and farmer demand, using FIPS' field networks as learning and demonstration platforms. This would create a continuous pathway linking field innovation, applied research, validation, improved technical protocols, policy evidence and sector-wide adoption, while positioning FIPS as an important national learning and innovation platform for decentralized potato seed systems.

10.11 Develop a partnership-based commercial financing and scaling platform

FIPS should establish a partnership-based commercial scaling platform linking financial institutions, development agencies, county governments and market actors to finance the next phase of the PRAC-DSM-VBA model. Building on interest expressed during the validation workshop, FIPS should engage Equity Bank/Equity Group Foundation and other financial institutions to develop tailored working-capital and investment products for qualified DSMs, PRAC operators and seed enterprises, while development agencies support system-building functions such as capacity development, regulatory strengthening, research, inclusion, market infrastructure and expansion into new counties. Financing should be linked to technical competency, quality assurance, credible enterprise records and viable market or off-take opportunities, enabling professionalized seed enterprises to access appropriate finance, expand commercially, strengthen structured market relationships and progressively reinvest for sustainable and autonomous growth, while FIPS increasingly serves as a technical, evidence and partnership facilitator rather than the sole implementer.

11.0 Stakeholder validation, learning and co-creation workshop

A two-day stakeholder validation, learning and co-creation workshop was convened following completion of the mid-line evaluation to subject the findings to sector-level scrutiny, validate their practical relevance, and identify implications for the future development and scaling of the FIPS Africa potato seed systems model. The workshop brought together representatives from national and county governments, regulatory agencies, research and academic institutions, potato-sector organizations, development partners, private-sector actors, financial institutions, FIPS technical teams, Village-Based Advisors (VBAs), Decentralized Seed Multipliers (DSMs), and farmers.

The validation process was deliberately designed to extend beyond a conventional presentation of evaluation results. On Day 1, participants undertook a field excursion to programme sites where they interacted directly with ordinary potato farmers, VBAs and DSMs, observed decentralized

seed multiplication and PRAC production, and visited an operational greenhouse. Participants also heard first-hand enterprise and adoption experiences from seed entrepreneurs, including the experience of Mr. Paul Munene. This field-based verification enabled participants to interrogate the evaluation findings against observable production, enterprise and market realities before the formal plenary validation sessions. It therefore strengthened the credibility of the validation process by combining evaluation evidence with direct stakeholder observation and practitioner testimony.

11.1 Overall validation of the evaluation findings

Workshop participants strongly identified with and endorsed the principal findings of the evaluation. There was broad agreement that the PRAC–DSM–VBA model has made an important contribution to improving last-mile access to clean quality seed, farmer advisory services and varietal choice, while creating commercially motivated local seed enterprises. Participants particularly affirmed the evaluation finding that the central constraint facing the potato sector remains inadequate availability and accessibility of quality planting material. There was unanimous agreement that the current formal seed supply system remains insufficient to meet national farmer demand and that the decentralized VBA/DSM model represents a significant complementary innovation capable of extending quality seed access deeper into potato-producing communities.

The discussion reinforced an important systems proposition arising from the evaluation that the issue is not a choice between certified seed and decentralized clean/QDS seed systems. Rather, Kenya requires both a stronger formal certified-seed system and credible, quality-assured decentralized multiplication pathways that reach farmers beyond the effective reach of conventional seed suppliers.

This conclusion received strong support from county representatives. Participants from counties including Narok, Bomet and Uasin Gishu made explicit appeals for FIPS Africa to extend the VBA/DSM model into their counties, citing continuing shortages of quality seed and the applicability of the model to their own potato-production systems. This demand provides an important external indicator of the perceived relevance and scalability of the model beyond the three evaluation counties.

11.2 Soil health, disease surveillance and seed-system integrity

One of the strongest technical recommendations emerging from the workshop was that soil health and soil nutrition management should become an integral component of the FIPS potato model, rather than being treated as an ancillary agronomic issue.

Participants emphasized the need to incorporate systematic soil testing, particularly within seed-multiplication areas, both to strengthen nutrient management and to support surveillance for soil-borne diseases and pests, including Potato Cyst Nematode (PCN). As decentralized seed multiplication expands geographically, participants considered disease surveillance increasingly important because multiplication of planting material without adequate soil-health safeguards

could potentially transmit production risks across otherwise clean farms and production zones. Accordingly, future programme design should progressively integrate;

- i. Soil fertility and nutrient diagnostics into VBA/DSM advisory packages;
- ii. Routine soil testing for commercial seed multipliers;
- iii. PCN and other soil-borne disease surveillance within multiplication areas;
- iv. Clearer protocols for site selection and movement of seed; and
- v. Partnerships with competent laboratories, KEPHIS, KALRO and county agricultural services to make soil-testing services more accessible and affordable.

The implication is that future scaling of decentralized seed multiplication should combine commercial accessibility with stronger phytosanitary discipline. This would enable the programme to protect the farmer-level trust that currently underpins the VBA/DSM system while reducing systemic disease risks associated with geographic expansion.

11.3 Quality assurance, QDS and institutional collaboration

The workshop strongly reinforced the evaluation's identification of quality assurance and institutional recognition as the major next-stage constraint facing the decentralized seed system. Participants recommended a strengthened and more structured collaboration between FIPS Africa, KEPHIS, KALRO, the National Potato Council of Kenya/Potato Council, the Ministry of Agriculture and county governments to establish an appropriate quality-assurance pathway for VBA/DSM-produced seed. The discussion recognized that rapid expansion without credible quality controls could weaken farmer confidence, while excessively burdensome regulation could undermine the accessibility and commercial logic that makes decentralized multiplication effective.

Participants were therefore supportive of a proportionate regulatory framework that links DSMs to the formal seed system while preserving the last-mile advantages of the model. Of particular strategic significance, the workshop was informed that the Ministry of Agriculture is reviewing the seed-sector policy and that Quality Declared Seed (QDS) is a priority within the ongoing policy discussion. Participants regarded this as a major policy window for aligning the emerging decentralized potato seed system with the broader national seed-sector architecture. Future engagement should consequently focus on converting the practical evidence generated by the FIPS model into policy and regulatory learning around;

- Quality standards,
- Multiplier competency
- Soil and disease testing
- Inspection, traceability and farmer confidence,
- Formal recognition of decentralized quality seed.

The workshop therefore validated QDS not merely as a regulatory issue but as a potential institutional bridge between the formal certified-seed sector and decentralized farmer-facing seed enterprises.

11.4 Economics and sustainability of PRAC greenhouse enterprises

Participants strongly supported the role of PRACs as an upstream technology enabling rapid multiplication and decentralization of quality planting materials. At the same time, they recommended that future assessments move beyond variable production costs and establish the full commercial economics of greenhouse-based PRAC enterprises. Future analysis should therefore account for;

- i. Capital costs of greenhouse establishment;
- ii. Depreciation and replacement of greenhouse structures and equipment;
- iii. Mother-plant and tissue-culture material costs;
- iv. Substrate and input costs;
- v. Water, energy and sanitation requirements;
- vi. Labor and technical supervision;
- vii. Disease-control and quality-assurance costs;
- viii. Periods of under-utilized capacity;
- ix. Demand-generation and distribution costs; and
- x. Actual and potential revenue under alternative production scales.

This analysis is important because future scaling decisions should distinguish between technically feasible nurseries and commercially sustainable nursery enterprises. Full-cost enterprise modelling would enable FIPS and potential investors to determine the minimum efficient scale, break-even production volume, capital requirements and realistic return on investment for different greenhouse models. It would also provide a more rigorous basis for deciding whether future PRAC capacity should be developed through individual entrepreneurs, larger commercial DSMs, county-supported facilities, specialized private operators, or institutional partners.

11.5 Research and knowledge partnerships

The workshop demonstrated strong interest from research and academic institutions in collaborating with FIPS on the technical questions emerging from programme implementation. Egerton University, represented by Prof. Kibe, strongly supported the overall findings and emphasized the importance of scientific evidence in strengthening the future integrity and resilience of the potato seed system. This creates an opportunity for FIPS Africa to develop a more structured implementation-research interface around questions such as;

- PRAC productivity and optimal nursery management;
- disease and soil-health management;
- seed degeneration across multiplication generations;
- varietal performance under different agro-ecologies;
- enterprise economics of DSMs and PRAC nurseries;
- farmer demand and willingness to pay for clean seed;
- quality-assurance mechanisms for decentralized production; and
- adoption, diffusion and systemic-change pathways.

Joint research with universities and KALRO could convert the considerable practical evidence generated by FIPS into tested protocols, peer-reviewed evidence and stronger technical standards, thereby increasing both the credibility and scalability of the model.

11.6 Moving beyond seed: strengthening the downstream market system

While participants strongly validated the seed-system achievements, there was equally strong consensus that future programme design should broaden its systems focus beyond production and seed supply. Participants emphasized that increasing availability of quality seed and improving productivity will ultimately generate larger volumes of ware potato. Unless downstream market functions develop in parallel, production gains could create seasonal gluts, price volatility and weakened farmer incentives. The workshop therefore recommended stronger engagement with downstream actors and functions, particularly in storage, market information, structured buyers, finance and value addition.

Storage emerged as a particularly important gap. Strengthening appropriate ware and seed storage systems would enable farmers and market actors to manage seasonal supply, reduce post-harvest losses, maintain seed quality, improve timing of sales and strengthen market bargaining positions. The implication is that the next phase should progressively reposition the intervention from a predominantly seed-access model toward an integrated potato market-system development platform, while retaining quality seed as the critical upstream entry point.

11.7 Implications of the validation for the evaluation conclusions

The validation process did not identify evidence requiring substantive reversal of the evaluation conclusions. Rather, stakeholder deliberations and field observations strongly reinforced the principal findings while adding technical specificity regarding the conditions required for responsible scaling. Five areas emerged as particularly important refinements to the evaluation's forward-looking agenda;

Validation priority	Implication for the next programme phase
i. Soil health and PCN surveillance	Integrate soil testing, nutrition management and phytosanitary risk monitoring into the seed-production model.
ii. Full economics of PRAC nurseries	Establish full-cost business models and commercial viability thresholds before widespread nursery replication.
iii. Quality assurance and QDS	Deepen structured collaboration with MoA, KEPHIS, KALRO, NPCK and counties to develop proportionate regulatory and quality-assurance pathways.
iv. Geographic scaling	Respond strategically to demonstrated county demand while conditioning expansion on institutional commitment, seed-system readiness and quality safeguards.
v. Downstream market development	Complement seed-system expansion with storage, aggregation, processing, finance and structured output-market development.

11.8 Overall validation conclusion

The stakeholder validation process provides an important additional layer of evidence for the mid-line evaluation. Quantitative and qualitative findings generated during the evaluation were

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substantially corroborated through field observation, farmer and DSM testimony, technical scrutiny by research and regulatory institutions, and deliberation among private and development-sector stakeholders. The strongest collective conclusion was that Kenya continues to face a significant structural shortage of accessible quality potato seed, and the FIPS Africa PRAC-DSM-VBA model represents a credible and novel contribution to closing that gap. The discussion therefore shifted beyond the question of whether the model works. The emerging strategic question is how the model can be scaled while protecting seed quality, soil and plant health, commercial viability and farmer trust and which permanent institutions should perform and finance each function.

The validation workshop consequently strengthens the evaluation's overall conclusion that the next phase should focus less on proving the model and increasingly on institutionalization, quality assurance, research partnerships, commercial investment, county co-investment and integration of downstream market functions. The strong expressions of interest from additional counties further suggest that the programme has reached a strategic transition point from localized evidence of effectiveness toward a potentially wider national scaling pathway.

11.9 Partnerships, institutional commitments and collaboration pathways

A particularly significant outcome of the validation workshop was the shift in discussion from whether the FIPS Africa PRAC-DSM-VBA model works to which permanent public, research, commercial and financial actors should perform the functions required for its sustainability and scale. Participants recognized that the next phase cannot depend on FIPS continuing to directly perform all seed-system functions. Sustainable scaling will require a partnership architecture in which FIPS increasingly plays a technical, capacity-development, evidence and market-facilitation role, while mandated institutions and commercially motivated actors progressively assume regulatory, research, financing, seed-production, extension and market functions.

This direction is consistent with the evaluation's market-systems findings. The evaluation had already recommended localized PRAC production linked to research institutions and certified in-vitro laboratories, structured private-sector and financial partnerships, stronger market linkages, and regulatory collaboration with KEPHIS and county governments. The workshop substantially strengthened these recommendations by identifying potential institutional partners and areas for immediate collaboration.

a. Research, seed technology and quality assurance.

KALRO representatives expressed willingness to work more closely with FIPS Africa, VBAs/DSMs and KEPHIS to address the technical and institutional challenges associated with registration, certification and maintenance of seed quality. This provides an important pathway for linking decentralized multiplication to the country's formal research and seed-quality architecture. Future collaboration could encompass access to clean mother material, varietal verification, disease management, technical protocols, research on multiplication performance, soil health and PCN surveillance, and generation of evidence to inform appropriate quality-assurance standards. This builds on FIPS' existing engagement with KALRO, KEPHIS, the Ministry of Agriculture,

county governments and NPCK around regulatory reform and recognition of decentralized seed multiplication.

b. Regulation, certification and QDS.

Participants strongly supported deeper institutional collaboration between FIPS Africa, KEPHIS, KALRO, the Ministry of Agriculture, NPCK/Potato Council and county governments. This is particularly timely given the ongoing review of the seed-sector policy and the priority being accorded to QDS. The proposed collaboration should address the regulatory pathway for DSM-produced seed, appropriate inspection and traceability arrangements, soil and disease testing, multiplier registration and mechanisms for protecting quality as the model expands. The objective should not be to create a parallel seed-regulation system, but to establish a credible interface between decentralized production and Kenya's formal seed-quality architecture.

c. Skills development, competency assessment and professionalization of DSMs.

A central registration and certification constraint facing many VBAs/DSMs is that the formal seed system expects seed producers to demonstrate recognized agricultural training and technical competence. This creates a structural barrier for experienced community-based seed multipliers who may have accumulated substantial practical expertise through years of FIPS-supported production, advisory work and enterprise management, but who do not hold formal agricultural qualifications.

The workshop therefore identified Recognition of Prior Learning (RPL) through NITA as a potentially important mechanism for bridging this gap. Rather than requiring experienced DSMs to undertake lengthy conventional training, an RPL pathway could assess and formally recognize competencies already acquired through practice. NITA expressed willingness to work with FIPS to develop a short, competency-based training, assessment and certification pathway for VBAs/DSMs and PRAC nursery operators, combining recognition of demonstrated experience with targeted upgrading of any identified competency gaps.

Such a pathway could assess competencies in seed multiplication, nursery hygiene, varietal integrity, soil and disease management, record keeping, traceability, quality assurance, enterprise management and farmer advisory services. FIPS would bring the technical content, field experience and practical production protocols, while NITA would provide the competency standards, assessment and certification architecture. KEPHIS participation would be essential to ensure that the competencies recognized through RPL and supplementary training are aligned with the requirements for registration and quality assurance within the formal seed system.

The workshop further identified the possibility of FIPS becoming an accredited training and/or assessment partner, working jointly with NITA and KEPHIS. This would enable the programme to move beyond training individual VBAs toward establishing a replicable professionalization system for decentralized seed multipliers. Importantly, the objective would not be to dilute seed-quality standards, but to create a credible route through which competent but informally trained producers can meet them. This could remove one of the most significant institutional barriers currently constraining the transition of successful VBA/DSM enterprises from informal market actors into formally recognized components of Kenya's potato seed system.

d. Enterprise finance and financial inclusion.

Financial institutions participating in the workshop, indicated willingness to collaborate with FIPS to develop financial products suited to the investment and working-capital requirements of VBAs/DSMs and larger seed enterprises. This is significant because the evaluation identified finance as one of the constraints to enterprise upgrading and commercialization. Discussions specifically identified potential products around seed multiplication, PRAC greenhouse investment, working capital and financial-management capability. The interest from Equity was particularly concrete in that the institution indicated willingness to explore development of fit-for-purpose loan products and financial-literacy/loan-management support for DSMs and larger seed merchants, subject to confidence that participating enterprises meet appropriate technical and accreditation standards. This creates a potentially powerful linkage between technical accreditation and commercial finance. The workshop also identified potential financing relationships involving larger seed enterprises such as Leldet, including financing for cutting and certified-seed production.

e. County government co-investment and institutionalization.

County representatives demonstrated particularly strong ownership of the model. Beyond requests from Narok, Bomet and Uasin Gishu for expansion, counties indicated willingness to enter into MoUs with FIPS and support the development of policies and institutional mechanisms necessary for DSM quality assurance. This represents an important opportunity to move from project-based county participation toward formalized county-FIPS co-investment arrangements covering extension personnel, demonstration sites, inspection support, soil testing, PRAC infrastructure, farmer mobilization, data systems and appropriate budgetary allocations.

However, geographic expansion should be sequenced according to demonstrated institutional commitment rather than expressions of interest alone. Workshop reflections similarly emphasized the importance of prioritizing counties prepared to make longer-term plans and allocate resources. FIPS could therefore establish a county-readiness framework in which an MoU, designated technical personnel, agreed budget contribution, quality-assurance arrangements and a multi-year scaling plan constitute entry conditions for intensive support.

f. Commercial seed production, input supply and off-take partnerships.

The workshop and evaluation also identified opportunities for deeper collaboration with seed companies, agro-input businesses and larger agricultural service providers. One Acre Fund, for example, was identified as an actor already operating significant VBA/DSM seed distribution and interested in accessing cuttings, presenting the possibility of a predictable commercial customer for PRAC producers as well as a technical-capacity partnership. The evaluation had similarly identified private-sector crowding-in through agro-input companies such as Bayer EA, demonstrating that the VBA network can provide a commercially useful last-mile platform.

Workshop reflections further proposed that FIPS could build the capacity of larger organizations including county governments, commercial seed enterprises and development organizations to establish and operate their own technically compliant PRAC nurseries. This could substantially accelerate scale while allowing FIPS to transition from being primarily a producer or project implementer toward being a technical systems enabler.

g. Development partnerships and scaling.

Development organizations also emerged as potential scaling partners. Farm Africa, for example, expressed interest in technical collaboration and joint resource mobilization around potato programmes. Such partnerships could enable replication into additional counties, but should be governed by clearly defined technical standards, respective contributions, coaching arrangements, data-sharing protocols, intellectual contribution and accountability for quality. This is particularly important as FIPS' technical model becomes attractive to organizations seeking to incorporate decentralized seed multiplication into larger agricultural programmes.

Taken together, the workshop suggests the emergence of a potential multi-actor scaling architecture;

System function	Potential lead/collaborating actors	Partnership opportunity
Research, varieties and clean mother material	KALRO, Egerton University, other research institutions	Joint research, varietal performance, mother material, soil/PCN research and technical protocols
Seed regulation and quality assurance	MoA, KEPHIS, NPCK/Potato Council, counties, FIPS	QDS pathway, registration, inspection, traceability and decentralized quality assurance
DSM/PRAC skills and certification	NITA, KEPHIS, FIPS	Competency-based curriculum, training, assessment and certification
PRAC production	High-capacity DSMs, commercial seed enterprises, counties, private laboratories	Commercially viable localized nurseries linked to certified mother-plant systems
Enterprise finance	Equity Bank and other financial institutions	Tailored credit, greenhouse finance, working capital and financial literacy
Commercial seed production/off-take	Leldet, seed companies and other commercial actors	PRAC purchase, certified-seed multiplication, technical support and predictable off-take
County scaling	Narok, Bomet, Uasin Gishu and other interested counties	MoUs, co-investment, extension, local policy support and quality-assurance infrastructure
Downstream markets	Cooperatives, aggregators, processors, traders and financial actors	Storage, aggregation, logistics, structured off-take and value addition
Research and evidence	Egerton University, KALRO, FIPS and other universities	Longitudinal research, enterprise economics, adoption, soil health and systemic-change evidence
Development-sector scaling	Development agencies/INGOs including Farm Africa	Joint programming, technical replication and resource mobilization

11.10 From workshop interest to structured bilateral partnerships

While these expressions of willingness constitute a significant validation outcome, they should be interpreted as partnership propositions rather than completed institutional commitments. The immediate post-validation priority should therefore be bilateral follow-through rather than another broad stakeholder forum. FIPS should convene focused engagements with each category of potential partner to translate workshop interest into clearly specified institutional arrangements. Each bilateral discussion should answer five questions;

- i. What system function needs to be performed?
- ii. Which institution has the mandate or commercial incentive to perform it?
- iii. What will FIPS contribute?
- iv. What will the partner contribute?
- v. What concrete action, agreement or investment should follow?

Priority bilateral processes could therefore include FIPS-KEPHIS-KALRO-MoA-NPCK on QDS and quality assurance; FIPS-NITA-KEPHIS on DSM/PRAC competency certification; FIPS-Equity/financial institutions on accreditation-linked enterprise finance; FIPS-KALRO-Egerton on research and evidence; individual FIPS-county MoUs on expansion and co-investment; and commercial discussions with One Acre Fund, Leldet and other seed/private-sector actors around PRAC supply, multiplication and off-take.

11.11 Partnership implication of the validation workshop

The next phase of scale should not mean FIPS doing more of everything in more counties. It should mean FIPS enabling the right permanent institutions and commercial actors to perform more of the functions required for a sustainable potato seed system. The partnership architecture emerging from the workshop therefore provides a credible pathway for moving the PRAC-DSM-VBA model from successful programme innovation toward an increasingly institutionalized and nationally scalable seed-system model.

Annexes

Annex A	Data collection tools
Contents	Complete set of all data collection instruments.
Folder Link	Access link: Quantitative Tool , Qualitative Tools

Annex B	Sampling frame and network lists
Contents	Complete sampling documentation: (1) VBA and farmer network lists by county and network (Nakuru, Meru & Nandi)
Folder Link	Access link: Sampling Frame & Samples Identified

Annex C	Informed consent documentation
Contents	Consent evidence for all survey respondents and all qualitative informants: (1) Digital consent logs from KoBoToolbox — respondent ID, date, enumerator ID, and consent confirmation for each of the respondents
Folder Link	Access link: Informed Consent Files

Annex D	Raw and cleaned quantitative datasets
Contents	Complete quantitative data package
Folder Link	Access link: Dataset , Analysis Code

Annex E	Qualitative data and analysis
Contents	Complete qualitative data package
Folder Link	Access link: Qualitative Data Audio Files , Qualitative Data Transcripts .

Annex F	Traceable analysis files
Contents	Complete analysis audit trail
Folder Link	Access link: Analyses Files

Annex H	Key informant interview guide
Contents	Complete KII instruments
Folder Link	Access link: KII Documents

Annex I	Focus group discussion guide
Contents	Complete FGD instruments and records
Folder Link	Access link: FGD Guides

Annex J	Stakeholders validation workshop
Contents	Workshop report with list of attendants
Folder Link	Access link: 28.08.26 FIPS Africa Potato Study Validation Workshop Report (2) (2).docx



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