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Structure and Operations of MicroVeg Vegetable Innovation Platforms for Sustainable Production in Southwestern Nigeria

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FAJ: Conception/design, methodology, development of data collection instrument, Interpretation of data and first draft (30%)
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AOC: Conception/design, first draft and fund acquisition (10%)
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Abstract

This study examined the structure and operations of the MicroVeg Vegetable Operational Innovation Platforms (IPs) in Southwestern Nigeria. A multistage sampling procedure was employed to select eleven MicroVeg IPs. Data were collected through focus group discussions and key informant interviews with IP stakeholders. Data were analyzed using thematic analysis in ATLAS.ti 8. The results revealed that MicroVeg IP structure was in three levels – State, Local Government and Community with the community IPs being the operational IPs while the district IPs were the strategic IPs. Farmers, marketers, input dealers/seed producers, and microfinance bankers were identified as the main stakeholders involved in the IPs. Roles

performed by Farmers were raising emerging issues around vegetable production, in-house training, and assistance of one another to resolve emerging issues. The marketers gave farmers market situational reports and counselled farmers on prevailing consumers' preferences and how to increase profit and reduce wastage. The IP operations utilised collective knowledge, expertise, and resources to improve the efficiency of the vegetable value chain. The IPs were successful in joint diagnostic, validation of technologies and access to services, co-creation of innovations, experience sharing, learning and capacity building. The study recommended the sustenance of the IPs.

Introduction

Vegetables are essential for providing nutritious food in Nigeria. Yet these vegetables, especially the leafy ones are known to be highly perishable. This has caused concern among the stakeholders along its value chain. Many stakeholders along the value chain face significant post-harvest losses because keeping vegetables fresh for more than a day is a challenging task since most indigenous vegetables wilt within a day after harvesting, depending on the conditions they are subjected to. Despite this, vegetable farmers and marketers must minimize their losses, while consumers prefer fresh produce.

MicroVeg-Project was a project conducted to advance indigenous vegetable production, enhance yields, promote consumption and value addition, propel marketing, preserve soil and water ecosystems and enable fertilizer cost saving. This was conducted to strengthen the food and economic security of West African farmers. MicroVeg Project adopted the Innovation Platform as a forum for coordinating activities among all relevant stakeholders to achieve more holistic and effective results.

An agricultural innovation platform (IP) is a forum for bringing together representatives of stakeholder groups with different backgrounds, expertise and interests along a value chain in collaborations and partnerships to solve problems and generate innovations (AfricaRice, 2020 and Hinnou et al, 2022). Conceptually, IPs are environments that enhance the capacity to handle various issues that contemporary institutional landscapes cannot manage (Rise et al., 2019; and SustainSahel, 2023). According to Yakubu et al. (2021), such issues could be as critical as farmer-herder conflicts. Innovation platforms can operate at an operational level or a strategic level with the operational platforms being located at the grassroots level and the strategic platform set up at a higher level. The roles of the operational IP are joint diagnostic with the different ground stakeholders, validation of technological options, validation of mechanisms to access different services, e.g. credit, information, market, support to farmers' organizations, facilitation of interactions among ground actors for experience sharing and learning and building ground stakeholders' capacity. The roles of the strategic platforms are to engage facilitators (researchers, extensionists, NGO professionals) to better support IPs, facilitate experience sharing among facilitators to ensure mutual learning, create institutional support to IPs, negotiate better market access to IP members, facilitate mechanisms to access various services like credits, markets and technical supports (Akpo et al., 2021). It was important to evaluate the MicroVeg Innovation Platforms to know if and how it has been able to play their roles in the indigenous vegetable value chain in Nigeria.

The study explored the structure and operations of MicroVeg IPs for sustainable vegetable production in Southwestern Nigeria. Specifically, it:

i. described the structure of MicroVeg indigenous vegetable Innovation Platforms;
ii. identified the stakeholders in the Innovation Platforms;

iii. described the roles of the stakeholders in the MicroVeg Innovation Platform; and
iv. explored the operation of the Innovation Platforms.

Methodology

The study was carried out in Southwestern Nigeria which is made up of six States namely: Ekiti, Lagos, Ogun, Ondo, Osun and Oyo. Southwestern Nigeria lies between longitude 2^0 31^1 and 6^0 00^1 East and Latitude 6^0 21^1 and 8^0 37^1 North. Case study research design was adopted for this study with MicroVeg operational innovation platforms. MicroVeg Project adopted innovation platforms as fora for coordinating activities among all relevant stakeholders to achieve more holistic and effective outcomes. Throughout Southwestern Nigeria, MicroVeg established 34 operational (cell) IPs at the village level and 15 IPs at the district level with a central IP at the Southwestern Nigeria level.

Both random and purposive sampling procedures were used to select the respondents for the study. In the first stage, a simple random sampling technique was used to select three participating Southwestern States: Ekiti, Osun and Oyo States (out of the six participating Southwestern States i.e. Ekiti, Lagos, Ogun, Ondo, Osun, and Oyo States). In the second stage, 50 percent of the cell Innovation Platforms (IPs) in each of the States were selected using a purposive sampling technique based on the functionality of the IPs. Four of the eight cell IPs in Osun State, four of the seven cell IPs in Ekiti State and three of the five cell IPs in Oyo State were selected making a total of eleven cell IPs (out of twenty cell IPs in the 3 selected states).

Eleven Focus Group Discussions with IP stakeholders (one in each selected IP) and four key informant interviews (2 IP Chairmen and 2 State IP District Officers) were used to elicit information on the structure of the MicroVeg IPs; IP stakeholders and performed roles; and IP operations. The data collected were analysed using thematic analysis.

Results and Discussion

Structure of MicroVeg Innovation Platforms

Results in Figure 1 show the organisation of the IPs. In all the locations, all the IPs were newly constituted by MicroVeg and all the IPs were represented at the State level. At the state level, all the district IPs met together. Each participating university (Obafemi Awolowo University and Osun State University) coordinated a set of district IPs independent of each other at the district level. For example, Osun State University collaborated with Green Generation, a non-governmental organisation, which employed the services of District Officers in each State to manage the district IPs coordinated by Osun State University. Each District Officer constituted district IPs in the districts he was overseeing by launching the IPs in the different districts; attended one or two meetings in each of the IPs at the Village level and handed over the IPs to the indigenous vegetable stakeholders in each IP to organize and manage. The District Officer however attended the community level IPs once in a while. The vegetable cooperative societies with which MicroVeg worked in each of the communities supplied the members of the operational innovation platforms.

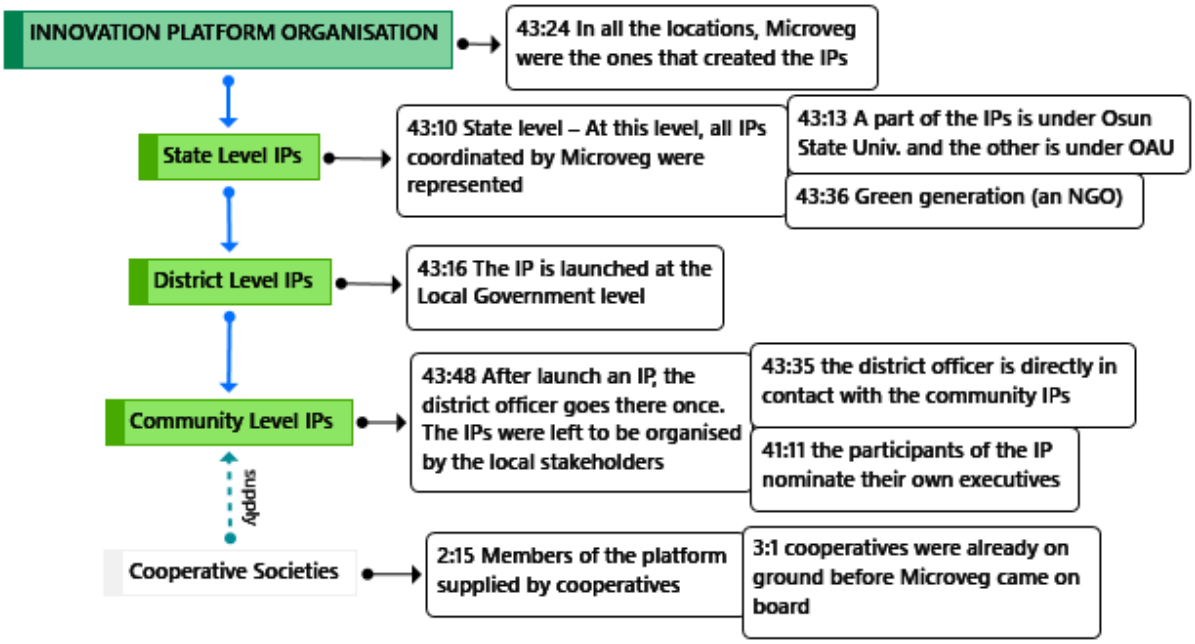

Figure 1: Organisation of MicroVeg IPs

The members of each operational IP nominated their executives and determined who would lead the affairs of the IPs at the cell level. This implies that MicroVeg IPs were instituted at 3 levels: state level, district level and cell (community) level. It also implies that the District IPs were the strategic IPs while the community-level MicroVeg IPs were the operational IPs. The operational IPs consisted of representatives of the stakeholders while the teeming stakeholders were present in the cooperative societies. Training sessions, especially on vegetable processing, preservation and value addition were conducted by the researchers at the district IPs. At the district level, all the facilitators (researchers, extensionists, NGO professionals) met together to chart the course of the operational innovation platforms and bring relevant stakeholders like microfinance banks on board. The findings in these results reveal that the strategic IPs performed its role as stated by Akpo et al. (2021) which included engaging facilitators to better support IPs, facilitating experience sharing among facilitators to ensure mutual learning, creating institutional support to IPs, negotiating better market access to IP members and facilitating mechanisms to access various services like credits, markets and technical supports.

Results in Figure 1 show that the vegetable cooperative societies that supplied members to the IPs were already on the ground before MicroVeg came on board. Most of these cooperative societies had been established years before MicroVeg partnered with them. Some were vegetable farmers' cooperative societies already registered with the State Corporate Affairs Commission. In other cases, vegetable farmers that were in Fadama groups and other groups like the National Programme for Food Security (NPFS) groups formed cooperatives. This implies that the cooperative societies formed the foundation for the IPs. It was at the cooperative societies that all the vegetable stakeholders were present and the decisions taken at the cell IPs were executed. Challenges faced at the cooperative societies were also taken to the cell IPs to discuss and get solutions. The arrangement practised implies that although MicroVeg created the IPs, MicroVeg worked with the vegetable institutions on the ground in each of the communities. This enabled them to be able to access real

vegetable stakeholders. Also, it made it easier for the local stakeholders to own the IPs and see the IPs as theirs. This aligns with the position of Van Ewijk et al. (2024) that many agricultural Innovation Platforms in Sub-Saharan Africa were constituted by researchers with the support of external funding and close partnership with relevant stakeholders at whose level the IPs were organised.

The Stakeholders in the MicroVeg IPs

Results in Table 1 show that all (100%) of the MicroVeg IPs had vegetable farmers and marketers as stakeholders; a good number (63.6%) of the IPs had input dealers as stakeholders; while few (27.3%) of the IPs had microfinance bankers as stakeholders. Also, few of the IPs (18.2%) had seed producers and transporters (9.1%) as stakeholders. This buttresses the fact that vegetable farmers and vegetable marketers were constant stakeholders in MicroVeg indigenous vegetable IPs. Extension personnel, researchers and microfinance bankers were not even regarded as stakeholders but partners in the MicroVeg IPs.

In the Operational IPs in Ekiti, microfinance bankers were regular stakeholders. The representatives of this institution attended IP meetings regularly to collect the loan repayments from IP members who were given loans. Some stakeholders might not participate conscientiously in the IPs at the operational level because, unlike the microfinance bankers, they had nothing at stake and they had no interest they compulsorily had to protect in the IPs. The transporters were said not to have participated regularly at the operational IPs because the indigenous vegetables were sold within farmers' immediate communities. Also, some farmers transported their vegetables to the markets themselves. Whenever the attention of other IP stakeholders like extension personnel, researchers, local leaders, NGOs and other service providers was needed, they were invited to the IPs. It could be deduced from this that the IPs had partnerships with these other stakeholders.

Table 1: Stakeholders in the MicroVeg IPs

Stakeholders*	Number of IPs	Percentage of IPs
Vegetable farmers	11	100
Vegetable marketers	11	100
Input dealers	7	63.64
Microfinance bankers	3	27.27
Seed producers	2	18.18
Transporters	1	9.09

***Multichoice**

This implies that MicroVeg IPs were as inclusive as was practicable. It had the representations and partnerships it needed to have successful operations. This agrees with the submission of Pamuk and Rijn (2019) that some of the criteria required for an IP to fit into the IAR4D approach were to be representative, inclusive and have various partnerships. Totin et al. (2020) and Adekunle et al. (2023) also stated that stakeholders in agricultural IPs included researchers, extension personnel, input supply, marketers, transporters, farmers' organisations, NGOs, credit providers and information service providers.

Roles of MicroVeg IP Stakeholders

Results in Figure 2 show the roles of the vegetable stakeholders. Apart from the statutory roles of producing the vegetables, farmers also, in some cases, transported the vegetables and marketed them. Farmers also raised emerging issues around vegetable production, trained one another, and assisted one another in resolving emerging issues. The marketers gave farmers situational reports of the vegetable market and counselled farmers on prevailing consumers' preferences and how they could increase their profit per unit and reduce wastage. An example of such was when the need arose to increase vegetable quantity per unit price and reduce the level of production, usually during the rainy season, and vice versa during the harmattan season. The seed producers produced seeds and sold seeds to the vegetable producers. Microfinance bankers released funds to the IP stakeholders and collected the loan repayment during the regular meetings of the benefitting IPs.

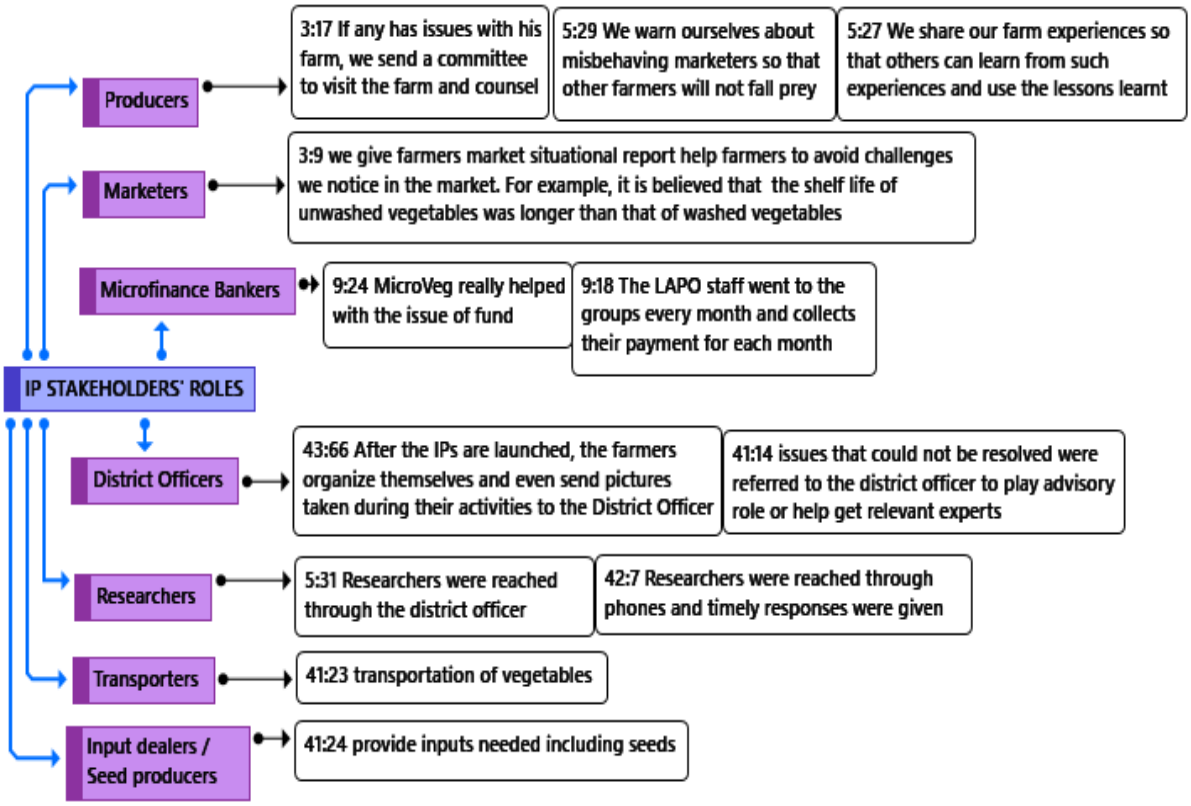

Figure 2: Roles performed by stakeholders in the IPs

Input dealers and seed producers were mutually exclusive stakeholders in the IPs. The role of input dealers was to make inputs available and find out the inputs required by farmers like seeds and fertilizers. Results in Figure 2 also reveal that the District Officers only visited the IPs occasionally and when necessary. This may be because there were quite some IPs to be supervised by each district officer. One of the roles of the District Officer was to monitor the activities of the IPs. This was usually done through occasional face-to-face visits, phone calls, and messages. The District Officer also received reports from the farmers e.g. pictures. Furthermore, monthly reports of IP activities were forwarded to the NGO (Green Generation) by the District Officers. The researchers participated occasionally also. This is usually when farmers were to be trained or when the farmers needed and asked for researchers' attention to resolve issues around the vegetable value chain. The roles of researchers were to train the

farmers and help proffer solutions to issues that came up and needed the intervention of research experts.

These findings align with the submission of Kipchumba (2023) about avocado innovation platforms farmers that farmers co-created innovations with relevant experts. They also corroborated the stance of Kamara *et al*. (2023), addressing the rice innovation platforms, that farmers' roles included trying innovation and providing feedback, monitoring and assisting in the mobilization of colleague farmers at the community level. The study also supports the findings of Amerani et al. (2024) that research and extension services had a limited impact on the Agricultural Knowledge and Innovation System of Greece.

Operations of MicroVeg IP

Results in Figure 3 show that the frequency of meetings in MicroVeg IPs varied. While some IPs met weekly, some met every two weeks (fortnightly), while some met monthly. Some IPs increased the intervals between subsequent meetings during the off-season and reduced the intervals when there were emergencies. This means that IPs met regularly at their convenient frequencies and as the needs arose. This implies that the operational IPs held regular physical meetings to discuss as an IP.

The results also show that issues arising from the vegetable value chain were regularly discussed during IP meetings. The operational IP members addressed challenges along the vegetable value chain and resolved issues they could handle on their own. For issues beyond the capability of the IP members, the district officers were contacted to play advisory roles or help get relevant experts to address such issues. Results in Figure 3 furthermore, reveal that training took place in all the IPs from time to time. The district officers, at the onset of the IPs, trained the farmers in the operational IPs. The stakeholders, especially farmers, also organised training among themselves from time to time. Whenever the researchers were going to organise training, such training took place at the State IP levels.

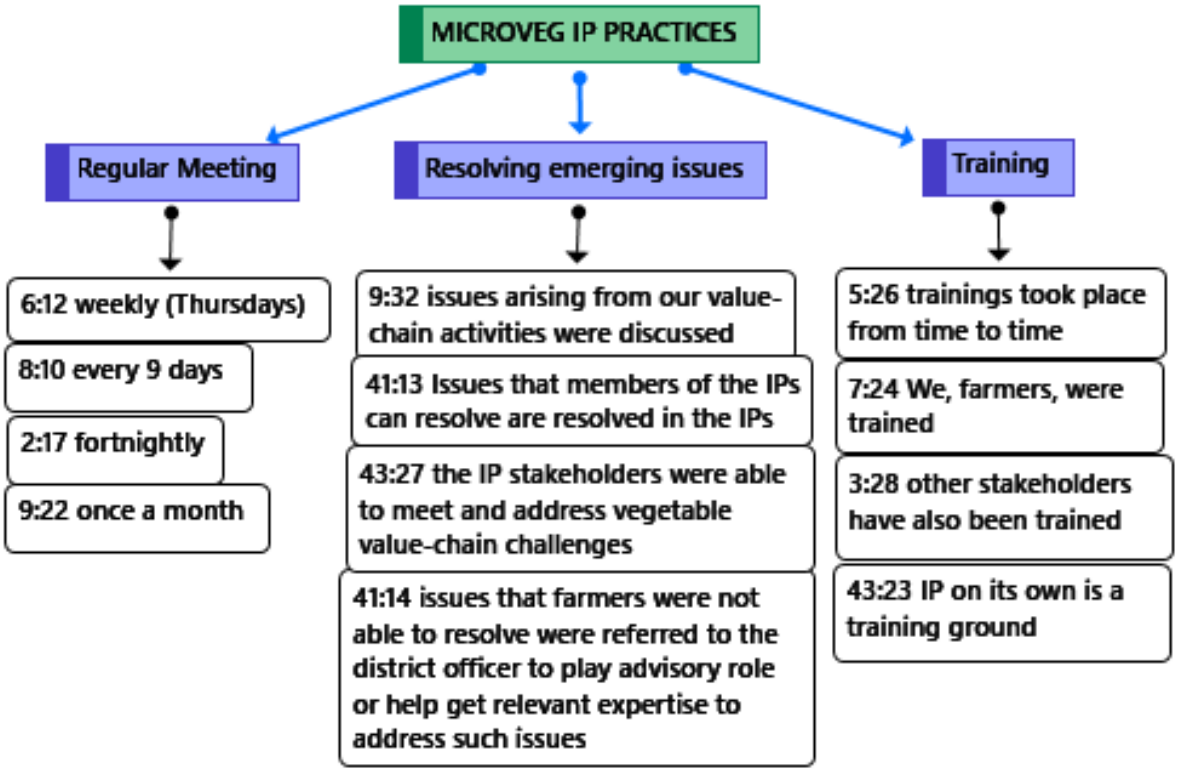

Figure 3: Practices in MicroVeg IPs

Training Sessions and Innovation Co-creation

Results in Figure 4 show the aspects on which training had been organised. These include modern techniques in transplanting, water management, seed dressing, seed dormancy breaking, fertilizer microdosing, insect pest management, vegetable processing and preservation. IP members shared emerging challenges faced and how such could be overcome; how to make the vegetable value chain a more profitable venture; and how progress could be made in the different aspects of the value chain. These were also seen as training among IP members. Results in Figure 4 also reveal that the IPs were platforms for innovation generation. Stakeholders in IPs combined their Indigenous technologies with the ones introduced by MicroVeg and generated innovations. The innovations generated have improved the knowledge of the IP members. The innovations generated were also said to be practicable and some of them have been adopted and found to be quite effective. It can be deduced from these results that the MicroVeg IPs were operational and served as platforms that brought representatives of stakeholder groups with different backgrounds, expertise and interests along the vegetable value chain together in collaborations and partnerships to solve problems and generate innovations which they successfully did. The IPs also enhanced the capacity of the stakeholders to handle various emerging issues as expected (Rise et al., 2019; Turyahikayo et al., *2019* and SustainSahel, 2023). These findings affirmed that MicroVeg operational IPs played their roles which entailed joint diagnostic, validation of technological options and mechanisms to access different services and facilitation of interaction among IP community-based stakeholders for experience sharing, learning and capacity building (Akpo et al., 2021)

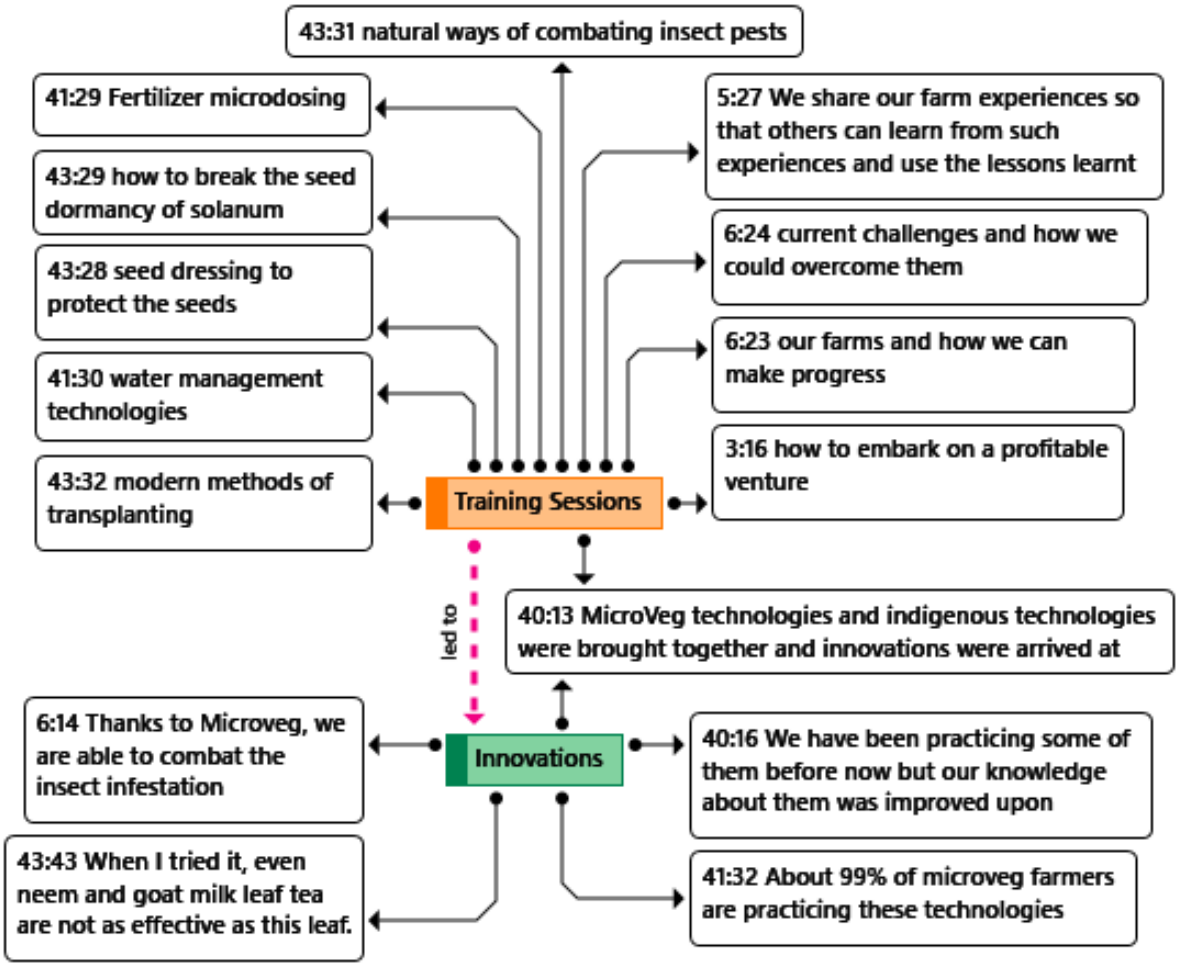

Figure 4: Training sessions and innovation co-creation

Conclusion and Recommendations

MicroVeg IP structure was in three levels – state, local government and community. The community IPs were the operational IPs while the district IPs were the strategic IPs. The operations of the operational IPs were joint diagnostic, validation of technological options and mechanisms to access different services, co-creation of innovations, experience sharing, learning and capacity building.

The IPs should be sustained by the stakeholders so that they could continue to keep the vegetable value chain viable and retain the potential to attract benefits from funding agencies and government projects.

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