



Popularizing National Root Crops Research Institute (NRCRI) Umudike Innovations amongst Students through the Use of Demonstration Farms

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Abstract

Agricultural innovations will have little or no impact until they are shared with stakeholders in ways that are meaningful to them. This paper highlights the use of demonstration farm by National Root Crops Research Institute (NRCRI) Umudike to disseminate, promote and popularize her innovations for improved productivity of her mandate crops amongst student visitors from 2018-2020. The demonstration farm was set up at Umudike in the rainy season of each year following good agronomic practices recommended by the Institute. Three thousand six hundred and twelve (3612) students from ninety-four (94) schools visited the farm during the period. The students were first given a *pep* talk on mandate of the Institute and the objectives of the demonstration farm before a guided tour of the farm after which there was a rap up and question time during which they were individually asked of their impression of the demonstration farm. Other data collected from the visiting schools include; their state, geopolitical zone, number of students and sex of the students. The data were analysed using descriptive statistics such frequencies and percentages. Vast majority (88.90%) of the visiting schools were from the South East geopolitical zone and majorly from Abia State (53.98%) probably due to proximity of the schools in the zone and state to the Institute. They were students mostly from secondary schools (50.00%), with more females (56.45%) than males (43.55%), reflecting the prevailing pattern of school enrolment skewed in favour of females in the zone. Most students (89.56%) were impressed by the innovations demonstrated in the farm. Many were excited to see crops like turmeric and ginger for the first time and learn how they are cultivated. In 2020, there were no student visitors to the demonstration farm as a result of drastic measures taken by government to curtail the transmission of the COVID-19 pandemic which includes closure of schools and movement restrictions.

Keywords: *Demonstration farm, Students, Innovations, COVID-19 Pandemic, NRCRI Umudike*

Introduction

The purpose of technology development is to enhance living conditions, generate opportunities for people to make livelihoods and improve their standard of living (Ironkwe, 2011). Technologies and innovations are developed by Research Agencies, while the Extension Agencies disseminate the developed technologies to farmers for adoption to increase production (Ironkwe, 2013). Agricultural innovations will have little or no impact until they are shared with farmers and other stakeholders in ways that are meaningful to them. Research Institutions developed technologies and published their results, but farmers and other stakeholders were not comfortable with printed words, and as a result, there was a continuing lack of connection between the informational needs of the farmers and the research stations who were conducting the research and publishing their findings (Rasmussen, 1989). Stakeholders are more confident with and are more

likely to trust what they see than what they hear (Flanagan, 2015).

Demonstration farm is a group extension method that has been used in agricultural extension for a very long time. It is a farm used to research or demonstrate various agricultural innovations and are usually owned or operated by educational institutions or government ministries. They have the advantages of being visual, practical, efficient, engaging and links stakeholders with research (Beevers, 2018). Demonstration farm is a powerful tool to use with students as it gives them the opportunity to observe, at first hand, recommended new crop practices. The strength of the demonstration should lie in its simplicity and its ability to present the farmers with concrete results (FAO, 1983). Demonstration farms basically serve two main purposes: to show farmers how to use an innovation (Method Demonstration) and how that innovation works (Result

Demonstration). Demonstrating results of an innovation to a target audience greatly affects adoption more than other educational methods (Boleman and Dromgoole, 2007); as farmers are encouraged by the noticeable results of such innovation to try the practice themselves (FAO, 1983).

As part of their training, many schools undertake excursions to Research Centres such as NRCRI Umudike to familiarize students with new innovations and state of art equipment. These students are harbingers of prospects. Some of them are farmers in their own right, while some will become farmers, processors, industrialists, policy makers and other stakeholders in agriculture. In addition, students carry information they learn about innovations to their parents who may be farmers or to farmers in their neighbourhood, hence familiarising them with agricultural innovations is important.

Among the cardinal objectives of the Extension Services Programme of National Root Crops Research Institute is the establishment and use of demonstration plots with improved production practices to showcase prototype on-farm evidence of various technologies developed by the Institute for teaching myriads of students, farmers and other visitors that visit the Institute. The promotion and popularization of improved root and tuber crops technologies developed at NRCRI Umudike through demonstration farm is carried out to bring about increased participation, orientation, adoption and diffusion and higher productivity by farmers leading to increased yields, food sufficiency and economic gains for farmers

(Tokula, *et al.*, 2016). This paper highlights the visits of students to the Demonstration farm of NRCRI Umudike and the popularization of Institutes innovations amongst this category of visitors.

Methodology

This study was carried out in 2018 to 2020 at NRCRI, Umudike Demonstration farm in Abia State, Nigeria. The emphasis was on Student visitors to the demonstration farm. Improved varieties and landraces of NRCRI Umudike mandate crops namely cassava, yam, turmeric, ginger, sweet potato and cocoyam were planted and maintained in the demonstration farm during the rainy season of 2018, 2019 and 2020 following good agronomic management practices recommended by the Institute (Anyaegbunam *et al.*, 2008; Mbanaso *et al.*, 2008; Eke-okoro *et al.*, 2008; Ohaeri and Ukpabi, 2021). Some sections of the demonstration farm are shown in Figs 1 a-f. Three key information sharing stages were adopted namely pep talk/briefing, guided tour of the farm and debriefing. At the first stage, student visitors to the demonstration farm were given a pep talk on the general mandate of the Institute, the cardinal objectives of the Extension Programme in general and the specific objective of the demonstration farm (Figs 2 a & b). At the second stage, during the guided tour, the innovations applied on the farm were explained to the students. At the third stage, the students were debriefed and their understanding of the innovations applied on the farm assessed. Finally, data were collected from the visiting schools which include their state, geopolitical zone, number of students and sex of the students. The data was analysed using descriptive statistics like frequencies and percentages.



Fig 1a: Cassava section of the demo farm



Fig 1b: Ginger section of the demo farm



Fig 1c: Sweet potato section demo farm



Fig 1d: Turmeric section of the demo farm



Fig 1e: Yam section of the demo farm



Fig 1f: Cocoyam section of the demo farm



Fig 2a & b: Students receiving a pep talk before a guided tour of Demo Farm

Results and Discussion

Distribution of student visitors to the demonstration farm according to categories

In 2018, 2402 students from 63 schools, visited the demonstration farm, while in 2019, 1210 students from 31 schools were at the farm. There were no student visitors to the farm in 2020 (Table 1). The bulk of the visitors in 2018 (47.61%) and 2019 (54.84%) were from secondary schools, followed by tertiary institutions (Table 1). Vast majority (88.90%) of the visiting schools were from the South East geopolitical zone. Majority (53.98%) of the visitors were from Abia State with Imo State (25.8%) coming a distant second (Table 2). Proximity of Abia State to the Institute with its benign effect on logistics may have been responsible for the high number of visitors from the State. Majority (55.8%) of the visitors across all the categories were females (Table 1). Varrella, (2020) and Akinbi and

Akinbi (2015), reported more female enrolment in schools than males in south eastern Nigeria.

Popularization of NRCRI innovations to student visitors of the demonstration farm

Vast majority (89.56%) of the visitors were impressed, 3.79% were undecided, while 9.19% were unimpressed with the demonstration farm and the innovations applied for its cultivation (Table 3). In 2018, 93.83% of tertiary school students were impressed with the innovation applied in the demonstration farm, while in 2019, 94.17% of secondary school students were impressed. Some students were excited to see some crops like ginger and turmeric for the first time.

Effect of COVID-19 Pandemic on the number of visitors to the Demonstration farm

There were no visitors to the demonstration farm in the

year 2020 (Table 1). COVID-19 (The novel coronavirus disease 2019), was declared a pandemic on March 11, 2020, by World Health Organization (WHO) calling for countries to take urgent and aggressive action (Cucinotta and Vanelli, 2020). Nigeria mounted a swift and aggressive response to COVID-19 that included early activation of the national EOC at the NCDC, establishment of the multi-sectoral COVID-19 PTF, and decisive actions to stop international travel and impose a time-limited lockdown in highly affected areas (Dan-Nwafor *et al.*, 2020). Because of the droplet method of transmission of Severe Acute Respiratory Syndrome (SARS) Cov 2 virus that causes COVID-19, severe restrictions were imposed on movement and group gathering. Schools were also closed and certain categories of Civil Servants were asked to work from home at some point. Wearing of face masks, social

distancing and other measures were also put in place to minimize contact. These measures taken to mitigate the transmission of COVID-19 drastically reduced the number of visitors to the demonstration farm in 2020 and consequently negatively impacted on the attainment of its objectives.

Conclusion

NRCRI Umudike innovations for improved productivity of her mandate crops were popularized among student visitors to the demonstration farm. These students, majority of who were females, were mainly from Abia State in South Eastern Nigeria. COVID-19 pandemic severely limited the number of student visitors to the farm.

Table 1: Distribution of visitors to the demonstration farm according to number of schools, students and sex in 2018 - 20

Categories	Number of Schools	Number of students	Number of males	Number of females
2018				
Primary	15 (23.81)	491 (20.44)	212 (20.42)	279 (20.45)
Secondary	30 (47.61)	1166 (48.54)	332 (31.98)	672 (49.27)
Tertiary	18 (28.57)	745 (31.02)	494 (47.59)	413 (30.27)
Total	63	2402	1038 (43.21)	1364 (56.77)
2019				
Primary	5 (16.12)	198 (16.36)	88 (16.45)	110 (16.30)
Secondary	17 (54.84)	635 (52.48)	264 (49.44)	371 (54.96)
Tertiary	9 (29.03)	377 (31.16)	183 (34.21)	194 (28.74)
Total	31	1210	535 (44.21)	675 (55.79)
2020				
Primary	0	0	0	0
Secondary	0	0	0	0
Tertiary	0	0	0	0
Total	0	0	0	0
Grand Total	94	3612	1573 (43.55)	2039 (56.45)

* Values in brackets are percentages

Table 2: Distribution of visiting schools to the demonstration farm according to their states

State	2018		2019		2020	
	Freq	Percentage	Freq	Percentage	Freq	Percentage
Abia	34	53.98	16	51.60	0	0
Imo	9	14.29	8	25.80	0	0
Ebonyi	7	11.11	3	9.70	0	0
Rivers	2	3.17	2	6.50	0	0
Delta	0	0	1	3.20	0	0
Cross River	0	0	1	3.20	0	0
Akwa Ibom	3	4.76	0	0	0	0
Kaduna	2	3.17	0	0	0	0
Anambra	2	3.17	0	0	0	0
Enugu	4	6.35	0	0	0	0
Total	63	100	31	100	0	0

Table 3: Distribution of visitors to the demonstration farm according to their impression of the innovations applied in the farm

Categories	Impressed	Undecided	Unimpressed
2018			
Primary	440 (89.61)	20 (4.07)	31 (6.31)
Secondary	1001 (85.85)	47 (4.03)	118 (10.12)
Tertiary	699 (93.83)	10 (1.34)	36 (4.83)
Total	2140 (89.09)	77 (3.21)	185 (7.70)
2019			
Primary	147 (74.24)	30 (15.15)	21 (10.61)
Secondary	598 (94.17)	22 (3.46)	15 (2.36)
Tertiary	350 (92.84)	8 (2.12)	19 (5.04)
Total	1095 (90.50)	60 (4.96)	55 (4.55)
2020			
Primary	0	0	0
Secondary	0	0	0
Tertiary	0	0	0
^Total	0	0	0
Grand Total	3235 (89.56)	137 (3.79)	240 (9.19)

References in brackets are percentages

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