Implications of AGRIRESEARCH's extensional services towards helping farmers intensify and diversify their farming systems for a transformative and improved agricultural production

INTRODUCTION

Agriculture is the main economic activity in Rwanda with around 72% of the working population employed in the sector and accounting for 33% of the national GDP. Despite these numbers, productivity remains very low and the potential represented by the sector is far from being met. 75% of Rwanda's agricultural production comes from smallholder farmers but majority of them lack information and skills on the best practices and the use agricultural inputs which leads to very low yields. Despite some progress over the past years, agricultural productivity in Sub-Saharan Africa is still low and far below potential.

Reaching these farmers with farming information, training, good agricultural practices and advisory services is vital to successfully meet the demands, food security guarantee and rural poverty alleviation among others.

It is in the above context that upon realizing what it takes to combat the massive problem of poverty specifically in rural communities, AGRIRESEARCH - a youth National Non-Governmental organization was initiated accordingly with different missions including diversification of crop production and increasing crop productivity. AGRIRESEARCH therefore emphasizes a stronger role in agriculture extensional services to farmers.

OUR ACTIVITIES

1. DEMONSTRATION PLOTS and FARMER FIELD SCHOOLS

With a growing population, shrinking land base, and emerging threats of climate change, agricultural transformation has become a high priority globally to enhance productivity and conserve natural resources. Global efforts are needed to address the pressing challenges of food insecurity, hunger, malnutrition, and poverty, as well as to protect livelihoods, enhance economic growth, and engage youth with due consideration to gender equity in the food and agricultural sector. Along with research and education, extension and outreach remain key pillars for global agricultural development and food systems. Several models of extension have

been implemented globally to serve the farming communities (Kumar et al., 2019; Antholt, 1998; Torimiro & Igodan, 2019).

Demonstration plots and Farmer Field School (FFS) are among models AGRIRESEARCH has used towards developing knowledge and skills for farmers to build their capacity to adopt improved practices and in turn increase yields.

Demonstration plots have facilitated clear positive changes in farmer practices through the integration of core behaviors in their farm activities such as proper spacing, use of fertilizers, improved seeds, pest and disease control.

We have also had a good experience in FFS, in exchange visits done to share findings with local authorities, agriculture workers and other farmers.

FFS strengthened community relations and the capacity of listening to other's opinion, to formulate and express personal point of view and to find together a common solution through the process of communication and learning.

49 demonstration plots (4 in 2019-2020, 14 in 2020-2021, 10 in 2021-2022 &1Demonstration plot in 2022-2023) and 25 farmer field school plots (2 FFS in 2020-2021, 2 in 2021-2022 and 1 in 2022-2023) were installed with the purpose of showcasing good agricultural practices to the farmers so as to increase their productivity. Furthermore, during the follow up on the above said activities, we showed and advised farmers on how to use agricultural inputs (seeds, fertilizers and pesticides) in a precisely manner as the result of having good health and well-being of the farmers. So far, many farmers leant on the established Demos and their productions increased respectively, as Good Agricultural Practices (GAPs) were adopted. They have also gained skills and knowledge on how to use precise inputs in their farms. 1234 farmers were recorded as direct beneficiaries in season 2021 A from Busogo, Gataraga and Kimonyi sectors in Musanze district and above 16526 farmers were recorded as indirect beneficiaries via social media platforms and farmer to farmer skills transfer. Crop productivity increased for farmers who worked with us in season 2021 A as follows: Maize from 2.3T/ha to 4.86T/ha, Wheat from 1.8T/ha to 3.37T/ha.

Yield record measurement

1. ENGAGEMENTS and AGRIRESEARCH BY THE NUMBERS

238
Individual Farming households worked with us and have improved farming skills due to AGRIRESEARCH

47
Farmer cooperatives worked with us in Musanze with 1492 Members (936Males and 556Females)

5430	**20 000**
Twitter followers	Average views of our tweets in 24 hours

829
Users of AGRITrials mobile application (Extension tool)

In addition to this, AGRIRESEARCH has via social media carried out an impactful Youth Engagement in Agriculture Campaign from 17 to 21 May 2021 with theme "The contribution of Youth in agriculture to the world's pathway of success.

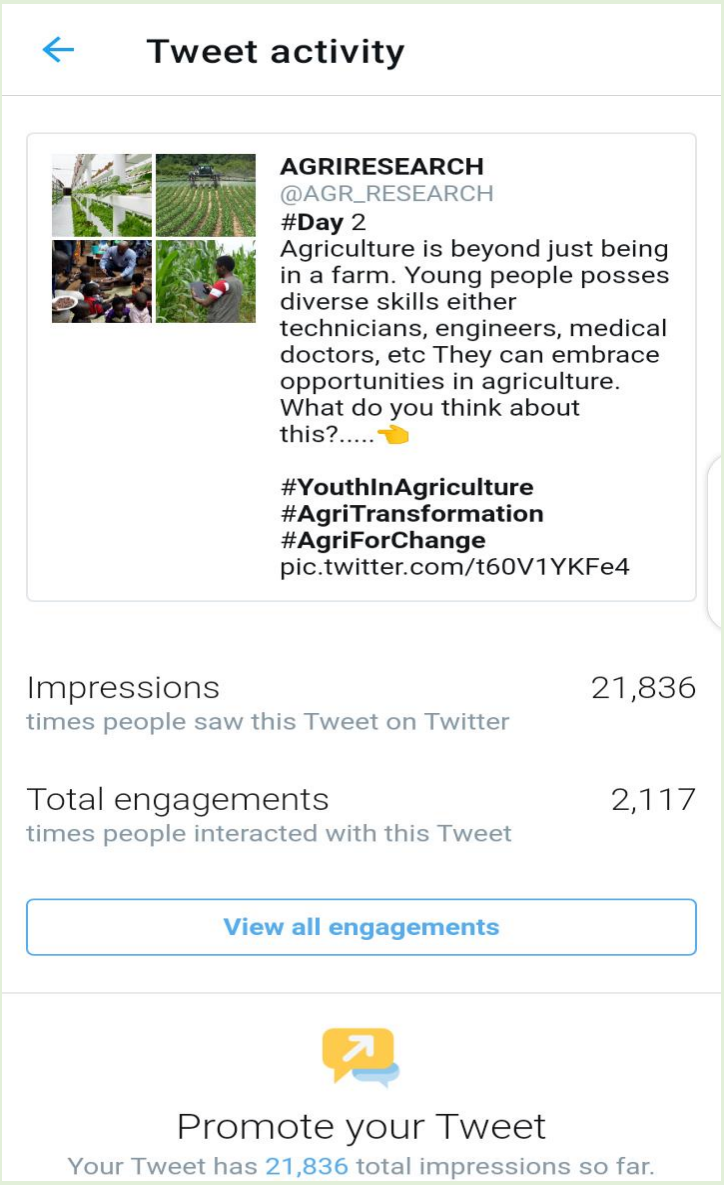
There have been youth mentors and cheerleaders for youth doing and willing to do Agriculture as business, including Mr Dieu Donne (Diego) TWAHIRWA, Managing Director of Gashora Farm, Olivier MUVANDIMWE, Program Manager of RYAF and Arcade NSHIMIYIMANA, Executive secretary of YEAN who took the audience including many youths through the webinar with theme "Opportunities exist for youth engaged in Agribusiness. They have demonstrated and explained the privilege of agriculture and its contribution to the country's economy and how facilitating the participation of the youth cohort in the agricultural sector has the potential to reduce rural poverty amongst youths and adults alike.

The campaign on Youth Engagement in Agriculture led to their mind-sets change and this will help in the contribution to the world's pathway of success as it was our main target. In order to ensure widespread impact of the campaign country widely, AGRIRESEARCH has approached Rwanda Youth in Agribusiness Forum (RYAF) as a Forum which has mandate of change and challenge the current mind-set among the youth vis-à-vis the agricultural sector, while orienting youth to raise awareness on the practice of business- oriented agriculture and to take up opportunities that the agriculture sector offers.

The partnership has created remarkable synergy which has made the campaign to be successful based on the feedback we have received thereafter.

PARTICIPANTS IMPRESSION AND CAMPAIGN FOLLOWERS THROUGH SOCIO MEDIAS

WORLD'S PATHWAY OF SUCCESS"



Precise use of agriculture inputs (Agrochemicals) Campaign in Musanze district

Although pesticides and agrochemicals have a positive effect on plant health in terms of insect pests and diseases control, increased productivity and improved crop storage,their malpractice impacts negatively. Equipping growers and agrochemicals dealers with sufficient knowledge regarding proper use, handling and the potential dangers of pesticides improper practices is the only practically feasible solution. In fact, farming communities, especially the developing worlds' have not a good level of such knowledge.

In this context, AGRIRESEARCH Organization in collaboration with MUSANZE district has organized the campaign on the proper use of agriculture input (Agrochemicals). The campaign has

brought together Musanze district director of agriculture and natural resources, district agronomist and all Musanze sector agronomists, to discuss together the status of this problem in this district and a way forward to help small scale and other farmers to access real-time information on the use of agricultural inputs as precise and simple as possible to increase farm productivity and profitability while ensuring farmers safety and protecting the environment.

AWARNESS COMPAIGN ON CROPPING SEASON 2021 A PREPARATION

Together with Musanze district and RAB/Musanze station, we prepared and conducted awareness campaign] on cropping season 2021A preparation where we had a theme of**" Empowering smallholder farmers to do modern agriculture as a way of shifting from producing enough to producing surplus"**.in this regard, the campaign helped farmers to use agricultural inputs as precise as possible (seeds, fertilizers and pesticides),to register in Smart Nkunganire System and it helped them to be aware on and use of improved seeds, all good agricultural practices was disseminated to to the farmers in this campaign.

On May 27,2021AGRIRESEARCH Organization hosted a training with farmer promoters and farmer field school facilitators from Musanze district on of safe and precise use of agrochemicals (Pesticides and fertilizers) to smallholder and doing evaluation of 2021 A&B seasons and prepare for the forthcoming season 2022A.

2. NUTRITION EXTENSION APPROACHES

Nutritional deficiencies in the third world affect the daily life of almost all the poor, mostly hungry people. If one wants to alleviate those deficiencies, recurrent food aid will never be a solution. That's when kitchen garden goes remarkably important towards alleviating food deficiencies, contagious hunger, malnutrition and provision of extra income for households.

AGRIRESEARCH has put much effort in reducing malnutrition where six (6) kitchen gardens were installed for the most vulnerable six families in RUGESHI Site -Busogo sector, Musanze district in addition to 8 households given vegetables from the kitchen garden installed in AGRIRESEARCH's Climate Smart Agriculture Model Farm located in Busogo Sector near University of Rwanda – Busogo campus. What is more fascinating is how these families shared the quality vegetable seedlings to their neighbors resulted in further increase in number of families fighting malnutrition! There is a plan that in fighting against malnutrition, the number of kitchen gardens will be increased and extended to many families and continue to do follow-ups and possible support to these families.


Households from Busogo sector taking vegetable seedlings given by AGRIRESEARCH Organization

3. CLIMATE SMART AGRICULTURE(CSA) IN EXTENSION AND ADVISORY SERVICES

Despite impressive growth in agriculture production over the past 10 years, changes in weather and climate patterns are still a complex problem in the sector.

We installed CSA model farm at community level where in capacity building of farmers on climate resilient agriculture by the model of "learning by doing", farmers get skills on the practices being done. This model farm incorporates all CSA pillars: **mitigation, adaptation and sustainable productivity**

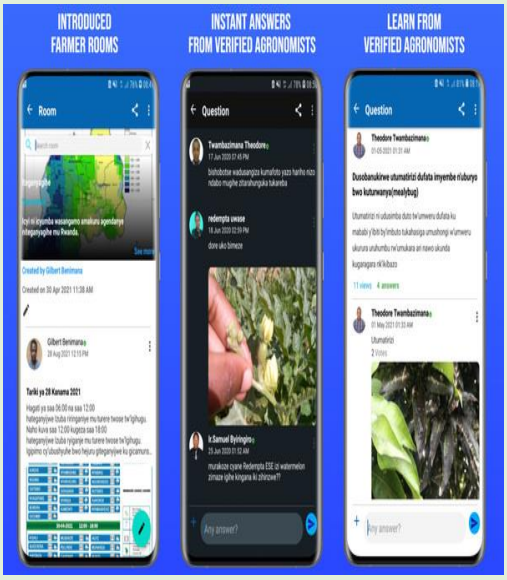
Impact of our CSA model farm to the community

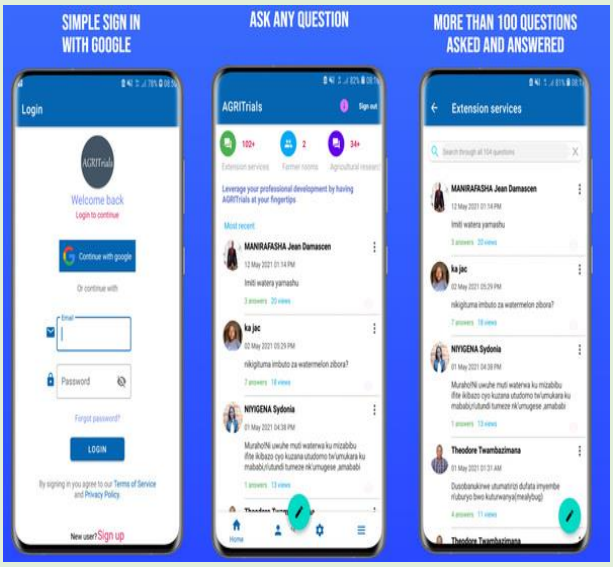
More than 30,000 people have learnt and adopted all CSA practices from our CSA model farm including women, youth,108 Students in University of Rwanda – College of Agriculture,Animal sciences and Veterinary Medicines(UR-CAVM) grouped in AGRIRESEARCH CLUB, farmer promoters and facilitators from Musanze districts.

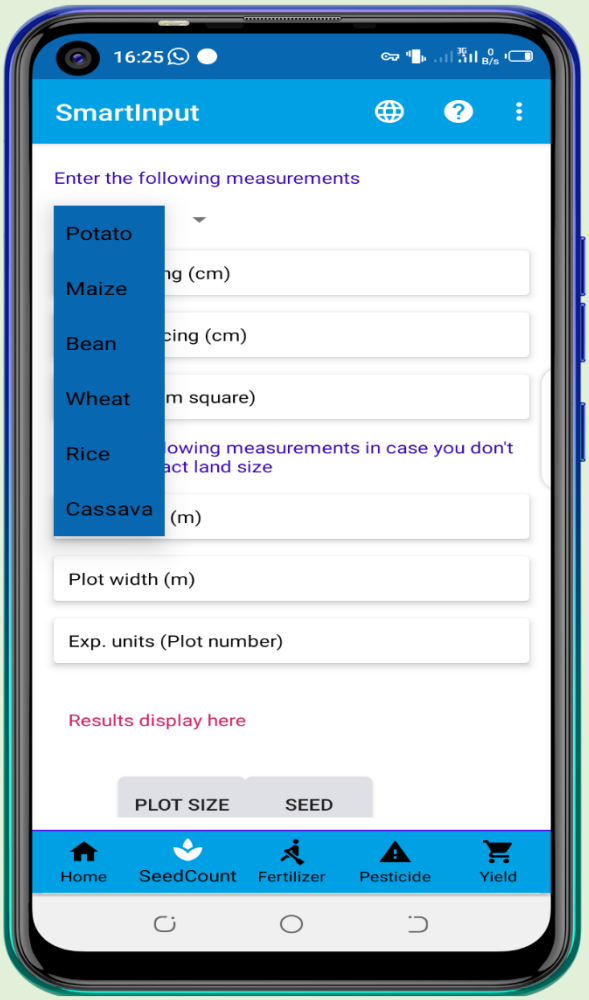
4. DIGITAL EXTENSION AND ICTs

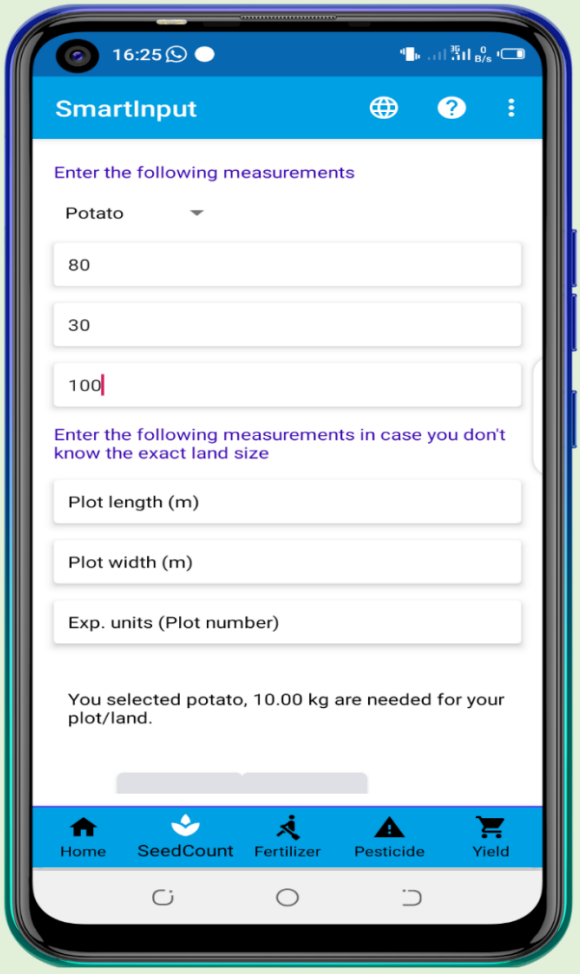
AGRIRESEARCH has developed two digital tools-AGRITrials and SmartInput-that help farmers to boost farm productivity while conserving the environment. AGRITrials provides daily and seasonal weather information, market information and advices on decision making for their farming businesses. The app was recognized by USAID Feed the Future, Developing Local Extension Capacity (DLEC) project as the best digital extension tool worldwide in 2021. It also won in the best video category of producing a video showcasing how the app works.

SmartInput mobile application among other things helps farmers to use agriculture inputs (fertilizers, seeds and pesticides) as recommended. It was featured in Youth Solutions report 2020, by United Nations, Sustainable Development Solutions Youth Network (UN-SDSN, 2020.Pg56) https://t.co/m5YwajzqOz where it received a 50,000 USD in seed funding after emerging among 50 global game changing innovative sustainable projects by youth in 2020.


INTRODUCED FARMER ROOMS
INSTANT ANSWERS FROM VERIFIED AGRONOMISTS
LEARN FROM VERIFIED AGRONOMISTS


SIMPLE SIGN IN WITH GOOGLE
ASK ANY QUESTION
MORE THAN 100 QUESTIONS ASKED AND ANSWERED

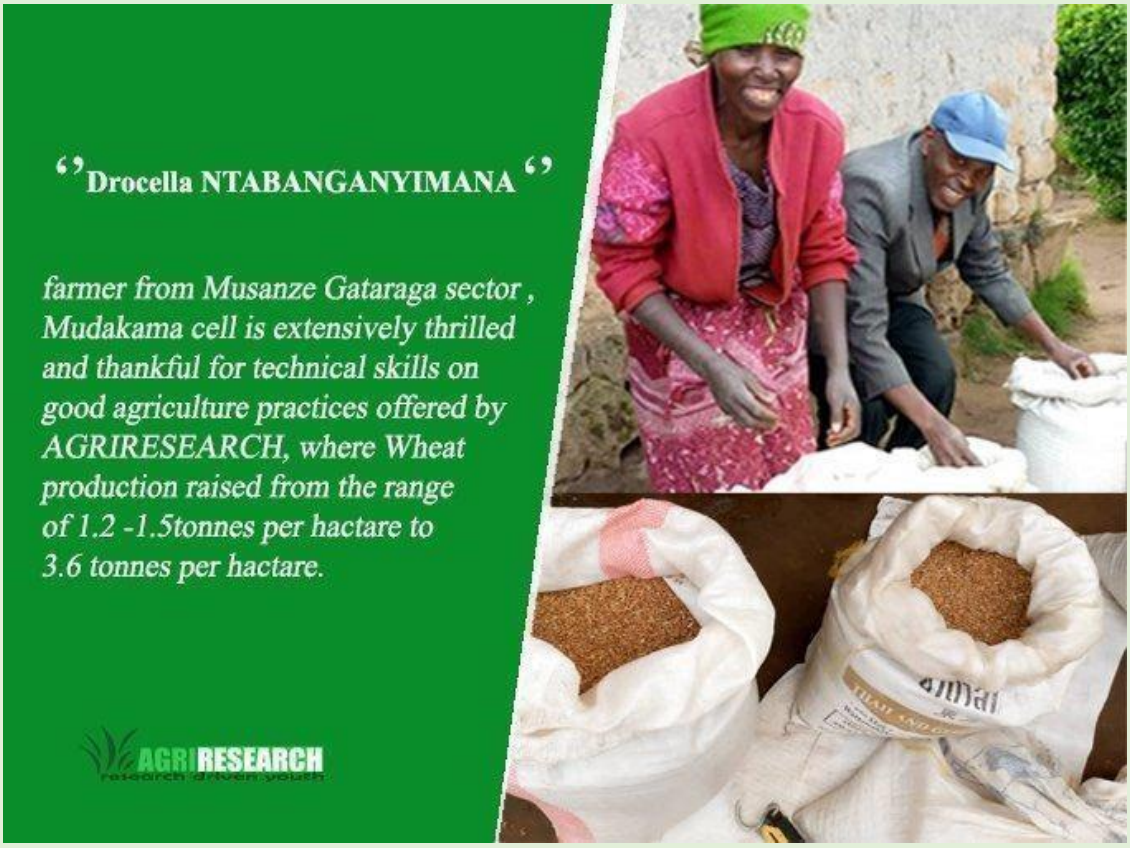

16:25
SmartInput
Enter the following measurements
Potato
Maize
Bean
Wheat
Rice
Cassava
Plot width (m)
Exp. units (Plot number)
Results display here
PLOT SIZE
SEED
Home
SeedCount
Fertilizer
Pesticide
Yield


16:25
SmartInput
Enter the following measurements
Potato
80
30
100
Enter the following measurements in case you don't know the exact land size
Plot length (m)
Plot width (m)
Exp. units (Plot number)
You selected potato, 10.00 kg are needed for your plot/land.
Home
SeedCount
Fertilizer
Pesticide
Yield

5. FARMER'S TESTIMONIES AND TRANSFORMATIONAL IMPACTS OF OUR ACTIVITIES

Since operations on the territory of Rwanda in 2020, many changes were observed and beneficiaries witness how working with us has helped them in improving their standards of living.

For instance, the fiscal year (2020-2021) has remarkably proved us that working relentlessly to support smallholder farmers is a key to agriculture transformation and building sustainable resilient food systems. The following are some transformational impacts recognized:



A Farmer testifies how she was increased wheat yield

A farmer promoter GAKURU from Kimonyi sector, Musanze district, witnessing how AGRIRESEARCH has helped them to boost maize yield (https://youtu.be/lhQgy7Uuq-k)