PROPOSAL

GARIKHANE E-CHAUTARI

MUNICIPAL AGRICULTURE ADVISORY CENTER

DIGITAL AGRICULTURE: DIGITAL TRANSFORMATION IN AGRICULTURE

Submitted by:
Jointly by GariKhane
Hattiban, Lalitpur

and

GeoKrishi Initiative,
Digital Data System for Development
Thapathali, Kathmandu

Version 1.2

August, 2020

1. Background

The predominance of traditional farming practices, lack of skilled manpower, and absence of market linkages are major challenges credited with holding back growth within the sector and preventing farmers from increasing their financial returns. We believe that one core issue lies at the heart of these challenges: farmers do not have access to the information they need, when they need it, to be able to take advantage of opportunities and tackle the challenges of changing economic, market, and climate conditions.

Today, digital tools are helping many businesses to take better decisions, and farmers are no exception. Technology and digital tools are helping farmers select the right crops, use more precise amounts of water, fertilizers and keep a better control of their operations. Increasing the efficiency, productivity and sustainability of farms are areas where ICT can make a significant contribution. Farming also involves risks and uncertainties due to poor soil quality, drought, erosion and pests. ICT can deliver context specific information to farmers on crop care, right use of fertilizers, pest control, seed sourcing and market demand and prices. Likewise, the livestock species play very important economic, social and cultural roles for rural households as they contribute to improve income and wellbeing of the farm family. Livestock helps in food supply, family nutrition, income, asset savings, soil productivity, livelihoods, transport, agricultural traction, diversification and sustainable production, family and community employment, ritual purposes and social status.

The main purpose of the project is to explore possibilities in establishing digitally enabled agriculture information center at municipality and farmers' cooperative or group level. The proposed approach includes four key activities: 1) Developing and establishing a digital agriculture platform; 2) Capacity building of agriculture officers, field mobilizer or local service provider 3) Operationalizing SMART and location specific agriculture advisory services; and 4) Partnership development for knowledge sharing and scaling out impacts.

Overall Objective

The overall objective of the proposal is to establish Agriculture Information System at Municipal or community level to profile farm, farmer and their production plan. More specifically,

1. Provide agriculture advisories to promote safe food production practices, data-driven decision making, efficient farm management operation and market linkages.
2. Monitor farm and farmers i.e. "Who is doing what, Where and How" and provide personalized advisories through– mobile apps or local service providers (JTA) and call center.
3. Training and educating the next generation extension worker along with farmers and Municipality agriculture officers, to increase productivity of the farm, easy access of information and communication linkages between various actors of agriculture supply chain.

This will pave a way for further improvements and measures about rural development and poverty alleviation in Nepal.

About Us

Gari Khane Udhyam Chahari, will function as a business development service center that will be the vehicle to connect all the stakeholders to support ideas and entrepreneurship. This center will help in creating employment and opportunities for a prosperous Nepal.

GeoKrishi is the award winner of U.S. Data Driven Farming Prize, 2017 and received National Agriculture Development and Research Fund from Ministry of Ministry of Agriculture and Livestock Development.

GeoKrishi provides intelligent digital agriculture platform that focuses on solving some of the major problems of the producers and smallholder farmer. GeoKrishi takes an integrated system approach covering different stages of agricultural value chain and provide data-driven solutions that translate data into actionable, timely and context-specific information. GeoKrishi work closely with government, farmer's cooperatives, community service providers, private and public companies and research institutes for agriculture development and commercialization.

2. Major component of the system

Municipality will receive access to a robust, user-friendly, and customized digital agriculture platform and its web version of the system. The farmers will able to use mobile apps *(as shown in the figure 1 and figure 2)* to access information and advisories.

This system will provide real-time advisories and suggest best farming practices based on the unique needs and demands of every farmer registered. The bundled solutions include a series of ICT-based advisory services *(see Table 1)*. GeoKrishi Farm mobile app will provide access to crucial updates on market price, weather conditions, and existing information and tools like day-to-day farm activities or crop scheduling. In addition, customized recommendations are provided for each geotagged farm using a mobile app.

TABLE 1 LIST OF DIGITAL AGRICULTURE PRODUCTS, FEATURES AND BENEFITS

S.N.	Products and services	Features and functions	Benefits to direct and indirect beneficiaries
1.	**Planning tool**	What, when, and where to grow	GIS based crop suitability evaluation tools to know what to plant, when, and where
		Business plan	Market analysis on historical data and atleast 15 crop-wise profit loss calculator.
2.	**Farm management solution**	Farmers diary	Track day-to-day farming input expenses, farming practices, and gaps.
		How to plant	Offline access to Day-to-day activity list for each farming stages – planning, nursery management, transplanting, growing and harvesting on 15 priority crops.
3.	**Advisory services**	Disease/pest	Pest and disease information on selected crops and provide expert recommendation to pictures & questions sent by the farmers.

		Smart notification service	Notifications with context-specific guidance on day-to-day activity and good agricultural practices to increase productivity and minimize climatic risk.
		Farmer call center	Initially to collect baseline later to provide advisories by returned phone calls.
		Market Rate	Provide daily market rates from key market centers to increase bargaining power of the farmers.
		Weather forecast	Five days of weather information at identified location.
4.	**Marketplace**	Virtual collection center	e-Marketplace in business-2-business (B2B) model

Solutions and content generated by the NARC, Government of Nepal Agriculture Information and Training Center, Seed and Quality Control Center, and other research and development partners including CEAPRED, CYMMIT, and ICIMOD etc. The content are further backed & validated by scientific evidence, quality testing, and curated before being pushed on to the platform. Further, pool of experts and scientific knowledge will be assessed to incorporate content to be disseminated to the farmers.

Figure 1: Mobile app for farmer

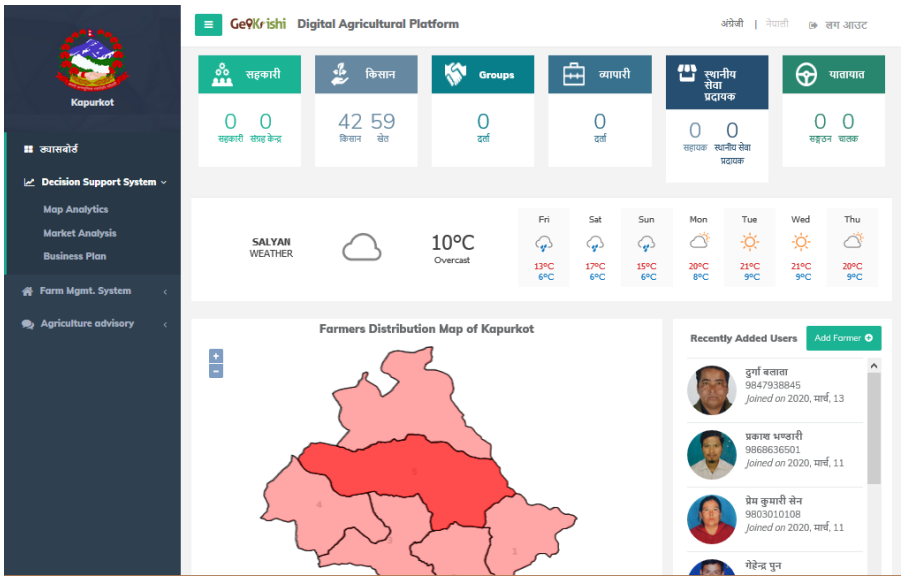

Figure 2: Web app for Municipal to manage and monitor their farmers and supply chain actors (traders, extension workers)

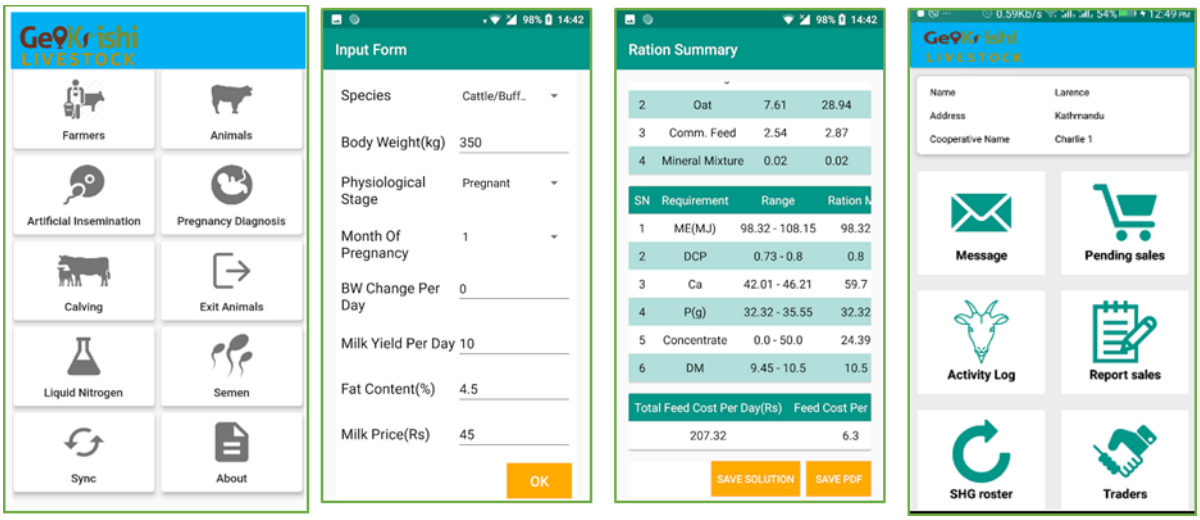

FIGURE 3: OTHER POTENTIAL APP FOR FARMERS AND EXTENSION WORKER

Similarly, Information about the agriculture commodities and livestock can be made available at farmers cooperative level in the digital marketplace - SamuhikBazar.com.

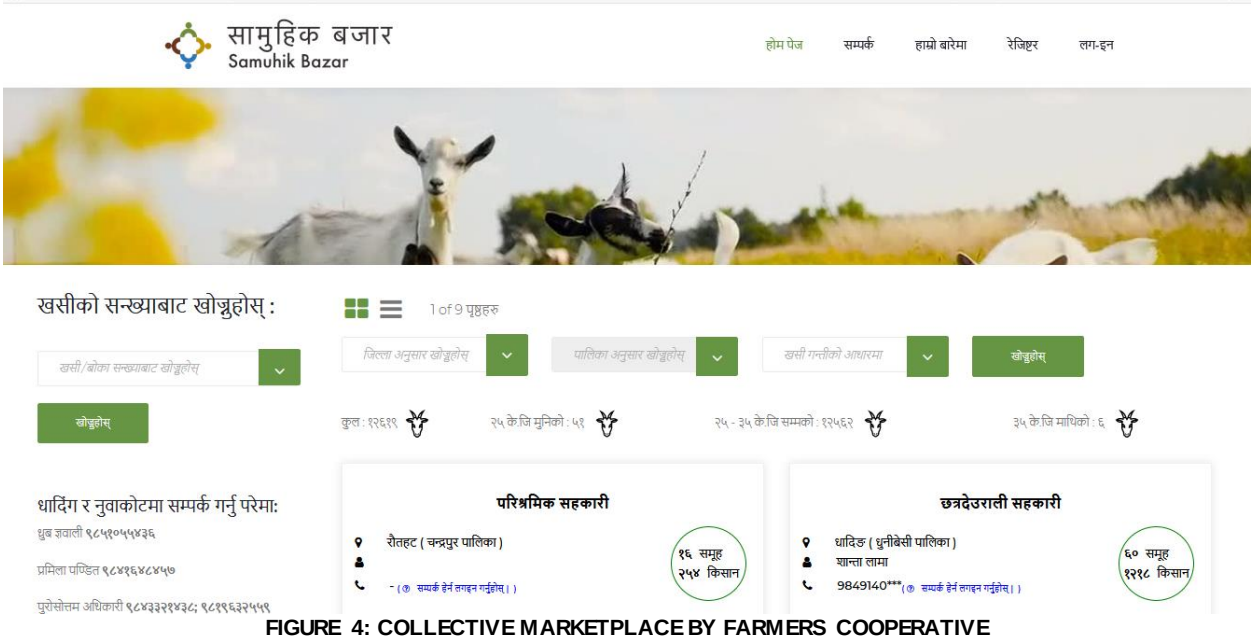

FIGURE 4: COLLECTIVE MARKETPLACE BY FARMERS COOPERATIVE

3. Output and Activities

The proposed solution uses innovative concepts, tools, methods and approaches that need to take into account such as crop specific parameters, soil fertility, solar radiation, climatic parameters, altitude, aspect, marginality, inaccessibility, market status at the same time seizing the opportunities offered by diversity and specific niches of the village. The key expected outputs are to engage farmers and stakeholders in planning, policy and practice with a range of data-driven and evidence based approaches to support livelihoods of the communities in such a way that can improve agricultural productivity and sustainable agricultural development.

Low cost production leads to increase rate of return and profit can be maximized. Farmers will acquire sufficient knowledge and skills to understand crop that suits best at their farmland and support in overall agriculture stages. Municipality authorities will be able to understand and expand area of farming and increase agriculture development activities. Mainstreaming of women and youth currently having in-active role will have agribusiness skills and which helps to brings in active role. Skills are transferred to local technicians to improved recommendation techniques and technologies introduced during implementation of the project. The overall output of the project will be as follow:

The overall output of the project will be as follow:

Outputs 1: Establish Agriculture Information platform

Activity 1.1: Setting up the system and orientation by GeoKrishi;

Activity 1.2: Hosting and provide access to the digital platform;

Activity 1.3: Recruitment of JTA by respective municipality and assign designated command area for each JTA's;

Activity 1.4: Training manual and hands-on exercise to municipality officers and JTA on both web and mobile app (GeoKrishi Farm and GeoKrishi Ext).

Output 2: Agriculture practices at municipal level piloted and agriculture extension services enhanced.

Activity 2.1: Identification of priority crops in the selected municipality;

Activity 2.2: Orientation of GeoKrishi Farm to the farmer HH, group, cooperative by recruited JTA's;

Activity 2.3: Baseline data collection of farmers household (HH) via call center agents;

Activity 2.4: JTA updates marketplace and handle demand placed by traders;

Activity 2.5: Enable agriculture advisory services to the farmer and provisioning of support service and help desk;

Activity 2.6: Evaluation and Report preparation.

Output 3: Operationalize GariKhane e-Chautari

The output 3 will be commenced by respective municipality.

Activity 3.1: Provisioning of Garikhane e-chautari space with necessary equipment like computer, internet, projector/tv, learning materials, knowledge products, soil test kits etc.

Activity 3.2: Recruit and incentivize local youth champions with minimum JTA certificate holders.

Activity 3.3: Mobilize youth champions in the field to provide farmers orientation, collect data and assist in enabling agriculture advisory services.

4. Cost Estimation

Estimated cost to establish and operationalize GariKhane e-chautari under output 1 and output 2 in each municipality is 4,98,500 four lakh ninety eight thousand five hundred. The cost is estimated based on extensive training to 4-5 JTA's and enable advisory services to around 600 farmers. The detail breakdown cost is provided below:

Sno.	Job Title	Job description	Rate	Unit	Total
1	Bikash Dangol - GeoKrishi Programme Coordinator	Focal person, supervision of activities, report writing	4,000	15	60,000
2	GariKhane Coordinator	Liaison/coordinate with municipality and community leaders	4,000	15	60,000
3	Kamana Bhattarai, Kiran, Radip Tuladhar - Agriculture and value chain specialist	Provide agriculture related support like pest and disease management and review potential bankable project	3,500	35	1,22,500
4	Call center agents	Baseline data collection/profiling of farmer HH, seasonal calls	75	1800	1,35,000
5	Saroj Raj Sharma - Training specialist	Training assistant specially to 3-4 JTA and 1 agriculture communication officer, 1 ICT	3,500	6	21,000
6	Hosting of Digital Agriculture Platform (GariKhane e-Chautari)	Yearly hosting of Garikhane e-chautari and virtual marketplace	35,000	1	35,000
7	Support and maintenance Digital Agriculture Platform (GariKhane e-Chautari)	Yearly maintenance and support services/help desk for app related issues to the farmers and updating marketplace	65,000	1	65,000
	Total				4,98,500

5. Contact Information

Heem Rawal
GariKhane
M: 98510.38472

Rajan M. Bajracharya
Chairperson
GeoKrishi Initiative, Digital Data System for Development
M: 98510.94030
E: rajan.man@gmail.com
W: www.dds4dev.org; www.geokrishi.farm