Impact Pathway

S.N.	Activity	Output(s)	Outcome(s)	Impact	Risks and Assumptions
1.1	Introduce released drought-tolerant and Striga-resistant maize varieties and hybrids with varying maturity periods from the subregion and test for registration and release.	Released drought-tolerant and Striga-resistant maize varieties and hybrids with varying maturity periods from the subregion introduced, tested and released.	Increased level of adoption of available and improved crop varieties and management practices.	Reduction in the use of low-quality traditional crop varieties.	Willingness of farmers to adopt the improved technologies.
1.2	Facilitate farmer adoption of appropriate climate smart agricultural practices, soil fertility management, and NRM practices.	Farmer adoption of appropriate climate smart agricultural practices, soil fertility management, and NRM practices facilitated.	Increased adoption of improved crop production and NRM practices.	○ Percent increase in the number of farmers who have adopted improved crop production and NRM practices. ○ Percent increase in number of farmers using improved crop varieties.	Willingness of farmers to adopt the improved technologies.
1.3	Testing and demonstration of Striga resistant, drought tolerant and downy mildew resistant pearl millet varieties in different agro-ecologies of Sierra Leone.	Striga resistant, drought tolerant and downy mildew resistant pearl millet varieties in different agro-ecologies of Sierra Leone tested and demonstrated.	Increase in number of framers and farm size.	Increased crop production and productivity.	Willingness of farmers to adopt the introduced technologies.
1.4	Produce and supply of breeder seeds of parents of released maize hybrids and varieties to national seed companies and other seed production entities to increase certified seed production for marketing in the country.	Breeder seeds of parents of released maize hybrids and varieties released to national seed companies and other seed production entities.	Increased access to quality planting materials.	Percent increase in average yield.	Adulteration of improved seeds along the distribution chain.
1.5	Train smallholder farmers and extension agents on appropriate climate smart crop production and management practices.	Training in appropriate climate smart crop production and management practices conducted.	Improvement in the knowledge level of famers and extension agents in appropriate climate smart crop production and management practices.	Increased in climate resilient cropping systems.	Willingness of farmers to adopt the introduced technologies.
1.6	Sensitize and train farmers in monitoring, surveillance and scouting for the identification, early warning and appropriate	Farmers sensitized and trained in monitoring, surveillance and scouting for the identification, early warning and	Incidence of FAW reduced in target communities.	Double season cropping of maize due to control of FAW incidence.	Willingness of farmers to attend sensitization programmes.

	control measures for the Fall Army Worm (FAW) and other pests.	appropriate control measures FAW.			
2.1	Collect historical and current weather data from strategic locations in target communities to use in model calibration, validation and application.	Historical and current weather data from strategic locations in target communities to use in model calibration, validation and application collected.	Database of quality weather data will be available for calibrating and running simulation models.	Robust prediction mechanism in place to guide decision making in farming.	Availability of technicians who understand the model framework and are ready to upscale the use of model predictions in agro-advisory services.
2.2	Train farmers in interpreting weather forecasts and using these in deciding on optimal planting and weeding times.	Farmers trained in interpreting weather forecasts and their applications in agronomic practices.	Increased farmer adaptation to climate smart technologies based on real time information.	o Increased number of farmers who have skills in interpreting weather data application in decision making. o Minimized weather shocks.	Willingness of farmers to adopt the introduced technologies.
2.3	Collect soil profile data from target communities for input into the models.	Soil profile data from target communities collected and inputted into the models.	Database of quality soil data will be available for calibrating and running simulation models.	Improvement in soil health and fertility related issues due to robust information sharing and decision-making platforms.	Absence of post-survey efforts to update database.
2.4	Conduct field trials in strategic locations to collect data for model calibration and evaluation.	Field trials conducted in strategic locations to collect data for model calibration and evaluation.	Location based and crop-based information available for testing and calibrating models.	High yielding crop varieties suitable for different soils and climatic conditions identified for deployment in future.	Tools and methods to assess, monitor, and understand climate change impacts on various crops and available.
3.1	Calibrate, validate models and run simulations to predict performance of crop varieties under changing management practices	Simulation models for different crop varieties developed and validated.	Crop, soil, and weather relationships fully established.	Timely information on agronomic practices such as optimal planting and weeding times guiding crop production.	Timely data is collected for running the simulation models.
3.2	Produce simulation maps and graphs	Model based yield maps and production domains for various crop varieties produced from models in conjunction with weather, soil and crop management practices.	Validated yield maps disaggregated by crop and production domain.	Improvement in crop and soil productivity	Ability of technicians to fully understand how to interpret yield maps and production domains in real time situations.
4.1	Interpret crop and nutrient simulation results to guide quality decision making and policy planning in	Model for variety, soils and management practices developed and validated.	Crops and Crop varieties matching soils and climatic conditions under varying crop	Field estimated response curves and experimental yields recommendations	Ability of technicians to fully understand how to interpret crop and soil

	climate smart agriculture.		management practices established.	guiding crop production.	simulation results in varying situations.
4.2	Assess the level of adoption of the generated knowledge over time	Results of user evaluations and comments regarding the generated knowledge is assessed.	Realistic number of potential users of the generated knowledge established.	Information sharing among potential users sustained.	○ Potential users are available and willing to evaluate the models. ○ Potential users will provide direct feedback on usability.
5.1	Strengthen the capacity of the Agronomy Department of the Faculty of Development Agriculture and Natural Resources Management	Capacity of the Agronomy Department of the Faculty of Development Agriculture and Natural Resources Management strengthened.	Improvement in the teaching and research ability of the trained staff.	Increased profile of trained and qualified staff of the institution.	Commitment of staff to finish the programme within the specified time.
5.2	Develop a web database and publish study findings in reputable domains/platforms.	A web database developed and study findings published in reputable domains/ platforms	Real time information available on soil health and fertility status, cropping systems, agricultural calendars and climate early warnings to local population.	Sustainable increase in crop yields through the use of quality information in farming.	Potential users may lack the good ICT experience in application of web-based information.