Proposal Cover Sheet

Project Title: **Harnessing the potential of Plant Genetic Resources (PGR) in enhancing climate change resilience among the rural farming communities in the Southern African Development Community (SADC)**
Project duration: 48 months
Target crops: **Sorghum (*Sorghum bicolor*), Finger millet (*Eleusine coracana*), Pearl millet (*Pennisetum glaucum*), Maize (*Zea mays*), Rice (*Oryza sativa*), Wheat (*Triticum aestivum*), Cow pea (*Vigna unguiculata*), Common bean (*Phaseolus vulgaris*) and Sesame (*Sesamum indicum*), Ground nuts (*Arachis hypogaea*), Bambara groundnuts (*Vigna subteranea*), Sweet Potato, Cassava and Yams.**
Targeted developing country/ies: **Angola, Botswana, Comoros, Democratic Republic of the Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.**
Total requested funding (USD): **1 Mio**
Applicant
Name of Organization: **SADC Plant Genetic Resources Centre (SPGRC)**
Type of organization: **Inter-Governmental Organisation**
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1.1. Problem definition

The Southern Africa Development Community (SADC) is a community of 16 nations on the southern tip of the African continent with an institution coordinating conservation of plant genetic resources (PGR) called the SADC Plant Genetic Resources Centre (SPGRC) situated in Lusaka, Zambia. The SPGRC coordinates PGR work through a network of National Plant Genetic Resources Centres (NPGRCs) or National Genebanks. SPGRC is a regional genebank housing slightly above 18 000 unique accessions of plants from SADC member states as a base collection, which is part of the region's estimated total accession collection of above 62 000 mostly collected from rural farmers over the past 30 years. The accessions stored at the SPGRC and its network of national genebanks, are supposed to have safety duplicates stored at the Svalbard Global Seed Vault in Norway. In addition, the plant accessions are supposed to be utilized to improve the livelihoods of communities in the SADC region and beyond.

The SADC region has a unique collection of PGR for food and agriculture but the collection has not all been characterized and documented to make it useful to users like farmers, researchers and plant breeders. The collections are from the region and have been present for centuries hence are fully adapted to the local conditions. Their broad adaptation mean that they are in a better position to withstand the negative effects of climate change exerted upon the region. SADC has over 62 000 different accessions of crop plants from over 245 species which have been collected from across the climatically widely diverse region but the majority of the accessions have not been characterized to extract the unique characteristics that can be employed to support different communities to fight the effects of climate change. This collection is an agricultural treasure full of novel genes which if extracted through characterization and documentation can be extended to breeders and farmers for use in climate resilient variety development programs and direct cropping by farmers in climate change induced stressed environments, respectively. Beneficial characteristics of all this collections of accessions in the region are not known making it difficult to use the material for either nutritional crop improvement or ordinary family cultivation. In addition, some of the accessions have limited quantities of seed for them to be given out to rural farmers who may want to use them or for duplication and safe keeping at both the SPGRC and the Svalbard Global Seed Vault making them vulnerable to extinction. Organising the rural farmers into community managed community seedbanks can also make it easy for the farmers to get diverse climate resilient seed within close proximity and at relatively low cost. The SPGRC network requires funding for the characterization and documentation of at least 20 000 accession in order to identify their potential to solve the climate induced challenges in Southern Africa. This work can be done in collaboration with other regional research institutions in the region and beyond. The generated information will be managed through the SPGRC regional database, the Web SDIS, which will also be upgraded and linked to other global systems such as Genesys in order for its

PGR information to be made available in the region and beyond, for the improvement global food security and sustainable development.

1.2. Project outcomes and related targets

The overall outcome of the project is fully characterized, climate smart agriculture readily usable crop germplasm in the SADC region. Once characterized, the SADC region's crop germplasm for food and agriculture will be uploaded onto a regional database, Web SDIS and linked to the global information systems (GLIS) making it available to users who will work with it to contribute to sustainable global crop production improvement, sustainable economic development and enhanced global food security in the face of climate change. All this will be achieved as a sum of the following individual targets and outcomes:

1. Field regeneration and characterization of a total of 20 000 accessions of plant genetic resources material over a period of four years in 16 SADC Member States.

   Most of the material has been stored for long periods of time with no information on their beneficial traits like drought tolerance, pest and dieses resistance, maturity time, nutritional content etc. yet all these challenges are now frequent. Each of the 16 SADC Member States of the network will multiply and morphologically characterize at least 425 accessions annually.

2. At least one (1) community genebank in each SADC Member States commissioned.

   There is need to have community genebanks storing adaptated locally collected accessions that can be used by local famers and communities to grow their crops. These accessions would be characterized and their benefits known to users.

3. Document (including allocation of digital object identifiers DOIs) 20 000 accessions of the plant genetic resources material upload it in the data base within a period of three (3) years.

   The morphological data recorded through the multiplication and characterization process will be entered in the regional database including the allocation of DOIs to accessions with complete characterization data sets.

4. Acquisition and connection of 17 desk top computers and accessories for establishing a regional network linked to the world wide web as part of the global information system (GLIS) during the first quarter of the first year (Year 1) of the project.

There is need to strengthen information sharing on the beneficial traits of stored germplasm among a community of users including the network of

national genebanks in the SADC region coordinated by the SPGRC. The network is connected online through the SPGRC website (www.spgrc.org.zm). There are, however, some countries which do not have up to date ICT hardware and software to facilitate smooth access to the internet and processing of information. Provision of ICT hardware and software at the early stages of the project enhances connectivity and ability to interact and share information through the internet.

5. Increase the SPGRC accession base collection by 10 000 in a period of three (3) years.

   There is still crop germplasm in the SADC member states farming communities that can be potentially used in mitigating against the effects of climate change and food and nutrition insecurity. This germplasm needs to be collected and characterized further for them to be used in crop improvement and crop production.

6. Twenty thousand accessions of plants from the SADC region characterized and safely duplicated at the Svalbard Global Seed Vault in Norway.

   Indications are that climate change will continue affect communities for many years to come. There is, therefore, need to ensure security of germplasm by maintaining it ex situ as a safety measure in case future needs arise. Safety duplication of the SADC region's plant genetic material at the Svalbard Global Seed Vault is important for long term security of germplasm, hence, multiplied, characterized and documented will also be duplicated and conserved at the Svalbard Global Seed Vault.

1.3. Targeted Plant Genetic Resources for Food and Agriculture (PGRFA)

This project will among others; cover ten (13) major cereal and legume species grown in the SADC region namely Sorghum (*Sorghum bicolor*), Finger millet (*Eleusine coracana*), Pearl millet (*Pennisetum glaucum*) , Maize (*Zea mays*), Rice (*Oryza sativa*), Wheat (*Triticum aestivum*), Cow pea (*Vigna unguiculata*), Common bean (*Phaseolus vulgaris*) and Sesame (*Sesamum indicum*), Ground nuts (*Arachis hypogaea*), Bambara groundnuts (*Vigna subteranea*), Cassava, Sweet potatoes and Yams . The cereals and tubers form the staple diet of over 80% of the world's population including in Africa and Asia. Many communities in the SADC region live in arid environments for instance, Botswana, Namibia and some parts of Zimbabwe and South Africa are negatively affected by the Kalahari Desert. These areas rely on drought tolerant cereals like Sorghum, Finger millet and Pearl millet as staple diets hence the need to characterize them and promote their cultivation The legumes are a major source of protein especially in rural communities where meat hardly come by. These pulses are taken as relish in most communities. However, seed of most of these legumes

are no longer available in communities where they should help to profide food security when used in farming programmes targeted at ensuring climate resilience of the communities. As a result, these species need to be profiled and conserved for use by future generations.

1.4. Beneficiaries

This project will benefit the SADC region by ensuring sustainable food and nutrition security. Plant breeders, researchers and farmers as well as consumers of products of plant genetic resources will be the direct beneficiaries. However, the immediate beneficiaries of the project can be grouped into the following categories:

a) **Communities in the 16 SADC countries** – The eventual beneficiaries of this project are the food and nutrition insecure communities in SADC who are threatened by climate change. Characterization of germplasm will result in more value from plant genetic resources will be unlocked such as drought tolerance, pest and disease resistance, nutrient use efficiency and water use efficiency as well as nutrition content. It is expected that characterization will make the germplasm usable by breeders to develop new climate resilient varieties for the SADC region and also that farmers will have ready material to use in their farming programmes. Community seed banks set up will be ready sources of resilient seed for local farmers.

b) **National Genebanks in the 16 SADC countries** – The genebanks in each SADC Member States will have their germplasm characterized and usable. They will also be supported in plant genetic resources information management making the resources usable.

c) **Communities from SADC region from which the conserved material originated** – Material conserved in the national gene banks and the SPGRC and associated indeginous knowledge will be clearly identified with their origins, allowing the benefits accrued from the use of the material to be directly channeled to them if that happens in future.

d) **Global community of PGR users** – The project will widen a regional database (SDIS) that is freely online and globally accessible. This will make the global community of plant scientists richer as they will also be able to access germplasm information and acquire germplam from the SADC region for use in their research and crop improvement programs. It will promote global information sharing and utilization of PGR material from the SADC region.

1.5. Partnerships and collaboration arrangements

This project will be done in the SPGRC network involving 16 countries namely, Angola, Botswana, Comoros Islands, Democratic Republic of the Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.

a) National gene banks

Each of the above SADC countries has a National Gene Bank which will be the focal point in the country. The Curator in the national gene

bank will be the focal person for all programs implemented in the country. Since most of the gene banks are located at research stations, some of the experiments on characterization will be established at National gene banks facilities to minimize costs unless university facilities are availed free of charge.

b) Universities/Colleges/ SANBio Network

In each country, the National gene bank will collaborate with at least one department in a local university in the process of characterization of the accessions. The university will second a maximum of three students for the whole duration to assist in the characterization of germplasm. SANBio Network will support with capacity building in molecular characterization.

c) Community Gene Banks in participating countries

The national genebank will involve local community gene banks in countries where they are to access germplam for characterization. Farmers forming part of community gene banks will provide indeginous knowledge (IK) about their accessions. Data will be collected on material conserved in Community Seed Banks.

d) National Departments of Agricultural Research

Departments of Agricultural Research through plant researchers and technicians will participate in characterization, multiplication/regeneration.

e) The SPGRC

The SPGRC will be the coordinator of the whole project including managing of the financial resources. All trainings and workshops and acquisition of tools and equipment for use during the project will be handled from SPGRC through the office of the Head of SPGRC. SPGRC will coordinate all the documentation and database monitoring from a central point in Lusaka.

At regional level this initiative seeks to partner with the SADC Seed Centre which is harmonizing the seed regulation across southern Africa, Bioversity International (a CGIAR institution). Further partnerships are feasible and appreciated.

1.6. Potential development impact and impact pathways

The implementation of the documentation and information management of plant genetic resources project will bring about significant development in the SADC region. The development will be equitably distributed in 16 countries within the SADC region. This will be made possible especially because the project involves different institutions in 16 countries. This is how development will be realized:

a) **Upgrade in ICT Infrastructure directly involved in Plant Genetic Resources for Food and Agriculture (PGRFA) conservation and use.** This is direct development in the form of increase in asset base that

is used to increase the extent of conservation and utilization work in the region.

b) **Regional capacity building in conservation of PGRFA.** The project involves imparting new skills to the staff in national PGR conservation programs. This will enable the countries and the region to do more and better in the area of conservation of PGRFA.

c) **Increase in personnel involved in conservation of PGRFA in the region.** Because the project involves universities, under graduate and possibly post graduate students will be oriented to the field of PGRFA conservation. They will possibly join careers in conservation of PGRFA.

d) **Increased collaboration in conservation of PGRFA in the region and beyond.** Establishment of a network that links countries allows more collaboration that results in better ways of achieving results contributing to development of communities.

e) Connecting the SPGRC network and its PGRFA to the global network of users allows the germplasm to be used in developmental programs that contribute to upliftment of lives in the world.

f) **Employment creation.** All the work that will be done in member countries will require workers who will be employed on a short term basis. This will empower communities.

1.7. Relevance to SDGs, UNFCCC commitments and SADC national plans and policies related to PGRFA

This initiative contributes to achieving the following Sustainable Development Goals (SDGs): SDGs 1 (end poverty), 2 (end hunger and achieve food and nutrition security), 5 (gender equality and empower women and girls. Usually the owners of seeds in rural communities are women), 13 (combat climate change and its impacts), and 15 (sustainable use of terrestrial ecosystems).

Governments in the SADC region have always appreciated the role of plant genetic resources for food and agriculture in the economic development value chain. The evidence of this is the presence of the National gene banks in all the 16 member states of the SADC with staff fully on government pay roll. SADC governments have annual programs that spearhead the collection, characterization, documentation, conservation and utilization of plant genetic resources although funding is the major challenge. In the regional body, the SADC, the Food, Agriculture and Natural Resources Directorate has put the conservation and utilization of plant genetic resources for sustainable development in the region as one of its key result areas.

Conservation, characterization, documentation and utilization of plant genetic resources go hand in hand. Conserved plant genetic resources have to be documented and the information generated shared so that the resources can be effectively utilized. This project clearly supports the national goals of effective conservation and utilization of the plant genetic resources in the region and beyond for sustainable development and the promotion of climate smart agriculture. By effectively linking the 16 member countries of the SADC region together and to the global plant genetic resources conservation network, the

regional policy of conservation and utilization of these resources for sustainable development of communities and the inclusion of the use plant genetic resources in the climate smart agriculture promotion would have be achieved given the benefit associated with the outcome of the project in communities with the SADC region and beyond.

All 16 Nationally Determined Contributions (NDCs) of SADC member states prioritize agriculture as an adaptation area. The characterization of plant genetic resources for drought- and heat tolerance, nutrition content and adaptation to local conditions is key to identifying and disseminating appropriate seed varieties towards building resilience to climate change in southern Africa's production systems.

Project outcome matrix

Goal	Farmers around the world use and conserve adapted varieties leading to increased productivity and on-farm incomes, increased availability of diverse nutrient-rich food, reduced adverse impacts to the environment, & enhanced resilience to production shocks.
MAIN TARGET AREAS	
Outcome 1	Farmers supported through provision of adapted and climate resilient local varieties in areas vulnerable to climate change and food insecurity
Target 1.1	At least 2 000 farmers supported to sustainably use and conserve PGRFA
Target 1.2	At least 50 locally adapted varieties are re-introduced, conserved, disseminated or bred with farmers' participation
Target 1.3	Seed systems enhanced to promote use of adapted climate smart varieties
Target 1.4	Local agricultural systems are diversified for enhanced climate change resilience
Outcome 2:	Research and development is strengthened in the developing world and accelerated to produce climate ready crops
Target 2.1	20 000 PGRFA characterized, phenotyped, evaluated, documented, pre-bred, for traits of importance to adaptation and resilience

Target 2.2	Two (Characterization and Utilization modules) PGRFA packages and tools (germplasm, information, know-how and technologies) are co-developed and transferred
Target 2.3	At least 32 national institutions (National genebanks, Universities, National Research Departments) are supported to strengthen PGRFA information systems and contribute to GLIS
Target 2.4	At least 32 researchers, extension agents, national focal points, government workers and technicians trained through targeted capacity building
Target 2.5	At least 50 young scientists, particularly women, supported to ensure a new generation of scientists have the knowledge and skills to take forward promotion of use of plant genetic resources in climate smart agriculture

CROSS CUTTING OUTCOMES AND TARGETS	
Outcome 3	The enabling environment for Treaty implementation is strengthened with increased funding available for the sustainability of project interventions
Target 3.1	Each project has strategies in place for securing resources to scale up project interventions
Target 3.3	One policy (Community Genebank Management Guidelines) strengthened or developed to support national implementation of the Treaty
Outcome 4	Enhanced equity and inclusion in the implementation of the programme
Target 4.1	All projects explicitly integrate a gender focus in their design, implementation, monitoring and reporting to ensure women are recognized as major knowledge holders of PGRFA and play a crucial role in planned activities
Target 4.2	Each project uses a needs and vulnerability assessment to identify and respond to the needs and interests of marginalized groups in project interventions
Outcome 5:	Partnerships and collaboration strengthened and leveraged across the seed value chain, and within and across SADC Member States.
Target 5.1	The program results in a strong consortia of many stakeholders collaborating to promote plant genetic resources use in enhancing climate resilient agriculture in the SADC region.

Appendix 1.

Proposed Restoration of Plant Genetic Resources in Cyclone-Hit Malawi, Mozambique and Zimbabwe

1. Background

The SADC Plant Genetic Resources Centre (SPGRC) was established in 1989 as a 20-year project, initially funded by Nordic donors and, later supplemented with SADC member country contributions on an increasing scale - until the end of the project in 2011 when SADC Member States started to fully fund SPGRC. Located about 25 km off Great East Road in Lusaka, SPGRC, has been mandated with the conservation, evaluation and promotion of sustainable utilization of regional plant genetic resources (PGR) for the benefit of present and future generations, thus contributing to food security and improved livelihoods. It coordinates all activities through a network of National Plant Genetic Resources Centres (NPGRCs), established in each of the 16 SADC Member States.

2. The tragic incident of Cyclone *Idai* Devastation

2.1 Affected Countries

In mid-March 2019, a devastating cyclone tore through Madagascar, Mozambique, Malawi and Zimbabwe, destroying homes, field crops, animals and killing hundreds of people due to strong winds and massive flooding. Cyclone *Idai* is reported to be the deadliest storm system to hit the SADC Region in the past half a century and may be the worst disaster ever to strike the southern hemisphere, according to the UN. It is estimated that almost 3 million people have been affected, with more than 1,000 deaths across the region and hundreds are still unaccounted for.

Heavy rains began hitting Mozambique, Malawi and Madagascar on March 6, causing serious damage and destruction to homes and farms. A few days later, on March 9, Tropical Cyclone *Idai* formed over the Northern Mozambique Channel. On March 15, Cyclone *Idai* made landfall near Beira, Mozambique, bringing torrential rains and winds

that caused death, destruction to infrastructure, and serious communication breakdowns with the rest of the region.

The path of devastation continued inland, where Cyclone *Idai* hit eastern Zimbabwe with more severe rains and wind. Chimanimani and Chipinge in Zimbabwe, were two of the most badly damaged areas. Because of flooding and significant damage to infrastructure, thousands of people were either trapped in their homes, marooned on high ground or swept away with their food reservoirs and homes. Torrential rain and sustained winds of up to 190 Km per hour flattened the low-lying area between Beira in Mozambique and the Zimbabwean border.

2.2 Loss of Plant Genetic Resources Resulting in Food Insecurity

It is estimated that the Cyclone Idai negatively affected approximately 2.6 million people most of which have been left with no food. The majority of the affected communities are either rural or peri-urban relying on subsistence agriculture for food and nutrition. Idai hit unexpectedly resulting in the communities losing everything they had in terms of crops. Crops of all species that provide used to provide food and nutrition to the affected communities of parts of Malawi, Zimbabwe and Mozambique were washed away resulting in total losses of useful crop diversity. Preliminary assessments have shown that communities lost, Zea mays, cow peas, rice, Bambara nut, sorghum, finger millet, millet, ground nuts, okra, common bean among other species and nothing was recovered after the disaster.

Fortunately, the affected countries are members of the SADC Plant Genetic Resources Centre Network that has collected some of the plant genetic resources occurring in the affected areas of the region and stored it at the national genebanks, the regional genebank at SPGRC or duplicated at the Svalbard Global Seed Vault. The SPGRC as the coordinator of plant genetic resources conservation in the SADC region intends to restore to the affected communities all the PGR that was lost to Cyclone Idai during the previous season from the duplicates stored in genebanks in the SADC region. Assessments have shown that a total of 652 accessions need restoration. The breakdown of the material is as shown below:

Country	Species	No. of Accessions	Total
Malawi	*Vigna unguiculata*	13	**13**
	Vigna radiata	3	**3**
	Sorghum bicolor	17	**17**
	Eleusine coracana	2	**2**
	Oryza sativa	7	**7**
	Oryza punctata	2	**2**
	Oryza barthi	1	**1**
	Cajanus cajan	2	**2**
	Zea mays	15	**15**
	Phaseolus vulgaris	3	**3**
	Pennisetum glaucum	4	**4**
	Total	**69**	**69**
Mozambique	*Leersia hexandra*	4	**4**
	Oryza longistaminata	16	**16**
	Oryza sativa	144	**144**
	Oryza spp.	3	**3**
	Sorghum bicolor	41	**41**
	Phaseolus vulgaris	13	**13**
	Seasamum spp.	8	**8**
	Vigna subterranea	14	**14**
	Vigna unguiculata	40	**40**
	Pennisetum spp	14	**14**
	Arachys	21	**21**
	Cucurbita maxima	17	**17**

	Cucurbita sativa	2	**2**
	Eleusina	6	**6**
	Citrullus	13	**13**
	Abelmochus	4	**4**
	Capsicum	1	**1**
	Cucumis melo	1	**1**
	Lablab	3	**3**
	Cajanus cajan	2	**2**
	Arroz silvestre	1	**1**
	Zea mays	59	**59**
	Total	**427**	**427**
Zimbabwe	Bambara nuts	10	**10**
	Finger millet	12	**12**
	Lagenaria	32	**32**
	Leersia	5	**5**
	Maize	3	**3**
	Cowpea	16	**16**
	Oryza barthii	1	**1**
	Oryza sativa	2	**2**
	Pearl millet	16	**16**
	Sesame	1	**1**
	Sorghum	66	**66**
	Total	**156**	**156**
Grand Total (Three Countries)		**652**	**652**

3.0 Appeal

The SADC Plant Genetic Resources Centre is appealing for financial and material resources to undertake restoration programmes for the lost plant genetic resources in the countries hit by Cyclone Idai. The plan is to multiply all the plant genetic resources

accessions lost but found to be duplicated either in the National Plant Genetic Resources Centres in the affected Member States or at the SPGRC in Lusaka, at a central location in the affected Member States like a Research Station. The multiplied accessions will be redistributed to the communities once the quantities are large enough to give to selected community leaders who will further be helped to multiply them and distribute to other members of their communities.

Activity	Quantity	Unit Cost ($)	Estimated Total Cost ($)
Survey to establish the extent of PGR Losses	3	3000	9 000
Land hire for multiplication	3	5 000	15 000
Labour for planting, weeding, harvesting and processing.	3	10 000	50 000
Inputs like fertilizers and tractor hire and pest control and other tools	3	15 000	45 000
Transporting the seeds	3	2000	10 000
Airfares and DSA for the coordinator from SPGRC to the 3 countries (3 return trips in each country).	1	2000	6 000

4.0 Emergency Rescue Collections and Restoration

Natural disasters such as floods and drought and major development works such as dams and road construction often threaten existing plant populations *in situ*. SPGRC in collaboration with NPGRCs is ready to conduct emergency rescue collections at short notice wherever need arises in the region.

One of SPGRC's strategic objectives aims at reducing plant genetic erosion and increase options of PGR and seed systems to enhance productivity. Strategically, the Centre would strengthen regional disaster preparedness by monitoring agrobiodiversity and predicting future trends in the use of agrobiodiversity. To achieve this, SPGRC will assist NPGRCs to conduct targeted rescue collecting missions, and reintroduce/restore lost seed of crop landraces. It will further indulge in strengthening the capability of NPGRCs to respond promptly to seed requests, and in identifying crops and accessions with potential for adaptation to climate change and develop suitability maps.

4.1 Proposed budget for the restoration exercise

Activity	Quantity	Unit Cost ($)	Estimated Total Cost ($)

Survey to establish the extent of PGR Losses	3	3000	9 000
Land hire for multiplication	3	5 000	15 000
Labour for planting, weeding, harvesting and processing.	3	10 000	50 000
Inputs like fertilizers and tractor hire and pest control and other tools	3	15 000	45 000
Transporting the seeds	3	2000	10 000
Airfares and DSA for the coordinator from SPGRC to the 3 countries (3 return trips in each country).	1	2000	6 000
Official handover ceremony costs	3	3 000	9 000
Fuel for movement and car hire	3	4 000	12 000
Estimated Total Cost			**156 000**

Workplan

This is planned to be a two-year process. The first year will involve the multiplication of the accessions at central places in Malawi, Mozambique and Zimbabwe. The second year involves community leaders multiplying the accessions for distributing to other community Members and conclusion of the programme by an official handover ceremony of the restored community crop diversity. The programme will be rolled out as illustrated on the chart below:

4.0 Gantt Chart for the role out of the restoration programme

The gantt chart.

	2019												2020												2021					
Activity	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
Survey to establish extent of loss																														
Increasing seed quantities accessions from the genebanks																														
Seed processing for further multiplication																														
Final multiplication of accessions seed																														
Harvesting and processing of multiplied seed																														
Handover of seed to farmers affected by Idai																														

The end