



## Innovations for Agricultural Value Chains in Africa | Concepts by Constraint Clusters

Concepts	Time Horizon	Description
<b>Diagnostics</b>		
Reproductive Health Diagnostics	Medium term	A rapid, low-cost test to detect pregnancy and heat in cows
A Panel Test for Tick-Borne Diseases	Medium- to long-term	A point-of-care, panel test for ECF, anaplasmosis, and babesiosis capable of differentially diagnosing the three diseases via visual readout in a single simple format
Animal Health Testing	Medium- to long-term	A low-cost, point-of-care test for mastitis, foot and mouth disease, Blackwater Fever, and TB
Milk Quality Testing	Medium- to long-term	Disposable diagnostics involving a one-step test for fat content and/or non-fat solids with a semi-quantitative visual readout
Milk Safety Diagnostics	Medium- to long-term	Two disposable diagnostics—a bacteria detector coupled with a pH indicator suitable for rapid analysis of each arriving milk delivery and a qualitative visual result
Animal Feed Composition Testing	Medium-term	A low-cost test for point-of-sale testing of animal feed composition
<b>Maize Drying &amp; Storage</b>		
Modified Plastic Tank with Dryer Options	Near-term	Small-scale, low-cost maize storage tanks for shelled grain that can be used on farm by small producers, in local co-ops, or in local facilities, such as milk-chilling plants and that could be integrated with a low-cost small-scale drying solution
Improved Plastic Bag for Maize Storage	Near-term	Existing plastic storage bags treated in situ to prolong the storage of maize
ISSB Granary	Near-term	Interlocking Stabilized Soil Blocks (ISSB) are the basis of small-scale, low-cost maize storage granaries for unshelled cobs or storage tanks for shelled grain
<b>Milk Quality &amp; Volume</b>		
Bacterial Sieve	Medium- to long-term	A membrane to filter out bacteria from the raw milk either directly at the farm, at the intake of the collection point/chilling plant, or while the milk is being chilled

Kenya Cargo Cycle	Near-term	An entirely new bicycle designed for cargo that could be built out of local parts and use local manufacturing capacity
Milk Bicycle Racks and Extenders	Near-term	An improved rack for existing bicycles that reduces losses from dropped bottles and increases delivery speed due to more secure attachment or a frame extender that adapts a conventional bike to carry more cargo
Milk Container with Anti-Microbial Properties	Near-term using micro-materials	A set of stackable milk containers and an associated transport system that efficiently transports milk and reduces losses from milk spoilage
Plastic Liner for Milk Transport	Medium-term	An individual use liner that protects milk from contamination during transport
GeoChiller	Near-term to medium-term	Creates geothermal cooling system to cool milk and store it safely overnight
Alternative Refrigeration	Near-term	Absorption refrigerators to cool milk and store it safely overnight
Rechargeable, Chemical Cooling Packs	Near-term to medium-term	Cooling packs that could be dropped in milk to keep the milk cool during storage and transport and then recharged at the chilling plant

## Universal Power | Farm Labor Processing | Power

Universal Power	Near-Term	A universal interface between available power and simple machines or farm implements
Power Distribution – Line Shafts and Turntables	Near-Term	A turntable on which would allow a small diesel motor to power a wider range of implements or a “Flexible Line Drive”

## Cassava Drying & Processing Efficiency

Cassava Tuberator	Medium-Term	A small-scale dryer for use in production of High Quality Cassava Flour (HQCF)
Integrated Cassava Roaster	Near-term	An integrated cassava roasting pan with built in chimney, firebox, and heat exchanger to enable excess heat to be used for other purposes (such as a Tuberator for simultaneous cassava flour roasting)
Cassava Basket Press	Near-Term	Grated cassava can be handled in smaller batches and moved through the plant in a basket that is easily carried, and used as a sieve in which to press the cassava

## Cassava Decay and Storage

Water Additives for Cassava Storage	Medium-term	Peeled cassava is stored in tanks (concrete, plastic, metal, etc) that is filled with water and additives to prevent deterioration
Ca-Sav-A Bag	Medium-Term	Two component bag liners for cassava that significantly slow deterioration process by blocking oxygen and consuming existing oxygen within bag