

RURAL DEVELOPMENT THROUGH LIVESTOCK EXPANSION AND TECHNOLOGY

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UNIVERSITY OF NAMIBIA

Prof Irvin Mpofu

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What is Rural Development?:- growth, expansion, progress, advancement, increase, enlargement, improvement, maturity. {What comes out clearly from the definitions are quantity and quality aspects}

RD= Income (wealth creation) + health + Food Security/percapita feed consumption) + Peace + Prosperity (Sound economic fundamentals like value of currency/buying power) + ...+ SE (inflation/Interest)

What is the place of livestock in the development equation

SYSTEMS APPROACH: Three components of a system
Inputs/Process/Output

Introspection-comments

Capabilities: *if we have capabilities, then we can have **options for solutions** to our problems through various **methods and channels**.*

- *We have **moral obligation** to **act** or otherwise??*
- *Incentives are critical.*
- *Build upon **intelligent capabilities** to deal with challenges at the planning stage.*
- *Intelligence gathering then **what action**.*
- *What about borrowing from **Quantitative easing**: providing cheap money. I.e. Loans at a dispensation characterized by very low interest rate, long payback periods, tax holidays*

Therefore, Rural Development through Livestock Sector Expansion and Technology

- Opening up livestock production opportunities can drive rural development
- Knowledge sharing is critical for the creation and sustenance of rural development
- Skills development at grassroots level is a must for technology uptake
- Techniques fit for purpose are prerequisites for rural development.



Significance of Livestock

- Human beings are well aware about the significance of livestock since their existence on the earth
- **Benefits/products**
 - Milk ● Ghee ● Cheese ● Whey
 - Yogurt ● Meat ● Eggs ● Hides
 - Skins ● Wool ● Fertilizer ● Playing
 - Ploughing ● Transportation ● Riding
 - Bags, violate & shoes

Significance of Livestock

- Above checklist has a vital role in human day by day life, especially for energy, productivity good health and growth.
- **Livestock play important role by:**
 - Food production • Draught power • Soil Fertility
 - Employment • Foreign exchange • Pharmaceuticals
 - Bio-gas production • Conversion of feeds into valuable products
 - Contributing 8% to national income and 28% to GDP from agriculture.
 - Miscellaneous (animal by-products, animal sacrifice, diversification of farm income, medical research and gifts).

Causes of low Productivity of Livestock

- Late age at puberty •
- Improper housing
 - Un-balanced feeding
 - Less green fodder availability
 - No feed supplementation
 - Lack of skilled man-power
 - Genetically low productive animals
 - Lack of animal health
 - High No. of un-productive stock
 - No ecto & endo parasitic control
 - Lack of knowledge about breed improvement
 - Lack of coordination among Cos and livestock department

So we have to do something for improvement

- The availability of feed is 5-6 kg per animals per day and the required is about 15 kg/Animals/day which must be a balance diet.
- Standard maturity age in commercial farms is 25--30 months but in most rural areas existing maturity age in cows is 48-55 months.
- Another reason for low productivity is a huge gap between parturition which is about 18-24 months while the standard is that we must have one calf in one year.
- We must give priority to the preventive measures against seasonal outbreaks of feed shortages and disease outbreaks

Per capita consumption of livestock products

Low Per Capita consumption in developing countries show potential for exploitation

Region	Meat (kg per year)			Milk (kg per year)		
	1964-66	1997-99	2030	1964-66	1997-99	2030
WORLD	24.2	36.4	45.3	73.9	78.1	89.5
Developing countries	10.2	25.5	36.7	28.0	44.6	65.8
Near East and North Africa	11.9	21.2	35.0	68.6	72.3	89.9
Sub-Saharan Africa^a	9.9	9.4	13.4	28.5	29.1	33.8
Latin America and the Caribbean	31.7	53.8	76.6	80.1	110.2	139.8
East Asia	8.7	37.7	58.5	3.6	10.0	17.8
South Asia	3.9	5.3	11.7	37.0	67.5	106.9
Industrialized countries	61.5	88.2	100.1	185.5	212.2	221.0
Transition countries	42.5	46.2	60.7	156.6	159.1	178.7

^a Excludes South Africa.

Suggestion of expanding Livestock numbers and productivity

- Improving their management.
- Breeding better animals: reducing number by replacing with fewer but more productive ones.
- Increasing numbers.
- Species mix depending on environment

Strategies

- In practice, both methods need to be carried simultaneously.
- The emphasis should be on quality rather than on number through:
 - 1. Upgrading local or indigenous (non-descriptive) cattle crossing with exotic e.g. Jersey through artificial insemination services.
 - Providing good quality bulls, rams and bucks to interested breeders of cattle, buffalo, sheep and goat.

Strategies

Efforts must also be concentrated on better management through improvement in:

Availability of green fodder through out the year by introducing new varieties of fodder in the common grazing areas.

- Availability of concentrates and mineral mixtures.
- Improvement of storage of available feed: hay and silage.
- Introducing Urea treatment technologies & at cluster level.
- Creating awareness on proper housing, feeding & caring.
- Strengthen linkages between line ministries with communities.
- 100% vaccination in every village against seasonal outbreaks.
- Creating awareness on de-wormers, tick drugs & antibiotics.
- Conservation of Range lands: rotational grazing & restoration.
- Provision of soft loans to farmers for the purchase of quality animals [QE2].

Strategies

1. Nos and quality' new genetic material but breeding policy should ensure indigenous base is not eroded
2. No extensive export of live animals: look at how ostrich industry in Southern Africa was killed
3. Vertical integration mainstreaming producers as owners of the value chain thereby fight middlemen, cartels and speculators
4. Encourage "on the hook" marketing not "on the hoof"
5. Feedlotting, make it more profitable by integrating livestock production and crop production to provide feed resources base
6. Feed budgeting and feed banks.
7. Farmer mentoring as opposed to adhoc training episodes.
Farmer apprenticeship program [Talent incubator programs]
8. Improve water provision for animals
9. Ensure high fecundity: min 60% calving per
10. Culling % min 30% coupled with a replacement policy

Strategies

Discourage keeping high nos of unproductive animals as is case in rural areas where nos is status symbol. forgo enslavement of the mind.

- Whose Responsibility? Government or NGOs or the farmers. Government enabling environment' NGOs dev by uplifting needy people, farmers themselves must champion their own destiny thru traditional leaders. But people always expect government to go beyond creating enabling environment and provide inputs to championing livestock expansion through local authorities.
- Diversify species, to fast track development through high turn-over.
- Primary school & high school curriculum should encourage cattle youth clubs like in the UK and USA.
- Adequate remuneration of livestock scientists, extension staff, animal nutritionist etc to encourage them to be dedicated to produce food, animal protein
- Land reform contentious but important if done properly.

Strategies

Decision making based on early warning systems by culling animals before droughts. A drought make farmers lose everything, i.e. the whole animal but lets think of it in terms of losing products: milk, reproductive capacity/losing young breeders, meat, hides, horns. 1 hide can make 10 leather shoes

- One cow per family; send a cow; or heifer projects run by NGOs should be duplicated/replicated and institutionalized in ministries of agriculture/livestock for more impact. NGOs have and are doing a great job as positive changes in some families' livelihood has been registered, but nationally, regionally or continentally the impact appear too thin & spread
- Livestock policy at national level, should spell out measurable ambitions, map out options and enumerate actions.

Strategies

LMIS [livestock management information systems], to flush in well with knowledge economy scenario and realities many developing countries are dreaming of.

- Precision farming: relate output to inputs and make processes effective/meet goals, efficient, relevant, have measurable impact and stay morally right.
- Input: acquisition of productive animal types and breeds; process/production/livestock operations; output disposal/marketing, local, lateral, trade, on the hoof vs. on the hoof, decisions on type of market national looking, regional looking or EU competitive markets Adv/disadvantage SA model.
- Value addition opportunities to be supported by livestock policy [*Science and manufacturing is gapped by prototyping. The gap is huge. It is necessary to narrow and bridge the gap through prototyping in order to get customers' attention*]

Group work presentation for better result from livestock training



Participants having veterinary kits for better utilization of training



Improved breeds of large animals for better production





Strengths

- Countries (ACP) that seek rural development have a human resource base already in place that faces high unemployment and hence can easily support new business ventures especially primary and secondary industries

Weaknesses

Major livestock marketing problems hinges on few buyers hence due to supply and demand; the producer prices are very low

- Livestock production is currently based on the use of largely indigenous Ankole/sanga breeds with a few farmers owning pure breeds that have been brought in by government and NGO programs
- Livestock commodity marketing problems are worsened by a pricing structure that favors middlemen so the producer (the farmer) has no incentives to produce along commercial lines utilizing modern farming methods.
- Modern market environment non existent.

Weaknesses

- Transport is a hindrance as most farmers.
- Major livestock marketing problems hinges on few buyers hence due to supply and demand issues; the producer prices are very low.
- There is a big problem with the supply, knowledge and affordability of livestock production inputs for modern production activities
- Milk yield averages 5-8 litres per cow per day versus a possible 25-50 litres per cow per day
- Lack of up-to-date (cutting edge) knowledge in modern agricultural and livestock production methods

Opportunities

Farmers and the ordinary people in rural areas are interested in acquiring skills through training workshops.

- This creates an opportunity of availing modern farming methods and other off-farm skills to them with immediate results that will make technology adoption and adaptation easy.
- Underutilized resources are clear opportunities. These are farming lands which are utilized using peasant production methods
- There is scope to improve Information and Communication Technologies e.g. putting in place mobile telephone antennae/ repeater stations to improve and expand reception, improve access to electricity, Internet cafes and tele-centres.

Threats

- Any meaningful investment climate requires that government through local government structures put in place certain minimum infrastructure to enable business activities to be initiated and go on unhindered.
- Disease control among animals including cross transmission to humans and across national borders

Good grazing pastures



Intensive dairy Management



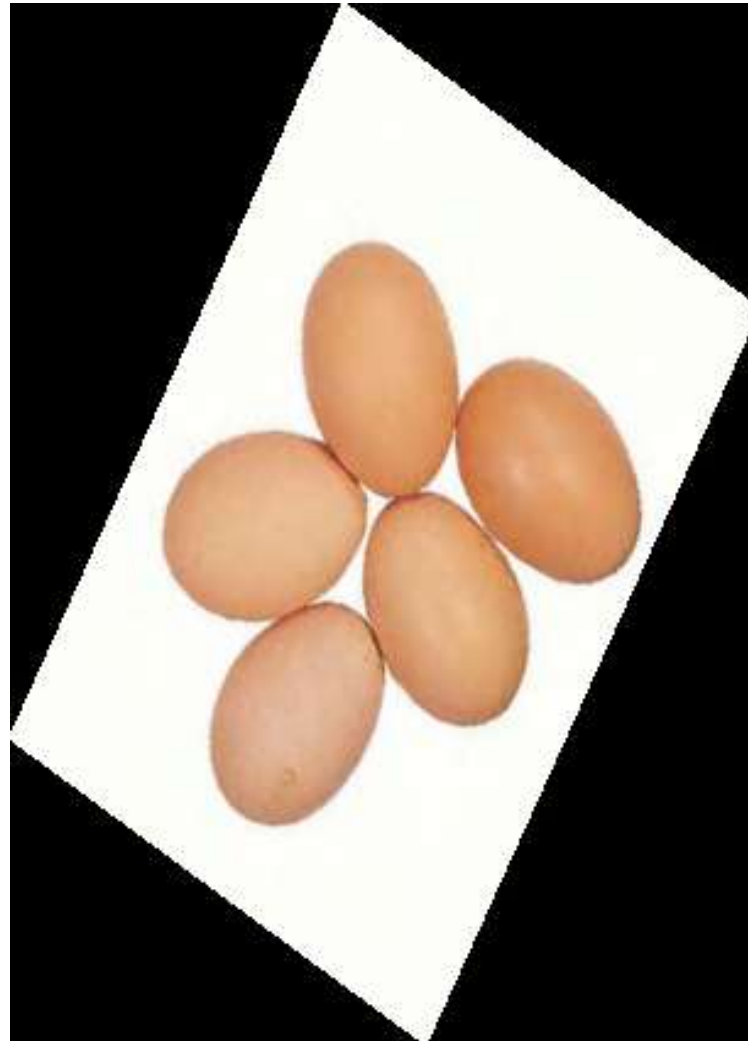
Value Addition of Milk



Organic farming in rural areas ??



Efficient egg production possible??



Feed mills for feed manufacturing?



Wildlife: Community based??



Appropriate technology at village level for value addition endeavors



Infrastructure development individually/communally??



Water harvesting to support livestock-crop systems



Maize/Soyabean storage cocoons





Feed Production

- The production of soybean in large quantities in rural areas would be complimentary to the dairy and beef production projects and
- Will act as a catalyst for the development of industries in rural areas that would be geared to process the crop into stock-feed and other products.
- To support the manufacture of stock-feeds the promotion of soybean must be accompanied with the processing of maize to provide the required carbohydrate source in the feed mixes



Challenges

- Dairy production in the rural areas is currently based on the use of largely indigenous Ankole/Sanga breeds with a few farmers owning pure dairy breeds that have been brought in by government and NGO programs

Options and actions

Investment is required in the following areas:

- Breeding of pure dairy breeds to increase access of animals of high genetic potential by farmers to use in cross breeding;
- Construction of milk collection centers, and equipping with milk pasteurizing and cooling facilities at sector level to enable a coordinated marketing opportunity for the dairy producers;
- Construction and equipping of milk processing industries that will produce market-oriented products such as cheese, butter and yoghurt that have export potential;
- Expansion of the electricity distribution network to sectors and rehabilitation and construction of feeder road network to ease transportation of milk and milk products within the district and out of the district to external markets.

Options and actions

Fodder Banks, Agro-forestry and Forestry

- Though small scale dairy farmers do grow Napier grass for feeding dairy cattle in many parts of the Developing World, the quality of the Napier is low and therefore does not support high milk production levels.
- There is need for farmers to grow high quality feed resources to complement pastures.
- Where localities have the ideal climatic conditions for the intensification of fodder production through the use of both herbaceous and tree legumes.
- The growing of tree legumes such as *Calliandra calothyrsus*, *Leucaena leucocephala* will also provide farmers with fuel wood which is currently a major constraint among the communities.
- Besides livestock feeds the farmers will also be able to produce legume seed that can be marketed locally and within the region earning rural households much needed cash.
- Government through line ministries or local authorities need to invest in fodder banks by organizing farmers, training them and providing them with planting materials, fertilizers and equipment such as chaff cutters and chopper grinders.
- The establishment of forests indigenous (*Acacia* spp., *Ficus* spp.,) and exotic species (Pine, Maple, Wattle) is a priority for the Governments to correct the massive de-forestation and concomitant high soil erosion caused by the over-utilization of land and high population densities found in some countries e.g. Rwanda.

Options and Actions

Animal Breeding (Artificial Insemination) Centre

The problem with Indigenous cows is that they are not specialized, have poor growth, milk yield, and reproductive performance.

- In an effort to overcome these limitations some governments recently adopted a one cow one family strategies, benefited from Send a Cow and Heifer Project activities.
- However, unconfirmed reports indicates: most of the imported cows have not lived up to expectations largely due to their failure to adapt to the hazards of the local environment (high temperatures, diseases, suboptimal nutrition, & management) leading to either death, or disappointingly low milk yields, & poor fertility.
- To overcome this challenge, there is need to cross breed with exotics to produce adapted hybrids, which can be gradually improved or upgraded to better performance standards.
- This can only be achieved with adoption of artificial insemination (A.I.).

Options and actions

Artificial insemination aids selection, a central theme in genetic improvement of animals whereby best cows are selected based on individual performance, their pedigree information, performance of collateral relatives or progeny testing.

- Importation of semen makes it expensive and unaffordable to most rural farmers.
- Therefore, the establishment of an AI centre, where semen will be tapped locally would make it cheap and affordable thereby bringing the technology to the doorstep of the intended beneficiaries.
- Further, an AI center will generate income through sale of fresh or frozen semen locally or abroad.
- The major resources required for the establishment of an artificial insemination centre are buildings, donor animals, laboratory equipment and personnel.
- Building requirements include offices, laboratories, animal houses and pens, animal holding (restraint) facilities, roads and security fences.
- As part of the initial Investment, donor animals (bulls) are imported.
- These bulls will be the initial semen donors till they are replaced by high performing bulls selected from the local environment.
- Semen from these bulls will be collected, processed, packaged and distributed to end users, the farmers.

Options and actions

Establishment of a feedlot

- There is a huge demand of meat and meat products on the local and export market especially in the region.
- A cattle feeding facility to provide quality animals for slaughter would provide graded beef animals to abattoir facilities and the beef would be marketed locally or exported.
- The cattle feeding facility will have to be built and preferably incorporate a slaughter facility with operations procedures put in place spelling out delivery time, mode, duration of holding the cattle before slaughter, condition scoring and treatment of animals pre-slaughter.

Pen feeding cattle



Options and actions

Livestock emergency interventions:- supplementary feeding

- For success; this intervention involve other lateral action like destocking and restocking; supplementary livestock feeding; cross border peace initiatives; emergency veterinary programmes; and transport subsidies.

Options and actions

Destocking/restocking

is the most successful livestock-related intervention because of the high level of community interest and involvement that it generated. Such interventions provide markets where there are none, generate income that can be used to maintain remaining stocks and to meet other needs, act as a cheap source of protein and promote business activity and trade in the local community.

- Compared with dry meat, fresh meat is cheaper and simpler to produce, faster to distribute, entails minimum wastage, is more satisfying and is, above all, preferred by pastoralists.

Options and actions

Destocking and Restocking continued:

- With proper planning, fresh meat can be distributed at regular intervals like relief food, thereby raising the possibility of replacing plant protein (beans and chickpeas) in the relief food ration with animal protein at a much reduced cost.
- Preparation of dried meat should only be considered where destocking has started too late, and large
- numbers of animals are at risk of death, necessitating immediate slaughter.
- Buying relief meat supports the local economy and livelihoods directly; the benefits are far greater than the costs, and should be considered as a form of economic investment.
- Given donor flexibility, funds allocated for destocking can easily be used instead for restocking should circumstances change.
- Restocking prevents pastoralists from falling out of the production system and becoming destitute.

Summary: Effecting rural development through livestock expansion and technology sustainable

Recognition of the value of biodiversity in rural communities.

Popularization of science in the rural areas (create incentives for identification of talented people from rural areas) to ensure rural development and sustainability;

- Introduction of cheaper technologies in rural areas (formation of innovative clusters in several areas of development) ensuring the engagement of women & youth.
- Enabling infrastructure e.g. roads for livestock specialists to visit rural areas to supervise, mentor & promote livestock farmer associations.
- Financial resources start up livestock projects by individuals or clusters.
- Popularization of animal reproduction techniques & sustain same through mentoring programs.
- Promote all kinds of projects aimed at creating a spectrum of livestock specialties e.g. beef producers, poultry producers, grass seed producers, village para—vets and livestock care givers, meat and milk processors.
- Identification of talented young people and make them livestock specialists in their own environments.