Animal Agriculture in Africa: Forecasting the Future.

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Introduction

- Globally – animal agriculture flourishing.
- Technologies - continuous improvement.
- Vital source of protein and calories
- Meat, milk and Eggs - aspirational food.
- Yet – many of our customers dislike our methods.

Introduction

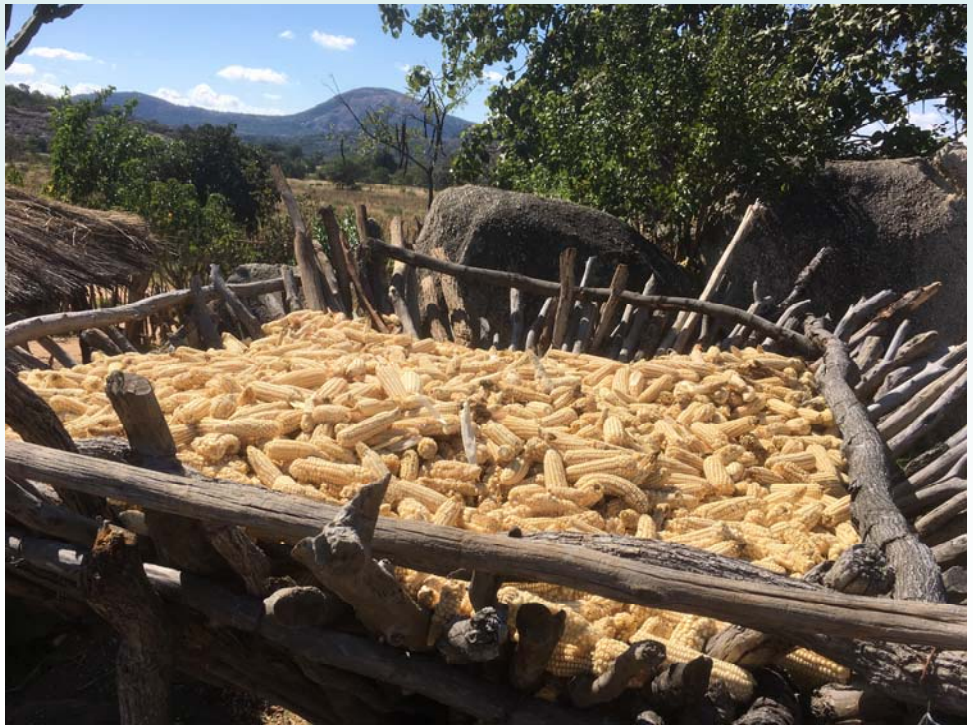
- Future commitments will likely be:
  - Meet the demand for food security.
  - Provide products that consumers want.
  - In a sustainable manner.
- Try to put it all in perspective.

Our Starting Point

- Confuse food security & food safety.
- To be food secure means:
  - Adequate food year round.
  - At a price the urban poor can afford.
- Not food secure:
  - 28% of SA households.
  - 11% of USA households.
- 22.7% of Africans undernourished. (FAO, 2017)

Our Starting Point

- Third of food produced –wasted (FAO, 2017).
  - Europe and N. America - 95 to115 kg/head.
  - Sub-Saharan Africa – 6 to11 kg kg/head.



The Global Scenario

- Population growth (9.6 bil by 2050).
- Demand for animal products – will increase by 70% by 2050. (Alexandratos et al. 2012)
- 50 mil more hens/annum (Preisinger, 2018)
- Demand for broilers - increase by 121%

Animal Agriculture

- Livestock currently supplies:
  - Represents 40% of agricultural value.
  - 13% of the calories consumed.
  - 28% of protein consumption.
  - Only 4% of all meat is “grass fed”.
  - Use waste products (bran and SBM)
- Increasingly - rely on conversion of food crops into animal products.

Animal Agriculture

- But:
  - Places pressure on environment.
  - Demand for scarce resources.
  - Emission of pollutants.
  - Uses about 70% of all agricultural land.
  - Contributes about 15 – 20 % of GHG.
  - Poultry 4-5 %.

Meat Eaters

- In low income areas – meat an essential dietary component.
- Global consumption 122g/day.
- 1/3 pork, 1/3 poultry, 1/5 beef
- Africa - 7 to 34g/day.
- Meat has never been cheaper (Godfray et al., 2018)
- Rich people eat meat (Bennet, 1941)

Efficiency of Meat Production

(Fry et al., 2018)

Species	FCR*
Atlantic Salmon	1.2 - 1.5
Tilapia	1.4 - 2.4
Beef Cattle	6 -10
Chicken	1.7 – 2
Pig	2.7 - 5

*Note: Breeding stock consumption is ignored

Efficiency of Meat Production

(Fry et al., 2018)

Species	FCR*	Edible %	Feed Protein (%)
Atlantic Salmon	1.2 - 1.5	58-88	35
Tilapia	1.4 - 2.4	37-45	28
Beef Cattle	6 -10	52-64	14
Chicken	1.7 – 2	70-78	20
Pig	2.7 - 5	68-76	18

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Efficiency of Meat Production

(Fry et al., 2018)

Species	FCR*	Edible %	Feed Protein (%)	Protein retention in human diet (%)
Atlantic Salmon	1.2 - 1.5	58-88	35	28
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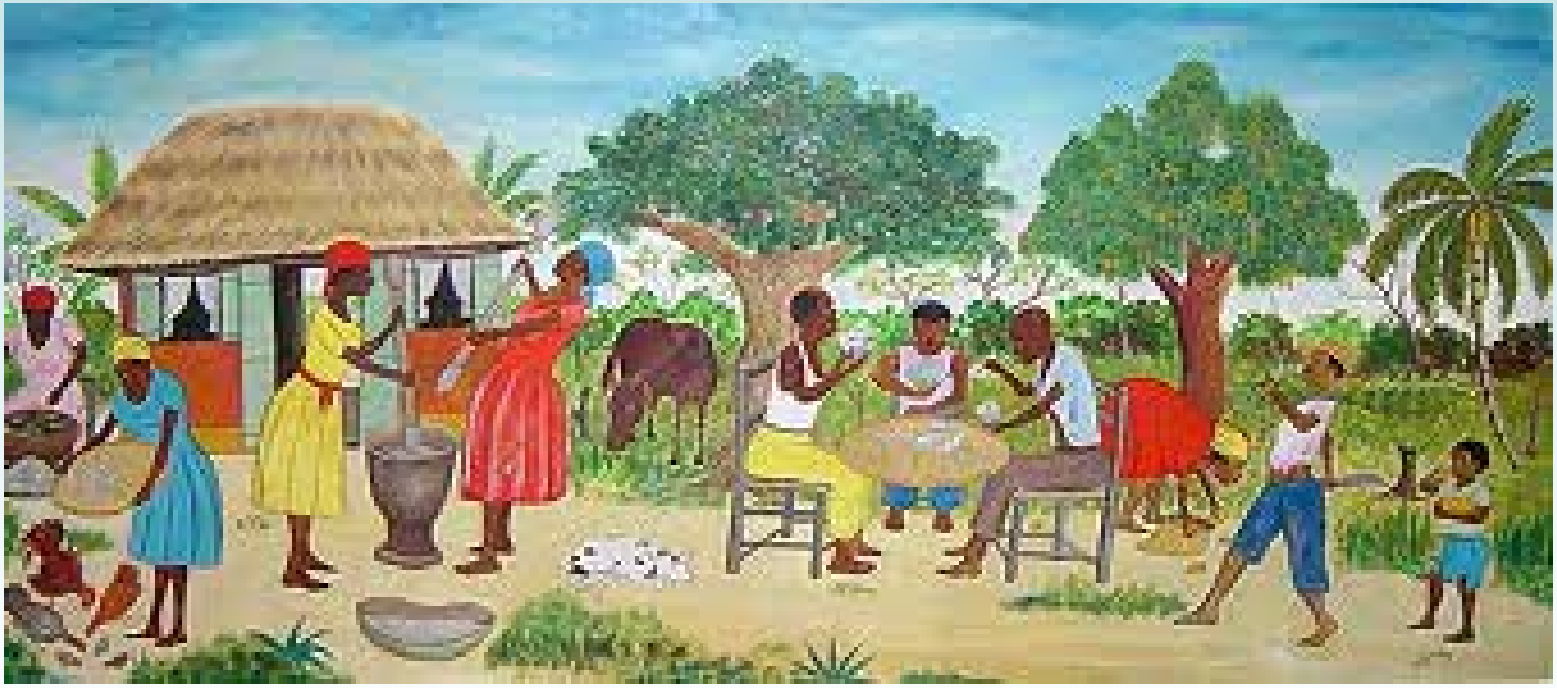
Our Citizens



Africa's People

- African population - 2 billion by 2050.
- Double the current number (Montpellier Panel, 2013)
  - Demographic changes (age and wealth).
  - Urbanisation from 50% to 70% (UN, 2015)
- Will only produce 13% of food requirement. (Montpellier, 2013)

Our Citizens

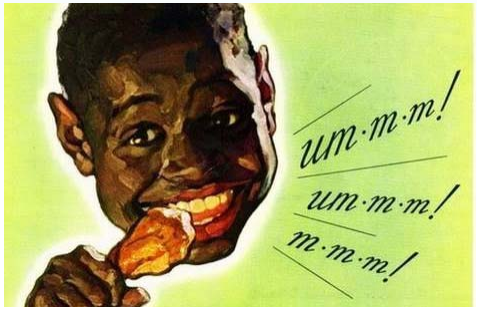
- Most are simply hungry.
- In the developed world:
  - Removed from realities of food production
  - Romanticised idea of agriculture.

‘Western’ Consumers

- Changing consumer perceptions:
  - “Natural” products (healthy, no additives).
  - “Sustainably” produced (environment).
  - Want to eat “happy” animals (welfare).
- Tend not to think about price.
- Many are now ‘millennials’.

African Consumers

- View animals somewhat differently:
  - Aspirational - the wealthy eat meat.
  - Essential protein source
  - Important culturally (village fowl - pets).
  - Viewed as a ‘bank’.
  - Disease such as AI or ND – catastrophic.
- Poultry cheaper than substitutes.



Africa and Antibiotics

- Focus in Western World on reduction:
  - Drug carry over to humans.
  - Anti-microbial resistance.
- In Africa – these are but side effects.
- Antibiotics keep people and animals alive!
- We must ensure that the poor do not shoulder the burden of antibiotic removal.

Africa and Antibiotics

(Robinson et al., 2017)

- Most African citizens live in the tropics:
  - Densities - people & livestock (close proximity).
  - Pathogen diversity - year round survival.
  - Poor biosecurity & weak health services.
  - Non-rational users of sub-standard, counterfeit drugs.
  - Sold by unscrupulous suppliers!


Natural
Environment
Sustainability
Economic
Vitality
Healthy
Communities

Sustainability

"meets the needs of the current generation without compromising the ability of future generations to meet their own needs"

Sustainable Development

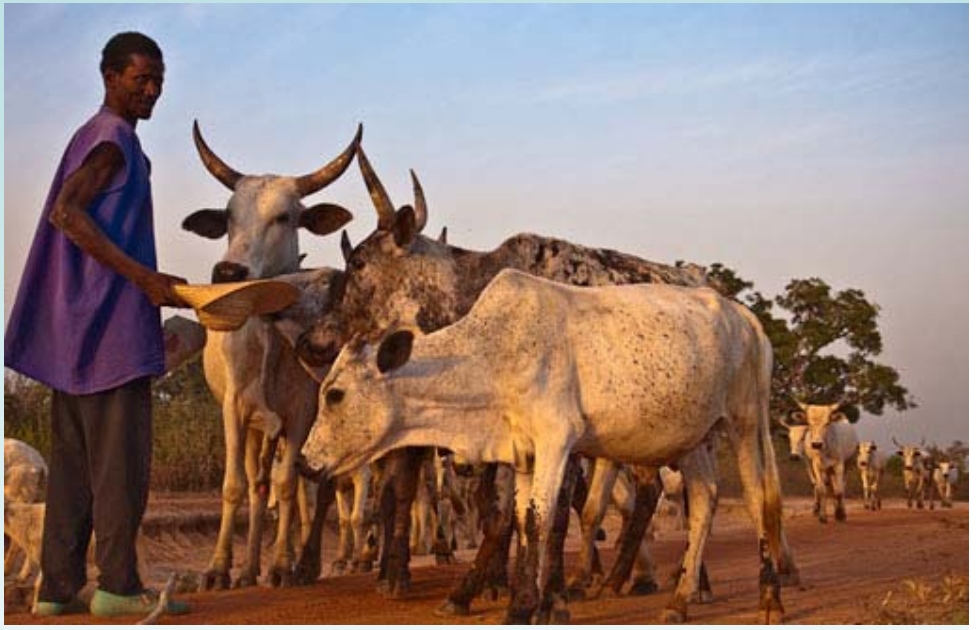
(FAO, 2012)

- 3 dimensions of a sustainable system:
  - Environmental integrity.
  - Social wellbeing.
  - Economic resilience.
- Sustainable systems – fulfill all criteria.
- Can’t pick and choose aspects to suit!

Sustainable Animal Production

- Reduce losses and/or wastage.
- Improved feed efficiency.
- Better life time performance:
  - The long-life layer.
  - More parturitions per cow/sow.
  - Dairy – milk output and parity number.
- Use of ‘unusable’ grass and rangeland.
- Use food waste (bran, chop, SBM).

African Agriculture



Not a Single Entity

- African poultry is not homogenous.
  - Subsistence farmers.
  - Small commercial growers (contract)
  - World class integrations.
- Differs by country/area.

Modern Agribusiness

- High-intensity – evolving rapidly.
- High capital requirement – low returns.
- Dependant on external inputs.
- Integration in all sectors.
- Not always ‘ sustainable’ welfare & environment aspects.

Smallholder Farming

- Africa 33 million farms < 2 Ha .
- Accounts for 80% of all farms.
- Subsistence farmers.
- Sustainability – a challenge.
- Local inputs & manual labour.
- Mostly below poverty line.

These are not gentle souls living with the sun on their backs!

Smallholder Farming

- Economic & logistic challenges:
  - Supply of inputs (vaccine, genetics, feed).
  - Access to market (vehicles, cold chain).
  - Economies of scale and access to finance.
- Technological challenges.
  - Rudimentary facilities
  - Poor biosecurity – human & bird health.
  - Water supply, feed & genotypes.

African Farms

- Much of food production - not sustainable:
  - Environmental degradation.
  - Welfare often poor (animal and human).
  - Not financially secure.
- 6 mil Ha agricultural land degraded/ year

African Agriculture

- Generally low levels of technology.
- Yield gaps exist:
  - Maize 1t/Ha - US 10t/Ha
  - Broiler FCR > 2
  - Milk < 1000 l per lactation.
  - Beef calving 40% (40% of SA cattle communal)
- Failure to embrace technology (GM).

Transformation Required

- Knowledge transfer (health, nutrition, financial).
- Appropriate technology.
- Capital – problem without freehold.
- Incentivised growers (profit).
- Access to supply chains.

Forecasting and Reality

Forecasting the Future

- We know we can produce the animals.
- Must consider feed/land resources first.
  - Deforestation increased GHG.
  - Cattle – trample and denude grazing areas.
  - Increase area under the plough.
- 75 to 80 % of future production - from enhanced crop yields (Montpellier, 2013; UN, 2015)

The Reality

- Consumers demand cheap, safe, uniform and unblemished food.
- Focus on welfare of self & the bird.
- Must understand environment & profit.
- Need to grasp the big picture!

The Reality

- Smallholder Farming
  - Powerful tool - alleviation of poverty.
  - Food security - sustainable intensification.
  - Challenges (technical, financial & supply).
  - Need to be profit driven (partnerships).
  - Animals fit the model perfectly.

Forecasting the Future

- Will require new incentives and policies:
  - Institutional support (finance).
  - Access to inputs and markets.
  - Technical services.
- Costs can’t be met by producers alone.

The Reality

- Optimistic – have skills to meet demands.
- Not sure about true sustainability.
- More pessimistic about Africa.
- Will require massive interventions.
- Political & social willpower for change required.

“Ask not what Africa can do for you—
ask what you can do for Africa.”

Apologies to JFK