Possibilities to Improve SR Productivity in Developing Countries, Egypt as a Model

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Distribution of SR population according to type of feed resources and production system

	Sheep		Goats	
	Population	%	Population	%
Rain Fed	693671	11.8	428978	9.6
Oasis	66387	1.1	102804	2.3
New reclaimed lands	931385	15.8	603924	13.6
Traditional	4197049	71.3	3311268	74.5
	5888492	100.0	4446974	100.0

Rain Fed Areas:
- Major feed input are product of rain & desert lands, yet free of charge but high risk.
- Hygiene of animals is relatively the best compared to other locations.
- Nomadic restrict breeds suitable to the system.
- Flocks managed by high experience Bedouins.

Oasis
- Animals mostly kept in doors – Flock sizes are small
- Rich in Agri By Products (date) and green fodder.
- Breeds are fertile and of high prolificacy.

New Reclaimed Areas
- Flocks less than 50 heads, reasonable part of feeds covered from lands product, as flock sizes increased system transfer to confinement.

- The developed sector of SR keepers, however performance and management are fragile.
- Green fodders are stage wise available.

Traditional Irrigated Lands (Villages)
- No range – Intensive agricultural rotation
- Green Fodder (Berseem) has fixed but small share
- Agri by products available, but for high cost

Highlights on Approaches Applied to Improve Production of SR in Egypt
Genetic Improvement

Within local breeds : All work done just considered model for possible impact of selection, but no valid and extended plan managed for selection among local breeds.

REASONS:

At the level of flocks used for selection programs
- Size of the flocks (200 – 400 heads) do not give valid opportunities for selection
- Management of the flocks was fragile which not allow stability to environmental parameters governed the measured changes.
- Selection of sires and breeding plan did not proceed with progeny test protocols, to test & maintain sires till prove there genetic potential.
- Difficulty to maintain long term plans.
- Lack in use of AI for breeding purposes.

At the level of national flocks
- Absence of recording system or just tagging animals (numbering individuals) minimize possibility of valid selection program.
- Difficulty to obtain pure local breed led to MIXED BREEDS of commercial flocks .
- Small holding flocks represent the majority of SR population.

Strange Equation !!!

Small holders have; good animals & good management & animal feed satisfaction
⇨**However, Not able to manage genetic improvement.**

Big holders have; moderate animals; moderate to poor management & fluctuated feeding according to finance availability and experience in formulating ration
⇨ **Yet, Do not have material for genetic improvement.**

Approaches to genetic improvement of local breeds

Activating tools able to bring in function flocks either at national or at least regional level !!!

Pls. Do not apply the wise: ALL OR NON !!!

Pls. Do not hang until national recording start.

Partial Solution 1: Ram Exchange Centers

- Benefit of rams in potential breeders flocks.
- Allow testing rams before selling to breeders.
- Facilitate implementing specific selection criteria.
- Can be used for expanding use of AI with fresh semen.
- Can be used for hosting to serve ewes, of small holders.
- Could allow low cost for exchanging rams for superior flocks.

Partial Solution 2: Animal Show

- In past it was occurred and exhibited strong competition among breeders (rich owners) .
- Today , it could announce and bring value for distinguish animals.
- It could encourage recording system with breeders keen to announce the high performance of individual animals.

Approaches targeted crossbreeding with imported breeds

Sheep:

Merino – Suffolk -Chios – Awassi – Finnsheep – Romanov

Goats:

Zanin – Alpine – Anglo Nubian – Damascus - Bore

General Observation :

Rate of dissemination is very limited compared to crossbred lines in cattle.

IS that due to superiority of local breeds in productive performance ?

Not true as production performance of local breeds compared to standard ones are;

Twining: 1.2 vs. 2.5   Growth: 200g vs. 450g   Milk: 120 L vs. 350 L

IS the rate of improvement gained by crossing is limited and not bring satisfaction or compensate effort ?

Yes and needs modification in breeding plans applied.

IS the quality of meat of crossbred reduced and price reduced ?

Valid - Fragile - Taste Panel studies did not prove that.

Gulf Countries Impact – Australian Approach – Breeder Effect (Flock size) –

IS fat tail is a target *per si* or its absence reduce quality and consequently affect price ?
Fragile - large flock owners do not encourage this trend.

Adaptability To Environment
* Suffolk trial: Early investigation reported incompatibility to Egypt environment.
* Rambouelt in Texas is a major breed
  When forgotten !!!/ or when crossed they survive.
* Diseases resistance
  o Pure breeds suffer from local diseases.
  o Crossbreeds have a reasonable comparable resistance as local breeds. (Refer to Symposium article)
  o After 20 years of keeping a breed infection problem go mostly parallel to local breeds.

Reproductive Performance
* Crossbred of seasonal breeds perform as local breeds (prolonged season).
* Imported pure breeds show positive modification towards extending estrus activity.

SO
It seems that crossbreeding has reasonable positive points while the major constrain facing its expand is;

The rate of improvement gained by crossing is limited and not either; bring satisfaction, compensate effort or economically feasible

Protocols applied for disseminating the imported genotypes might be responsible of that.
* **Use of natural mating in certain flocks (State Research Farms) to test and produce the recommended crossbred levels and distributing them to the attractive beneficiaries (Small holders)**
  - The impact was minimal

Reasons ,in my view, may be are:
* Production level of individuals distributed did not represent their genotype efficiently.
* Small holders are highly selective for the few individuals each have, which make difference unrecognized.
* Upgrade of TRAITS in charge (twinning) is workable on flock level while not on individual level.
* Size of flock carried out the crossbreeding were not enough for efficient production of the newly recommended genotypes.

- Small holders are not the best choice to absorb the new genotypes
- Not able to keep lambs till marketing age to identify potential and to avoid loss in price.
- Not facing problems in fertility due to fat tails.
- Not suffering of increased cost of intake and consequently relax while judging new genotypes.
- The few animals per flock is not functional.

Trials with large flocks also did not spread, reasons might be:
- Difficulty to maintain supply with the new genotypes which led to dilution of gained performance .
- Inavailability of new genotype individuals, also led to dilution.
- They start recognizing the new genotype from the end crossbred level recommended (1/4 exotic) which is the least representing type for the imported breed.

Margins to be in risk and out PROFIT from raising sheep or goats
1. Twining rate less than 1.3 for sheep and 1.8 for goats
2. Growth rate of lambs less than 280 g/day (Sheep) & 190 g/day (Goats)
3. Conception rate less than 90% per season.
4. Frequency of lambing less than 1.3 per ewe/year
5. Mortality rate over 8% up to weaning and over 2% among mature flock.
6. Milk less than 150 L/season for sheep and 220 L/season for goats.

Approaches to add impact for crossbreeding
1. Use of AI to directly introduce the germplasm of imported animals among private flocks or live rams.
2. Maintaining nucleus flock of the imported pure breed under controlled environment as propagator for rams or bucks .
3. Recommended level for genotype to be expanded is ½ Imported which could be monitored by control release of imported dams.
4. Allowing unique farms implementing efficient recording in different regions of the country to own imported dams.
5. Open the gate for inter see mating among the ½ crossbred