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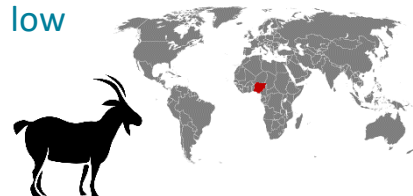
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Improving goat meat productivity in Nigeria

Goats in Nigeria are mainly produced by smallholder farmers in low input, low yielding systems. Production and household income can be increased through interventions to increase reproduction, growth rates and animal survival.



Current production systems

Most goats in Nigeria are indigenous breeds used for meat, hides and savings. Goats are mainly produced by smallholder farmers in low input, low yielding systems.

This factsheet uses production systems from Katsina Province as an example of how goat production can be improved. While we model goats only, we expect results to be applicable to sheep and mixed flocks.

Issues limiting goat meat production

Low reproduction rates

Largely caused by inadequate nutrition and disease, and genetic potential of small ruminant breeds.

Low growth rates

Largely caused by inadequate nutrition due to seasonal feed shortages and disease.

High animal mortality

Largely caused by poor animal hygiene, disease and high parasite burden.

Using models to understand potential impacts

Bio-economic models can be used to simulate and understand the potential effects of changes to production systems. A baseline simulation is created to match current production systems, and different interventions are tested.

Models show what *could* happen, not what *will* happen, so results need to be interpreted with caution.

For more information: McDonald et al. (2019) *Agricultural Systems*. 176, 102659.

Modelled baseline household

- 15 breeding Red Sokoto females, 1 male + offspring
- Kids weaned at 3 months
- Males sold at 1 year
- Mating from 10 months, 40% twinning
- 15% mortality of kids and adults

Modelled interventions to increase production

Reduced mortality

A 33% reduction in herd mortality through improved animal hygiene, management and treatment of internal parasites. Cost of healthcare ₦500/head/yr.

Later turnoff

Males were kept longer to increase turnoff weight and sold at 24 months.

Later turnoff + supplement males

Weaned males supplemented with 0.2 kg/head/day purchased concentrate (maize, wheat offal, cottonseed cake, bonemeal) to increase liveweight gain, sold at 25 kg.

Later turnoff + concentrate-based diet

Weaned males fed concentrate at 0.5 kg/head/day to increase liveweight gain.

Supplement breeding females + reduced mortality

Females of breeding age supplemented 0.3 kg/head/day concentrate during the dry season. A 33% reduction in mortality to 10%.

Combined interventions

Combinations of the above interventions.

Interventions can increase production and profitability

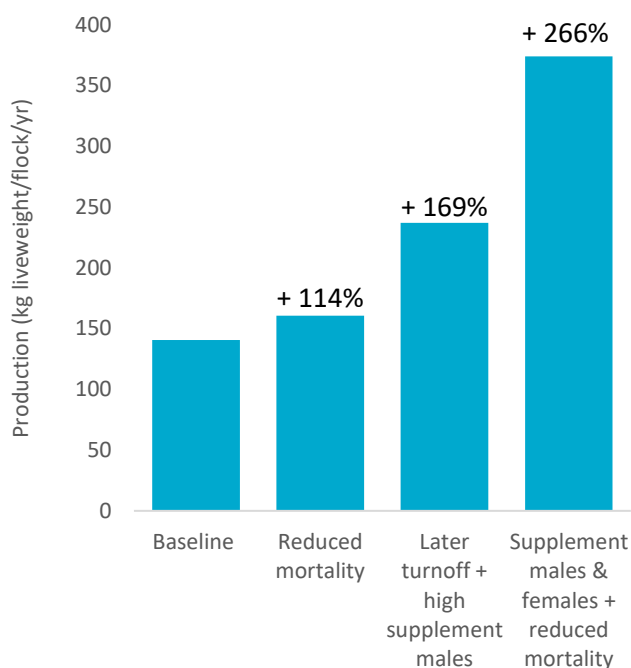
Modelled impacts of interventions to goat meat production systems

	Flock size (head)	Number of births/year	Number of animals sold or consumed by household	Production ¹ (kg liveweight)	Losses ² (%)	Annual income from goat production (NGN ³)
Baseline	28	14	10	141	17	49,013
Reduced mortality	29	15	12	161	13	67,569
Later turnoff	31	13	6	104	23	33,348
Later turnoff + supplement males	27	14	9	205	18	69,205
Later turnoff + concentrate-based diet	26	14	10	237	18	78,332
Later turnoff + high supplement males + reduced mortality	27	15	12	274	13	114,321
Supplement breeding females + reduced mortality	34	21	17	201	11	70,417
Supplement males & breeding females + reduced mortality	30	21	18	374	12	145,766

¹ Production – total liveweight of animals sold and consumed by a household per year

² Losses - percentage loss from mortality, theft, predation, etc. in a flock per year

³ 1 USD = 381 NGN (Nov 2020)



Modelling of interventions shows the greatest increases in production come from combining multiple interventions.

Key messages

Combined interventions are more successful than single interventions.

Later turnoff of growing males is only profitable if supplementary feeds are available to increase growth rates.

Strategic supplementation of breeding females is likely to be most profitable where productivity is limited by low reproduction rates. The high level of twins (40%) in our baseline meant that birth rates were reasonably high, despite individual conception rates being sub-optimal.

Smallholder farmers often face multiple barriers (distance to market, capital, quality of products) in accessing improved feeds and healthcare as modelled in these scenarios. Access to markets and inputs should be considered in any intervention program.

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