

# Poultry Production and Breeding Systems in Malawi

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# Content

- Background and frame conditions
- History of improvement programmes
- Traditional vs. commercial production
- Case study: preliminary results
- Conclusion



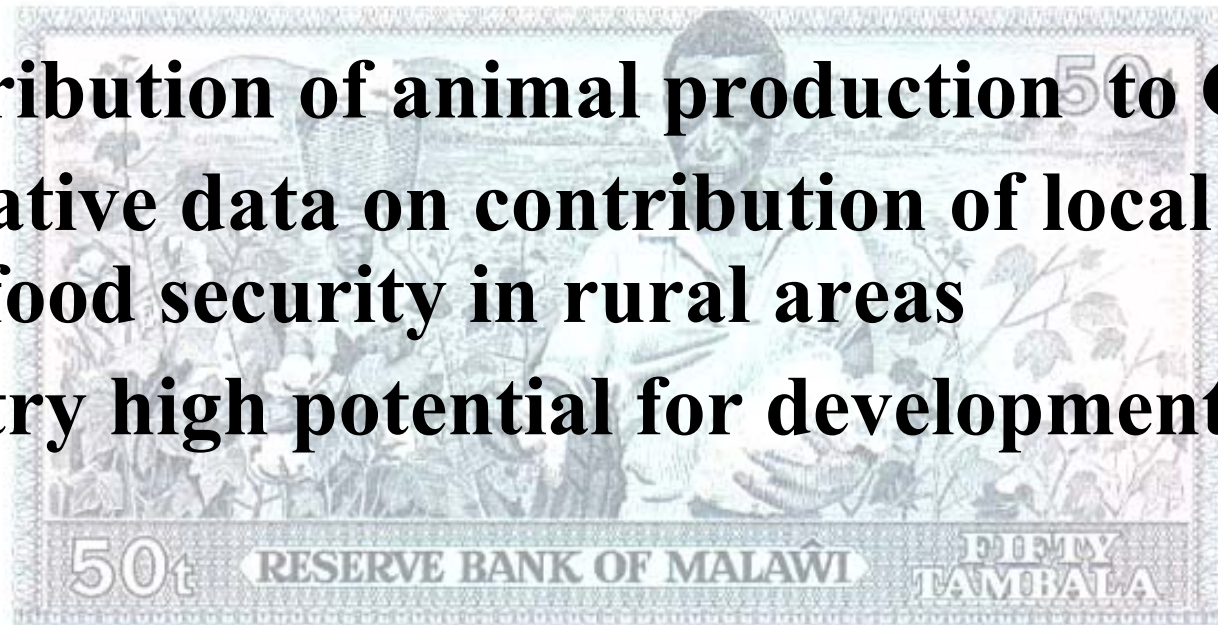
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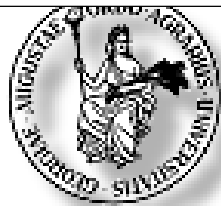
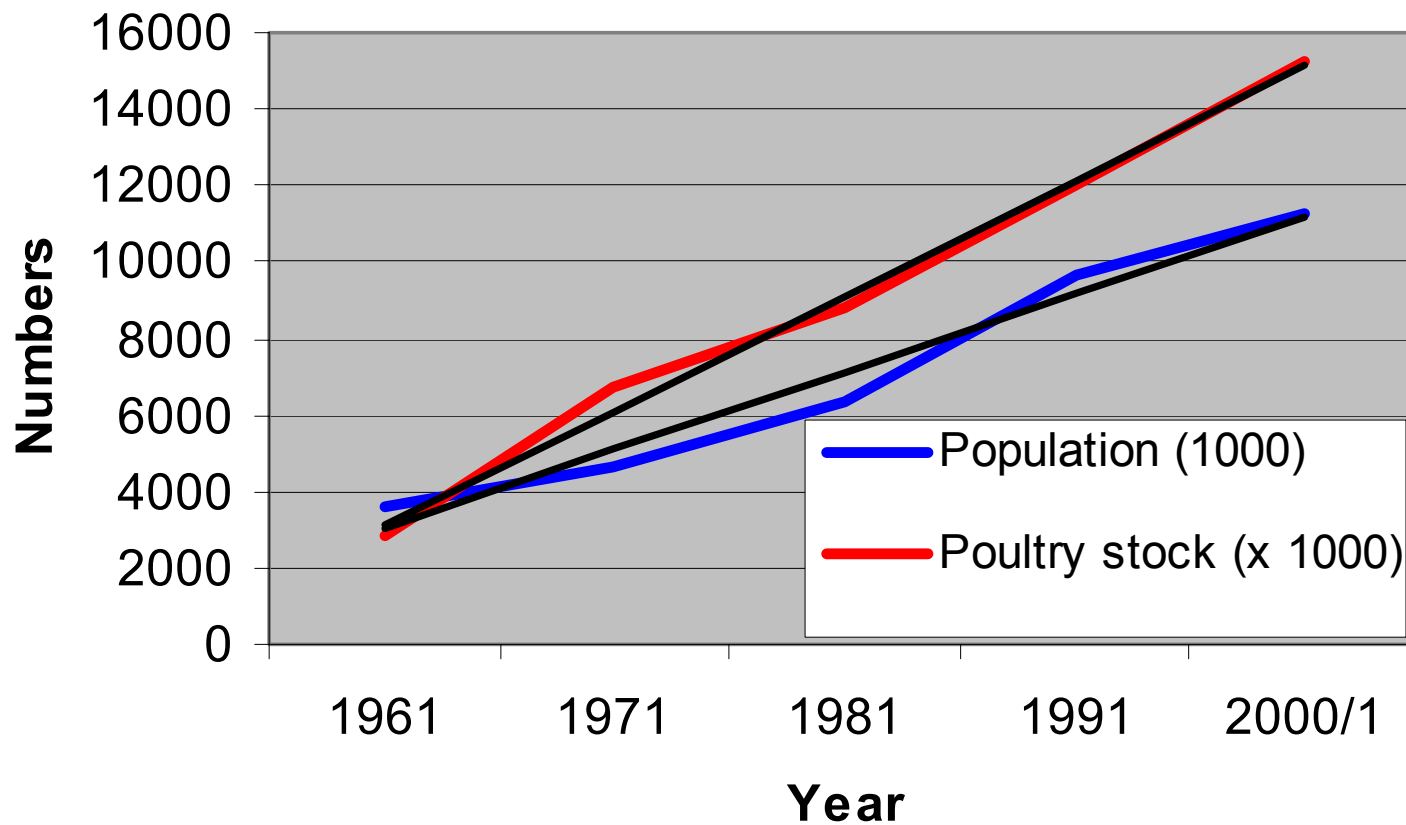


# Economic Role of Livestock and Poultry

- **Small contribution of animal production to GDP**
- **No quantitative data on contribution of local poultry to food security in rural areas**
- **Local poultry high potential for development**



## Is the 'Livestock Revolution' taking place in Malawi? (Data source: FAOSTAT 2002)

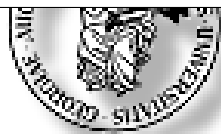
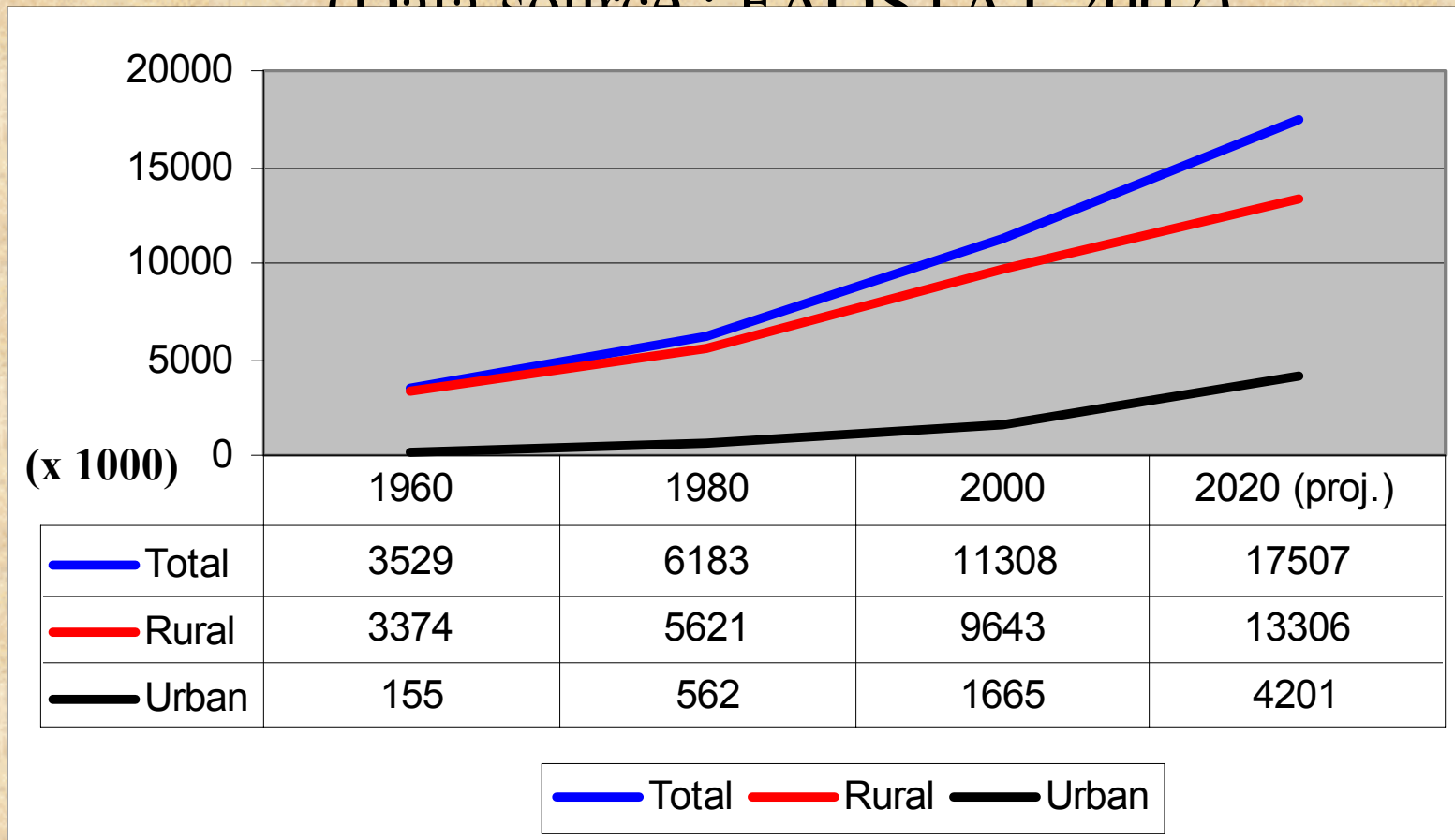


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# Human Population Malawi: Urbanization and Rural Population

(Data source: FAOSTAT 2002)



# Daily Per Caput Energy and Protein Supply is Low

(Source of Data: FAOSTAT 2002)

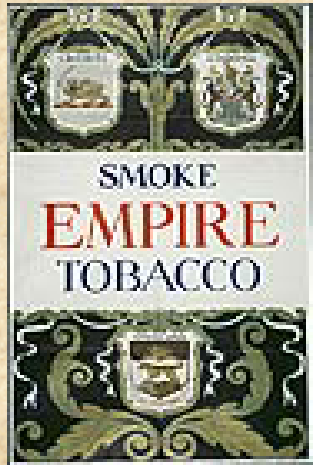
Per caput supply	1961	1981	2000	2000 (Africa)
Total calories	2015	2281	2131	2434
Calories animal origin	51	96	49	175
Poultry meat protein (g)	0.2	0.5	0.5	1.4
Egg protein (g)	0.2	0.4	0.4	0.5
Animal protein (g)	3.2	5.8	3.7	12.9



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# History of Farm Animal Improvement Programmes



Source: HIP

- British Colonial Office: 1950's foundation of government breeding stations.
- Independence 1964: Strict state control of sector by Head of State until 1994.
- Centralised government stations host farm animal breeding programmes: top-down approach.



The former President Banda  
Photo BBC



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# Possible Improvement Strategies

- Sustainable breeding programmes (crossbreeding and/or selection within population): Improve genetics
- Management (feeding, health): Alleviate constraints
- Organization (goals and ownership development)  
e.g. community-based programmes
- >Holistic approach required



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# Centralised Strategy and Action Plans



## 1. Overall goal:

‘Rural development through commercialisation of animal production‘

## 2. Strategy: Dissemination of improved chicken (exotics or F1).

## 3. Implementation:

- Donor subsidies (mainly provided to government stations)  
> distorted markets > value of local/breeding animals?
- Improvement strategy basically build on, well functioning breeding centres‘



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# The National Black Australorp Programme

**Main Breeding Station:  
Mikolongwe**

One comparative trial (crossing with various exotic breeds) served as a point of reference (not published)!

**3 Multiplication Centres**

Dissemination of (mainly) cocks to farms

**Indiscriminate crossbreeding  
at village production level**

**No impact studies**

**No breeding programme**



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# The Missing Links: Lack of Impact of Poultry Improvement Schemes

**No defined breeding goal**

**Failure of dissemination mechanism**

**Poor process involvement of stakeholders**

**No livestock services provided**

**Benefits through improved Genetics and Management**

**Production environment degrading**



# Rural Poultry Have Multiple Roles in Malawi's Society

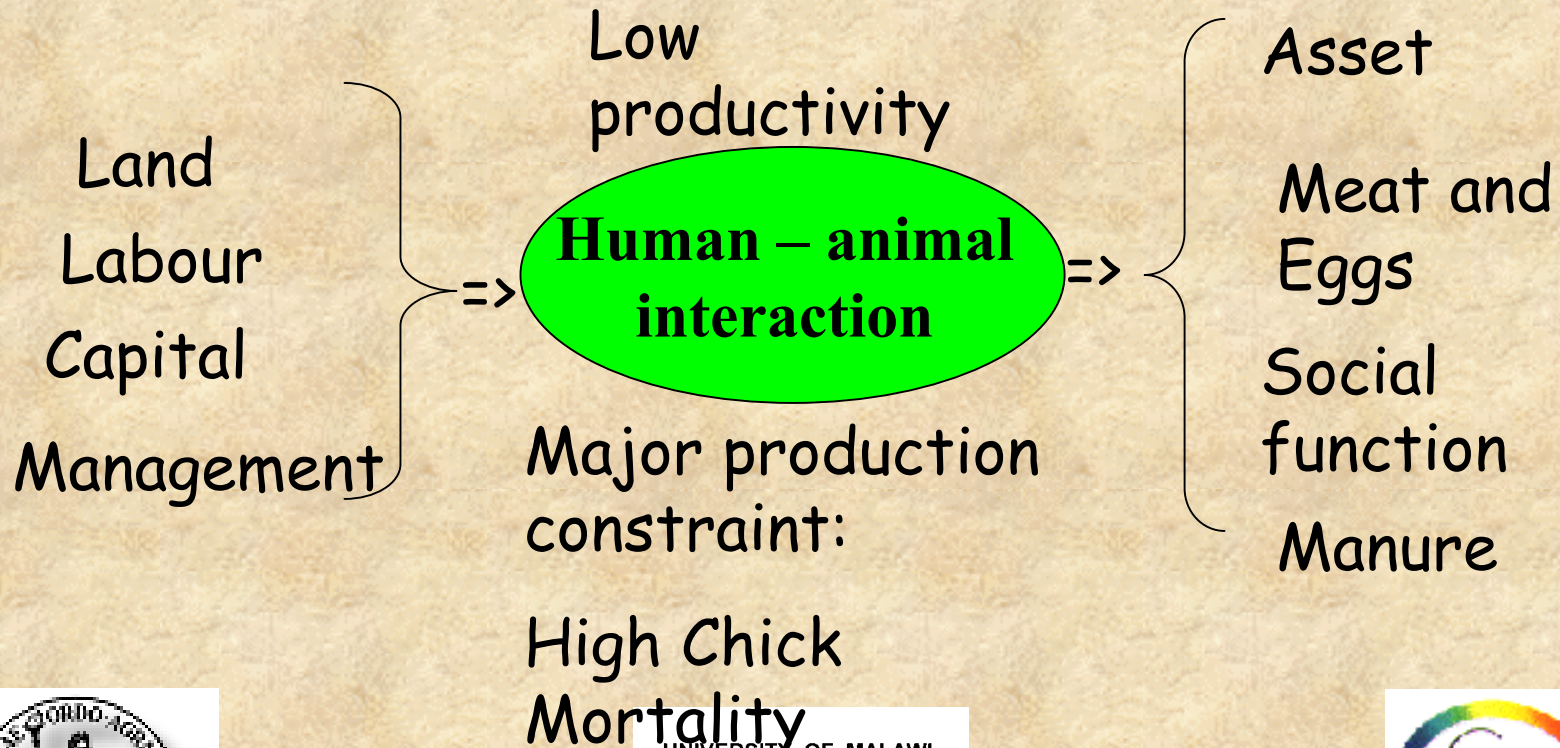
- Food supply
- Income
- Food shortage buffer
- Asset and wealth
- Social components (risks, traditions, fines)
- Keeping of mixed species:
  - Chickens dominate (92.6%)
  - Pigeons (4%)
  - Ducks (3.1%)
  - Guinea fowls (0.3%)



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# High Chick Mortality is a General Problem in Local Low-input Poultry Production Systems Throughout Africa (FAO/IAEA 2002)

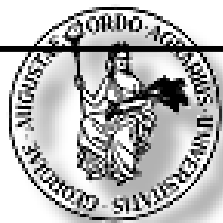


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# Commercial Production Structure 2001

Category		Farmers (n)	Frequency (%)
Type	Broiler	169	49.6
	Layers	172	50.4
Gender	Male	215	36.0
	Female	120	64.0
Location	Urban	212	60.4
	Peri-urban	139	39.6
Scale	Small	300	85.5
	Medium	47	12.8
	Large	6	1.7

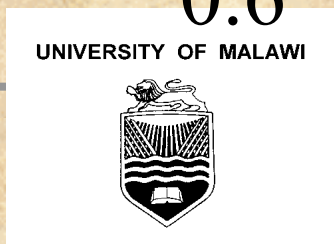


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# Formal Education of Smallholder Poultry Farmers in Rural Areas (n = 316) (Gondwe et al. 1999)

	Lilongwe	Mzuzu
	%	%
None	23.4	0.7
Std. 1- 4	44.9	21.7
Std. 6 – 8	28.5	52.7
Secondary School	2.4	25.0
Adult Training	0.6	







# Climate

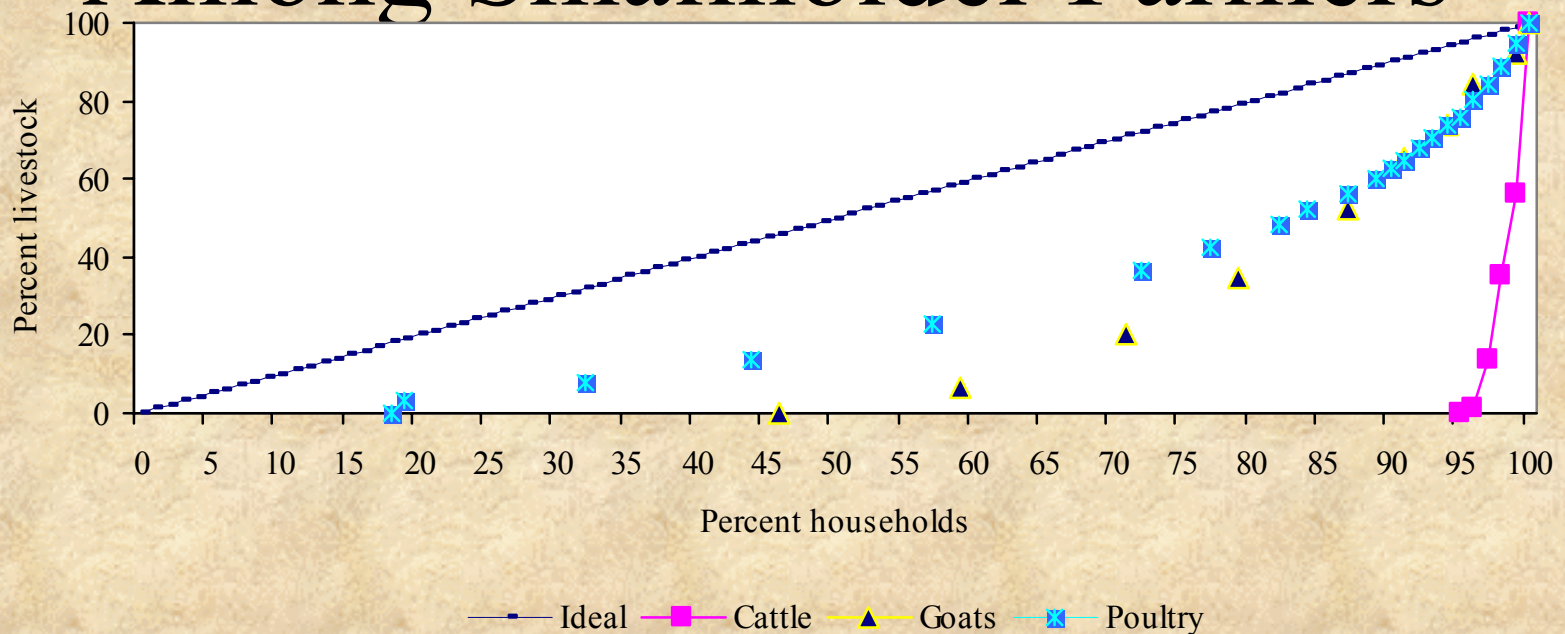
- Tropical with two distinct seasons
- Rainy season: Nov – April
- Dry season: May – Oct
- Highly variable annual rainfall: 500 – 1500mm
- Average maximum temperature: 27.5° C
- Average minimum temperature: 15.7° C
- Altitude Lilongwe: 1040 m asl



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# Rural Poultry Distribution Among Smallholder Farmers



Lorenz curve for livestock assets ( n = 752 households)  
(Gini coefficient: 0.49 poultry, 0.67 goats, 0.94 cattle)



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# Overall Research Goal

Contribute to alleviation of nutritional deficiency and poverty of rural human population through sustainable poultry breeding programmes



# Objectives



1. Phenotypic and genetic characterisation of Malawi rural chickens.
2. Compare performance of local chicken to Black Australorp which are used in national crossbreeding programme
3. Develop village based management systems for multiplication and sustainable breeding programmes



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# Materials and Methods

- Surveys in rural areas of Lilongwe (central region) and Mzuzu (northern region)
- Age of birds estimated by farmers
- Acquisition and exchange of birds for breeding
- Flock monitoring census (Lilongwe)
- Recording performance



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# On-farm Multiplication Centres



Monitoring of in- and output variables



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# Preliminary Results



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# Phenotypic Diversity

Phenotype	Description	Frequency (%)
Chiphulutsa	Grey, ash type	11.97
Yakuda	Black	31.36
Yoyela	White	15.68
Yofira	Red brownish	12.84
Kameta	Necked neck	3.21
Mawanga	multicolour	2.96



multicolour  
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# Phenotypic Diversity

<b>Kansilanga</b>	<b>frizzled</b>	<b>0.99</b>
<b>Kawangi</b>	<b>Spotted like Guinea fowl</b>	<b>14.81</b>
<b>Tsumba</b>	<b>feather hill on head</b>	<b>2.84</b>
<b>Kachibudu</b>	<b>Without tail feathers</b>	<b>0.37</b>
<b>Simboti</b>	<b>Dwarf</b>	<b>0.12</b>
<b>Mikolongwe</b>	<b>Black Australorp</b>	<b>2.47</b>



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# Productive Performance

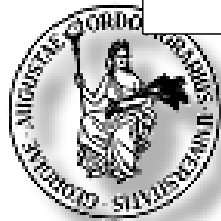
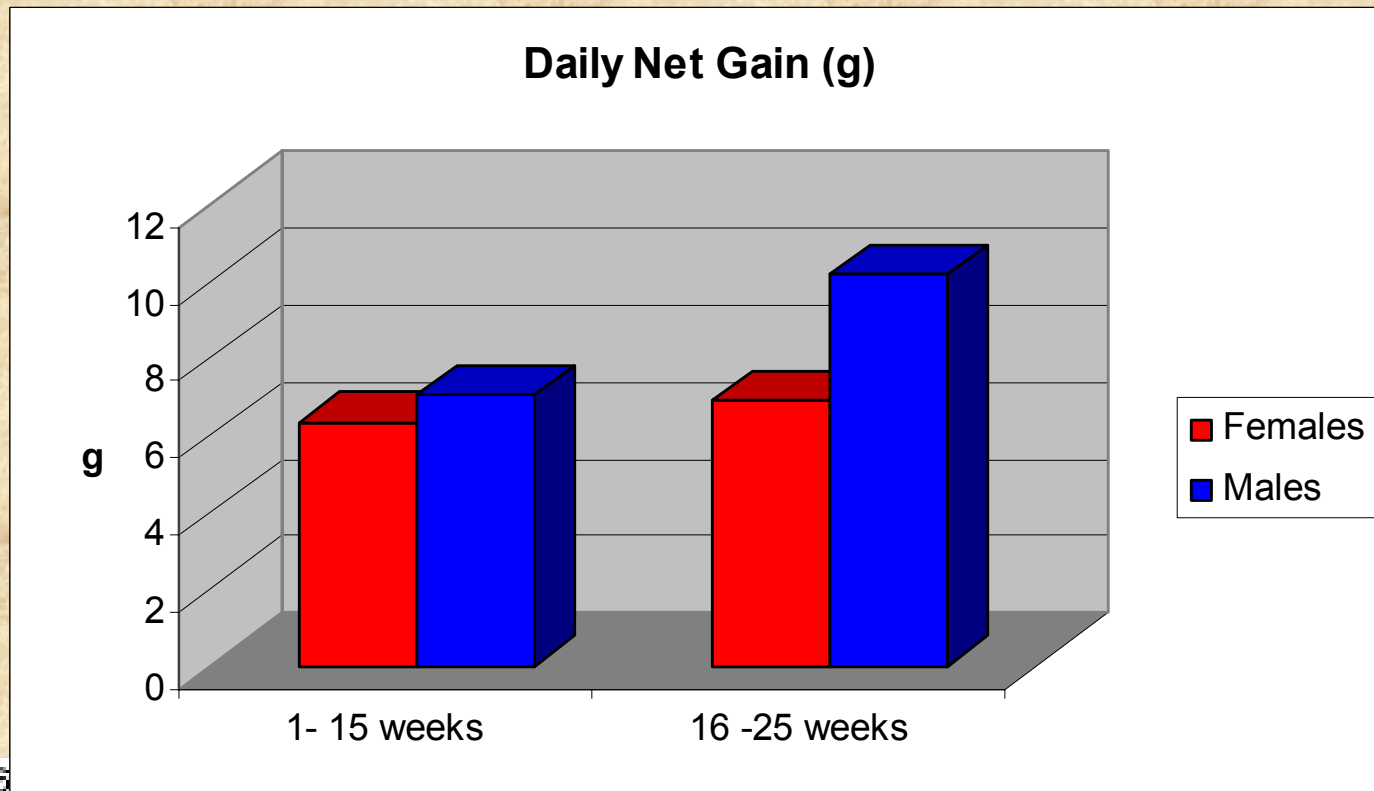
Trait	Lilongwe ADD (Central)			Mzuzu ADD (North)		
	n	LSmean (SE)	CV %	n	LSmean (SE)	CV%
Age to POL, wks	190	25.6 (0.7)	14.5	145	30.0 (0.8)	33.8
Eggs/clutch laid	209	14.9 (0.2)	22.5	146	14.7 (0.3)	25.3
Eggs/clutch sit	133	13.1 (0.26)	20.5	263	12.3 (0.19)	24.5
Hatchability, %	119	89.7 (1.30)	9.5	243	81.1 (0.90)	21.1
Clutches / year	205	3.1 (0.05)	20.8	146	3.0 (0.06)	21.9



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# Daily Gain of Scavenging Local Chicken



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# Major Causes of Chick Loss

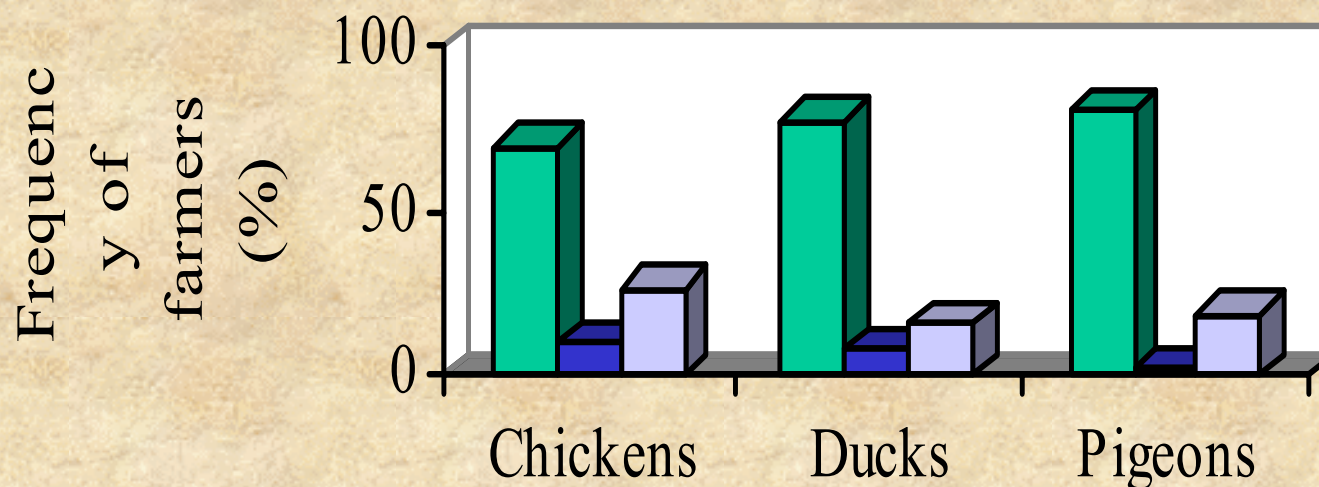
- Newcastle disease (peak hot-dry season)
- Coccidiosis and internal parasites
- External parasites (lice and fleas)
- Predation
- Cold (June-July)
- Rainy season (December-March)



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# Sources of Breeding Stock



■ Within Village ■ Market places ■ Outside Village

Most breeding stock is derived from exchange among relatives and friends within the village



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# Exchange of Breeding Stock

- Locally called Chipazga (North) or Chakhola (Central)
- Functions as a social loan system
- Usually no monetary transactions involved
- Hence every household has a chance to utilise breed stock
- No controlled mating (Average Cock : Hen Ratio = 1 : 3.2)



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# Reasons for Within Village Breed Stock Exchange

Reasons given by respondents	%
Need and preference for specific phenotypes	29
Cheap source for multiplication	31
Reinvesting after disease outbreak	29



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# Conclusion

- **Previous external financial support to central government prevented development of participatory structures**
- **Phenotypic selection practised by livelihood oriented smallholder poultry farmers possible entry point for community based breeding programmes**



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# Conclusion

- **Level of productive performance in a ‘zero’-input production environment indicates high adaptive value of local chicken**
- **Potential of production not utilised due to constraints**
- **Revision of livestock policies to avoid further indiscriminate crossbreeding**



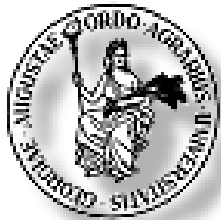
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