

# Research Trends in Animal Genetic Resources in Africa

S. O. Oseni

Department of Animal Sciences,  
OAU Ile-Ife, Nigeria



# Brief Outline

- Background (Situation analysis and the Global Plan of Action for AGRs)
- Research questions
- Objectives
- Methodology
- Results
- Discussion & Conclusion
- Acknowledgements

# Background

- iLINOVA ([www.ilinova.org](http://www.ilinova.org)) covers
  - Science, technology and innovations (STI) in the management of indigenous livestock resources
  - Three regions in Africa (East, Southern & West Africa)
  - Farm animal genetic resources (FAnGR)
- Consequently, some general questions include:
  - What is the trend for R&D for FAnGRs across Africa?
  - What are the drivers of R&D for FAnGRs in Africa
  - What is the direction of R&D vis-à-vis the Global Plan of Action (GPA) for FAnGRs on a continental scale?
  - What is the progress in the implementation of the GPA in Africa, especially the GPA #4?

# **Global Plan of Action (GPA) for FAnGR (in brief)**

- ❑ **Global Plan of Action (GPA) for FAnGR** or the Interlaken Declaration, (FAO, 2007)
- ❑ What is the **GPA for AnGR**?
  - ❑ internationally agreed framework for the management, conservation and sustainable utilization of FAnGR
  - ❑ Endorsed by
    - ❑ 109 countries
    - ❑ the European Community
    - ❑ 42 Organizations
- ❑ **Aims:**
  - ❑ combating the erosion of animal genetic diversity
  - ❑ Using animal genetic resources sustainably.

# Strategic Priority Areas (SPA) of the GPA

- ❑ **SPA – 1: Characterization, inventory and monitoring of trends and associated risks**
  - ❑ Classification of AnGR
  - ❑ Assess trends in, and risks to AnGR
- ❑ **SPA – 2: Sustainable use and development**
  - ❑ Sustainability in animal production systems with a focus on food security and rural development
- ❑ **SPA – 3: Conservation**
  - ❑ Steps needed to preserve genetic diversity and integrity for the benefit of current and future generations
- ❑ **SPA – 4: Institutions, policy and capacity building**
  - ❑ Addresses key questions of practical implementation of the GPA

# Research Questions

- What is the overall trend in R&D for AGRs in Africa?
- Are there region- and country-specific trends with respect to
  - Particular AGR?
  - Funding for R&D for AGR?
  - Role of local communities?
  - Role of breed societies?
  - Role of funding agencies?
- What is the trend for R&D in AGR before and after Interlaken Declaration?

## Research Questions (Cont'd)

- With reference to specific SPAs of the GPA,
  - How are countries and regions of Africa faring with respect to each SPA of the GPA?
  - Is there a particular disposition towards some SPAs?
  - What is the overall trend for SPAs for AGRs?
- What is the funding patterns of R&D for AGRs across
  - Countries and regions of Africa?
  - SPAs of the GPA?
  - Breeds, livestock species or AGRs
- In particular, what is the trend for SPA\_4, especially with respect to STI for the MIL?

# Objectives

- **Main**
  - Assess the general trend for R&D for AGRs across Africa
- **Specific**
  - Establish trends for R&D in FAnGRs with respect to specific livestock in Africa
  - Assess the role of funding for R&D in AGRs across Africa and across the SPAs of the GPA
  - Establish region- and country-specific trends for R&D for AGRs
  - Evaluate a trend for R&D in AGRs pre- and post-Interlaken
  - Assess the trend for R&D in AGRs with particular reference to SPAs (1,2,3 and 4) or possible combinations thereof



# Methodology

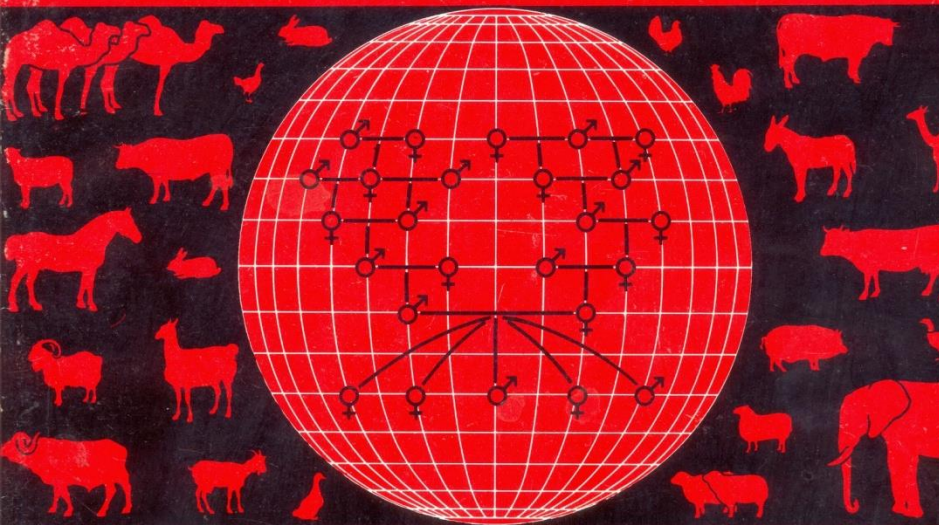
# Methodology – Source of data extracted

- Focus was on **Animal Genetic Resources Information, AGRI, (now Animal Genetic Resources, AGR)**
- A Journal of the FAO of the UN
- Published by **Cambridge.org**
- Published since 1983 (33 years ago!)
- Covers topics on SPAs of the GPA for FAnGRs
  - Characterization
  - Sustainable use and development
  - Conservation
  - Policies, institutions and capacity building
- Journal is devoted towards implementing the GPA
- Rich harvest of scientific knowledge on the afore-mentioned topics and more

# Source of Data Source of Data

ANIMAL GENETIC RESOURCES INFORMATION  
BULLETIN D'INFORMATION  
SUR LES RESSOURCES GÉNÉTIQUES ANIMALES  
BOLETIN DE INFORMACION  
SOBRE RECURSOS GENETICOS ANIMALES

199



**46**  
**2010**

ISSN 2078-6333

## **ANIMAL GENETIC RESOURCES**

an international journal

## **RESSOURCES GÉNÉTIQUES ANIMALES**

un journal international

## **RECURSOS GENÉTICOS ANIMALES**

una revista internacional



# Methodology – Extracted Data

- Volume and issue
- Study title
- Year of publication
- Author(s) / Number of Authors
- Livestock or FAnGRs
- Breed of livestock
- Breed society
- Country & region in Africa
- Institution(s) involved
- *On-station, on-farm, regional, or national study*
- Agro-ecology/production systems
- Target communities
- SPAs (1,2,3 & 4) of the GPA established through **Key words**, Abstract content, Key conclusions
- **Acknowledgements** of
  - Funding source
  - Local communities
  - Breed societies
- Date of the publication
  - Pre-Interlaken ( $\leq 2007$ )
  - Post-Interlaken ( $> 2007$ )

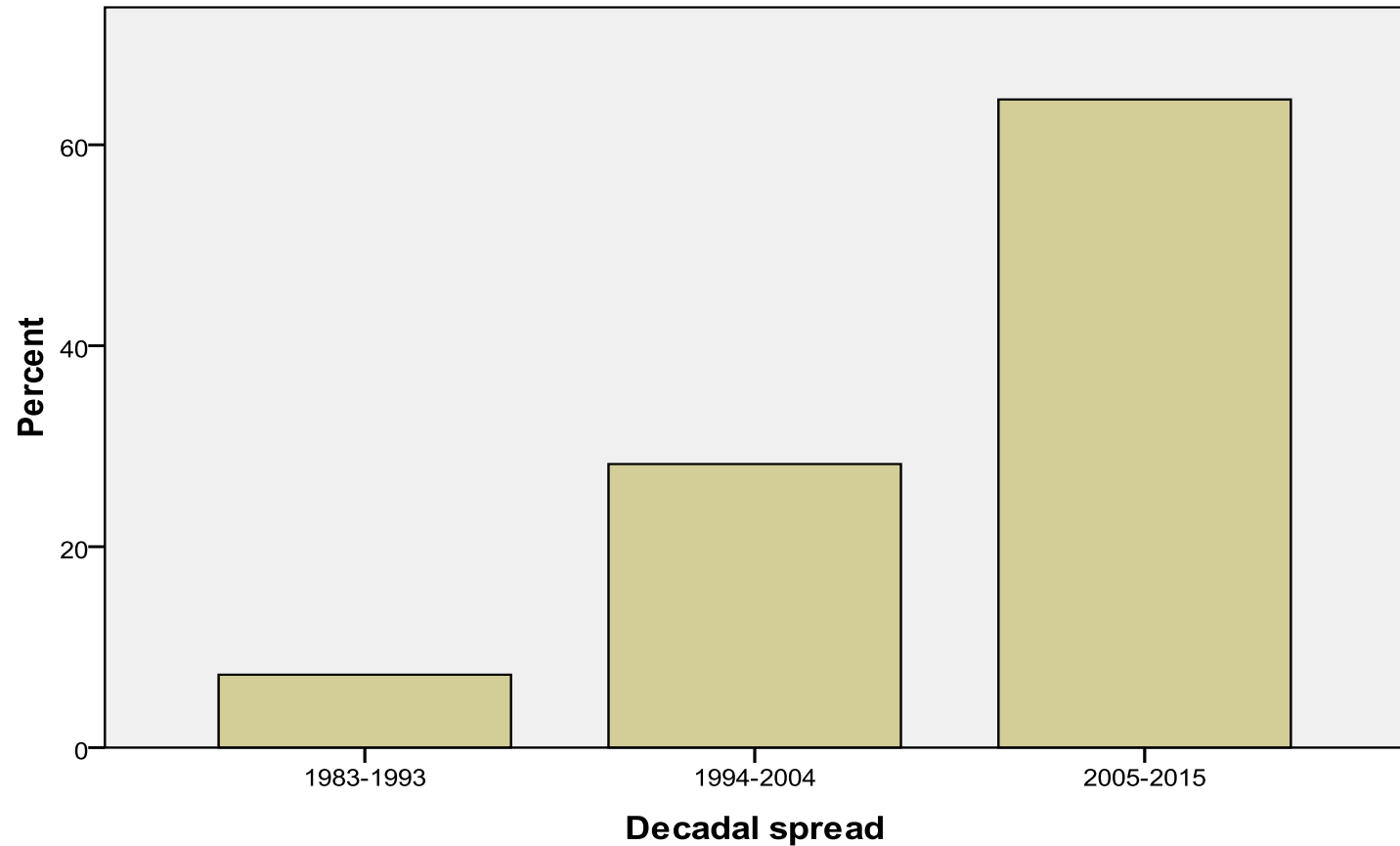
# Methodology – Extracted Data (Cont'd)

- Two datasets generated and analyzed
  - (a) Whole data of all 124 papers (or records)
  - (b) Subset data for the top **nine** countries that contributed almost 80% of the AGR studies
- Analysis of data via frequency procedures and cross-tabulations
- **Summary of paper**
  - Total number of studies from Africa = **124 papers**
  - Number of countries across Africa = **26 countries**
  - Livestock covered = **13**
  - Regions in Africa = **04**
  - Years of studies (1983-2015) = **33 years**

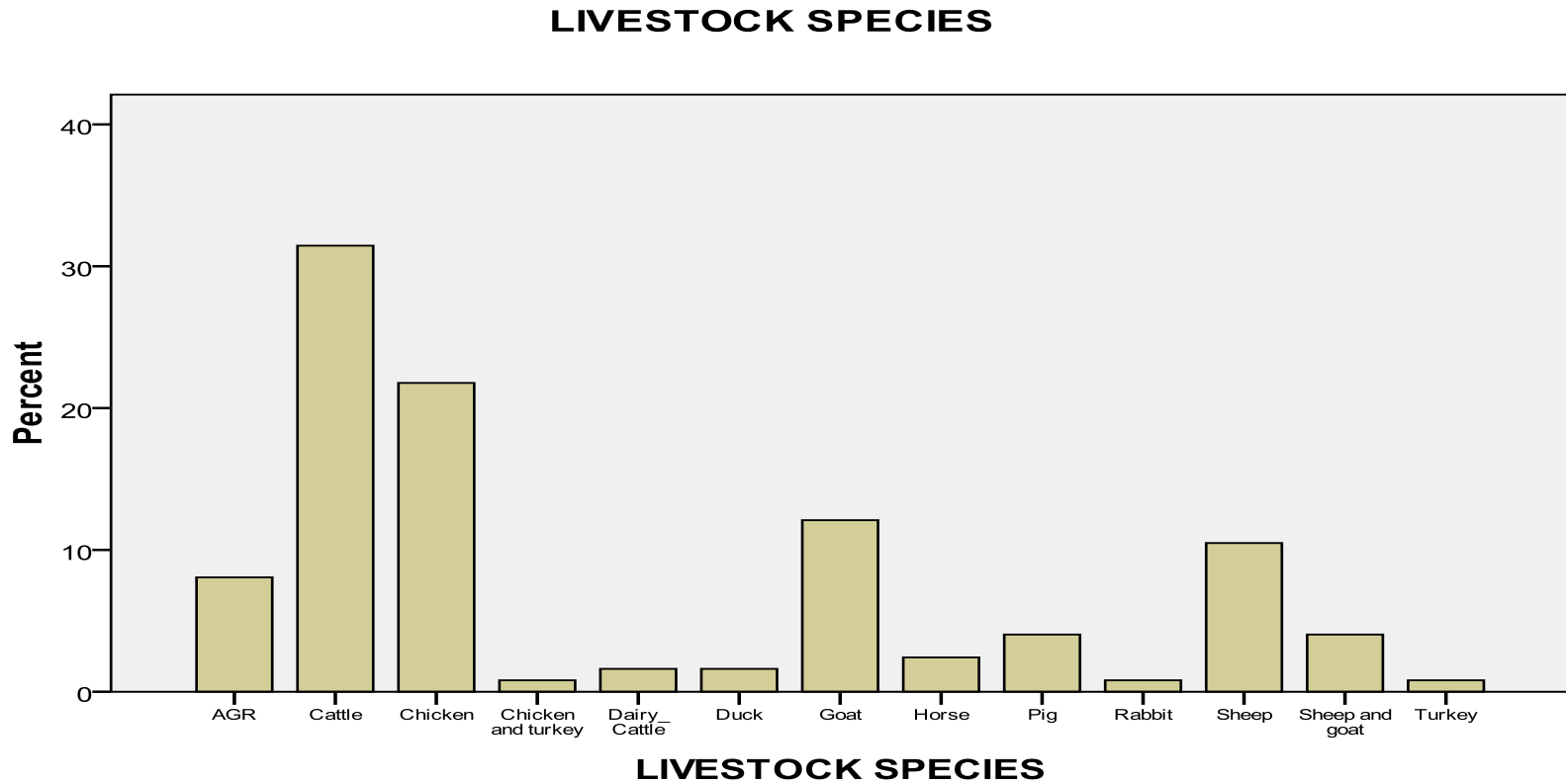
# **Results Set 1 – Full AGR dataset**

# Decadal spread of AGR reports

Decadal spread

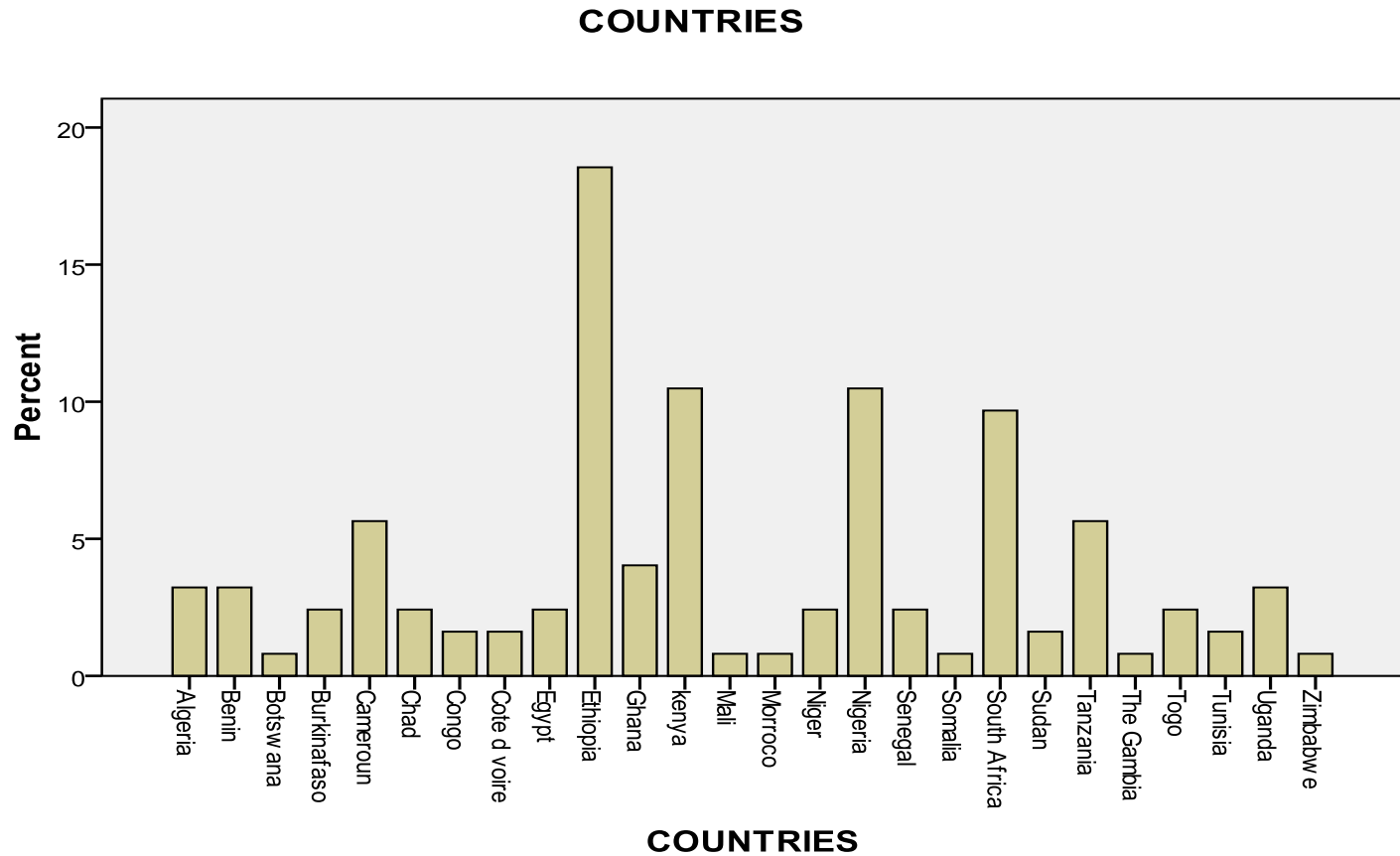


# Distributions of papers by livestock

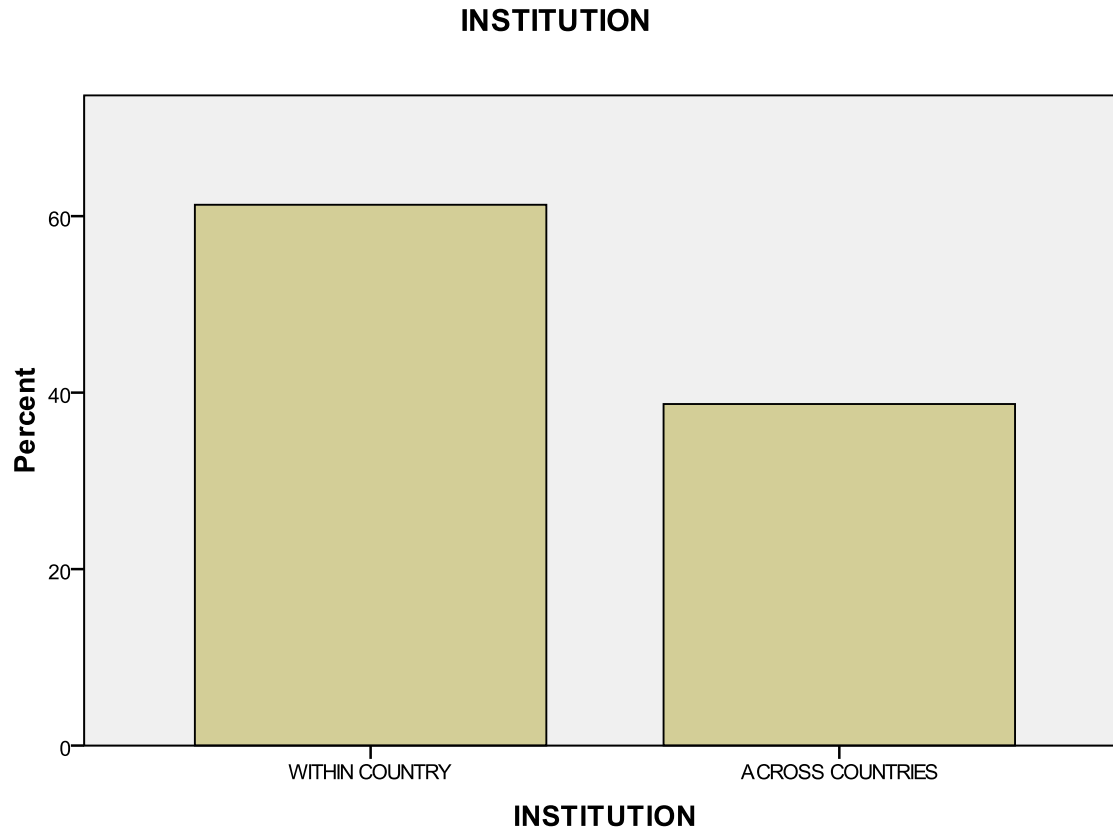




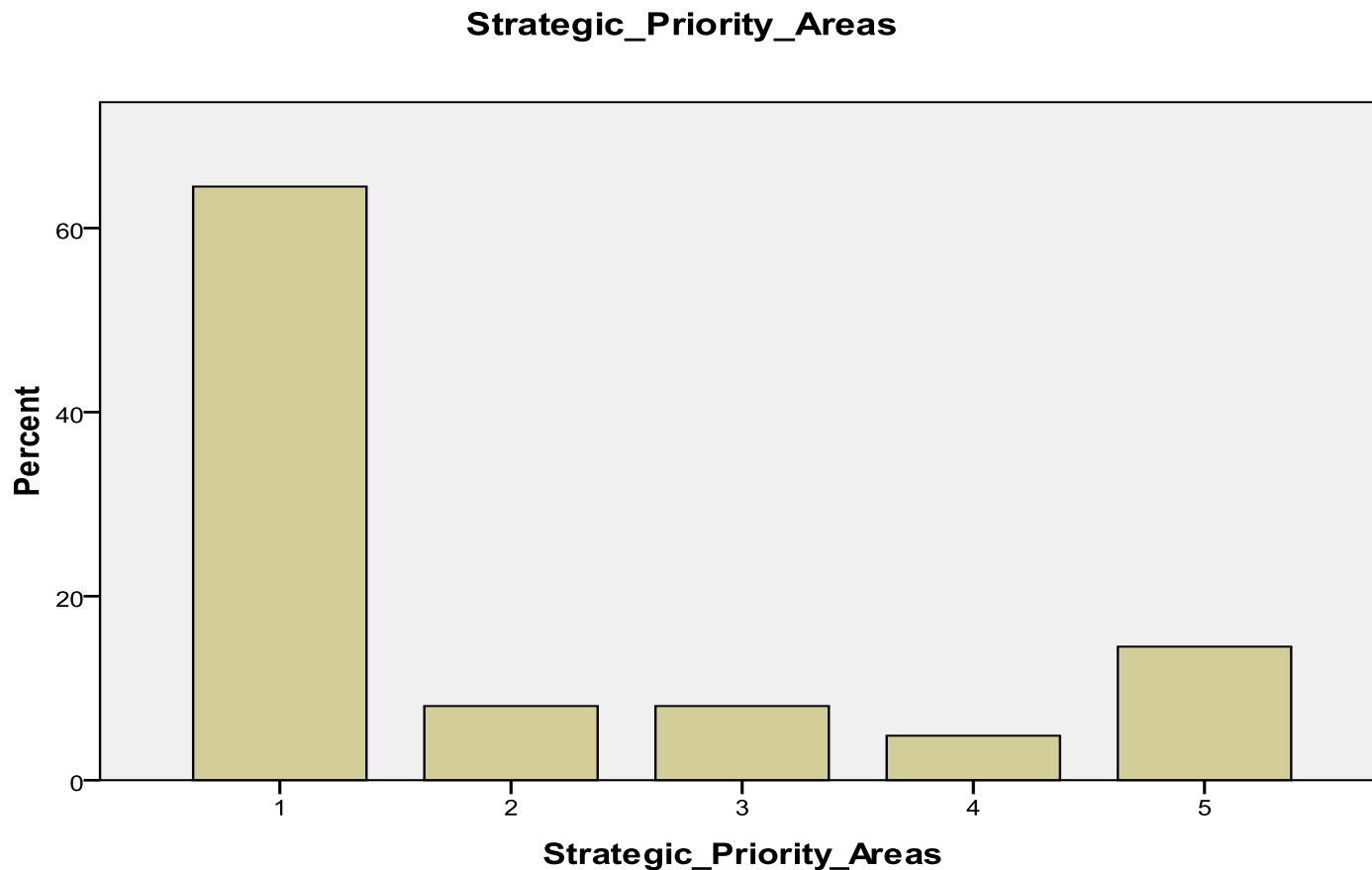
# Distributions of AGR papers across countries



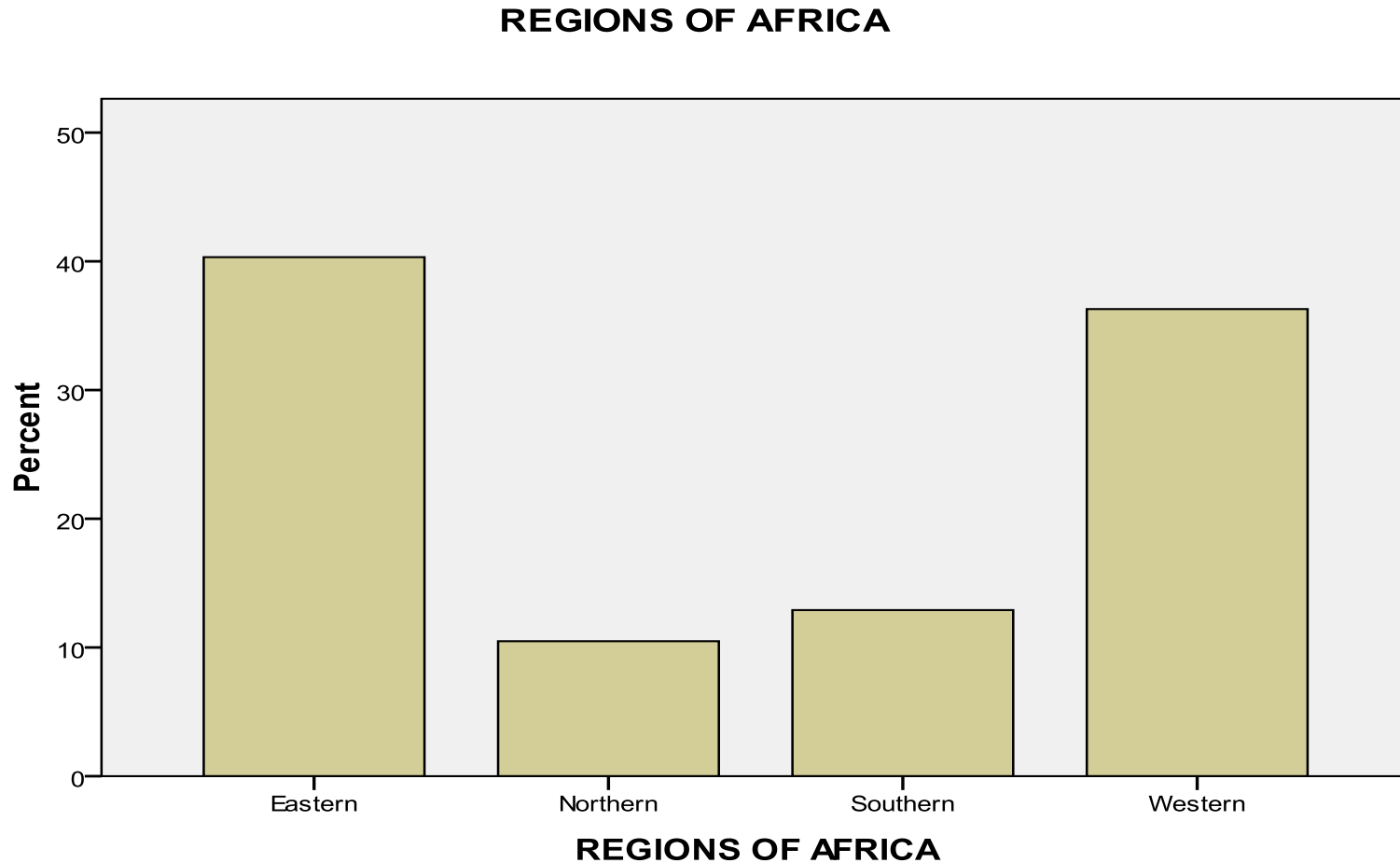
# Spread of AGR studies within and across collaborating countries



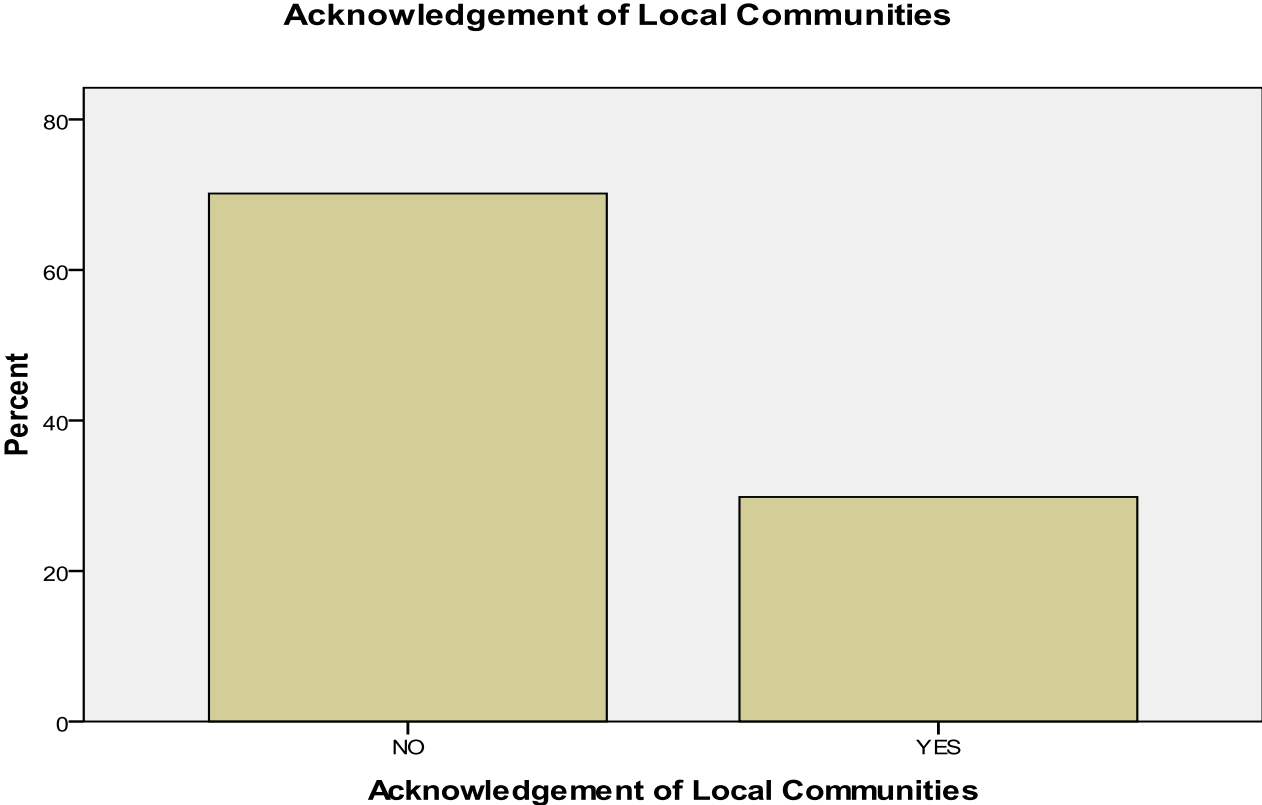
# Distributions of AGR papers across Strategic Priority Areas of the Global plan of Action



# Spread of AGR studies across Regions of Africa



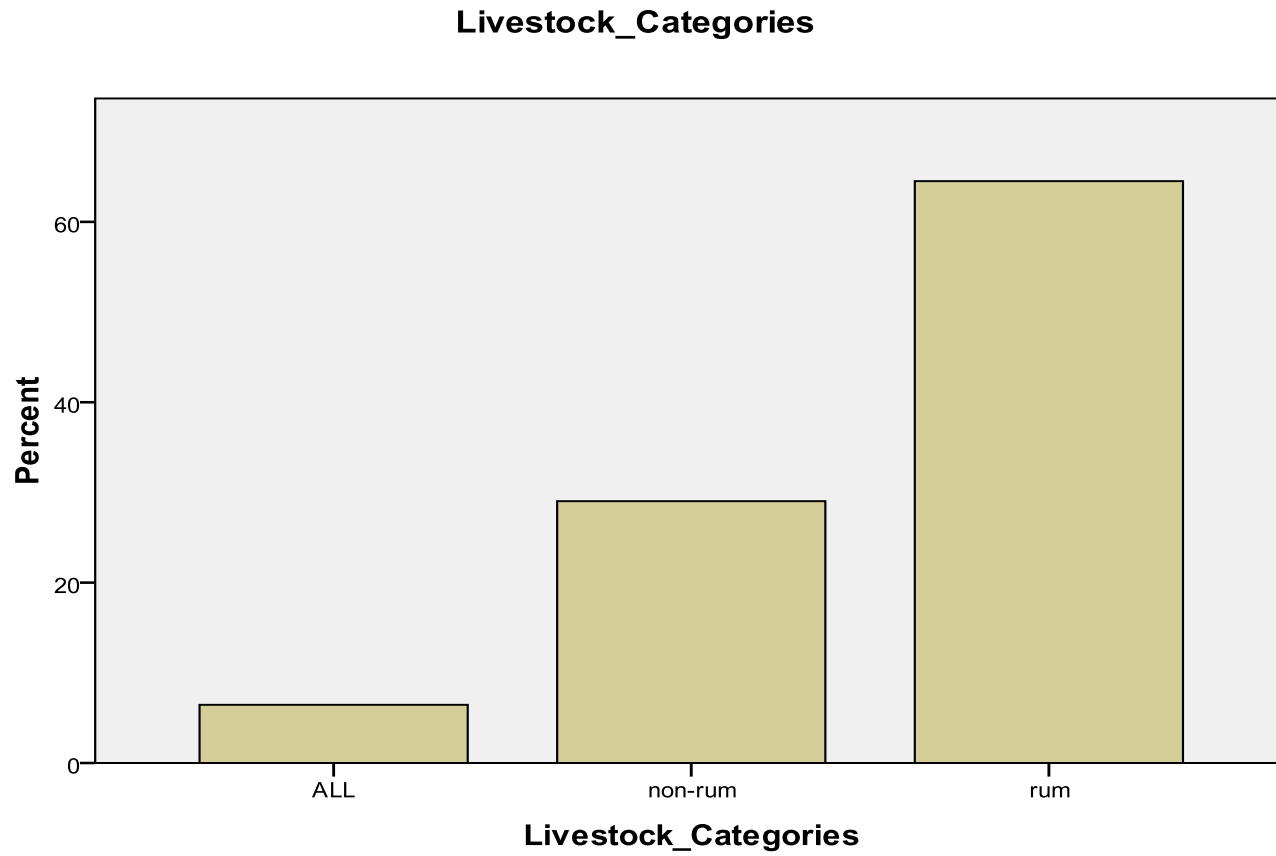
# Distribution of AGR studies by 'acknowledgment of local communities'



# Spread of papers by the GPA\_date



# Spread of papers by Livestock\_Categories



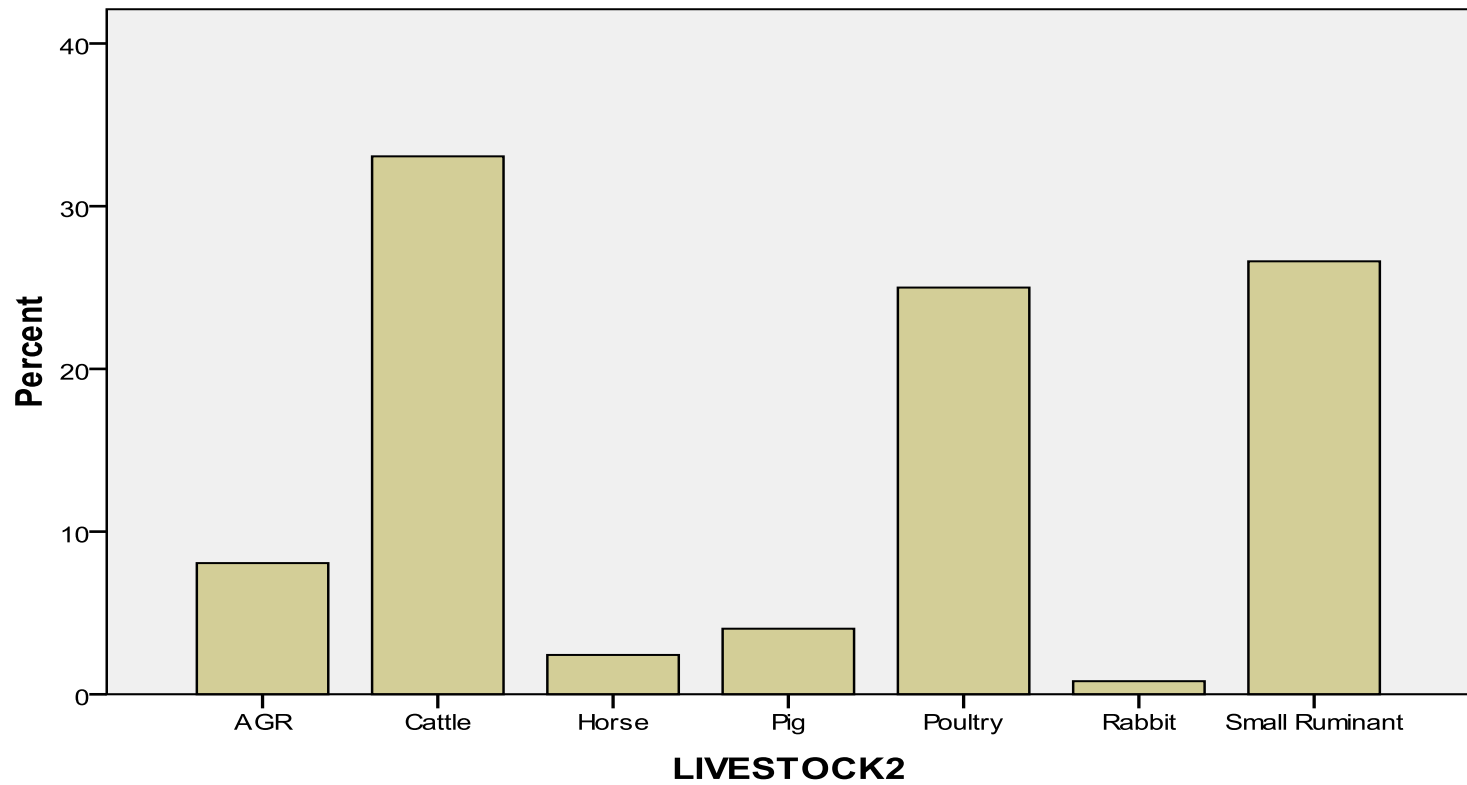
# Distribution of papers by the number of institutions involved



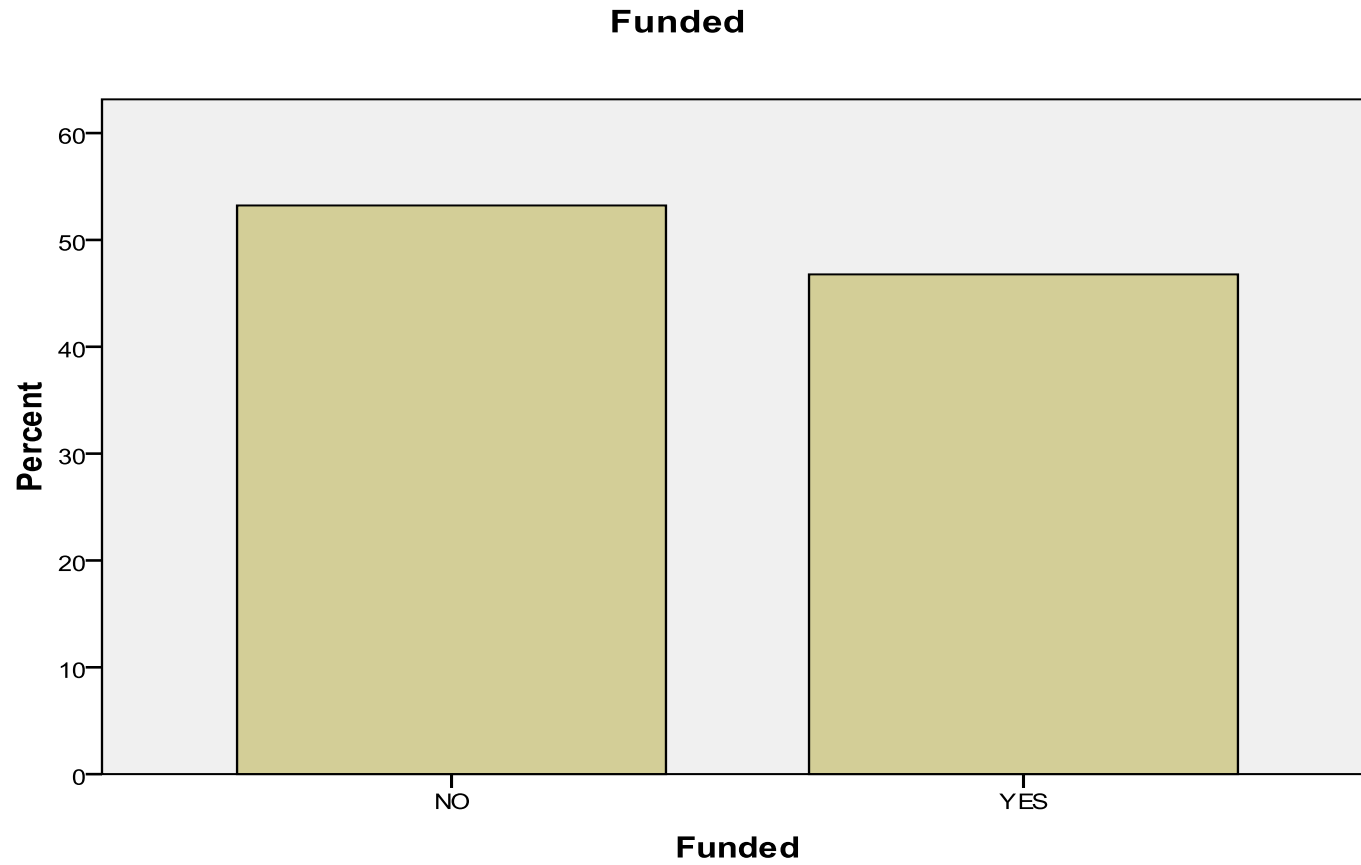


# Distribution of papers by Livestock species studied

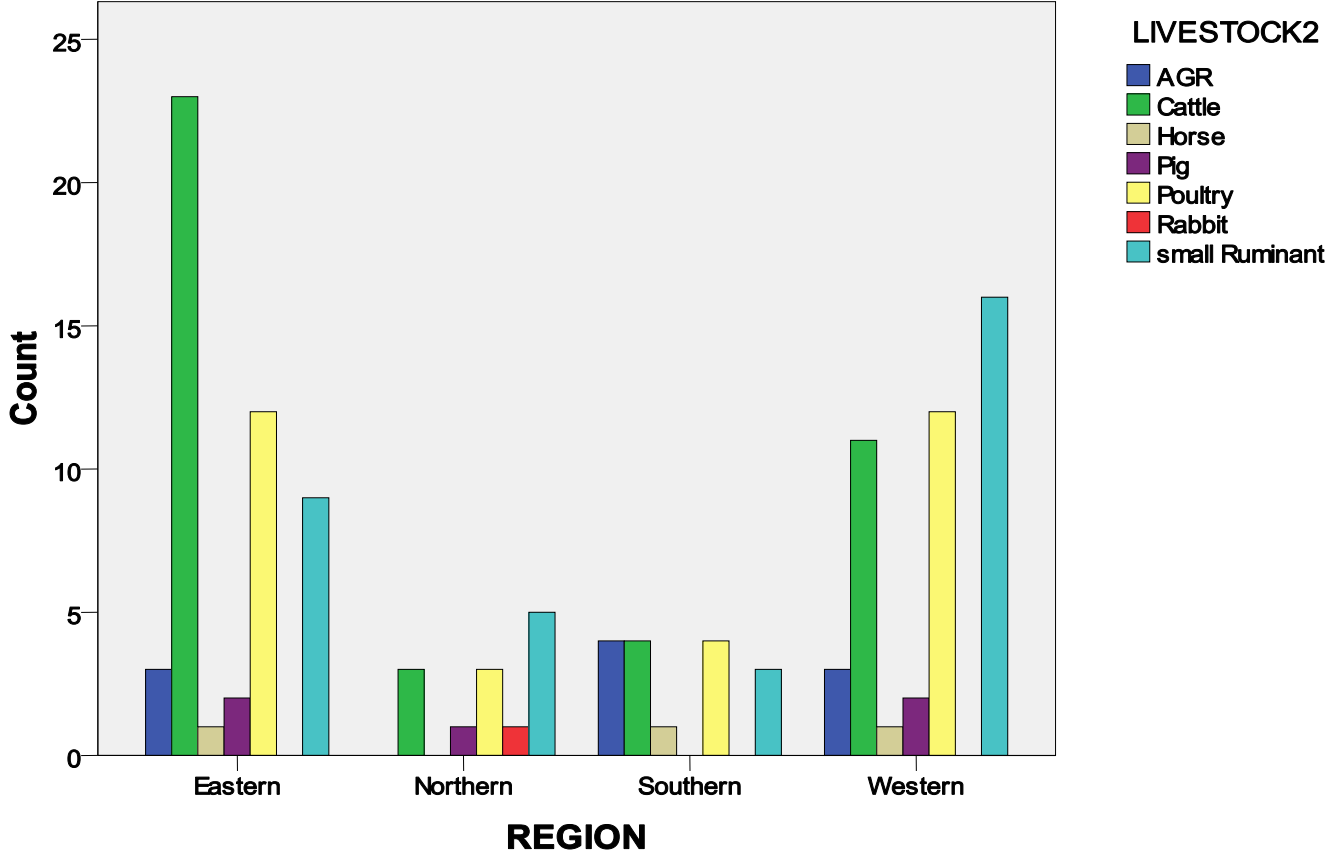
LIVESTOCK2



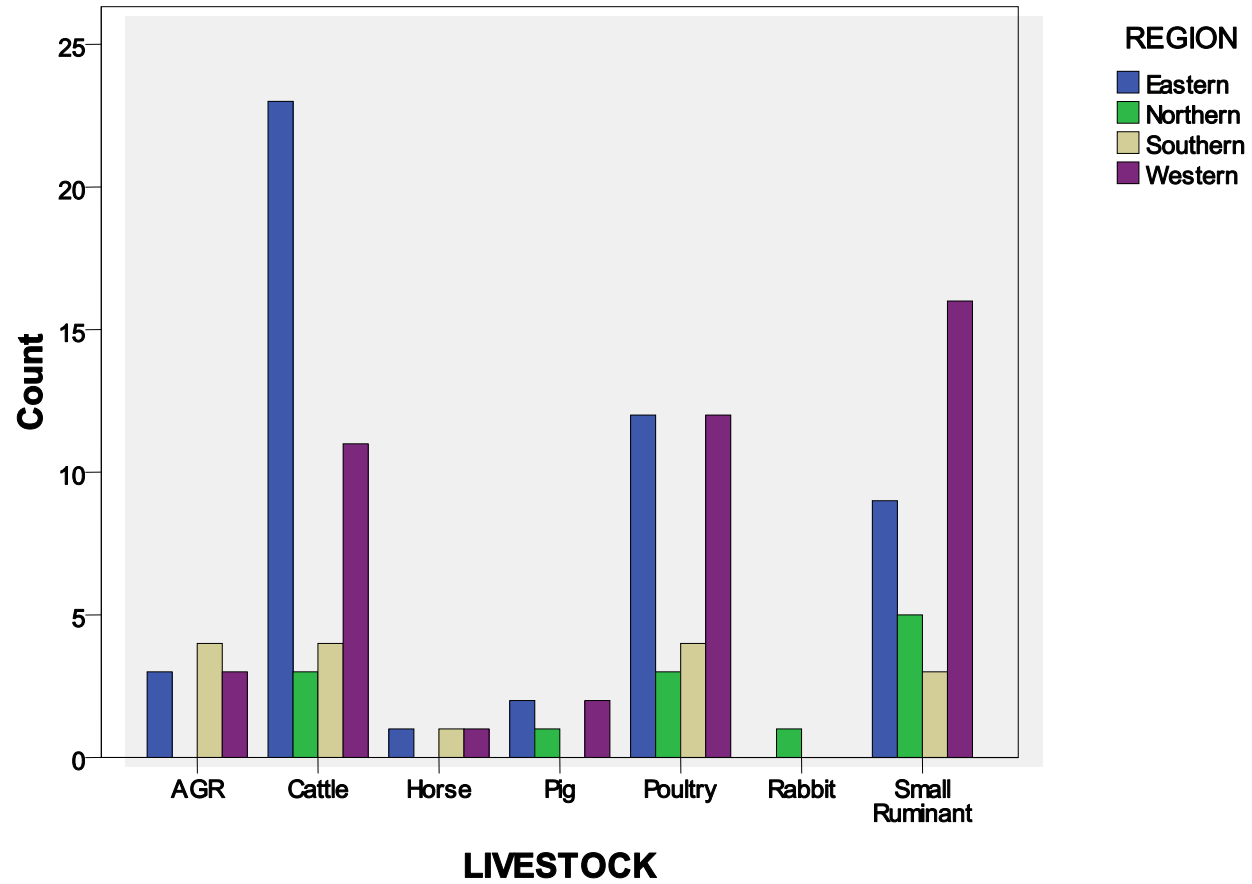
# Distribution of papers by funding criterion



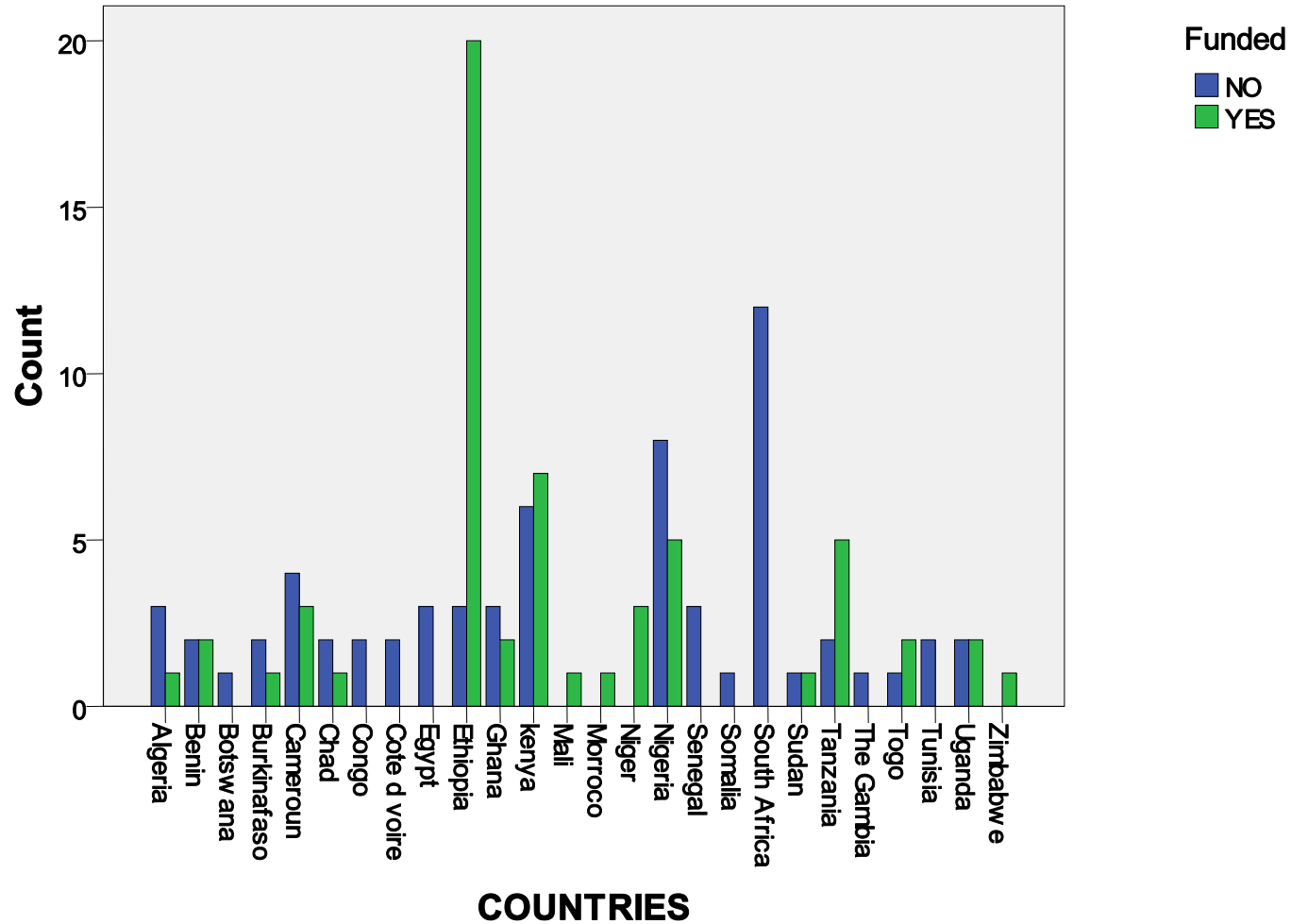
# DISTRIBUTION OF LIVESTOCK ACROSS REGIONS



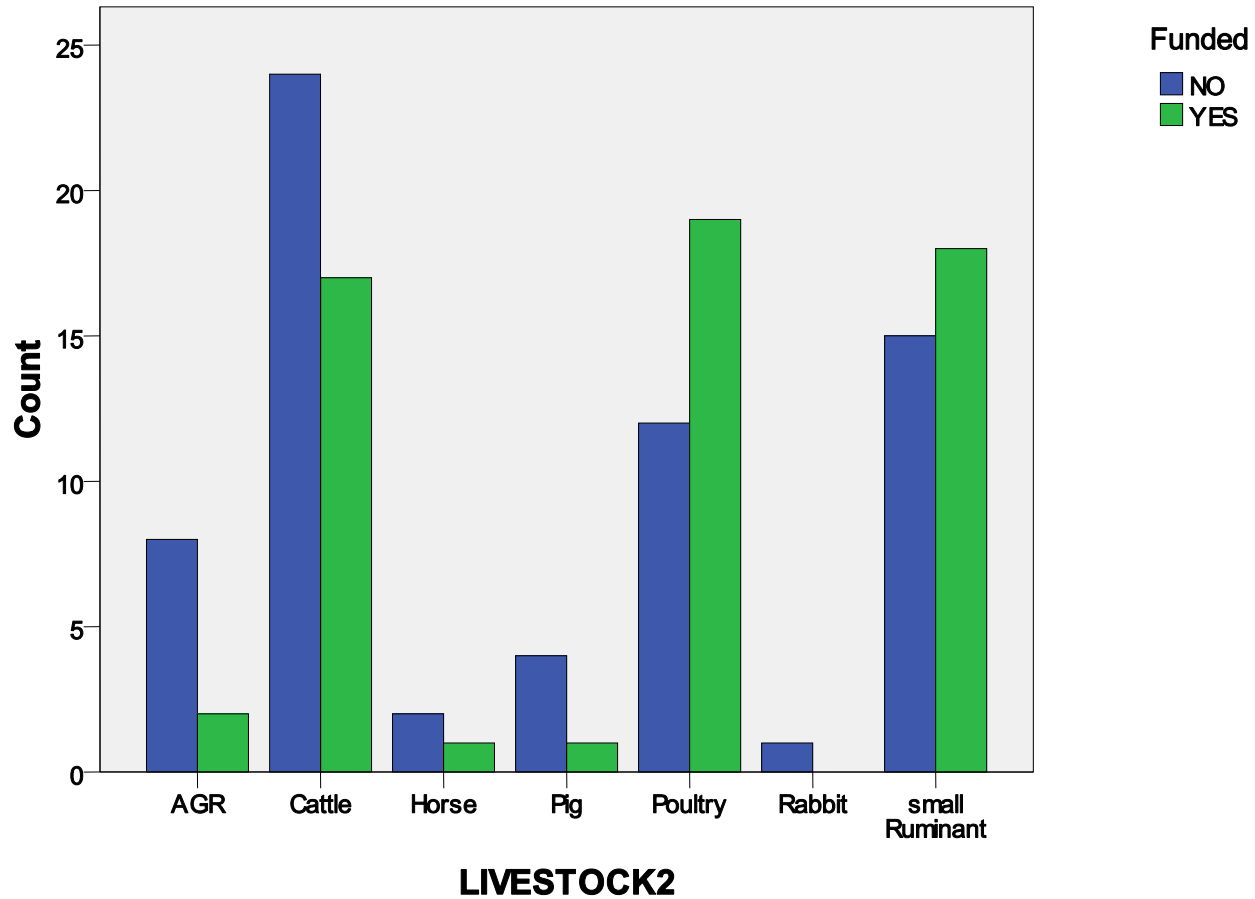
# DISTRIBUTION OF LIVESTOCK ACROSS REGION



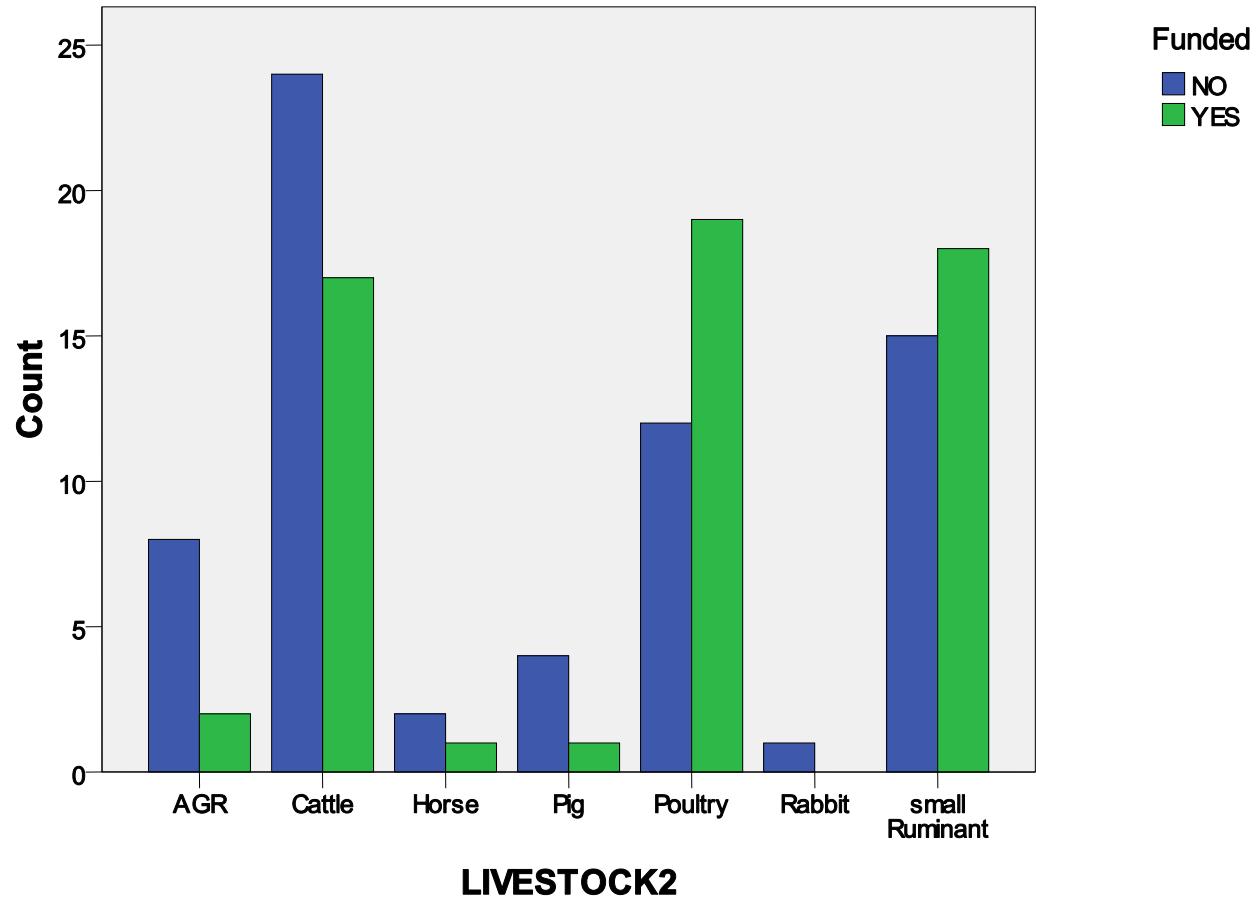
# FUNDING PATTERNS ACROSS COUNTRIES



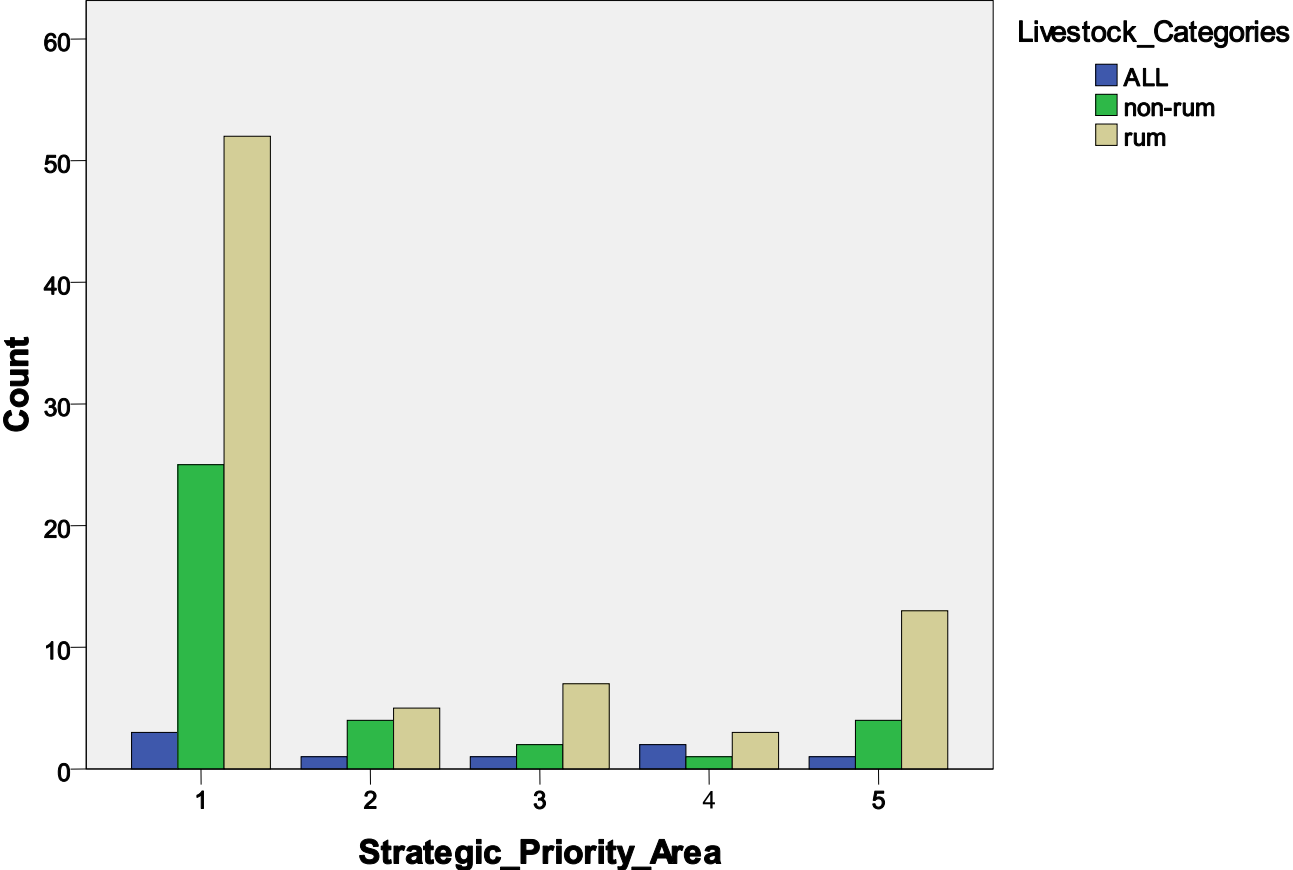
# FUNDING PATTERNS ACROSS LIVESTOCK



# FUNDING PATTERNS ACROSS LIVESTOCK

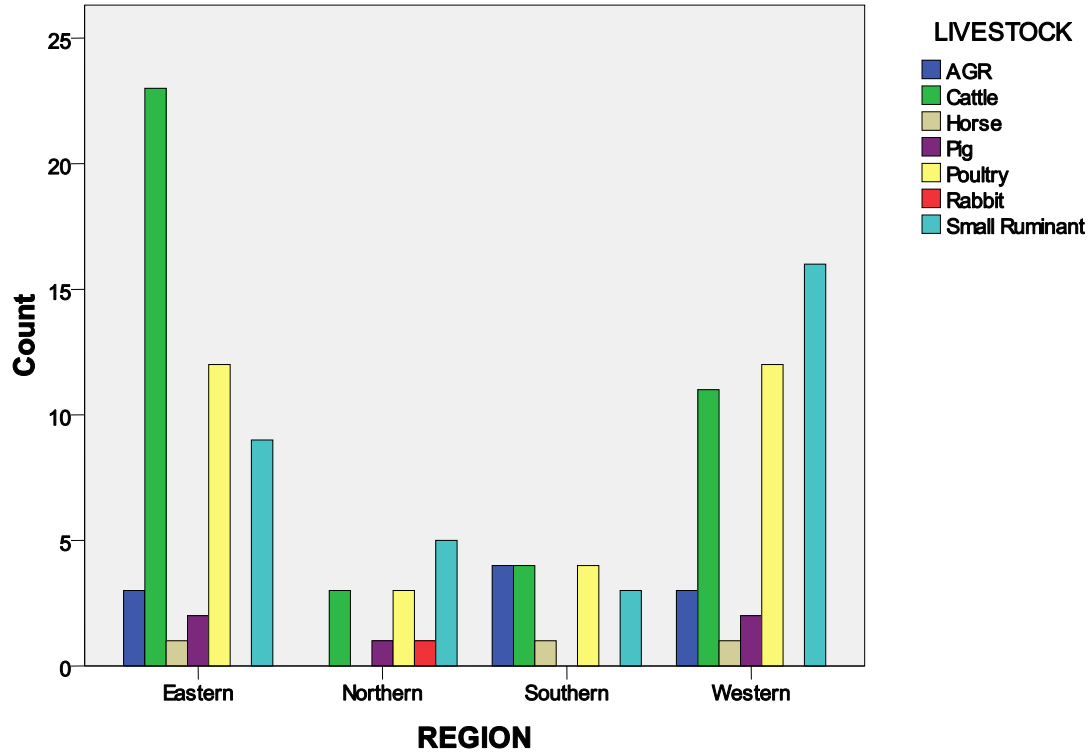


# LIVESTOCK CATEGORIES ACROSS STRATEGIC PRIORITY AREAS

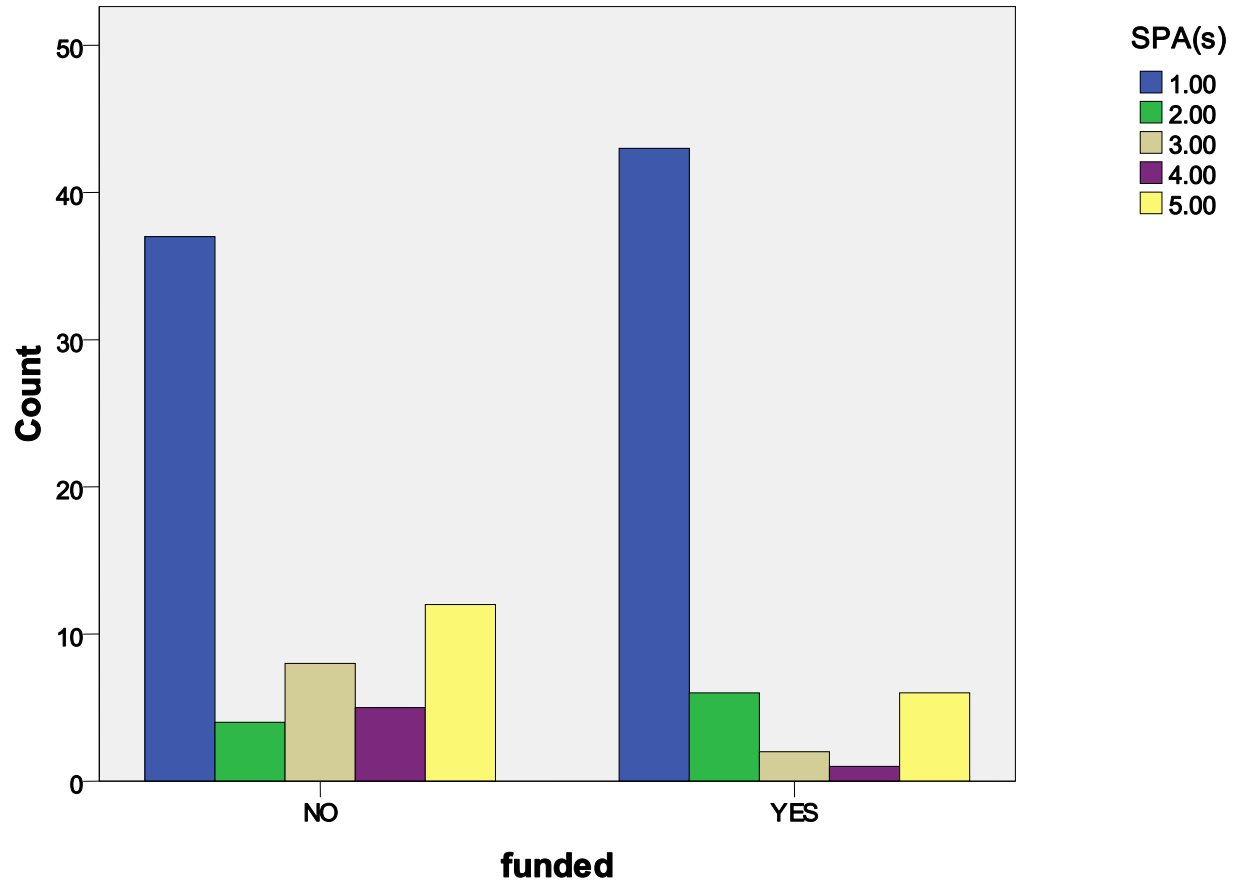




# LIVESTOCK ACROSS REGIONS

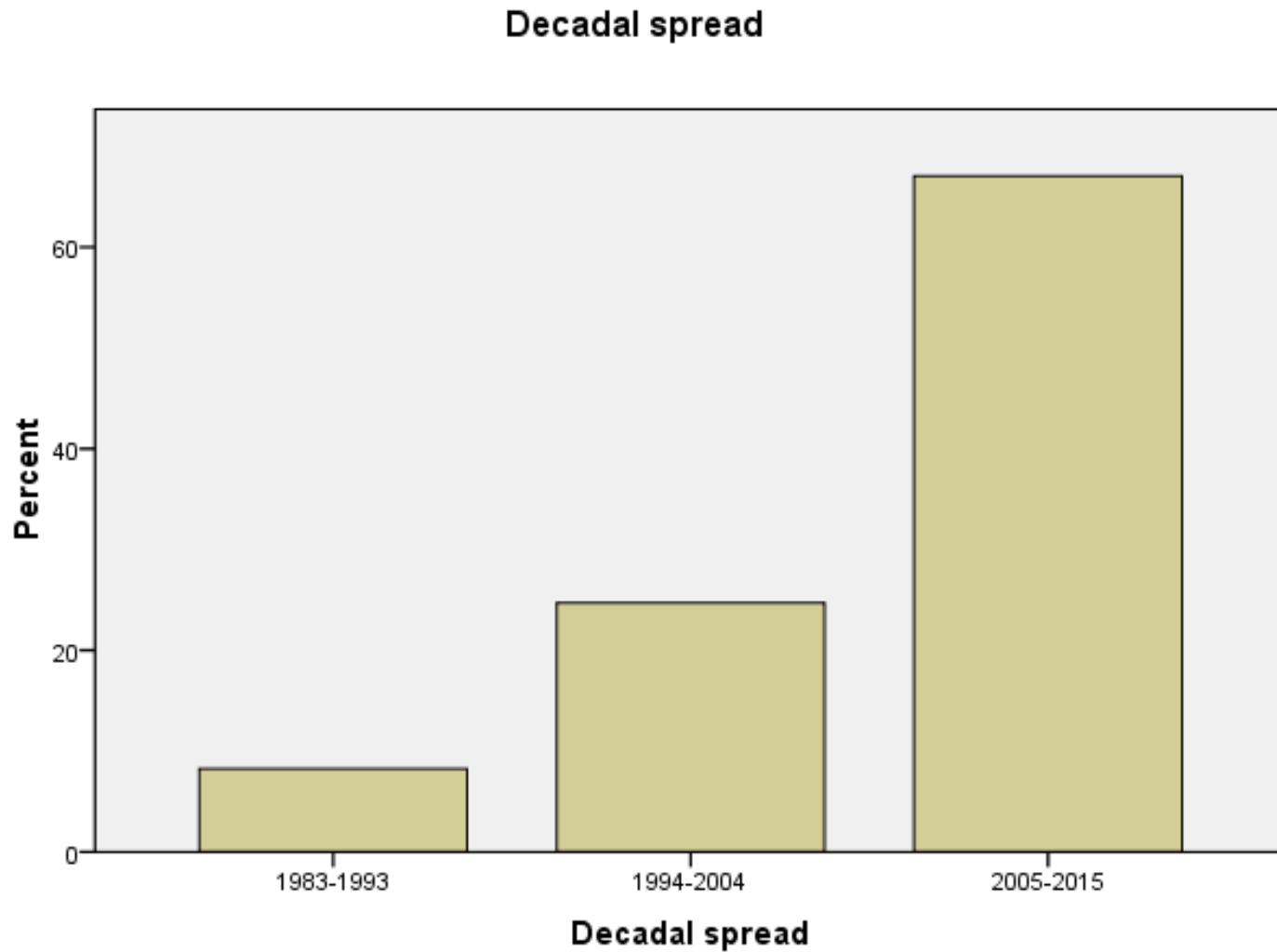


# FUNDING AGR STUDIES ACROSS SPA

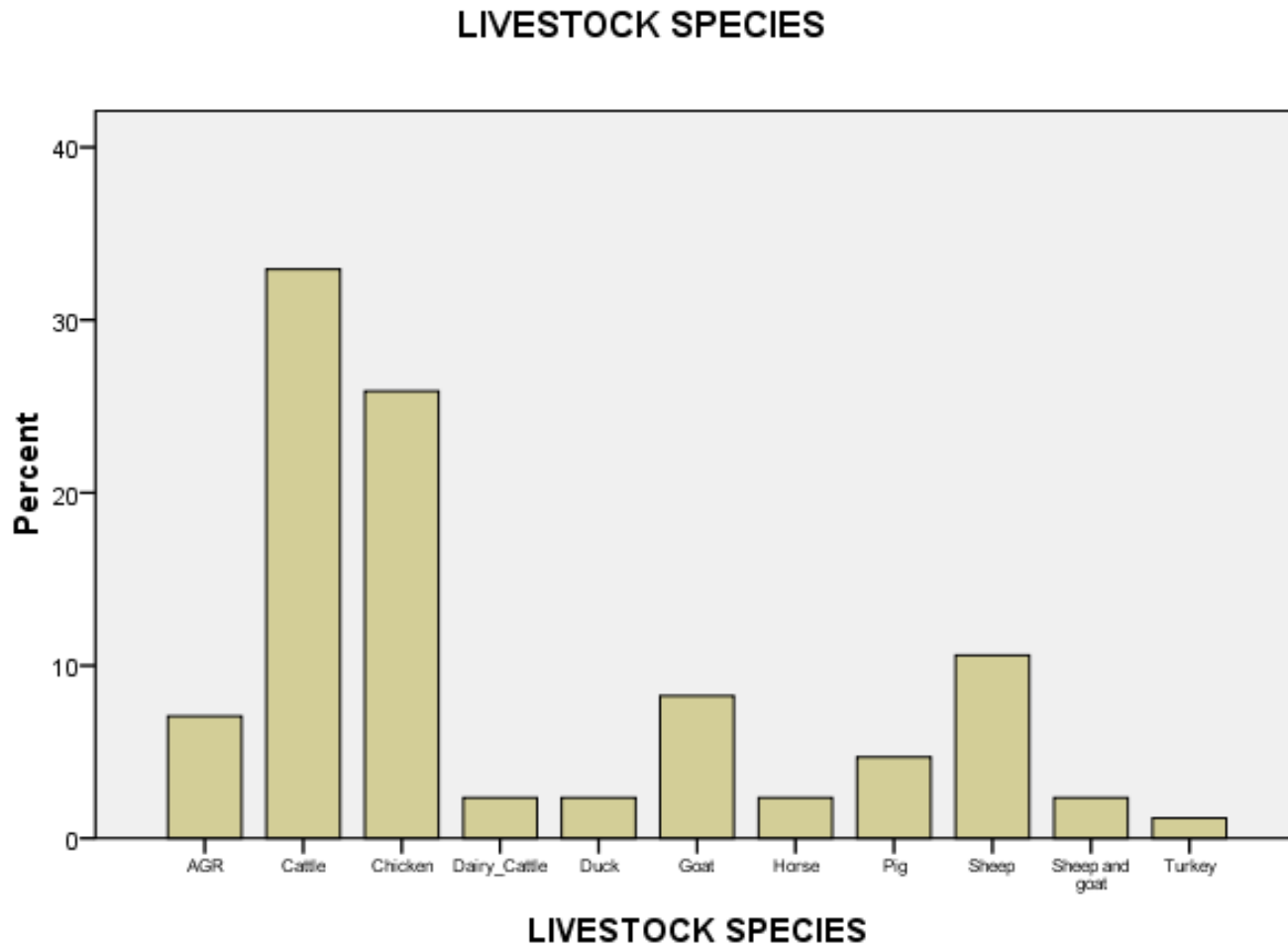


# Results Set 2 – SUBSET DATA, TOP NINE COUNTRIES

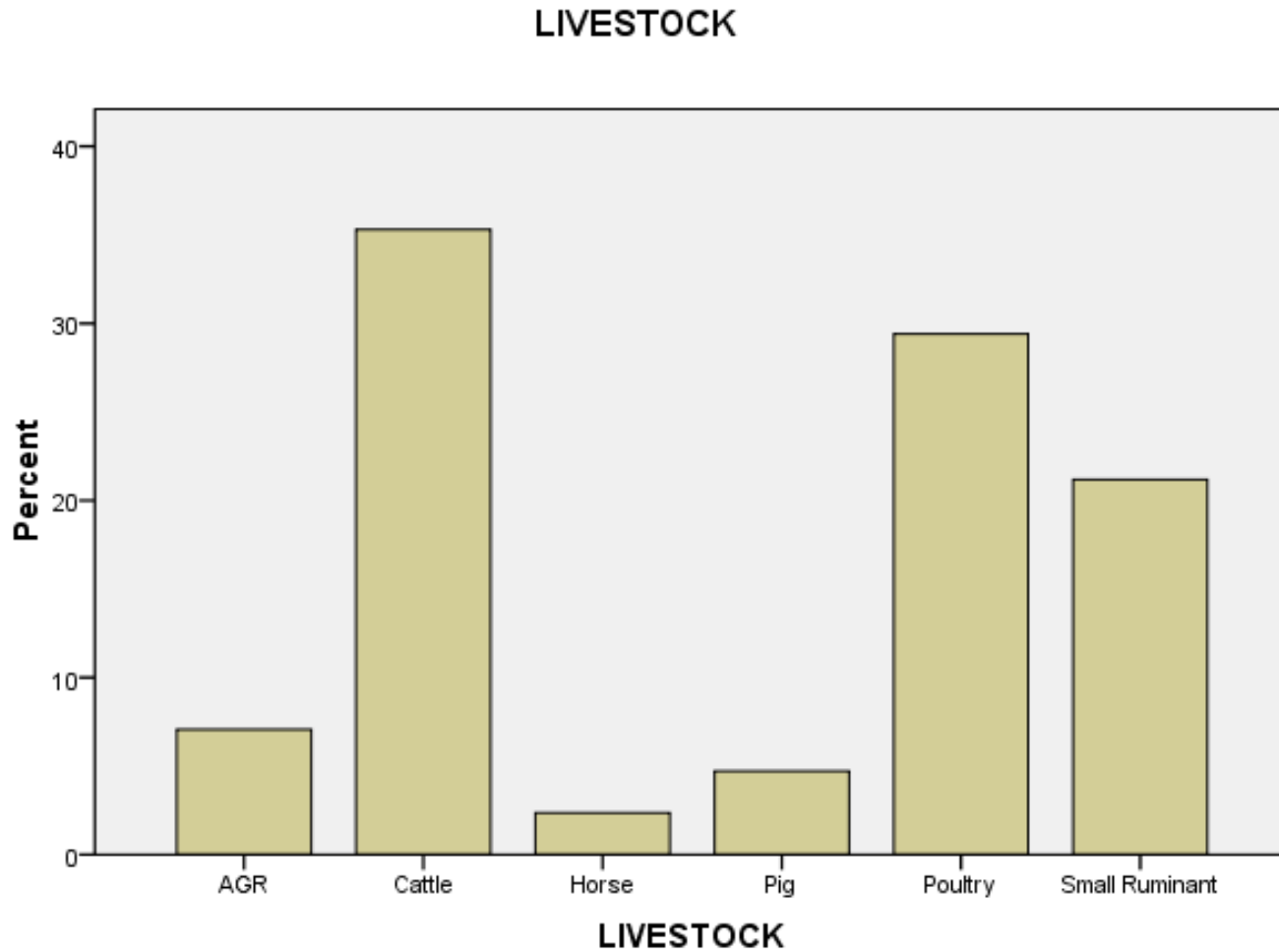
# Decadal spread of AGR reports



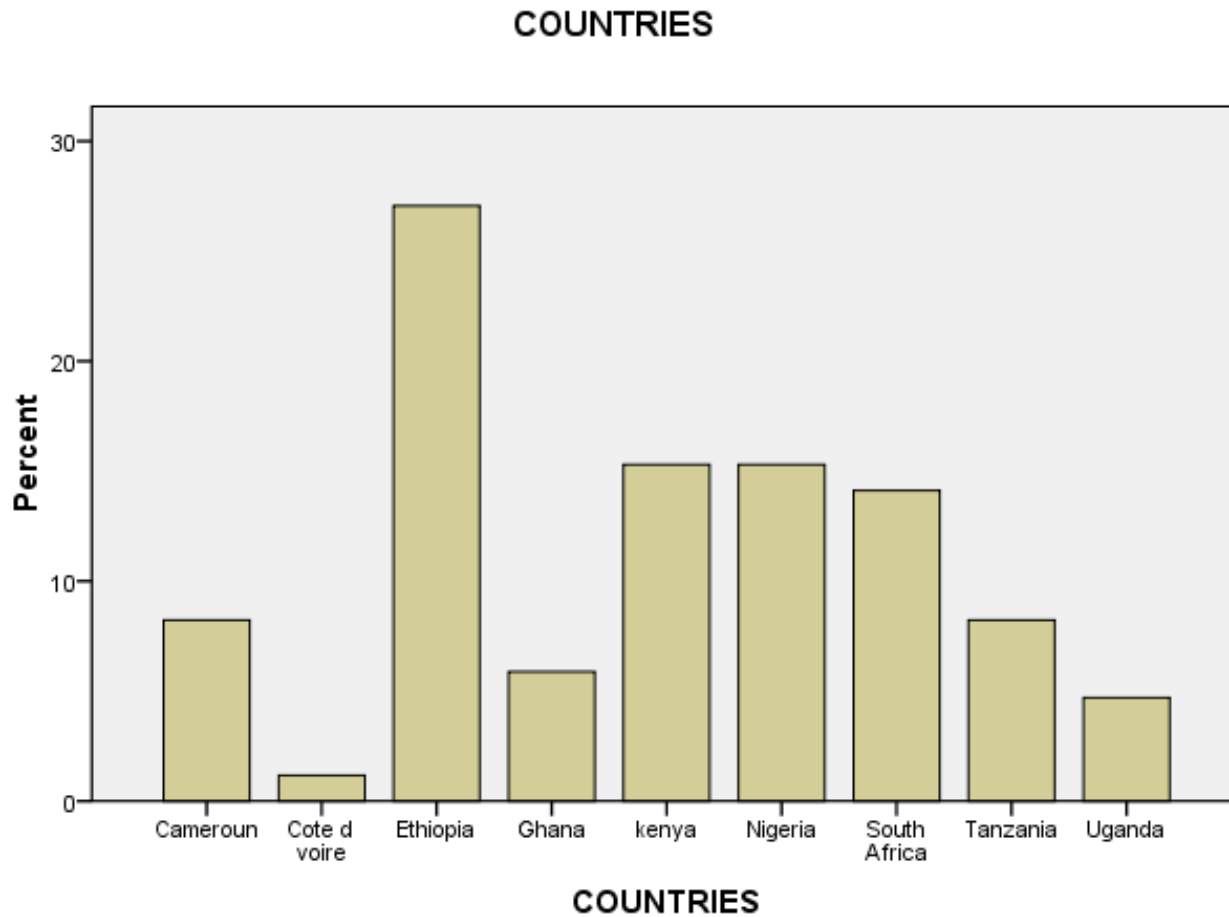
# Distributions of papers by Livestock species



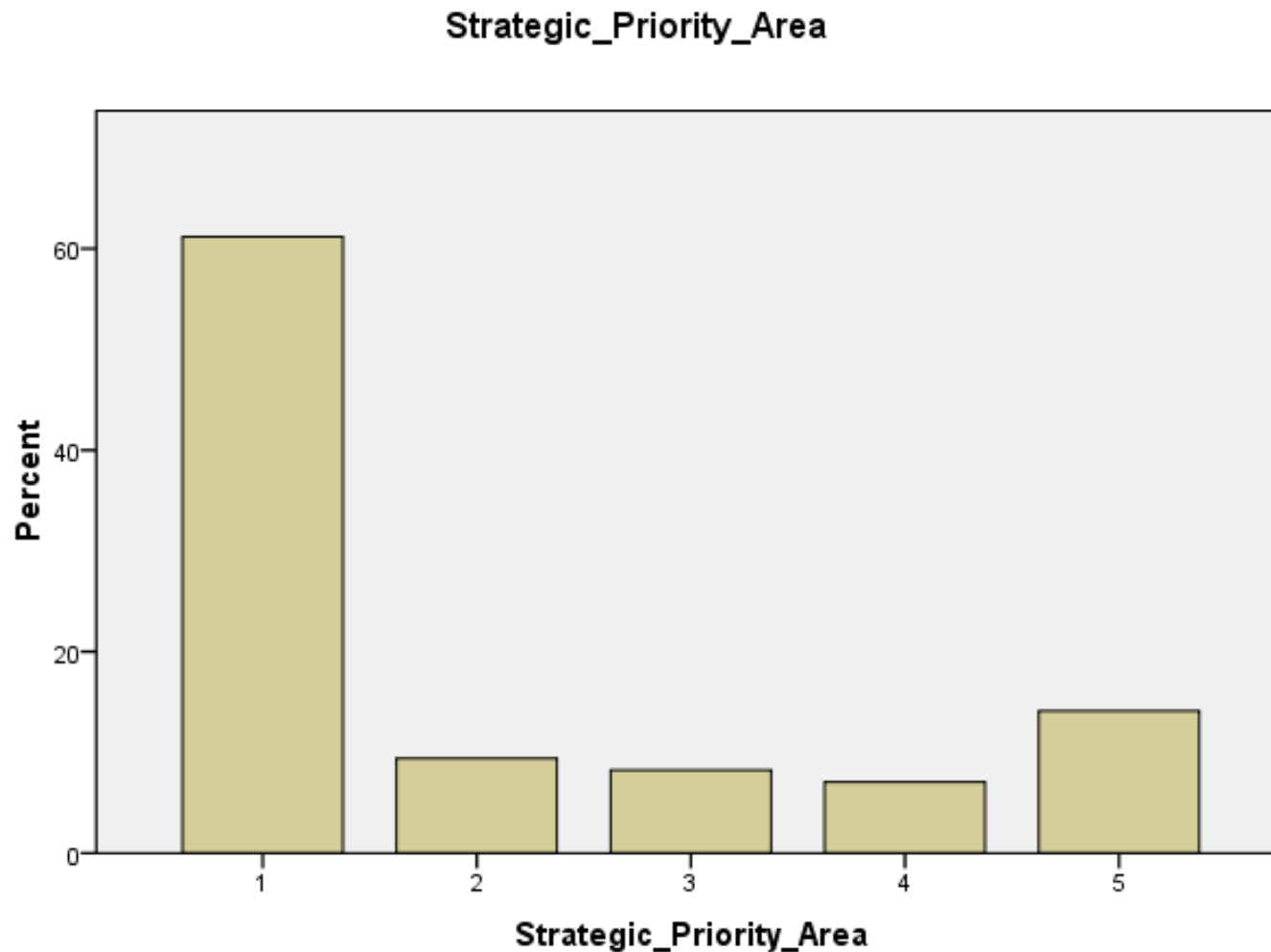
# Distributions of papers by Livestock species



# Distributions of AGR papers across countries



# Spread of AGR studies across Strategic Priority Areas of the Global plan of Action

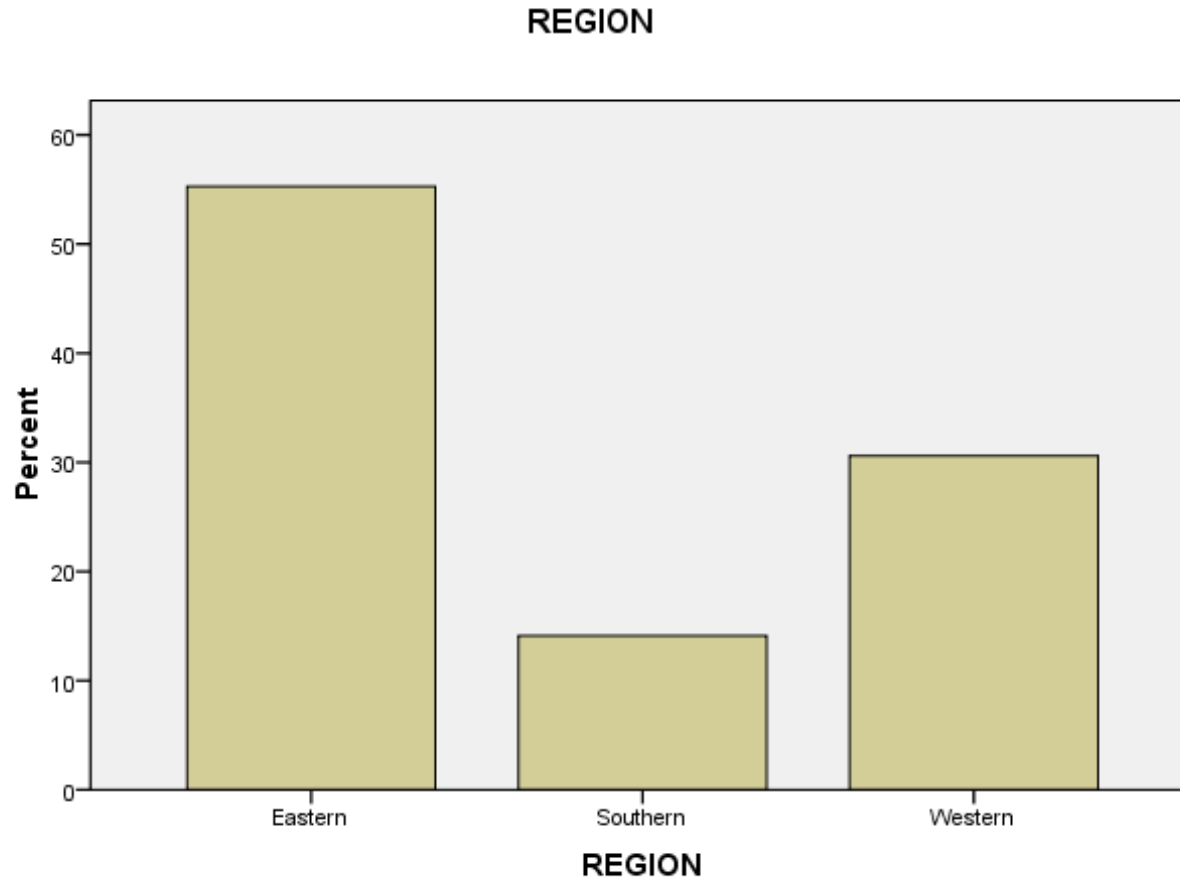




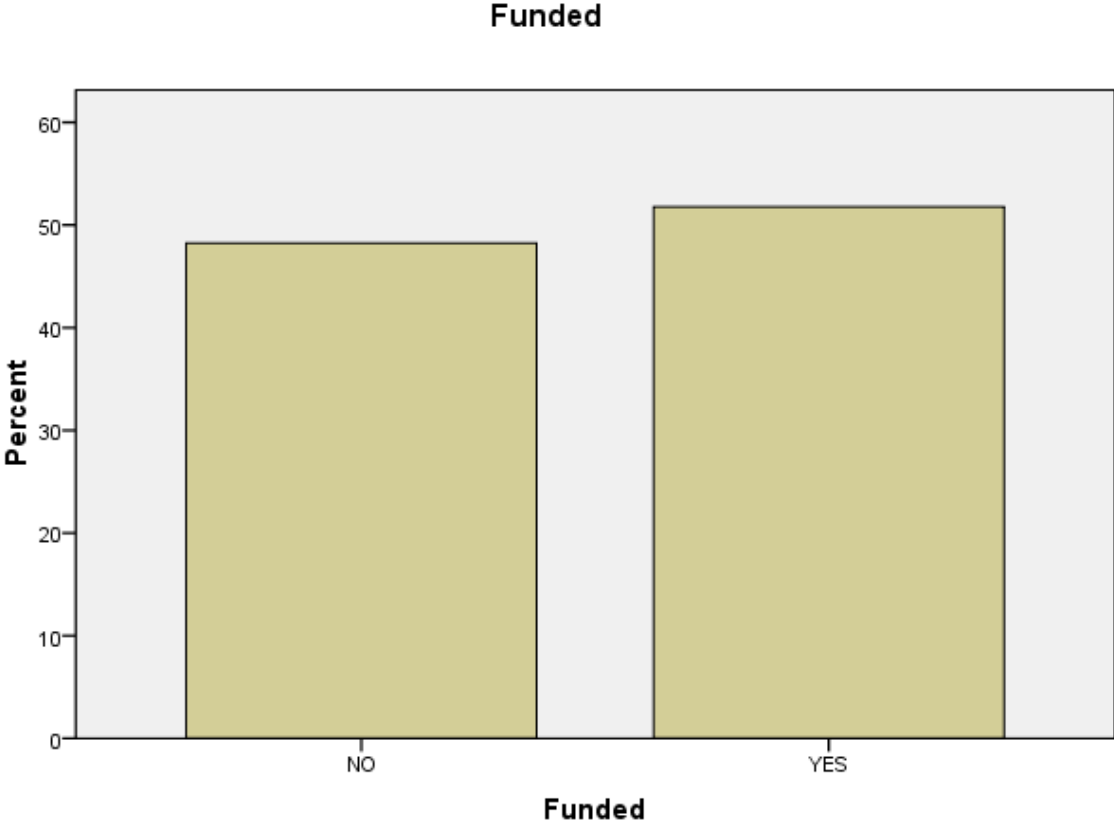
# Spread of AGR studies within and across collaborating authors and institutions



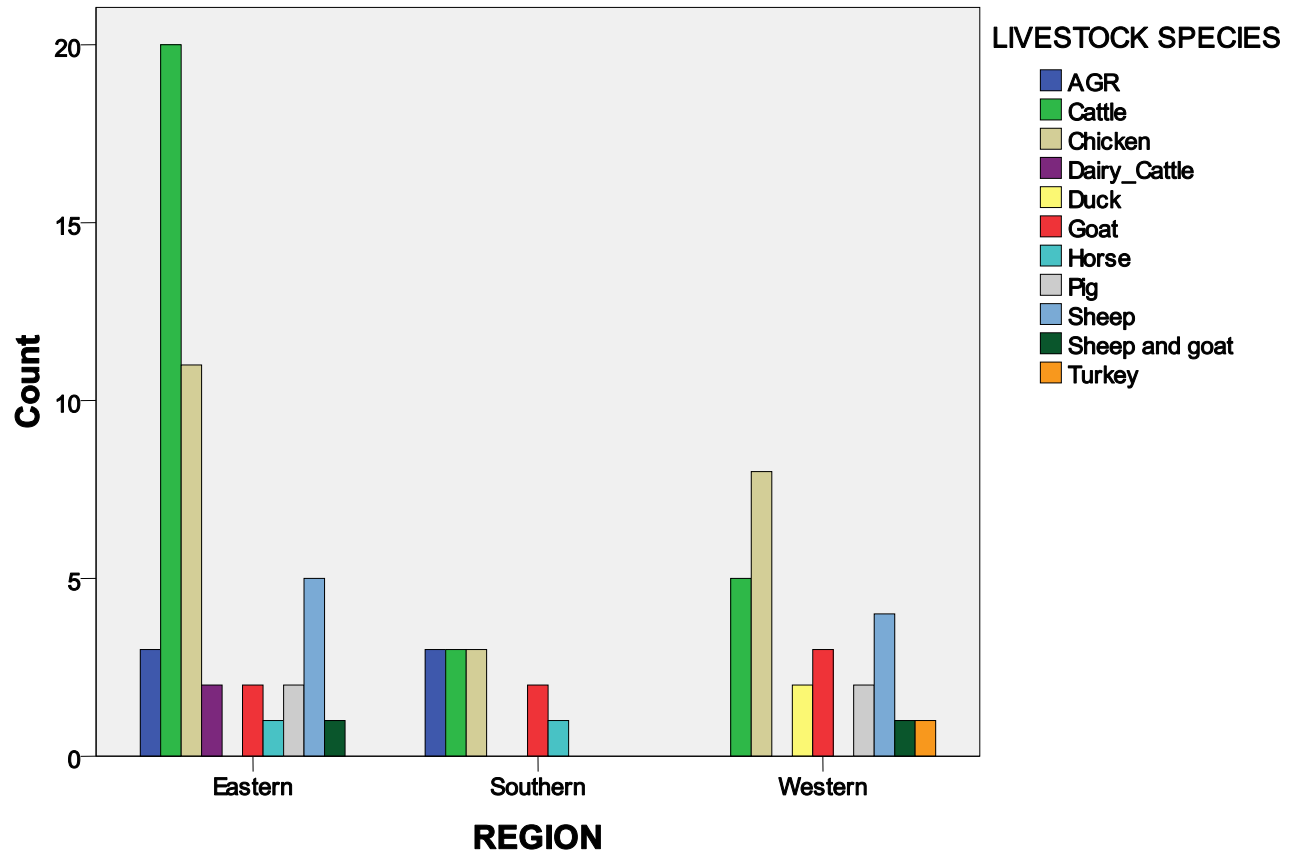
# Spread of AGR studies across Regions of Africa



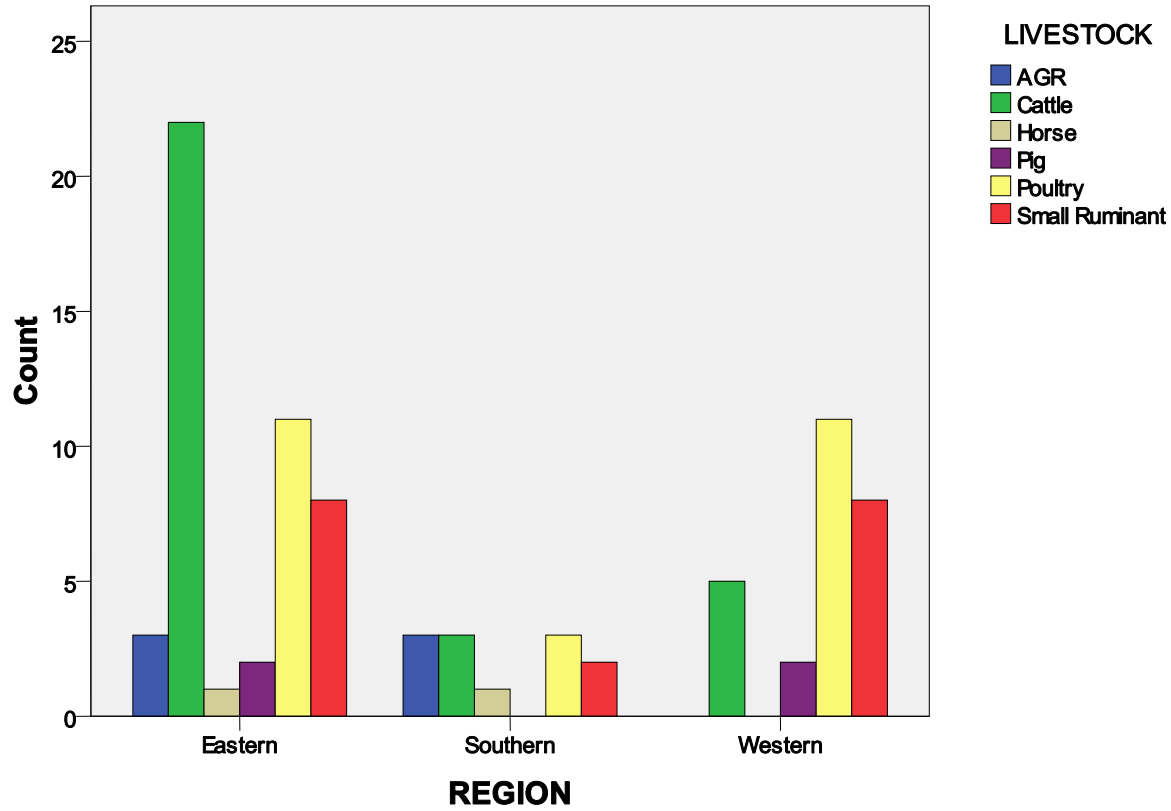
# Distribution of papers by funding



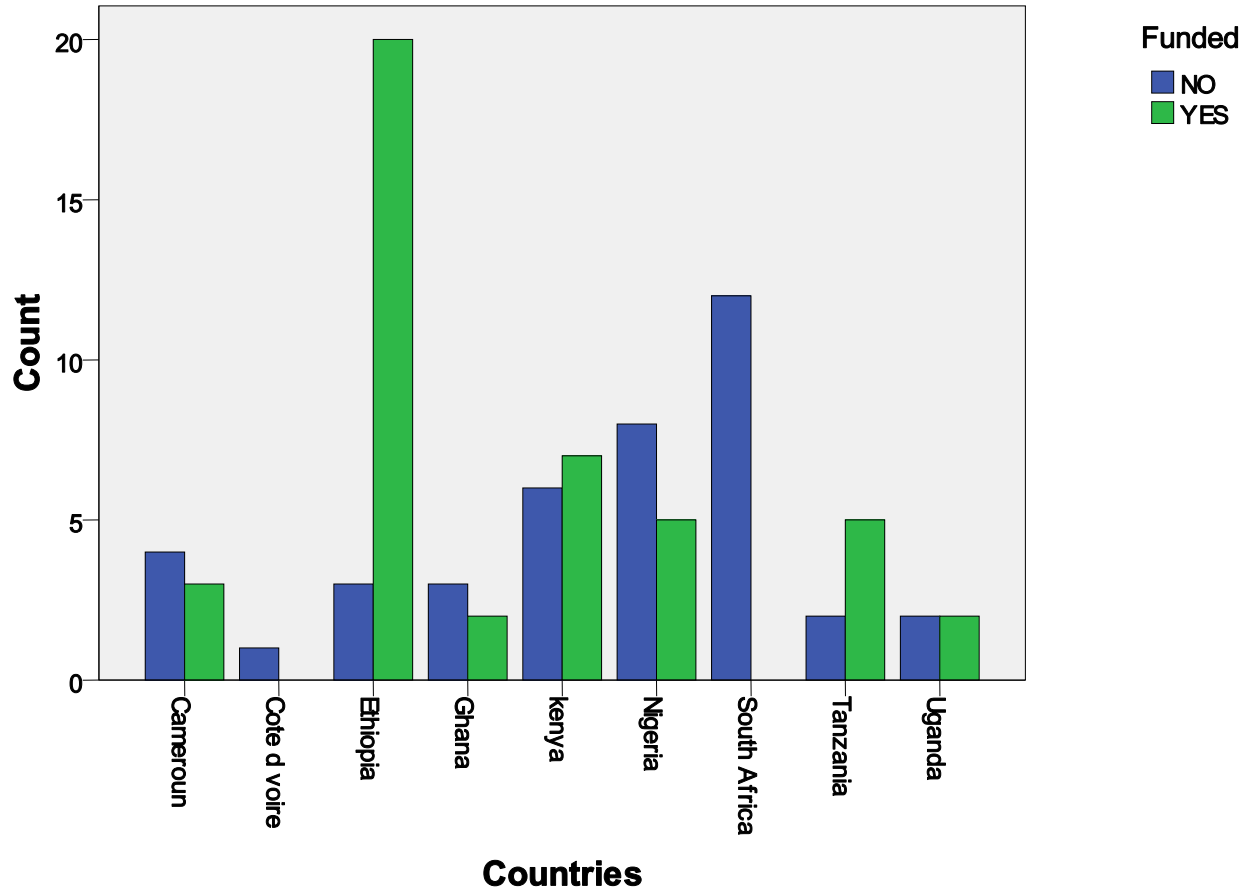
# DISTRIBUTION LIVESTOCK SPECIE ACROSS REGIONS



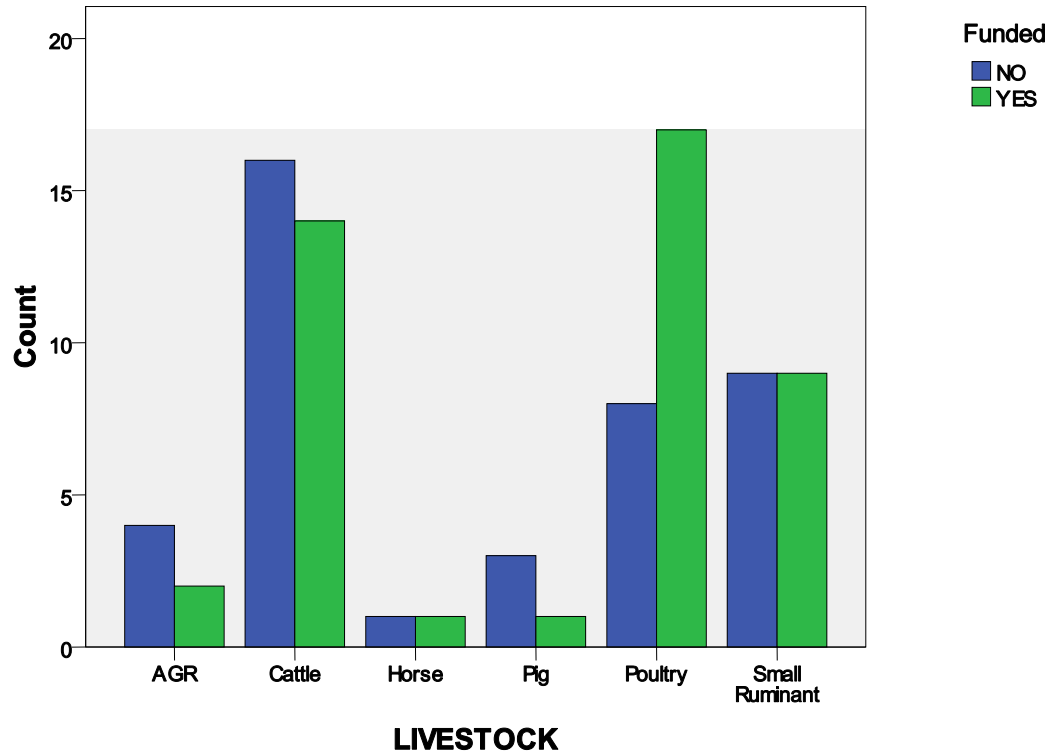
# DISTRIBUTION LIVESTOCK SPECIE ACROSS REGIONS



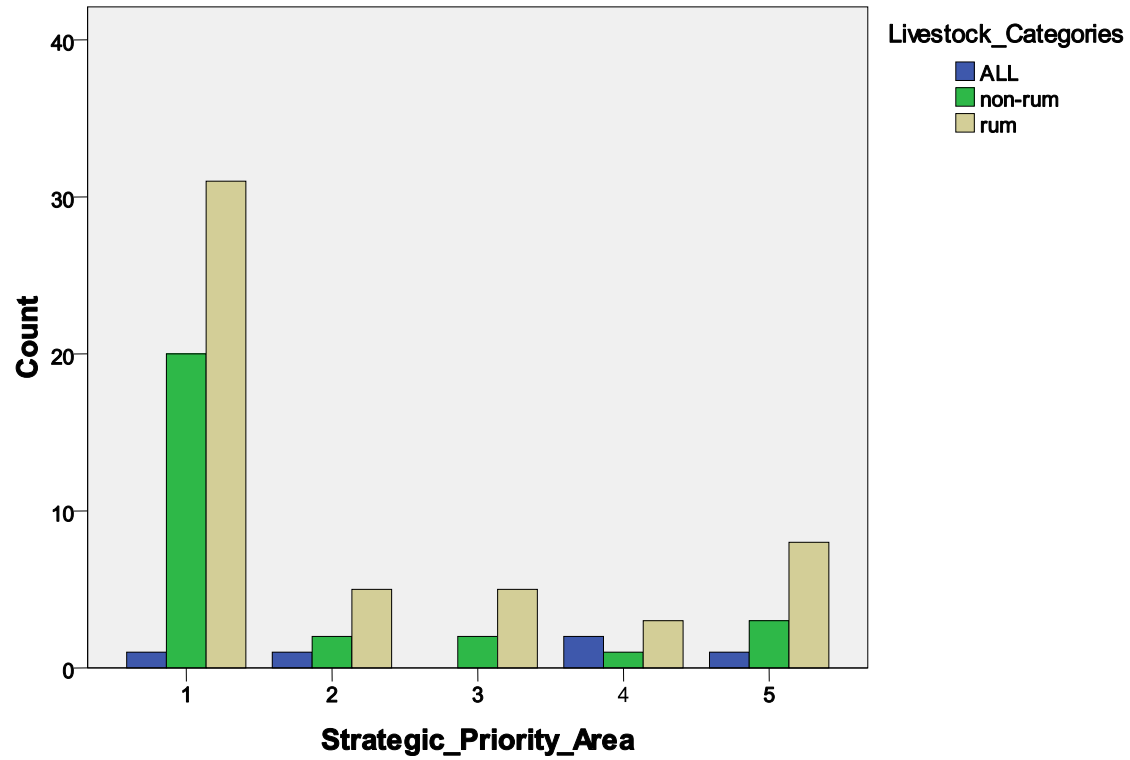
# FUNDING PATTERN ACROSS COUNTRIES



# FUNDING PATTERN ACROSS LIVESTOCK

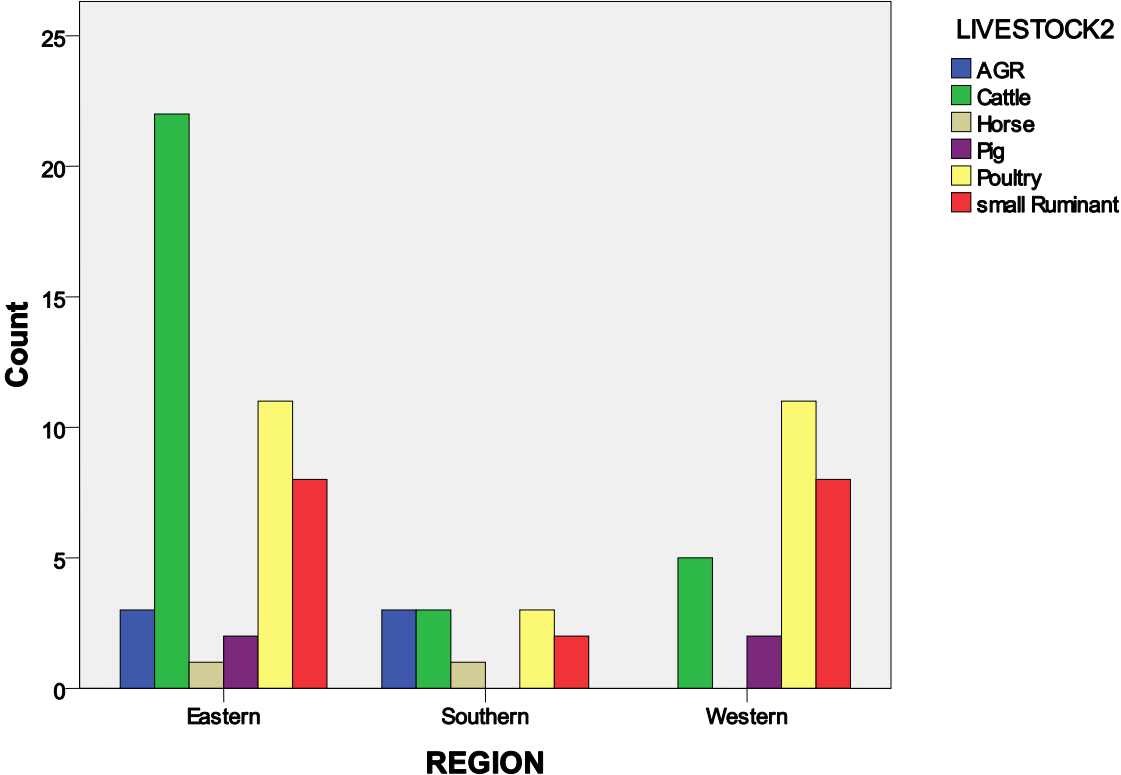


# LIVESTOCK CATEGORIES ACROSS STRATEGIC PRIORITY AREAS

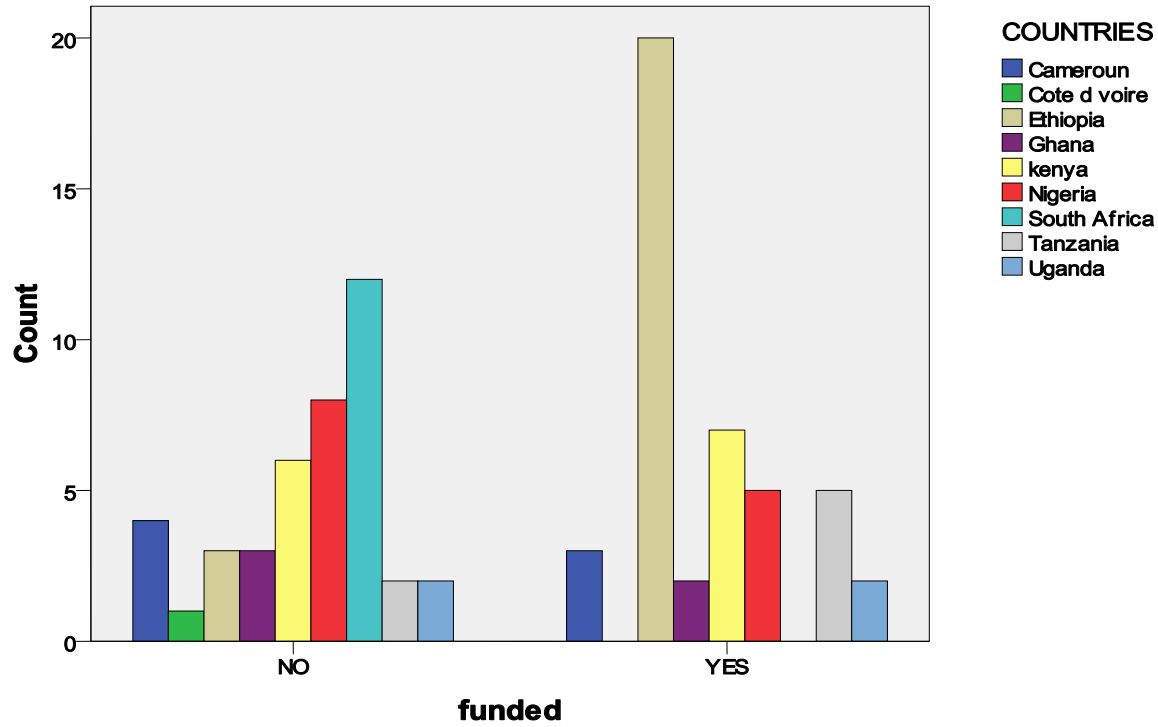




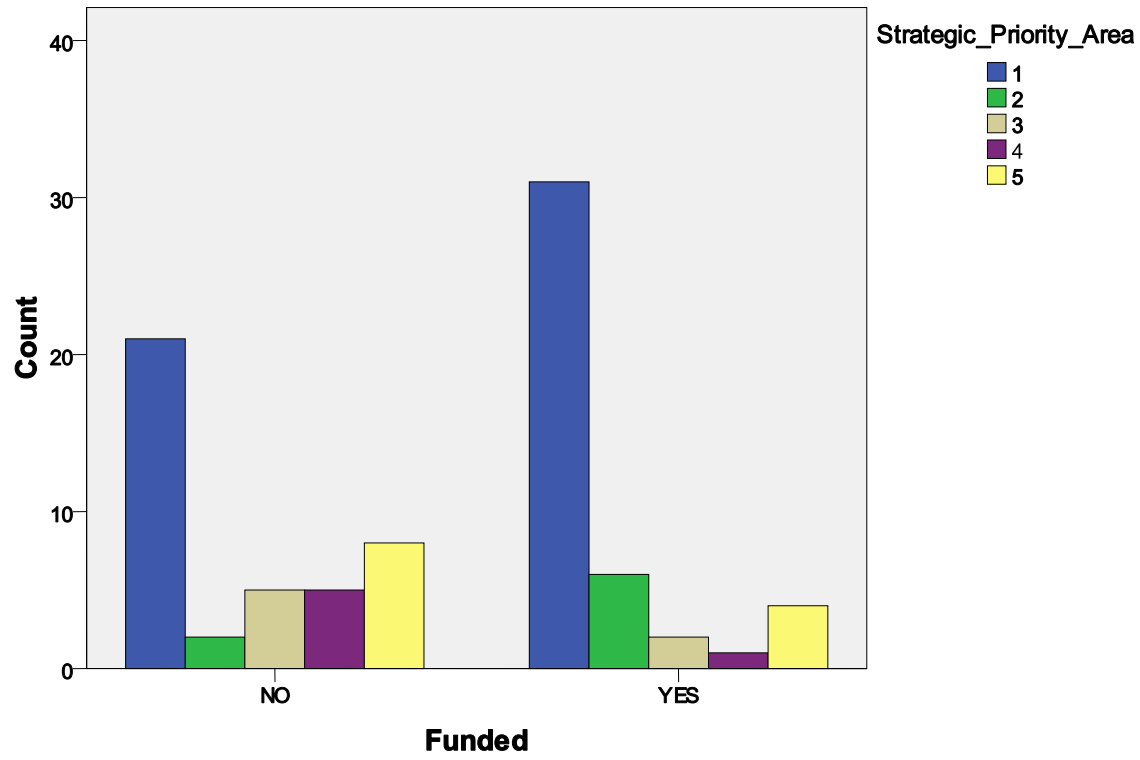
# LIVESTOCK ACROSS REGIONS



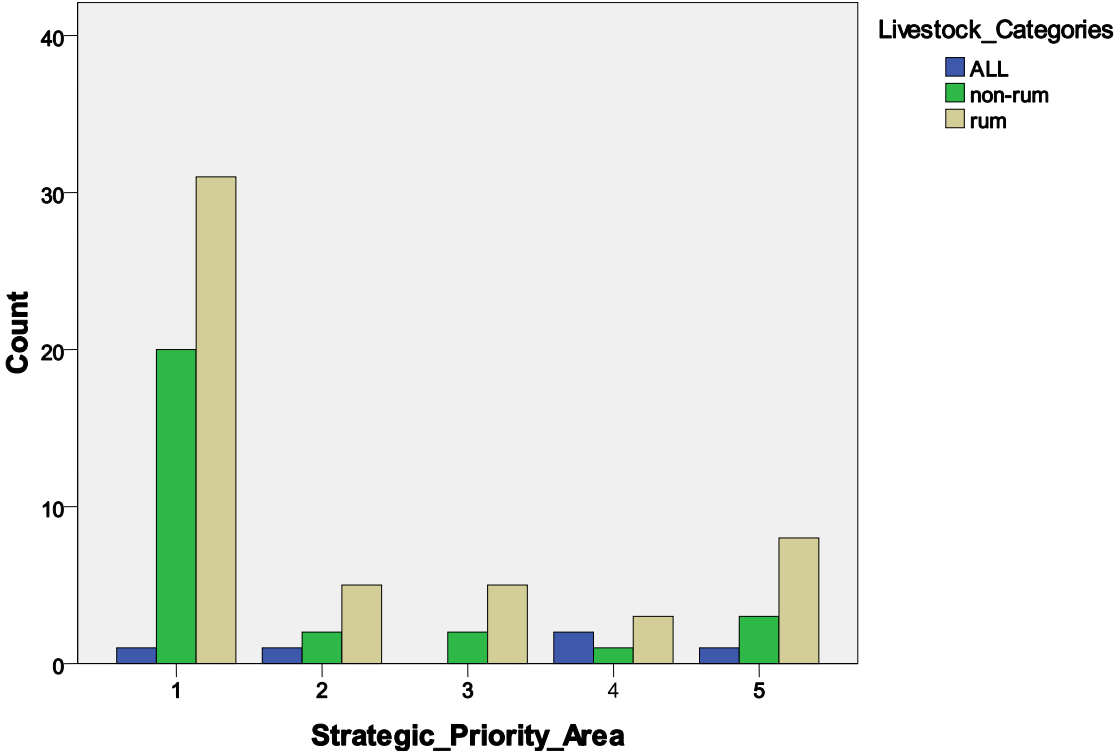
# FUNDING PATTERN ACROSS COUNTRIES



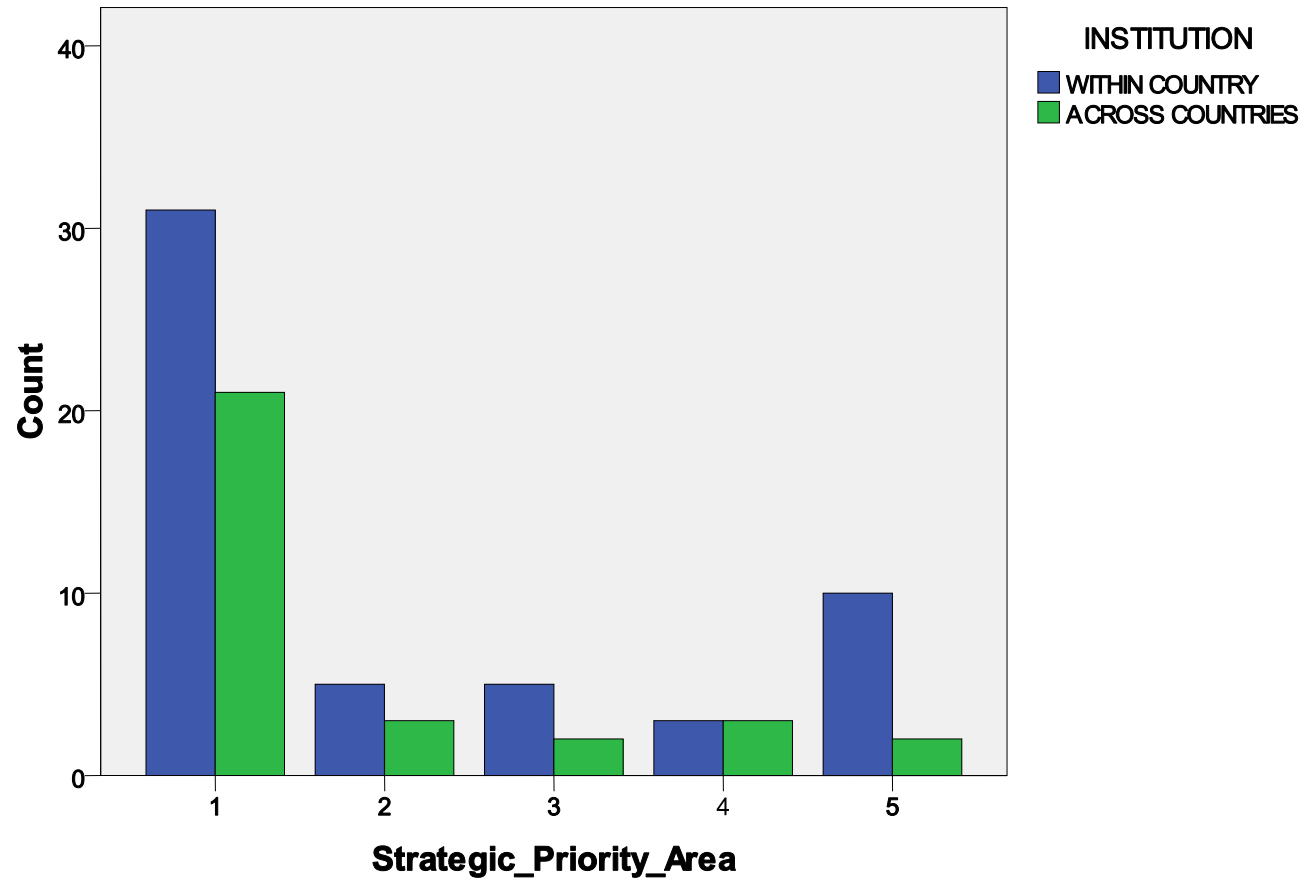
# FUNDING ACROSS STRATEGIC PRIORITY AREAS



# DISTRIBUTION OF LIVESTOCK CATEGORIES ACROSS STRATEGIC PRIORITY AREAS



# STRATEGIC PRIORITY AREA ACROSS COLLABORATING COUNTRIES



# Discussion & Conclusion

- About two-thirds of the studies were added after Interlaken Declaration (FAO, 2007)
- General ranking of AGRs include the following: cattle>chickens>goat>sheep, etc.
- Ranking of top six countries included Ethiopia, Kenya, Nigeria, South Africa, Tanzania and Cameroon
- Spread of papers across SPAs of the GPA showed that SPA\_1 (characterization....) was top while SPA\_4 received the least patronage. This may be a worrisome trend!

# Discussion and Conclusion (Cont'd)

- Some studies combined SPAs (especially SPAs\_2 and 3 and sometimes, 2,3 and 4) – that policy and capacity building via in situ conservation through sustainable use
- Regional rankings showed East Africa (40%), West Africa (36%), Southern Africa (13%) and North Africa (11%)
- Funding patterns showed that some 53% and 47% were funded and not funded respectively
- Funding patterns however, differed by livestock species and across countries and regions.
- Funding was more favourable in East Africa when compared to all other regions

# Discussion and Conclusion (Cont'd)

- Cross-tabulation of livestock across regions showed that
  - Cattle and poultry received highest attention in East Africa compared to
  - Small ruminants and poultry in West Africa, while
  - Southern Africa received equal rankings for cattle and poultry
- Funding across livestock classes showed a favourable disposition towards small ruminants and poultry when compared to cattle, pigs, horses and rabbits



# Acknowledgements

- European Union (EU) funding for iLINOVA ([www.ilinova.org](http://www.ilinova.org))
- DAD-Net (FAO) for all Journal articles of ***Animal Genetic Resources Information*** (now ***Animal Genetic Resources***) accessible at: [http://www.fao.org/ag/againfo/resources/en/pubs\\_gen.html](http://www.fao.org/ag/againfo/resources/en/pubs_gen.html)

**Thank you!**