



The poultry research facility of the International Livestock Research Institute (ILRI) in Addis Ababa, Ethiopia. The site's geographic coordinates are 9°1'48' N and 38°44' E on an elevation of 2,382 m.



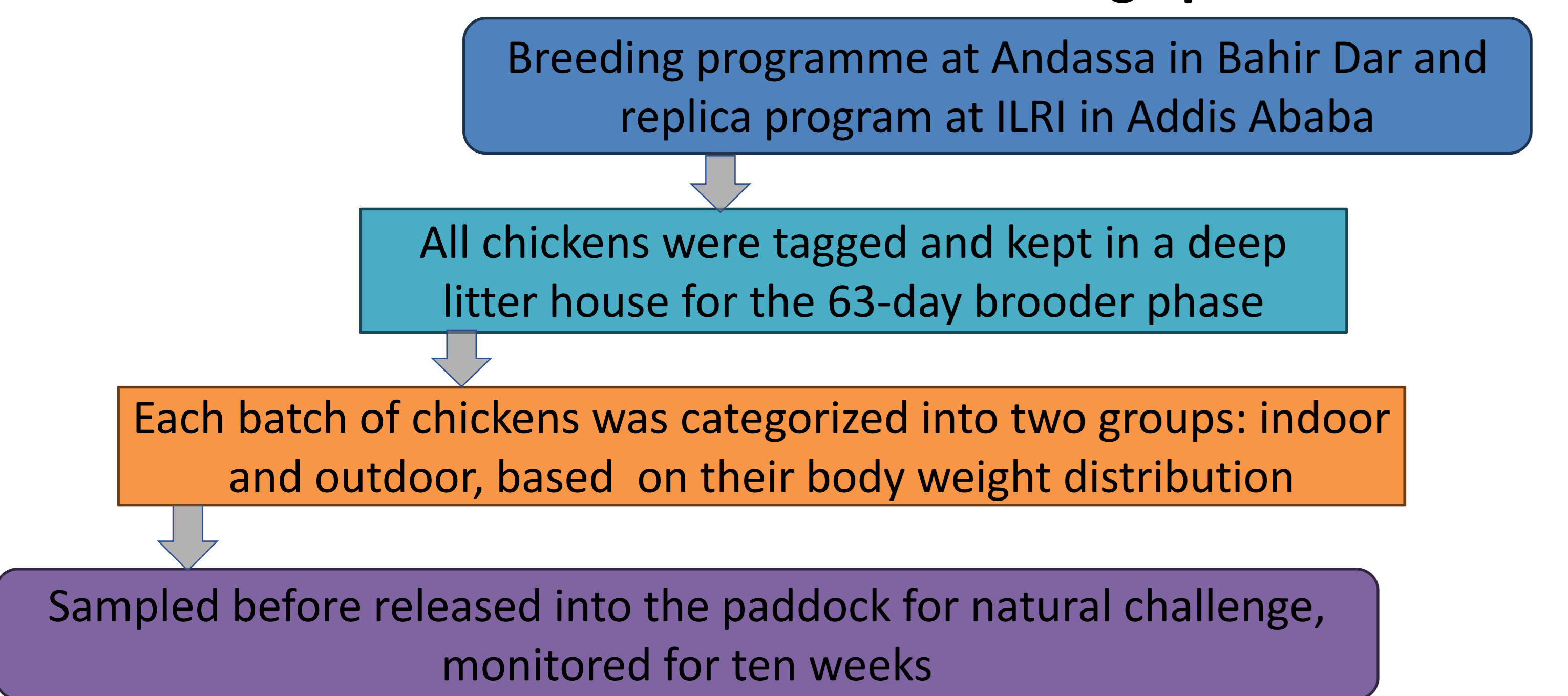
The challenge

- **Indigenous chickens** are locally adapted but poor producers.
- Limited understanding of phenotypic and genotypic traits that contributing to **adaptability** and **productivity** of the indigenous chicken.
- **Smallholder farmers** need more productive and more climate-resilient chicken.

Our innovative approach

- **Study scale:** > 3000 Tilili chickens in 13 batches with around 200 to 300 birds/batch under indoor and outdoor conditions.
- Detailed phenotypic analysis combined with advanced **genomic screening**.

Challenge protocol



UNDERSTANDING PHENOTYPIC AND GENETIC VARIATION OF TILILI CHICKEN ECOTYPE

GENETIC IMPROVEMENT AND SUSTAINABLE UTILIZATION

Indigenous chickens exhibit high diversity in morphology, production, and adaptation traits.

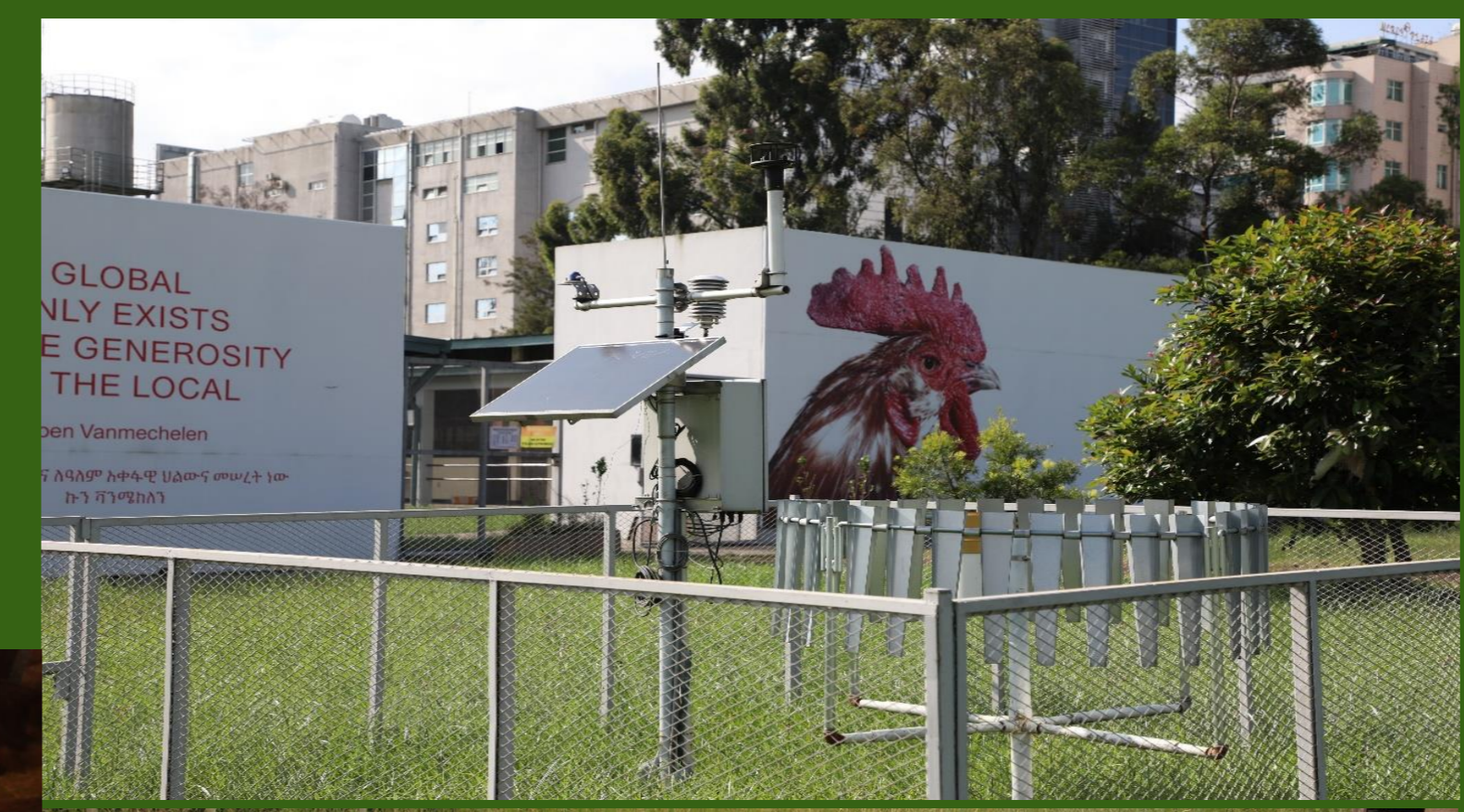
Genetic gains is influenced by genetic and environmental factors.

Phenotypes collected

- Bird ID and Live body weight at day 0 and weekly, and growth rate.
- Recording bird pedigree (sire & dam lines).
- Survival during the monitoring period and cause of death.
- Blood collected at d56, d77, and d133 for determination of antibody profile. Low-pass genome sequencing.
- Cloacal swabs for determination of pathogen load.
- Photograph of the bird to capture morphometric data, feather type, cover, and colour.

Weather data

- Average, minimum and maximum air temperature
- Atmospheric pressure
- Relative humidity
- Wind speed and direction
- Amount of precipitation



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Outcomes

- Identification of genetic markers that are important for production and resilient traits in different climatic challenges (signature of selection and Genotype-by-Environment interactions).
- Foundation for **genome-wide selection breeding programs** to improve performance and adaptability in indigenous chickens.

Next steps

- Integrations of quantitative and –omic results.
- Collaboration with local farmers and stakeholders to implement findings in breeding programs.

Partners



The International Livestock Research Institute thanks all donors & organizations which globally support its work through their contributions to the CGIAR Trust Fund. cgiar.org/funders

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