

# Detection of antimicrobial resistance (AMR) in broiler chickens supplying urban areas in Western Java:

## A pilot AMR surveillance programme in Indonesia in 2017

I. Suandy<sup>1</sup>, G.B. Utomo<sup>2</sup>, R. Telussa<sup>2</sup>, E. Setyawan<sup>2</sup>, P. Allamanda<sup>4</sup>, N. Triwijayanti<sup>5</sup>, D.M. Pangaribuan<sup>1</sup>, M.J.N. Gordonillo<sup>3</sup>, S. Ma'arif<sup>1</sup>, L. Schoonman<sup>2</sup>, J. McGrane<sup>2</sup>

<sup>1</sup> Directorate General of Livestock and Animal Health Services (DGLAHS), Ministry of Agriculture, Jakarta, Indonesia;

<sup>2</sup> Food and Agriculture Organization of the United Nations, Emergency Centre for Transboundary Animal Diseases, Jakarta, Indonesia;

<sup>3</sup> Food and Agriculture Organization of the United Nations, Regional Office for Asia and the Pacific, Bangkok, Thailand.

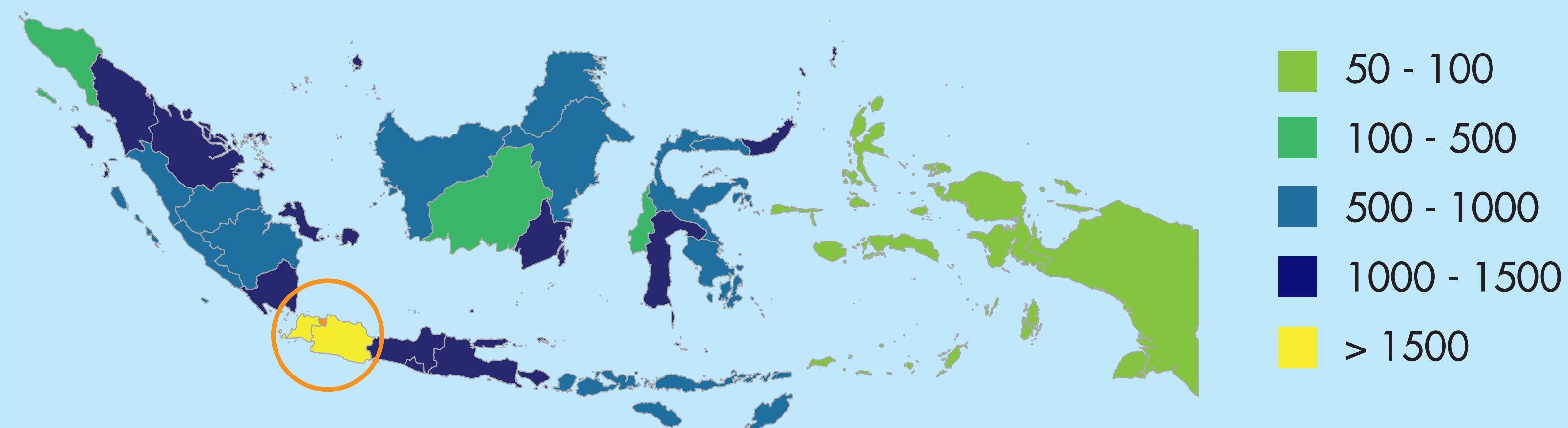
<sup>4</sup> Disease Investigation Center, Subang District, Directorate General of Livestock and Animal Health Services, Ministry of Agriculture, Indonesia;

<sup>5</sup> National Animal Product Quality Testing and Certification Laboratory (BPMSPH), Bogor, Directorate General of Livestock and Animal Health Services, Ministry of Agriculture, Indonesia

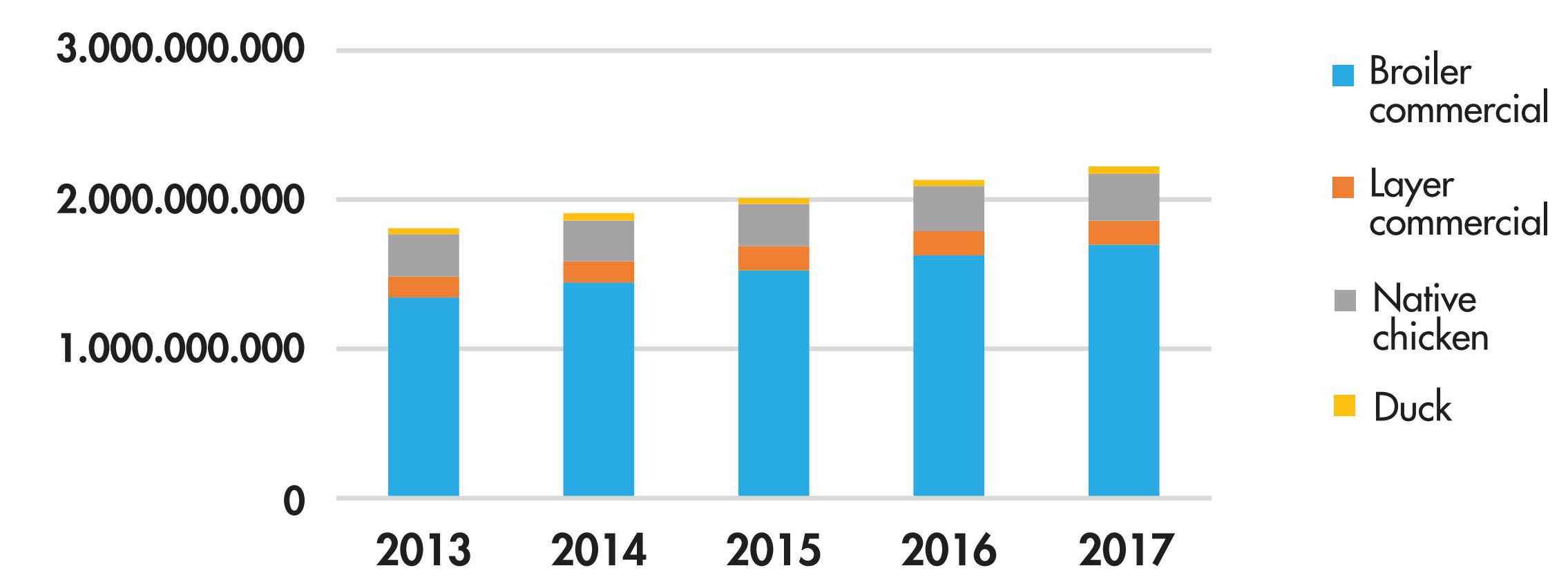
## Introduction

More than 80% of poultry are raised on commercial farms in Indonesia. This system encourages substantial usage of antibiotics for therapeutic and non-therapeutic purposes, including growth promotion (Indonesian Bureau of Statistics, 2017)

Poultry Density in 2017 | Broiler chicken / area sqkm



Poultry Population by types in Indonesia in 2013 - 2017



## Materials and Methods

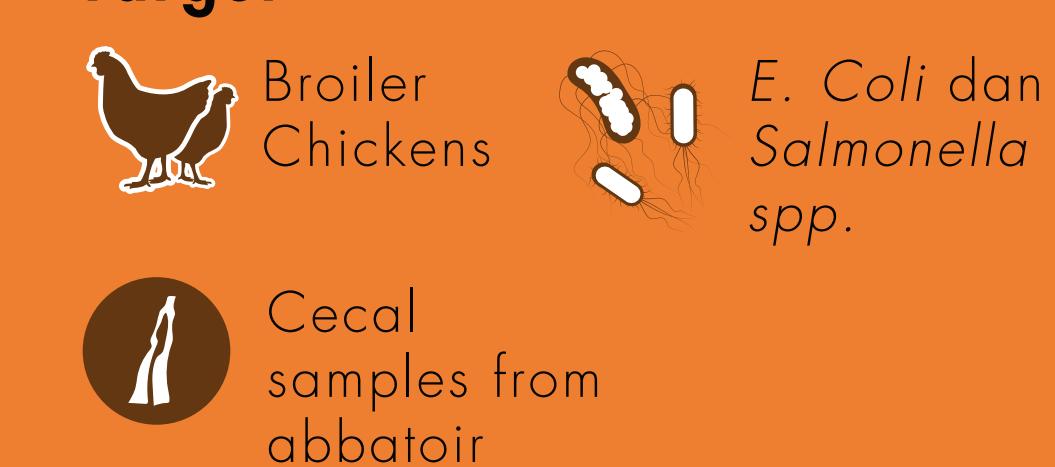
### Objective:

- To detect antimicrobial resistance patterns of *Salmonella* spp. and *Escherichia coli* bacteria and elucidate factors influencing bacterial recovery rates for the development of AMR surveillance guidelines.
- To test the draft national AMR surveillance plan, pilot work was carried out in one of the eight regional disease investigation centers following the provisional scheme developed by the DGLAHS.

### Sample collection

Random collection at 209 abattoirs in 15 districts in Banten, Jakarta, and West Java Provinces

#### Target



### Isolation and identification

Indonesian National Standard Bacterial Analytical Manual methods (SNI 2897: 2008I)



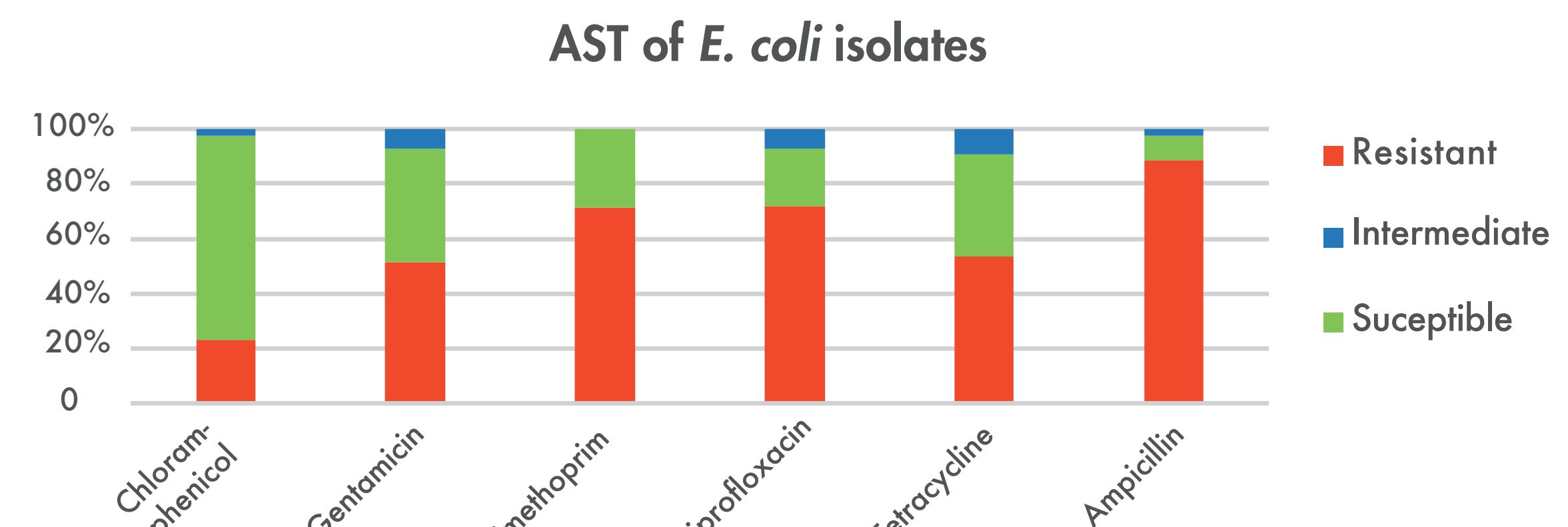
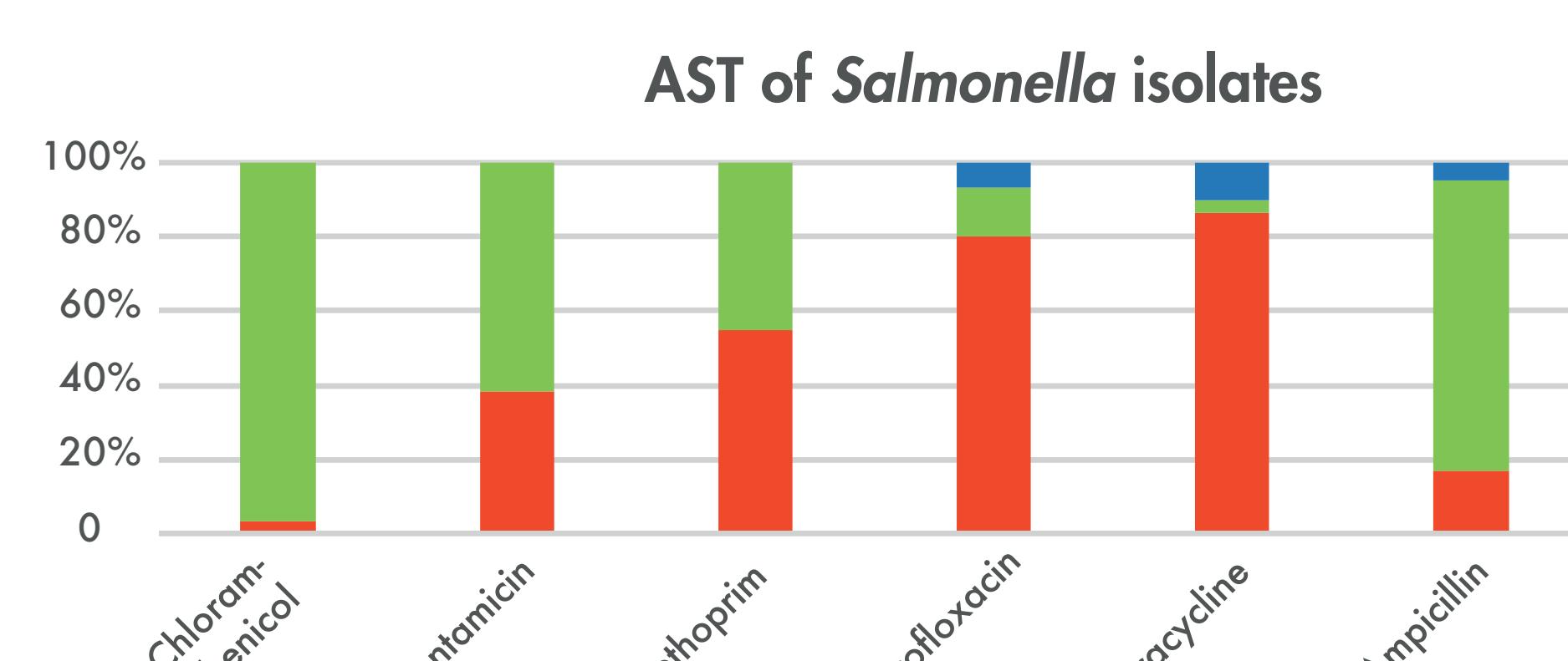
### Antimicrobial Susceptibility Test (AST)

Standardized agar dilution method to 6 antibiotics performed based on the CLSI VET01S ED3:2015 and CLSI M100 ED28:2018. Calculation of percentage resistance based on CLSI clinical breakpoints.



## Results and Discussion

A total of 79 *Salmonella* spp. (13%) and 352 *E. coli* (57%) isolates were recovered from 623 chicken caecal samples. Of these, 43 *E. coli* and 60 *Salmonella* spp isolates were selected for Antimicrobial Susceptibility Testing (AST).



## Conclusions and Recommendations

- The majority of *Salmonella* spp. were resistant to Tetracycline (87%), Ciprofloxacin (80%) and Trimethoprim (55%), while *E. coli* were resistant to Ciprofloxacin (72%), Trimethoprim (70%), Tetracycline (53%), and Gentamycin (51%).
- The lower than expected recovery rate of *E. coli* and other areas for improvement from this pilot were all noted and will be addressed in any future routine national AMR surveillance work in broiler poultry in Indonesia.
- It should be noted that *Salmonella* spp recovered in this small-scale pilot study were directly from intact caeca and were not typed. This therefore does not reflect the prevalence of or risks for zoonotic *Salmonella* in all sectors of the broader broiler industry of the country.
- AMR surveillance should be conducted in a scientifically acceptable manner according to local priorities and available resources.

## Acknowledgements

- The work reported in this poster was supported by USAID with the technical collaboration of FAO ECTAD Indonesia and FAO Regional Office for Asia and the Pacific.
- This work was undertaken by staff of the Directorate General of Livestock and Animal Health Services, Ministry of Agriculture, Indonesia; FAO ECTAD Indonesia and National Veterinary Laboratories (DIC Subang and BPMSPH)



Directorate General of  
Livestocks and Animal Health  
Ministry of Agriculture



Food and Agriculture  
Organization of the  
United Nations



USAID  
FROM THE AMERICAN PEOPLE