

## Introduction

- ◆ Wheat (*Triticum* spp.) is one of staple food crops across the world and primarily a high source of protein (Shiferaw et al., 2013)
- ◆ It is increasingly in demand as a result of rapid population growth, despite of low production and productivity in Sub-Saharan African countries as compared to developed world (Negassa et al., 2013)
- ◆ It is attributed to a number factors like diseases, insects, and weeds and socioeconomic constraints. In Ethiopia, wheat stem rust causing up to more than 90% yield losses during the epidemic year (Hei et al., 2017)
- ◆ Therefore, regular surveillance and keeping the record is very crucial for intimate and ultimate solution of rusts problem across all location of the country

## Objective

⇒ To assess Spatial distribution and Intensity of wheat stem rust in western and south-western Ethiopia

## Materials and methods

### Disease Assessment

- ◆ Two zone of south-western (Jimma and Bunobede) and 2 zone of Western (Assosa and West wellega), Ethiopia were used for disease assessment
- ◆ In a randomly selected field, a total of five points in (X) pattern were assessed for disease Intensity
- ◆ Severity were estimated using modified Cobb scales (Peterson et al., 1948) and field information such as wheat type, variety name, and crop growth stage recorded on pre prepared checklist

### Statistical Analysis

- ◆ The nested design was used as a model and SAS version 9.3 were used for data analysis (Schielzeth and Nakagawa, 2013).
- ◆ Correlation and Stepwise regression: Of diseases Severity and altitude, growth stage and weed infestation.

## Results

### Spatial Distribution and Intensity

- ◆ ANOVA indicates fields, districts, zones and altitude, weed management, a wheat variety significantly vary by disease incidence and severity
- ◆ Disease mean prevalence ranged of 66.7%-92% in zones.
- ◆ Mean % incidence ranged of 3.7-47.9% and with the corresponding severities of 4.8 - 66.5%.
- ◆ Correlation analysis indicates, a significant and positive association between crop growth stages, weed infestation and intensity; -ve correlation with altitudes
- ◆ Moreover, the strongest predictor for disease severity was the growth stage with the highest  $\beta$  value which is 0.47 and with its highest shared; 20.1% and unique 18.4% contribution indicated by stepwise regression



Typical fields with high rust severity (picture taken from Maokomo special district; Assosa zone of western Ethiopia)



Typical field with mild disease severity (picture taken from Bunobede zone of South-western Ethiopia)

**Conclusions:** In conclusion, wheat stem rust disease was widely distributed and intense in wheat farms of the west and south-western Ethiopia and need to undertake regular monitoring across the areas

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### References

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