



## **Preliminary pest assessment in south Gondar zone (2020) Ethiopia; In the case of crop protection**

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### **Introduction**

South Gondar is a Zone in the Ethiopian Amhara Region. This Zone is bordered on the south by East Gojjam, on the southwest by West Gojjam and Bahir Dar, on the west by Lake Tana, on the north by North Gondar, on the northeast by Wag Hemra, on the east by North Wollo, and on the southeast by South Wollo; the Abbay River separates South Gondar from the two Gojjam Zones. The highest point in South Gondar is Mount Guna (4,231 meters). Towns and cities in this zone include Addis Zemen, Debre Tabor and Wereta.

Based on the 2007 Census conducted by the Central Statistical Agency of Ethiopia (CSA), this Zone has a total population of 2,051,738 and an increase of 16% over the 1994 census, of whom 1,041,061 are men and 1,010,677 women. With an area of 14,095.19 square kilometers, South Gondar has a population density of 145.56; 195,619 or 9.53% are urban inhabitants. A total of 468,238 households were counted in this Zone, which results in an average of 4.38 persons to a household, and 453,658 housing units.

The average rural household has 1 hectare of land (compared to the national average of 1.01 hectare of land and an average of 0.75 for the Amhara Region and the equivalent of 0.6 heads of livestock. Nearly 14% of the population is in non-farm related jobs. The zone have diversified agro ecology; mid-altitude, Kola and Dega which are suitable for different crop production.

### **Materials and Methods**

The survey was conducted in six (mid-altitude, highland and lowland agro ecology) selected districts of South Gondar, Ethiopia. The primary and secondary data was collected through the participatory rural appraisal (PRA) and from Zone and districts agricultural office. The six representative districts selected based on their production potential and different agro ecology, which is most important for different crop production. Two kebele were selected from each districts and focus group discussions were held with 6 farmers in groups. For PRA the questionnaire was first prepared in English and pretested to improve it and thereafter the discussion was in Amharic for convenience communication between farmers and interviewers the discussions were to determine the major crops

grown, main constraints to crop and live stalk production and identify preferences for new research intervention. The focus group discussion was conducted using a checklist and the major crops and constraints were subsequently ranked using pair-wise ranking method. The current major production constraints, particularly crop pests were also ranked.

Objectives, of survey target to identify the problems in the proposed area and to propose areas of concern for future investigation.

## **Results and Discussion**

### **Major crops grown in the study area**

1. Mid-altitude agro ecology include
  - ✓ Cereal= tef, wheat, maize, rice, finger millet,
  - ✓ Pulse= Faba bean and grass pea and chick pea
  - ✓ Vegetable= tomato, onion, garlic, pepper, cabbage
2. In Dega, crops primarily grown
  - ✓ Potato,
  - ✓ Food barley,
  - ✓ Triticale, and
  - ✓ Faba bean.
3. Kollaagro ecology includes
  - ✓ Haricot bean,
  - ✓ Mung bean,
  - ✓ Sorghum,
  - ✓ Tef and sesame.

### **Major crop disease and insect**

The reasons for the continued increase in yield per hectare of crops may be attributed to several factors.

#### **1. Insect pest and disease**

##### **Migratory insect pest**

Migratory pestattacks (army worm) were reported mid-altitude districts of zones, the most numerous outbreaks being army worm in May-June.

##### **Non-migratory insect pests**

Non-migratory pests such as stalk borer (maize and sorghum), aphids, shoot fly (teff and barley), onion thrips and other were noted as present. The pest problem is further aggravated by shortage of appropriate pest control technology and misuse of pesticide by the smallholder farmers to manage them.

##### **Disease**

The major crop diseases in the lowland and mid-altitude include leaf and steam rust, downy mildew, powdery mildew, faba bean gall, chocolate spot, root rot. These pests affect most of the vegetable crops, cereal and pulse crops grown in the study area.

Vegetables like cabbage, onion, garlic are increasingly affected by disease and insect pest. Pulse crops like faba bean being devastated by faba bean gall and chocolate spot. Most of farmers depend on pesticide for pest control, but they purchase pesticides without consulting the agricultural experts. Further they lack the required skills and knowledge to identify the pests. This indicate the need for better farmer access to plant protection chemicals.

**Table 1 represents major insect pest and disease of cereal and pulse crops in South Gondar**

Crops	Major Insect pest	Major Disease
<b>Cereal crops</b>		
1. Bread Wheat and Barley	Barley shoot fly Russian wheat aphid Crickets	Yellow rust Leaf rust Stem rust
2. Tef	Shoot fly Crickets	Rust Smudge
3. Maize and sorghum	B. fusca Stem borers Sorghum Shoot fly chaffer Termites African bollworm	Gray leaf spot(Maize) Leaf spot (Maize) Common leaf rust(Maize)  Anthracnose(Sorghum ) Sorghum leaf rust(Sorghum ) Sorghum ergot(Sorghum )
4. Rice	Stalk eyed fly, steam borer	Sheath rot and blast
<b>Pulse crops</b>		
1. Faba bean	pea aphid African bollworm cut worm	Chocolate spot Faba bean gall
2. Field pea	Pea aphid Pea bruchid African bollworm Common cutworm Adzuki bean beetle Bean bruchid	Rust  Powdery mildew  Fusarium wilt Dry root rot
3. Chick pea	Pod borer Cutworm Azuki bean beetle	Ascochyta blight
4. Mung bean and haricot been	Bean pod weevil Green stink bug Pod borer Pea aphid	Ascochytablight Fusarium sp. Leaf spot Root rot
5. Grass pea	Pea aphid Azuki bean beetle	Powdery mildew

All listed pests in the table have been observed and confirmed during this survey and considered

as an important pest of vegetables for the study area.

Crops	Insect Pests	Disease
<b>Vegetable</b>		Purple blotch Downy mildew
1. Onion/garlic/shallot	Onion thrips	
2. Potato	Aphid white fly	Blights
3. Tomato	Aphids Leaf miner White fly Fruit borer	Blights Damping-off
4. Pepper	Fruit borer	Wilt
5. Head Cabbage	Diamondback moth Aphids	Downy mildew Damping-off

## 2. Major weeds found in the surveyed area

- ✓ *Guizotiascabra*
- ✓ *Amaranthusspp*
- ✓ *Bidenspilosa L.*
- ✓ *Tagetesminuta L.*
- ✓ *Xanthium strumariumL*
- ✓ *Commelinabenghalensis L.*
- ✓ *Snowdeniapolystachya*
- ✓ *Avenafatua L.*
- ✓ *Cyperusrotundus L*
- ✓ *Eleusineindica (L.)*

## Invasive and Parasitic Weeds

- ✓ *Lantana camara*
- ✓ *Striga*
- ✓ *Orobanchespp*
- ✓ *Partheniumhystrophorus*
- ✓ *Water hyacinth*

## Summary and Conclusion

### Summary:

From the result of farming characterization survey in south Gondar, it showed that a large

number of crop protection research should be conducted to confirm for food self sufficiency and food security agenda of the country. Some crops in the surveyed area being devastated by disease and insect pests; like Faba bean.

## Entomology

- ✓ Insect pests are major constraints to pulses, Cereal and vegetable crop production; yet there has been relatively little research carried out.
- ✓ Chemical control of the insect has been the only option for many growers and will remain so far some time.
- ✓ Survey should concentrate on quantitative observation to map the relative distribution and importance of major migratory and non migratory insect pest in different agro-ecological zones
- ✓ Research should concentrate on host plant resistance,cultural and chemical control.
- ✓ Knowledge of the impact, dynamics and ecology of the pest and its naturalenemies is essential before effective control strategies can be developed.

- ✓ Research should focus on plant-pest, natural enemy, biological control and IPM.
- ✓ The research also must focus on cropping systems, the effect of crop rotation, straw management, and tillage system on the management of legume pests will be adequately investigated.

### Pathology

- ✓ Survey should concentrate on quantitative observation to map the relative distribution and importance of major diseases in different agro-ecological zones.
- ✓ Losses should be quantified for different infection regimes for diseases.
- ✓ Research for resistance gene against major disease like faba bean gall, *Ascochyta* and powdery mildew should be done.
- ✓ Research for resistance genes should continue for major diseases (chocolate spot, rust and black root rot...etc).

- ✓ Integration of cultural, varietal, biological, chemical, etc. options should be considered.

### WEED

- ✓ One way of achieving crop production is through effective management of weeds, which are among the major production constraints.
- ✓ Survey should concentrate on quantitative observation to map the relative distribution and importance of major invasive and non-invasive weed in different agro-ecological zones.
- ✓ It is imperative to adopt a strategy, which integrates research, extension and development for a holistic approach to the problem of weeds.
- ✓ Future work in this regard should therefore emphasize: Studying the biology and ecology of major weed species;
- ✓ Developing integrated management approaches.

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