K : Abundance of insect; Crops; Damage; Infestation percentage insects

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In raising and balancing the demand and supply of food quality and quantity for the community needs, protecting the agricultural crops plays a great role [1]. One practical means of achieving greater yields is to minimize the insect associated losses [2]. Crop production is one of the major sources of income diversi cation available to pastoralists and ironically one of the most important competitors to the pastoralist way of life (Tache, B., 2000). According to Mengistu et al. [3] the major crops grown around Borana and West Guji are tef, maize, common bean and wheat (exceptional for west Guji zone). In Ethiopia, during 2020/21 production year major crops such as tef, wheat, maize and red common bean and white common bean were cultivated over the area 2.93mil ha, 1.9mil ha, 2.53mil ha, 0.21mil ha, and 0.1mil ha respectively. e produce from those areas were 1.882t/ha, 3.05t/ha, 4.18t/ha, 1.796 t/ha, and 1.76t/ha respectively. In Borana, maize was cultivated on 6,716.82ha and yields about 891.2089t which is 1.33t/ha. Red common bean is cultivated on 5,447.35ha and yielded about 577.16t with average yield 1.10t/ha. Similarly, in West Guji maize was cultivated on over 9,180.49ha of land and yields about 37880.01t, with 4.13t/ha yields, Red common bean 932.52t from 5,222.94ha with 0.18t/ha [4]. Despite its importance, the productivity of those major crops was very low compared to the national average yield. e yield losses caused by biotic pests are altogether responsible for losses ranging between 20 and 40 % of global agricultural productivity [2]. Among biotic factors, insect pests are one of the major limiting factors to crop production and storage. In Ethiopia, pre harvest yield loss due to insect pests in cereal and legume crops are estimated around 21-44% and 16-29 respectively [5]. e potential areas of Borana and West Guji zones for crop productions include Yabello, Teltelle, Elweye, Dire, Abaya and Bule Hora districts. e above listed districts have alike climatic conditions except Bule Hora district. Nowadays, demands for crop production had already been raised to ll demand for food security. e study by Tache and Sjaastad, (2008) also con rmed that crop cultivation is rmly expanding in the rangelands and tenure. ough crop production is relatively at initial level in pastoral areas, nowadays the urge for crop production knocks the integrity of every household regardless of the production skill and knowledge [6]. According to Mengistu et al. [3] about 85%, 65% and 30% of the respondents con rmed that they were producing maize, common bean and te , respectively. Some internal constraints are lack of agricultural inputs and land competition. According to respondents, the major factors constraining crop production include lack of rainfall (the rainfall pattern is highly erratic and rains o en do not occur at the expected time), presence of di erent harmful agricultural pests. Among, the constraints insect pests are the major challenging factors of crop production around Borana and West Guji. erefore, the objective this assessment was to identify the most economic insect pests of major crops and their distribution at Borana and West Guji Zones.

M **M**

D

e study was conducted at two zones (West Guji and Borana) of

long rainy season than the other districts. ere are two rainy seasons with in a year and the main rainy season is ranges from March to May while short rainy season is from early September to end of October.

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e assessment was conducted in two districts from each zone and totally at four districts in 2020-2022 production seasons. e assessed districts were Yabello, Teltelle, Abaya and Bule Hora. e study area of each district was located under an elevation range of 1490-1800masl, 1356-1460masl, 1422-1460masl and 1860 to 2328masl Yabello, Teltelle, Abaya and Bule Hora respectively. e districts were selected purposively based on potential of crop they produce. Fields were assessed with the distance of about 3-5km apart accordingly i.e., based on the presence of the crop. During assessment GPS map was used, for the purpose of geographical data such as elevation, latitude and longitude, distance and area of the assessed eld. e sampling was done at ve points (quadrats) in each eld and 1m*1m quadrat was used during the survey to take a sample from the elds and sampling was done in diagonal pattern (X-fashion) in each eld. e identi ed insect in each point was recorded and separated according to their families (groups). e abundance level and damage caused by the identi ed insect pest was recorded from each quadrat. When the assessment was done maize and te crops were at the stage of owering, while common bean was at the stage of pod setting. Questionary was developed to collect additional data from the farmers. e infestation percentage of the insects on the crop was recorded speci cally for each crop as well as infesting insects. e insect species and their infestation level were recorded from all the surveyed districts for each crop. e major crops produced at the study areas include maize, common bean and te . Percentage infestation level and damage were calculated using the formula:

$$\text{Percent Infestation} = \frac{\text{No of Infested Plants per quadrat}}{\text{Total number of observed plants per quadrat}} \times 100$$

D

All collected data were feed into computer and managed by using Excel and lastly the data was analyzed using IBM SPSS Statistics 20.

D

T

e survey indicates that there were di erent insect pests on each assessed crop's i.e., common bean, maize and te . Also, their prevalence was varied from location to location based on the crop type and cropping history. On majority of assessed areas producers use local varieties which may increase the risk of insect pest damage. Based on the commodity the species of insects observed on each crop were di erent and even within a crop based on infestation level, they vary from location to location (Table 1).

Among, the identi ed insect pests on common bean, cutworm (*S ac a a b c a*), ladybird beetle (*E ac a a*) and pod borer (*Ma ca a a*) were insects those have signi cant role in common bean yield reduction (Table 1). ese insect pests have their own abundance and damage levels on common bean crop on farmer's eld, as analyzed data collected during assessment indicated (Figures 1-3). e population/abundance and damage percentage caused by those insects on common bean was di er from district to district and from eld to eld (Table 1). e result shows that, Cutworm (*S ac a a b c a*) was recorded only from Teltelle, while pod borer (*Ma ca a a*) was found in all assessed districts as the analyzed data of the assessed eld shown, Pod borer (*Ma ca a a*) damages common bean with about 36%, 40% and 27.78% infestation level at Teltelle Bule Hora and Yabello districts respectively. Sharma et al., [7] also reported the pod borer as a major pest of cowpea and pigeon pea, but also damage other food legumes. e other major crop cultivated at the study area was maize and for this activity about 94 maize elds were assessed across the four districts (Yabello, Teltelle, Bule Hora and Abaya). On this, crop three major insect pests fall armyworm (FAW), stem borer and aphids (black) were determined. e damage level caused by these insect species and their infestation percentage were vary from eld to eld and district to district.

Among, the insects infest maize crop fall armyworm (FAW) (*S a*) was the dominant and existed all over the

surveyed elds of both Borana and West Guji zones. Among, the 94 led of maize assessed about 65 elds were infested by fall armyworm (*S a*) pest. us, the Fall armyworm damages on maize from the elds, accounts for about 50%, 73.7% and 18.5%

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