ASJ: *International Journal of Agricultural Research, Sustainability, and Food Sufficiency (IJARSFS)*
Vol. 6(02) 24 July, 2019, Pp. 348-357
www.academiascholarlyjournal.org/ijarsfs/index_ijarsfs.htm
ISSN: 2360-932X©Academia Scholarly Journals
Indexed In: Directory of Research Journals Indexing - www.drji.org
Also Available@; Archive.org
Open access

Full Length Research

GLOBAL WAR ON HUNGER AND CURRENT RESEARCH ON THE ROLES OF WORLD ENTOMOLOGISTS IN ENHANCING FOOD SECURITY

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Accepted July, 23, 2019

The global war on hunger and the **roles of world entomologists in enhancing food security were reviewed and findings were highlighted for the attention of International Community. The current state of affairs shows that hunger is prevalent in countries of the world marked by violence and internal discord and in countries compromised agriculturally, technologically, economically and politically. World hunger statistics revealed that majority of the hungry people live in developing countries where 12.9% of the population is grossly undernourished. Hunger was directly linked to global food crises and the most important factors responsible for the global food insecurity were high rate of population growth relative to agricultural productivity of a country, insect pest attack, low capacity to store food products, low capacity to buy staples from other sources, climate change, insurgency, impoverished health, political instability and high proclivity for corruption. The current Global Hunger Index scores revealed hunger inequalities in different countries of the world and showed that hunger has declined over a long term. In the review, insects were implicated as the originator of global food crises and their activities culminate in substantial economic losses. World entomologists have key roles to play in order to make global impact in the fight against hunger and the roles include developing methods for preventing the importation and spread of destructive insects, embarking on extensive studies on the role of insects in agriculture, forestry, human and environmental health, designing and implementing pest management programmes for both urban and agricultural locations, coordinating public awareness and education programmes targeted at reducing hunger, discovering and cataloguing new species and classifying and preparing publications that help to identify different insect species and involving actively in pest control services and extension programmes. These functional responsibilities will help to control insect pest attack and reduce hunger by increasing agricultural productivity.**

KEYWORDS: world entomologists; hunger statistics; global food crises; losses; agriculture.

Contribution/ Originality: This work is one of very few studies that revealed current hunger statistics in the world as well as the most important factors responsible for the global food insecurity. Part of the paper's primary contribution is revealing that world Entomologists have key roles to play in enhancing food security in order to help to cope with hunger.

INTRODUCTION

Hunger has been described by many, as subjective feeling of discomfort which follows a period without eating. GHI (2004) described hunger as the distress associated with lack of food and the state of total food deprivation and undernourishment. According to FAO (2014) there is hunger when a person's food consumption is below the minimum of 1,800 kcal/day required for a healthy and productive living. It is already known that this compelling desire for food described as hunger can occur at various levels in the society. Namely, an individual, household, nation, continent or even the entire globe can battle with hunger. Hunger is one desire which every living thing including man wishes to satisfy in a hurry. When prolonged, the body system usually ends up in a crisis. Hunger has received increased attention and world hunger statistics (www.foodaidfoundation.org/world-hunger-statistics.html) shows that (i) some 795 million people in the world do not have enough food to lead a healthy active life; this is about one in nine persons on earth, (ii) majority of the world's hungry people live in developing countries, where 12.9 percent of the population is undernourished, (iii) sub-Saharan Africa is the region with the highest prevalence of hunger; one person in four in sub-Saharan Africa is undernourished, (iv) poor nutrition causes nearly half (45%) of deaths in children under five- 3.1 million children each year, (v) one out of six children (roughly 100 million) in developing countries is underweight, (vii) one in four of the world's children are stunted; in developing countries the proportion can rise to one in three, (viii) If women farmers had the same access to resources as men, the number of hungry people in the world could be reduced by up to 150 million, (ix) sixty-six million primary school-age children attend classes hungry across the developing world, with 23 million in Africa alone, (x) World Food Programme calculates that US$3.2 billion is needed per year to reach all 66 million hungry school-age children and so the war requires commitment. Hunger can be acute, chronic or hidden depending on the magnitude with acute hunger representing 10% when the lack of access to adequate food is for a short-term possibly due to drought or war and 90% in chronically undernourished situations (FAO, 2003; UN Millennium Project, 2005). Hunger and global food crises are partners, the latter dragging the former. Global food crises or global food insecurity exists when an individual or a people are undernourished because of physical unavailability of food, lack of access to and / or inability to utilize food effectively due to infection or disease (FMAWR, 2008). According to Adedire (2011), the main factors responsible for global food crises are high rate of population growth relative to agricultural productivity of a country, low capacity to store excess food produced, low capacity to purchase staples from other sources and political volatility. It is known that about 14% of all food production is destroyed by insect pests, despite serious control with synthetic chemicals (Pimentel, 2007; Gemechu *et al*., 2011) and this implies that the arthropod is a major cause of hunger. Berebaum (1995) reported that virtually all crops in Africa are exposed to insect pest attack to some degree. This has made insect pests very important in food production. Adedire (2011) reported that insects are into very serious contention with man and are the most probable originator of global food crises. Their activities culminate in substantial economic losses. Therefore, it is incontrovertible that in tackling hunger, world entomologists have a key role to play and it centres on the insects. Unfortunately, the roles Entomologists play in tackling the damaging activities of insects in agriculture have been grossly understudied and implemented. This research gap is one of the features in which the present work hopes to bridge. It has been reported that after several years of combating malnutrition, the number of hunger victims is likely to increase (Powledge, 2010) and this has come to a fulfilment evidenced by widespread hunger and poverty currently affecting many countries. From current analysis (Peng and Berry, 2018), the future does not look very promising due to expanding fat world. Deadlines to control hunger have reached and passed and policymakers rely on scientific research for progress. In other words, both policymakers and researchers have important roles to play in tackling this quandary. In the present review, we reveal the feasible roles world Entomologists can play in order to help in solving the dilemma. Full implementation of suggested entomological actions will enhance food security by fighting the insects (originator of food crises) successfully.

Insects belong to the great phylum of the animal kingdom called Arthropoda which are marked by the possession of an exoskeleton which serves as

coverage to inner organs and as a receptor of stimuli. Insects account for more than three-quarters of all known animals and are frequently regarded as pests and seldom as beneficial organism. As a result, even the useful insects are unfairly oppressed. Insects exist in enormous numbers and being small; they colonize areas expediently. Notably, insects are numerous mainly because they show high fecundity and their high number and diversity have both positive and negative effects on hunger. The main aim of applied entomology is to manipulate both injurious and beneficial insects to man's advantage and successful manipulation depends largely on the possession of adequate knowledge of insect biology. Although insects are generally viewed as destructive organisms by man, they play an important role in production of industrial and medicinal products and are critical in cultural entomology. Other indispensable roles insects play include pollination of cultivated and non-cultivated plants, serving as food resource for both man and other animals and dispose of dead organisms through recycling and restoration of ecological balance. Many insects are vectors of diseases and some are crop or livestock pests. As pests, insects are man's commonest enemy at home or on the farm since they attack stored products, livestock and agricultural crops (Ayertey, 2002; Lale, 2002; Umeozor, 2009; Ajayi, 2015). Damage to stored products due to insect attack serve portals of entry for weakly pathogenic organisms and this is totally unfair to man who depends on his stores for many reasons especially to cope with hunger. To considerably reduce hunger in the world therefore, entomologists are well-equipped to control insects as pests and vectors of disease pathogens and manipulate beneficial species to improve the livelihood of man on earth using various techniques. Of course, the overall action should ensure food security in order to meaningfully reduce hunger globally. UNEP (2002) and IFRCRCS (2009) classified three dimensions of food security as (i) food availability which refers to a situation in a local area, region or country where such food is physically available either because it has been grown, processed manufactured and/or imported, (ii) food access which refers to the way in which different people acquire available food which may include home production, use of left-over stocks, purchase, barter, borrowing, sharing, gifts from friends and relations and/or through provision by welfare system or food aid, and (iii) food utilization which refers to the way in which people use food and this depends on the number of factors such as quality of food and its method of preparation, storage facilities, nutritional knowledge and health status of the consumer.

In fact, any action by world entomologists that ensures availability of nutritious food at all times to all people is necessary in the global war against hunger. Food is a major means of sustaining life and its adequate intake (to meet specified criteria of adequacy and prevent risk of deficit or excess) in the right proportion (both quantitatively and qualitatively) is considered as a key to healthy living and productive wellbeing (Lale, 2012). Food accounts for a substantial budget of households (Omonona and Agoi, 2007). Daily minimum nutrient for an adult is put at 65 g protein and 2500 kcal of energy per capita intake and any short fall, leads to malnutrition (WHO/FAO, 1993). IFRCRCS (2009) reported that sub-Saharan Africa is not on track to achieve millennium development goal and therefore the continent is vulnerable to high malnutrition index. Lale (2012) attributed this state of affairs to food insecurity in the place coupled with numerous problems such as HIV/AIDS, climate change, insurgency, environmental degradation deficiencies, disproportionate population of humans, sluggish economic growth and poor governance. This resulted into significant decline in agricultural production especially with rural urban migration, increased poverty line and chronic food insecurity in the region where agriculture accounts for 35% of the Gross Domestic Product. WFP (2009) estimated that 40% of people in sub-Saharan Africa live below poverty line, with daily increase in both income and human poverty and yet they spend over 60% of their earnings on food. UNEP (2002) reported that none of the African countries is included in the list of the high Human Development Index- which is a measure of quality of life; rather they were all ranked among the low Human Development Index. UNEP (2002) however, forecasted that human susceptibility in Africa is most likely to rise thus leading to increased poverty and wretchedness and rapid decline in the environmental quality of the continent. Food production in sub-Saharan Africa grew at 1.5% per annum while population grew at 3% from 1970 -1985 since then; the situation has continued to deteriorate. From 1988-19993, 33 African countries experienced a reduction in per capita food production (Rosegrant et al., 1997). McGranaham et al. (1999) extrapolated that by the 2025 Africa's food demand will sharply

increase and in order to realise food security, grain production needs to increase by four times whereas animal production by seven times. UNEP/UNCTAD (2008) in a joint report stated that over the past 40 years, globally there has been a remarkable increase in per capita world food production by 17% growth and which translated to 145% aggregate world food production increase. From 1960s to 1990s average cereal grew from 1.2 t/ha to 2.25t/ha in developing countries and a total cereal grew from 420t/ha to 1,176 million t/ha per year (FAO, 1996). The case is the Rivers State in Africa where food production per person is 10% lower today than in 1960 (UNEP/UNCTAD, 2008). Lale (2012) reported that the recent advance in science and technology has not led to proportionate increase in food production nor adequate access to food in African continent. The author stated that in sub-Saharan Africa, the number of hungry people has increased by 20% since 1990. UN/SCN (2004) and Von Braun (2005) have extrapolated that from the year 2000-2002, proportion of undernourished people in the total population in Kenya was 33%, Uganda, 19%, Tanzania 44% with number of underweight children increasing in Central, West and East Africa while the figure decreased in developed nations of the world-only Asia was implicated in the world hunger statistics. Researchers believe that combination of increased production techniques and importation to countries of deficit food security will mean increase in per capita consumption by 2015- a person living in developing country will still consume half of the cereals and a third of the animal protein consumed by a person in an industrialized country (Pretty and Hine, 2001; Von Braun, 2005; Lale 2012). In Nigeria, Nwajiuba (2012) reported that at present Nigeria is facing huge food security issues with over 70% of the population living in less than 100 Naira (US$0.035) per day. Therefore, majority of Nigerians are hungry, impoverished, wretched and angry and the question is, what can world entomologists do to assist the people of the world that are battled with hunger. In this paper, we have highlighted our findings based on the literature reviewed.

GLOBAL HUNGER INDEX: CURRENT DATA AND TRENDS

Global hunger index (GHI) has the capacity to holistically measure and track hunger at the global, regional and national levels (Wiesmann, 2006). The GHI is based on four very important indicators namely, undernourishment, child wasting (low weight-for-height), child stunting (low height-for-age) and child mortality. These indicators reflect caloric deficiencies and poor nutrition. The GHI not only covers nutrition status of the entire population but also of children. Children are particularly vulnerable that lack of dietary energy, protein, essential vitamins and minerals cause them high risk of illness, poor physical and cognitive development, and death. Table 1 is a scale which shows severity of hunger from low to extremely alarming hunger, associated with global hunger index scores. Table 2 shows the global hunger index scores by rank from 2000 - 2017 and revealed the hunger inequalities and hunger performance ranks in different countries of the world. The 2017 global hunger index revealed that hunger levels and under-nutrition have diminished over the period covered. Countries with high rate of population growth relative to agricultural productivity, heavy insect pest infestations, low capacity to store food products, low capacity to buy staples from other sources, bad climate change effects, war and insurgency, poor health, political instability and high propensity for corruption are most likely to have high global hunger index.

Figure 1 shows the 2017 global hunger index and revealed the trend and progress since 2000. Countries which experienced higher reduction in hunger, lower reduction in hunger and increase in hunger from 2000 - 2017 have been indicated in Figure 1. The Figure illustrates the changes in global hunger index scores in absolute values. It featured countries where data were available to calculate 2000 and 2017 global hunger index scores and where 2017 global hunger index scores show moderate, serious, alarming, or extremely alarming hunger levels. Some likely poor performers may not have appeared due to missing data. According to literature, the 2017 global hunger index scores similarly revealed a decline both in hunger and under-nutrition (IFPRI, 2017). Briefly, the average GHI score for year 2017 is 27% lower than the year 2000 score (29.9%). This improvement reflects the decline in each of the global hunger index indicators since 2000 (IFPRI, 2017). Details of the 2017 GHI show that the proportion of the population that is under-nourished is down from 18.2% in 1999 - 2001 to 13.0% as at 2014 - 2016. Furthermore, the records show that 27.8% of children under age five were

stunted while 9.5% were wasted. Meanwhile, mortality rate diminished from 8.2% in 2000 to 4.7% in 2015. Despite these improvements, a number of factors including deep and repetitive inequalities globally weaken efforts to end hunger and under-nutrition. Part of the consequences is that although the mean global hunger level has reduced, some regions of the world still battle with hunger more acutely than poorer or more vulnerable neighbours. The United Nations (in early 2017) announced that at least 20 million people were at risk of extreme shortage of food in four countries of the world namely, Nigeria, Somalia, South Sudan and Yemen. It is pathetic to note that these crises are caused by man, precisely as a consequence of greed, violent contention and internal discord that prevent people from having access to food and clean water while sabotaging aid organizations to a magnitude that reaching people in need become practically impossible.

However, it is pertinent to mention that the GHI scores for 2017 were not reported for thirteen countries of the world because data on under-nutrition and in some cases data on child stunting and child wasting were not available. Incidentally, the countries with missing data may not be the most affected. Out of the thirteen countries, nine had insufficient data, yet major concerns (IFPRI, 2017). Table 3 presents the nine countries and the existing GHI indicator values. Child stunting level in Burundi (56.6%) was highest. This tallied with the report of von Grebmer *et al*. (2014) which placed Burundi in the extremely alarming hunger category when all data were available to calculate full global hunger index scores in 2014. The factors responsible for Burundi's food crises are not different from those already highlighted. In fact, twelve years of violent contention and internal strife (1993 - 2005) contributed to Burundi's food insecurity and impoverished nutrition (WFPUSA, 2015). Prevalence of under-nutrition in children is extreme in Eritrea (Table 3). Under-nutrition in Eritrea is directly related to the challenges of food production due to limited arable land, water shortages and frequent droughts. People's ability to purchase food is also limited by extreme poverty (UNICEF, 2015) and this may have also affected Eritrea. Table 3 further shows that Somalia had the highest child mortality (13.7%) in 2017 and child mortality is the only global hunger index indicator for which data were available for Somalia. Persistent drought, indiscriminate internal displacement of individuals and series of frustration providing humanitarian services to Somalia population brought the country to the threshold of famine. In 2011, famine wasted 250,000 lives in Somalia (WFP, 2015). The 13.7% child mortality recorded in Somalia in 2017 is the third highest rate of child mortality among the countries captured in this review. Conclusively based on available data, Burundi, Eritrea and Somalia have high global hunger index suggesting high level hunger and wretchedness in the countries.

FUNCTIONAL RESPONSIBILITIES OF ENTOMOLOGISTS IN THE FIGHT AGAINST HUNGER

In what functional responsibilities are world entomologists expected to make global impact in the fight against hunger. Ogunwolu et al. (2015) provided the hint and they include:

i. Developing methods for preventing the importation and spread of destructive insects whose activities have adverse effects on agriculture and the health of man.

ii. Embarking on extensive investigations on the role of insects in agriculture, forestry, human and environmental health.

iii. Accurately devising and implementing pest management programmes for both urban and agricultural locations.

iv. Coordinate public awareness and education programmes targeted at reducing hunger in the world.

v. Carrying out research on the evolution of insects, discovering and cataloguing new species and classifying and preparing publications that help to identify different insect species.

vi. Involving in pest control services and extension entomology. These activities (when actively taken up by entomologists in different parts of the world) will reduce insect pest menace and invariably reduce hunger considerably by increasing agricultural productivity.

LOSSES CAUSED BY INSECTS AND ROLE OF ENTOMOLOGISTS IN FIGHTING SUCH LOSSES IN AGRICULTURE

Loss is a measurable decrease of the foodstuff,

which may be qualitative or quantitative. Therefore, loss leads to hunger. Lale and Ofuya (2001) and Lale (2002) categorized loss in agricultural products attributed to insect pest in storage depending on the kind of damage and the crop product as:

i. loss in weight when insect feed on stored commodities especially the endosperm and cotyledons thus amounting to reduction in wholesome weight of the grain and edible seeds.

ii. loss in quality mostly arising from infestation of cereal and grain legume by arthropod pests thereby resulting in loss of vital nutrients to some extent the alteration of the chemical structures of the nutrients is not uncommon and sometimes the industrial values as well.

iii. loss in visual appeal and market value. When arthropod pests leave their broken body parts such as antenna, legs and wings, or their dejecta and debries amidst commodities, loss in visual appeal of such commodities often occur. Others include physical damage of grains (such as presence of holes) and discolouration of the products which all reduce market value of affected commodities.

iv. indirect loss by microflora especially in humid areas. Arthropods infestations lead to microfloral growth and thus result to caking of grains and indirect loss.

v. reduction in nutritional value and seed viability. Insects mostly attack the embryo of seeds because it is the most nutritious component. This however, results into loss of essential nutrients and loss of viability. Loss of agricultural products due to insect pests started right from when man began to grow crops and store the products for future use. Swaminathan (1981) reported that crop cultivation may have begun over 10,000 years back by women while their male counterparts engaged in hunting (Ayertey, 2002). The major challenge even at that time was insect pest infestation and disease epidemics which probably arouse from monoculture of few crops. For instance in Africa, *Schistocerca gregaria* carvings could be found on tombs of dating 2470-2220BC which was also recorded as a catastrophe pest in Exodus 10:1-15 (written 1300BC) and also in the tomb of Tutenkhanmum around 1350BC, storage insects such as *Lasioderma serricorne, Oryzaephilus surinamensis*, *Rhizopertha dominica* and *Tribolium casteneum* were identified (Ayertey, 2002).

United Nations general Assembly at its 7th special session in 1975 passed a resolution that 'no child, woman or man should go to bed hungry and no human being with physical or mental potentials should be stunted by malnutrition'. This call was made to urge member nations to reduce post-harvest losses by 50% within ten years (i.e. by 1985). It is evident that there are more people going to bed hungry despite the World Food Day intended to draw the world's attention to the problem of food insecurity but the problem has become rather intense. Speth (1994) warned that if the problem is not urgently checked the number of people to face absolute poverty will increase from 300 million in the next 30 years from 1.2-1.5 billion by the year 2025. In Africa about 13-18 million people mostly children die as a result of hunger and malnutrition related cases each year (40,000 people per day or 1,700 an hour). UN Millennium Project (2005) proposed immediate plan to eliminate or at least halve global hunger by 2015 from 33 percent to 18 percent in the past 40 years. Yet 852 million people still go to bed hungry every night with some conditions being chronic or acutely malnourished. The statistics shows 221 million people in India, China 142 million and sub-Saharan Africa 204 million and the figure is still increasing. Hunger is a global tragedy which requires much entomological efforts to eliminate. We recognise that political, economic and technological interventions are necessary too in the fight against hunger, however entomologists have a key role to play. On the 5th of July, 2004, the UN Secretary-General addressed heads of African States and senior members of the International Community at a presidential level seminar on hunger in Addis Ababa, Ethiopia and described hunger as one of the most serious problems on earth and called for a uniquely African Green Revolution in the twenty-first century to spearhead the fight against hunger by addressing challenges of agriculture; healthcare; nutrition; adverse and unfair market conditions; weak infrastructure; and environmental degradation. Ayertey (2002) estimated that if a conservative loss figure of 10% due to storage insect pest was applied to major cereal crop produced worldwide, the total food loss to mankind was enough to sustain the whole Africa's population of 70 million people for 16 months. Adedire (2008) lauded the importance of insects in food security as veritable agents in ensuring food security as their pollinating activities directly affect fruits and crop production, and cross pollination is required for fertility and plant vigour. About $5-6 billion per annum have been estimated

for non-honey bee pollination in USA alone while the global pollination services rendered by insects may exceed $100 billion annually by 2013 (Gullan and Cranstan, 2005).

Lale (2010) while citing several reports conducted over 30 years on loss assessment conducted in the tropics arrived at 30-80% in cereals and 0ver 50% in legumes. Appert (1987) reported 40% loss between harvest and consumption incurred by farmers in the humid regions. While postharvest loss worldwide was put at 10-20% and 25-40% for tropics. In Nigeria, okra yield loss ranges from 26.7-45.6% (Anne, 1987) and seasonal monetary losses in tomatoes ranges from N1490.00 - N17, 555.00 p/ha (Lawal *et al*., 2011). Larger Grain Borer, *Prostephanus truncatus* (Horn) one of the insect pests accidently introduced into Africa now poses a serious threat to food security in Africa. Ayertey (2002) reported total destruction of stored maize by *P*. *truncatus* in particular cob stored maize and cassava, which the insect can reduce to powder in few months. The major constraint to stored maize worldwide is the maize weevil, *Sitophilus zeamais* Motschulsky (Ofuya and Lale, 2001; Zakka, 2012; Nwosu, 2018). According to Adedire (2001), the larval stage is the most destructive stage of the insect. *Sitophilus zeamais* is the principal post-harvest insect pest of maize and infestation commences in the field as soon as the maize cobs begun to turn yellow (Haines, 1991; Zakka *et al*., 2015). Both adult weevils and larvae feed on undamaged grains and frequently cause severe powdering and tainting, caking and mouldy infestation which thus reduce their market values, rendering the product unfit for human consumption (Adedire, 2001; Ofuya *et al*., 2008). Enobakhare and Law-Ogbomo (2002) reported that partially damaged maize manifest loss in weight, poor marketability, quality deterioration and low viability. Obeng-Ofori (2008) and Zakka (2012) stated that the grain weevils are capable of establishing themselves on whole undamaged cereals (as primary pest) and infested grains are perforated thus, allowing entry of secondary insect pests such as *Tribolium casteneum* which accentuate damage. Infestation by *S*. *zeamais* often commences in the field before harvest (Lale, 2002) and brought to stores with the harvested maize (Semple *et al*., 1992). Several works have shown the degree of infestation posed by *Callosobruchus maculatus* to stored legume in the tropics (Ofuya, 2001; Lale, 2002). These huge losses aggravate food insecurity status in Africa and increase hunger in the continent. *Callosobruchus maculatus* is a principal pest of stored cowpea seeds (Ofuya, 2001) and is capable of infesting intact seeds in which immature stages develop. Substantial quantitative and qualitative losses in cowpea due to bruchid infestations have been reported and the major challenge facing farmers, traders and household consumers is post-harvest losses associated with arthropod pests, causing varying degree of hunger and entomologists have the capacity to solve this problem through research and innovation, pest control and extension services and active involvement in agriculture, especially precision farming.

CONCLUSION

The major threats to attaining food security in order to prevent hunger are insect pests. Other factors of importance include climate change (which leads to drought and/or flood), disease epidemic, corruption in governance and internal and external crises such as insurgency. These factors have bad effects on agricultural production and on the economy of a country, ultimately causing hunger in the world. When a country suffers hunger, other countries may be affected because international economic relationships exist between countries of the world. To enhance food security and mitigate hunger prevalent in certain parts of the world, entomologists have developed strategists to control insect pests by applying a combination of methods already highlighted by Ayertey (2002), Okwakpam (2007), Umeozor (2009), Lale (2010) and Ajayi (2015). Such useful entomological strategies include quarantine or regulatory measures, cultural techniques, physical and mechanical measures, biotechnical control (to cover use of plant resistance and insecticidal plants), synthetic chemical and plant materials especially in stored products management, modified storage structures such as hermetic storage (i.e. anaerobic technique), use of insect attractants and repellents, genetic techniques (such as sterile insect technique, translocation, conditional lethal genes, compound chromosomes), use of pheromones (i.e. semiochemicals), biological techniques (use of natural enemies) and integrated pest management (IPM) techniques. To effectively fight hunger in the world, entomologists must intensify research in all aspects of agriculture which shall culminate in

successful control of insect pests and development of new technologies in order to increase food availability. Current data on global hunger index showed that hunger and under-nutrition have declined over a long term. However, despite these improvements, certain factors including deep and persistent inequalities globally work against efforts to eliminate hunger and under-nutrition. To see a world without hunger by 2030, the task has to be undertaken holistically. In other words, governments, citizens, civil society organizations and the private sector must collaborate to invest, innovate and create lasting remedy for hunger. The eradication of hunger is an incontrovertible necessity because if unmanaged, it has the capacity to slow progress in many others areas of development such as education and employment.

Funding: The work received no specific financial support.
Competing Interests: The authors declare that they have no competing interests.
Contributors/Acknowledgement: The two authors contributed equally to the work.

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