

**Short communication**

**A TAKE-HOME MESSAGE  
"FALL ARMYWORM MANAGEMENT IN ASIA AND THE PACIFIC REGION"**

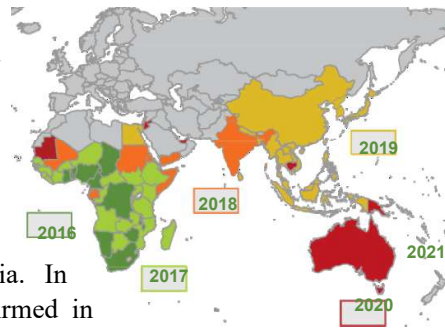
**Y.D. GC<sup>1\*</sup>**

**INTRODUCTION**

Fall armyworm (FAW) is an insect pest that feeds mainly on maize and also on more than 80 crops, including sorghum, millet, sugarcane, vegetable crops, and cotton (Prasanna *et al.*, 2018). It is a transboundary pest, which can fly over 100 km in a single night (CABI, 2019) and has a high reproductive rate of more than 1,000 eggs per female in its life time. The larval stage is the most devastating period with drastic yield loss, resulting in adverse impacts on the overall economy.

**DISTRIBUTION**

Native to the Americas, FAW was first detected in the West and Central Africa in early 2016 (Goergen *et al.*, 2016). Within two years, the pest rapidly spread to the southern hemisphere and was reported in more than 70 countries in Africa, Asia and The Pacific, as well as the Near East. It reached India and Bangladesh in July 2018, after which it spread quickly in Asia. In October 2019, the presence of FAW was confirmed in most Asian countries, including, China, Indonesia, India, Japan, Laos PDR, Malaysia, Myanmar, Nepal, South Korea, Sri Lanka, Viet Nam, Cambodia, and the Philippines (FAO, 2019). In Nepal, it was identified in Nawalparasi at Gaidakot associated with maize (Bajracharya *et al.*, 2019). In early 2020, it was confirmed in Australia, Timor Leste and Papua New Guinea. Most recently, in August 2021, FAW reached the Solomon Islands - the doorstep of the Pacific (IPPC, 2021) which was more than 15,000 km from the regions of the Americas where the pest was native, posing a serious threat and risks for farmer's livelihoods and environmental health in other Pacific islands.



**Challenges**

This pest has now become endemic in the region including Nepal. It can cause considerable yield losses in maize and other key staple cereal crops, threatening food security and the livelihoods of hundreds of millions of smallholder farmers and consumers. In Nepal,

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maize is the second most important crop which is important for food and animal feed could pose significant impacts on food and livelihood security the pest causes damage in both quantity and quality. In the Asia Pacific region, the damage is at various levels. It is negligible in Japan and the Republic of Korea, low and medium (5-40%) in Nepal, Philippines, Thailand, and significantly higher (40-60%) in Viet Nam and Cambodia, depending on the season. With maize being the important food and feed crop, the damage caused by FAW has a direct impact on national economies, leading to global food insecurity, malnutrition, and poverty among smallholder farmers. Another major problem associated with FAW infestation is the increased use of hazardous pesticides. Major challenges faced by countries in mitigating FAW damage include, among others, inadequate coordination, ineffective monitoring and control techniques, lack of alternatives to chemical pesticides and ineffective phytosanitary measures and low capacity to deal with the pest at the national level. Strong emphasis should be placed on limiting the pest dispersal and control rather than eradication.

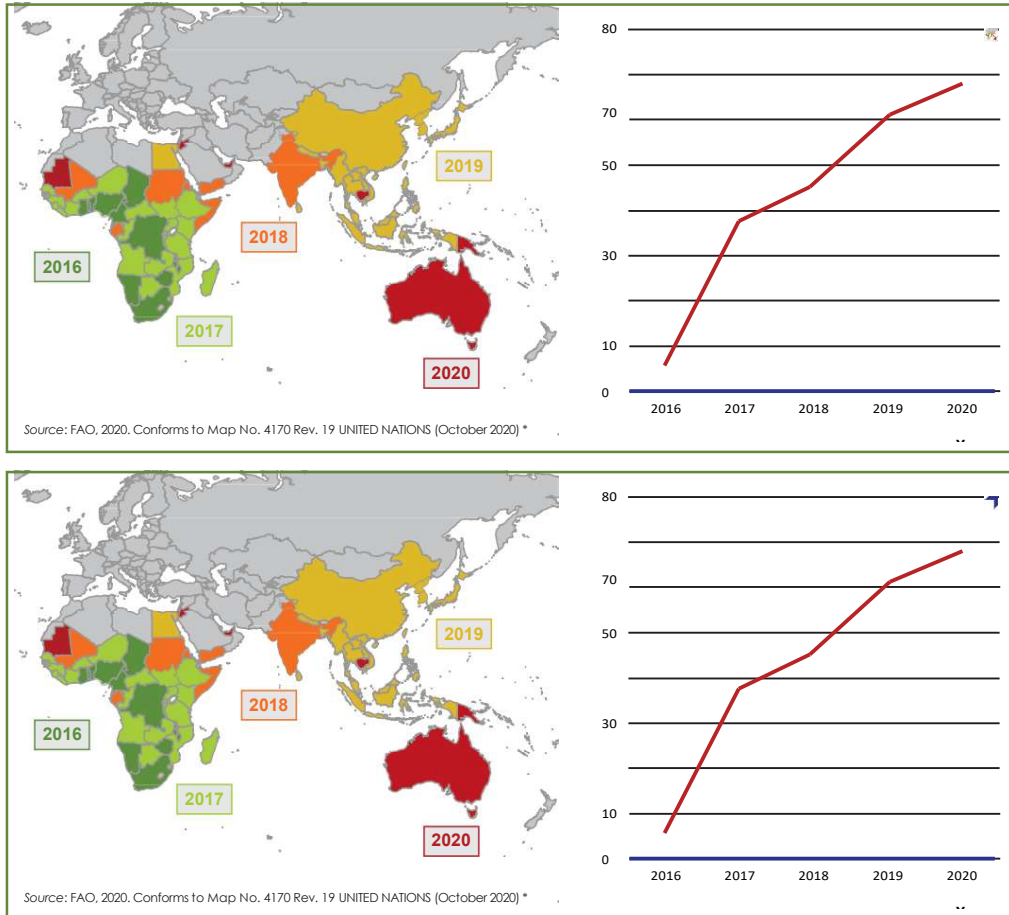
### **Key actions**

As a robust response to FAW's rapid spread, FAO launched its three-year Global Action on FAW Control (2020-2022) in December 2019, aiming at promoting FAW control at global, regional, and national levels. In the Asia and Pacific region, FAO-RAP organized an international conference in Bangkok, Thailand, in March 2019 and brought together relevant scientists and practitioners to share their knowledge and experiences and help the region prepare for the continued spread of FAW in Asia. In early August 2020, ASEAN approved a FAW action plan. In this connection, chaired by Assistant Director-General of FAO-RAP, a regional steering group consisting of 32 FAO member countries was established in June 2020. The team was composed of National Focal Points nominated by the governments concerned, and representatives from the region. It focused on building capacities of the National Plant Protection Organizations (NPPOs). FAO-RAP also supported emergency and technical cooperation projects in the countries concerned. In addition, FAO-RAP supported Technical Cooperation Programmes (TCPs) in China, Lao PDR, Pakistan, Viet Nam, and Indonesia in Asia as well as the Solomon Islands, Fiji, and Vanuatu in the Pacific in the areas of both programme formulation and implementation. In Nepal, there is National FAW Steering Committee under the joint secretary of the Government of Nepal. Capacity building on the Monitoring and Early Warning using (FAMEWS), biological control activities and field level management were some of the key interventions in Nepal.

### **Current situation**

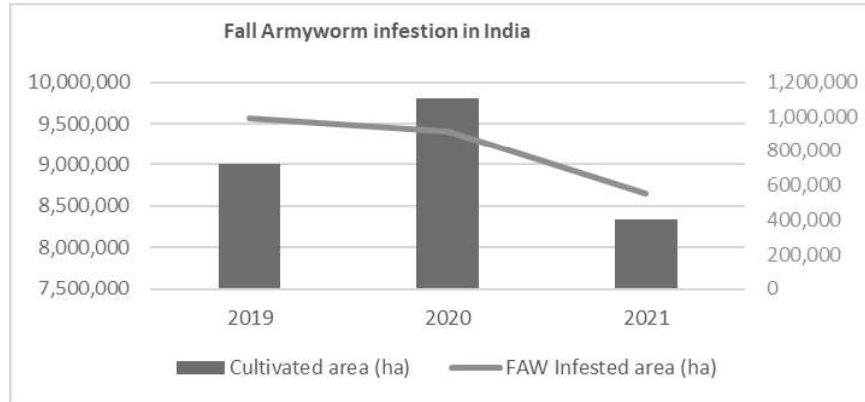
During the period from 2019 to 2021, FAW was controlled and managed with crop losses caused by the pest significantly reduced in several countries in Asia and the Pacific, including, Bangladesh, Cambodia, China, India, Indonesia, Lao PDR, Nepal, Pakistan, the Philippines, Papua New Guinea, Sri Lanka, Thailand, Timor Leste and Viet Nam. The

achievements could be attributable to FAO's three-year Global Action on FAW Control (2020-2022) and also other related programmes supported by FAO.

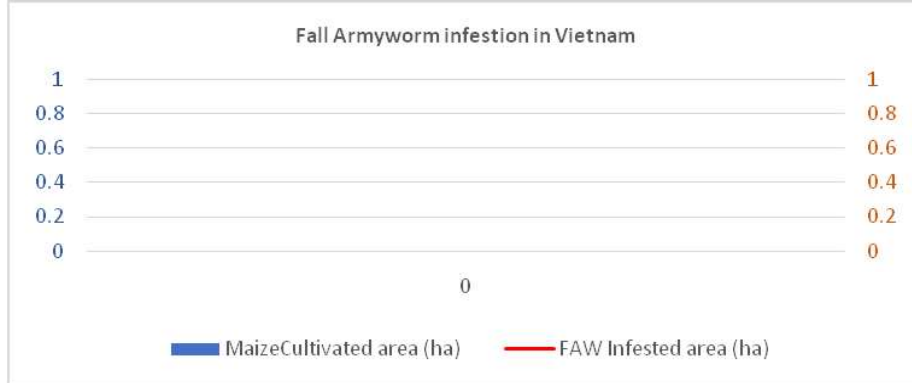


Radical, direct and coordinated measures have been implemented to strengthen prevention and pest control capacities, making use of multiple mechanisms which are already available (such as the Farmer Field Schools, partnerships with research institutions and the private sector, and National Plant Protection Organizations), apart from the establishment of national FAW task forces in the region. Emphasis has been placed not only on prevention but also on discouraging the use of highly hazardous chemical pesticides. Moreover, the focus has been given to raising pest awareness, developing and increasing capacities, enhancing preparedness, use of FAW Monitoring and Early Warning Systems (FAMEWS), and encouraging the use of biopesticide, biocontrol and natural enemies to control the pest. Noteworthy achievement is the institutionalization of the programmes in the government systems through the establishment of National Task Forces (NTFs). These bodies are providing oversight for the development of action plans and the implementation of various

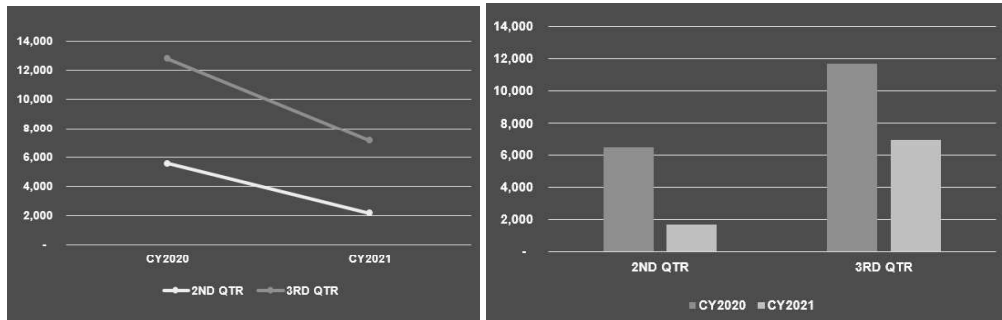
IPM programmes in the countries. Among others, improvements in the functional capacity of the working staff and farmers through the implementation of IPM programmes and programmatic interventions are the keys to success. Importantly, one of the effective key actions taken is the know-how transfer to the Global Action on FAW control programme's 15 piloting countries from the demonstrating countries (including China, India and the Philippines) which have successful experiences in managing and controlling the pest.



**Fig. 1.** Reduction in the losses in maize crops in India  
(Source: Country report FAO Global Action (GA) for FAW Control Annual meeting in Asia and NENA regions, 13 December 2021)



**Fig. 2.** Reduction in the losses in maize crops in Viet Nam  
(Source: Country report FAO Global Action (GA) for FAW Control Annual meeting in Asia and NENA regions, 13 December 2021)



**Fig. 3.** Dynamics of the FAW-Infested Areas in the Philippines

FAW area infestations in 2<sup>nd</sup> & 3<sup>rd</sup> Quarter CY 2021 decreased by 70% & 44% from CY 2020 levels, respectively. The reduction in FAW- infested areas could be due to the presence of natural enemies of FAW. The Covid-19 quarantine regulations could have also restricted field monitoring of FAW.

About 91-93% of FAW infested areas were treated with subsidized pesticides registered for FAW control. Some farmers were reportedly using pesticides registered for local armyworms and other corn pests, due to availability and considerably lower costs.

### **Trend and the way forward**

It is expected that the mechanisms put in place by FAO through the global actions will catalyze its member countries in Asia and the Pacific to continue their efforts to contain the spread of FAW effectively and reduce the damage caused by the pest to an acceptable level. It is also expected that the Integrated Pest Management (IPM) packages that are being developed will be implemented soon, leading to sustainable management and control of the pest. The networks which FAO has helped establish at national, regional and global levels will also play an instrumental role in fostering closer collaboration in fighting against the pest's future infestations. In this connection, member countries need to incorporate the following: (i) assessment of preferred crop varieties for resistance or tolerance to FAW; (ii) use of biopesticides, inoculative and inundative biological control; and (iii) continuous support in the implementation of phytosanitary and biosecurity measures backed by the conducive policy environment. As an important by-product, the established mechanisms and networks, the preparedness as well as the enhanced capacities could also be used for dealing with future transboundary pests, although they are not one-size-fits-all solutions. Looking into some of the earlier achievements in these three demonstration countries, Nepal can put more effort in future taking, where some good foundations have already been there.

IPM would be sustainable means of controlling Fall armyworm including with cultural, mechanical, physical, biological control measures, where the emphasis on chemical pesticides should be placed as a last resort, when other control measures are ineffective. The chemical pesticides may solve the first generation problem however, for the use of Nature

Based Solutions (NBS) with increasing emphasis of eco-friendly control measures needs to be rolled out as a sustainable control measures. Nepal has ample opportunities of utilising nature friendly technologies yet.

#### **LITERATURE CITED**

- Bajracharya, A.S.R., B. Bhat, P. Sharma, P.R. Shashank, N.M. Meshram and T.R. Hasmi. 2019. First record of Fall Armyworm, *Spodoptera frugiperda* (J.E. Smith) from Nepal. Indian J. Entomol. 81(4):635-639.
- CABI. 2019. *Spodoptera frugiperda* (fall armyworm). CABI.
- FAO. 2019. FAW Briefing Note July 2019. Rome, Italy: FAO
- Goergen, G., P.L. Kumar, S.B. Sankung, A. Togola and M. Tamò. 2016. First report of outbreaks of the fall armyworm *Spodoptera frugiperda* (J E Smith) (Lepidoptera, Noctuidae), a new alien invasive pest in West and Central Africa. PLoS ONE, 11(10), e0165632. <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0165632>. doi: 10.1371/journal.pone.0165632
- IPPC. 2021. <https://www.ippc.int/en/countries/solomon-islands/pestreports/2021/10/spodoptera-frugiperda-fall-armyworm-detections-solomon-islands/>
- Prasanna B.M., J.E. Huesing, R. Eddy and V.M. Peschke (eds.). 2018. Fall armyworm in Africa: A guide for integrated pest management, First Edition. Mexico, CDMX: CIMMYT. 108 pp.