FIELD NOTE

Simultaneous occurrence of white grubs of different ages in *kharif* groundnut from Saurashtra region of Gujarat

Nataraja Maheshala, Harish G, Ananth Kurella, Kiran Kumar Reddy and SD Savaliya

A team of scientists from ICAR-Directorate of Groundnut Research, Junagadh surveyed groundnut fields in Saurashtra region of Gujarat, known as 'groundnut bowl of India'. Survey was aimed at understanding and reporting of crop health including the infestation levels of insect-pest and diseases; soil health and impacts of monsoon rains; socio-economic issues of groundnut farmers and get feedback on improved technologies and varieties. Such surveys were regularly conducted during the crop growing seasons namely, Kharif and rabi-summer. One such survey was conducted during the Kharif season (mid-August, 2022) in Amreli, Gir-Somnath, Junagadh, Porbandar and Rajkot districts of Saurashtra. In these districts, due to excess cumulative rainfall (4199.1 mm) received between June to August, as against the normal cumulative rainfall (2932.7 mm), excessive vegetative growth of crop was observed (Anon., 2022). The major soil-type in the surveyed areas of Saurashtra was fine textured, black clayey soils. Water logging in the field for longer durations resulted in reduced root nodulation and yellowing of foliage. Groundnut crop was around 70 days old and the varieties sown were Girnar-4, GJG 22, GG-9, GG-20, TG-37A, TG-39 and KDG-128.

Survey conducted by Chudasama et al. (2019) identified 23 species of white grubs from light traps collections made from groundnut crop in Junagadh, Gujarat. Soil-inhabiting white grub infestation ranged from 15-100% across the surveyed groundnut fields. The lowest incidence (15%) was observed in Naredi village of Vanthali taluka and Choki Sorath village of Junagadh taluka in Junagadh district; and Thepda village of Kutiyana taluka in Porbandar district. The highest incidence (100%) was noted from Chiroda village of Mendrada taluka in Junagadh district. Nataraja and Jasrotia (2014) reported white grub incidence causing 20-80% damage to groundnut in talukas namely, Porbandar, Ranavav, Jetpur, Kutiyana, Maliya Hatina, Keshod, Visavadar, Mendarada and Dhari of Saurashtra region. An unusual observation that caught scientists' eyes during the survey

Figure 1: White grubs of different age groups infesting same plant. (**Inset:** White grubs infested groundnut crop).

was simultaneous occurrence of different age groups white grubs infesting the same groundnut plant (Figure 1). White grubs were in 2nd to 4th larval instar. This might be due to continuous rains affecting the synchronous adult emergence and oviposition or due to the occurrence of different species of white grubs at the same location. Dashad et al. (2008) reported positive correlation (r=0.69 and 0.76, respectively) between rainfall and the adult emergence patterns of *Holotrichia consanguinea* and *H. serrata*. Earlier reports identified groundnut infesting white grub species, *Phyllognathus dionysius*, *Apogonia rauca*, *H. consanguinea*, *H. serrata*, *H. fissa*, *Adoretus bicolor*, *A. deccanus*, *A. versutus*, *Anomala bengalensis*, *A. dorsalis* and *A. varicolor* (Dashad and Chauhan, 2011; Kapadia et al., 2006).

It was noted that farmers were aware of white grub incidence and nature of damage it causes in groundnut however; they were unaware of life cycle of white grubs as well as management options. Kapadia et al. (2006) reported that *A. rauca* grub and pupal stages lasted for 60-75 and 7-10 days, respectively on groundnut in Saurashtra. While interacting with farmers, scientists have

learned about new host plants of adult beetles, papaya (*Carica papaya* L.; Caricaceae), pomegranate (*Punica granatum* L.; Punicaceae), and white gulmohar/sandeshra (*Delonix elata* (L.); Fabaceae), although this warrants further investigation. Earlier reports noted gulmohar (*Delonix regia* Raf.) as host of *H. serrata* (F.) adults (David and Ananthanarayana, 1974) and pomegranate as host of *H. insularis* Brenske adults (Avasthy, 1967).The other major hosts of white grub adults in the region were, mango, guava, tamarind, citrus, jamun, sapota, arjuna, jajube, neem, cluster fig, sacred fig, flame of the forest, golden shower, gum arabic, babool, etc. (Nandagopal, 2004).

Identification of white grub species, abiotic factors influencing adult emergence, and host plants for adult congregation, play significant roles in the effective community level integrated pest management of white grubs. This survey sheds light on the need for such studies.

REFERENCES:

Anonymous. 2022. https://mausam.imd.gov.in/ahmedabad/mcdata/rain_cum.pdf accessed on August 29, 2022.

Avasthy P N. 1967. The problem of white grubs of sugarcane in India. Proceedings of International Society of Sugarcane Technologist 12: 1321-1333.

Chudasama K A, Kabaria B B, Kaneria P B, Acharya M F and Variya M V. 2019. Occurrence of white grubs species associated with groundnut growing area of Junagadh district, part of South Saurashtra Region in Gujarat, India. Journal of Entomology and Zoology Studies 7: 1182-1184.

David B V and Ananthanarayana K. 1974. Some aspects of the biology of white grub, *Holotrichia serrate* F., in sugarcane in South India. Whitegrub Newsletter 1: 14-15.

Dashad S S and Chauhan R. 2011. Studies on the emergence pattern of different white grub species at Bawal, Haryana, India. Crop Research (Hisar) 42: 336-339.

Dashad S S, Chauhan R and Choudhary O P. 2008. Emergence of different species of white grub beetles in relation to abiotic factors based on light trap catches. Research on Crops 9: 688-691.

Kapadia M N, Butani P G and Beria N N. 2006. White grub species attacking groundnut in the Saurashtra Region in

Gujarat, India. International Arachis Newsletter 26: 28-29.

Nandagopal V. 2004. Insect-pest of economic importance and their management in groundnut. Groundnut Research in India, pp.427-468. National Research Center for Groundnut, Junagadh.

Nataraja M V and Poonam Jasrotia. 2014. White grub menace reported in *Kharif* groundnut of Saurashtra. ICAR-DGR Newsletter 13(3-4): 2.

AUTHORS

Nataraja Maheshala * (corresponding author), Harish G, Ananth Kurella, Kiran Kumar Reddy and SD Savaliya
ICAR-Directorate of Groundnut Research, Junagadh, 362 001, Gujarat, India
E-mail: natarajatan@gmail.com