Report of Monitoring, Early Warning and Assessment of Desert Locust

[2025] NO.08 Total 71
August 2025

Aerospace Information Research Institute, Chinese Academy of Sciences
State Key Laboratory of Remote Sensing and Digital Earth
The International Research Center of Big Data for Sustainable Development Goals (CBAS)
Key Laboratory of National Forestry and Grassland Administration on Forest and Grassland Pest Monitoring and Warning
National Engineering Research Center for Agro-Ecological Big Data Analysis & Application
China Biodiversity Conservation and Green Development Foundation
Sino-UK Crop Pest and Disease Forecasting & Management Joint Laboratory
Key Lab of Aviation Plant Protection, Ministry of Agriculture and Rural Affairs, P.R. China

Desert Locust Monitoring and Loss Assessment in Egypt, Saudi Arabia and Pakistan (July 2025)

Integrated with multi-source Earth Observation data, e.g. meteorological data, field data, and remote sensing data (such as MODIS in the US, etc), and self-developed models and algorithms for Desert Locust monitoring and forecasting, the research team constructed the 'Vegetation pests and diseases monitoring and forecasting system', which could regularly release thematical maps and reports on Desert Locust.

The remote sensing monitoring results showed that, in July 2025, desert locusts were primarily distributed in the western desert and the central Nile Valley of Egypt, the inland regions from southern to northern Saudi Arabia, and the eastern plains and the southeastern desert fringe of Pakistan, affecting 17.1, 16.2, and 14.4 thousand hectares of vegetation, respectively. Over the next two months, most parts of Egypt are expected to remain dry with little rainfall, leading to continued population decline and gradual southward migration toward Sudan, with only scattered activity in irrigated oases. In Saudi Arabia, limited rainfall in the northern and central inland regions will constrain breeding, with only small-scale activity possible along the southern Red Sea coast. In Pakistan, the India–Pakistan desert belt is expected to maintain small-scale summer breeding under the monsoon influence, yet no significant development is anticipated. As this period coincides with the major growing and harvest season for food crops in Egypt and Pakistan, and the primary planting and growing season for food crops in Saudi Arabia, continued monitoring is essential to prevent recurrent losses in agricultural and pastoral production. The specific results are as follows:

■ 1. Desert Locust Monitoring and Loss Assessment in Egypt

In July 2025, most parts of Egypt received little rainfall and vegetation along the Red Sea coast tended to dry, creating generally unfavorable conditions for reproduction. Locust activity was largely confined to irrigated areas in the western desert and along the central Nile Valley; a few small gregarious groups and scattered adults were observed in localized areas, but overall distribution remained at low density. Monitoring results showed that, in July, desert locusts affected 17.1 thousand hectares of vegetation in Egypt, including 7.7 thousand hectares of cropland, 5.8 thousand hectares of grassland, and 3.6 thousand hectares of shrubland (Figure 1), accounting for 0.21%, 0.42%, and 0.45% of the country's total cropland, grassland, and shrubland areas, respectively. New Valley Governorate recorded the most extensive damage, with 6.4 thousand hectares of affected vegetation, followed by Qina with 5.5 thousand hectares; Aswan and Suhaj were also affected, with 3.3 and 1.9 thousand hectares, respectively.

Fig.1 Monitoring of Desert Locust damage in Egypt (July 2025)

■ 2. Desert Locust Monitoring and Loss Assessment in Saudi Arabia

In July 2025, inland regions from the south to the north of Saudi Arabia received little rainfall and remained dry, creating unfavorable conditions for oviposition and reproduction. Locust activity exhibited a patchy pattern at low density, mainly confined to the central interior with localized extension into surrounding inland areas. Monitoring results showed that, in July, desert locusts affected 16.2 thousand hectares of vegetation in Saudi Arabia, including 4.2 thousand hectares of cropland, 6.6 thousand hectares of grassland, and 5.4 thousand hectares of shrubland (Figure 2), accounting for 1.92%, 0.33%, and 0.13% of the country's total cropland, grassland, and shrubland areas, respectively. Riyadh recorded the most

extensive damage, with 8.2 thousand hectares of affected vegetation, followed by Al Quassim with 5.3 thousand hectares. Ha'il was also affected, with 2.7 thousand hectares of vegetation damage.

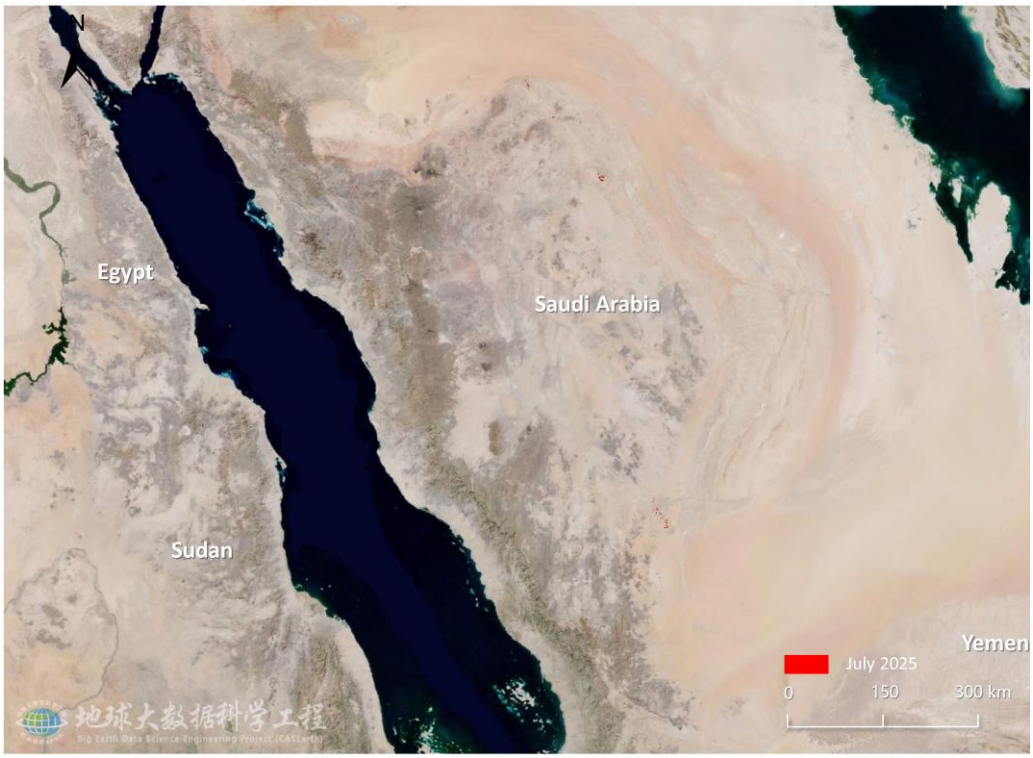

Fig.2 Monitoring of Desert Locust damage in Saudi Arabia (July 2025)

■ 3. Desert Locust Monitoring and Loss Assessment in Pakistan

In July 2025, monsoon rainfall led to partial greening in Pakistan's eastern plains and along the southeastern desert fringe, but the limited environmental carrying capacity restricted large-scale expansion. Locust activity was sporadic and intermittent, mainly along the India–Pakistan border near the Cholistan area. Monitoring results showed that, in July, desert locusts affected 14.4 thousand hectares of vegetation in Pakistan, including 6.0 thousand hectares of cropland, 4.6 thousand hectares of grassland, and 3.8 thousand hectares of shrubland (Figure 3), accounting for 0.09‰, 0.08‰, and 0.10‰ of the country's total cropland, grassland, and shrubland areas, respectively. Punjab recorded the most extensive damage, with 10.1 thousand hectares of affected vegetation, followed by Sindh with 4.3 thousand hectares.

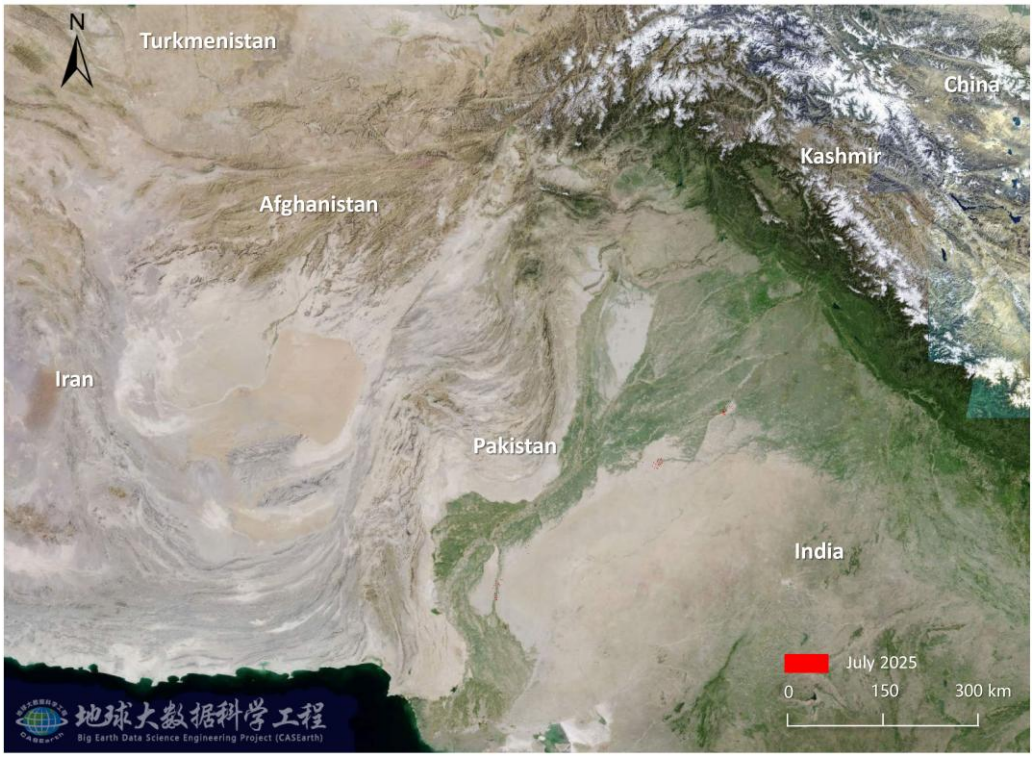

Fig.3 Monitoring of Desert Locust damage in Pakistan (July 2025)

The analysis indicates that over the next two months, most parts of Egypt are expected to remain dry with little rainfall, leading to continued population decline and gradual southward migration toward Sudan, with only scattered activity in irrigated oases. In Saudi Arabia, limited rainfall in the northern and central inland regions will constrain breeding, with only small-scale activity possible along the southern Red Sea coast. In Pakistan, the India–Pakistan desert belt is expected to maintain small-scale summer breeding under the monsoon influence, yet no significant development is anticipated. In addition, during monsoon breaks coupled with local wind-field transitions, small groups of adult locusts are expected to undertake westward return migration along the Balochistan–Sindh corridor, which will pose no incursion risk to China. Continuous monitoring of desert locust dynamics in Egypt, Saudi Arabia and Pakistan is essential to prevent repeated losses in crop growth and agricultural production.

·NO. 20250308071

This report was released by Professor Wenjiang Huang's and Associate Professor Yingying Dong's research team in Aerospace Information Research Institute, Chinese Academy of Sciences.

Chinese Contributors

Wenjiang Huang, Yingying Dong, Biyao Zhang, Linyi Liu, Kun Wang, Quanjun Jiao, Xiangmei Qin, Gang Sun, Yanli Zhang, Jingcheng Zhang, Yantao Zhou, Linsheng Huang, Longlong Zhao, Anting Guo, Xueling Li, Yanru Huang, Hansu Zhang, Binxiang Qian, Zhuoqing Hao, Jing Guo, Rui Hou, Mingxian Zhao, Kehui Ren, Xiangzhe Cheng, Bohai Hu, Minghao Wang, Yan Zhang, Xuanli He, Chao Ruan, Huiqin Ma, Yue Shi, Naichen Xing, Qiong Zheng, Xiaoping Du, Huichun Ye, Bei Cui, Huifang Wang, Yu Ren, Chao Ding, Ruiqi Sun, Yingxin Xiao, Weiping Kong, Juhua Luo, Jinling Zhao, Dongyan Zhang, Xiaodong Yang, Yanhua Meng, Yue Liu, Wei Feng, Xianfeng Zhou

Foreign Contributors

Belinda Luke, Bethan Perkins, Qiaoyun Xie, Yue Shi, Bryony Taylor, Hongmei Li, Wenhua Chen, Pablo Gonzalez Moreno, Sarah Thomas, Timothy Holmes, Stefano Pignatti, Giovanni Laneve, Raffaele Casa, Simone Pascucci, Martin Wooster, Jason Chapman.

Advisory Experts

Bing Zhang, Gensuo Jia, Jihua Wang, Qiming Qin, Puyun Yang, Guofei Fang, Shouquan Chai, Yuying Jiang, Jingquan Zhu, Jinfeng Zhou, Dongmei Yan, Xiangtao Fan, Jianhui Li, Tianhua Hong,Yubin Lan, Jingfeng Huang, Huo Wang, Anhong Guo, Zhanhong Ma, Yilin Zhou, Xiongbing Tu, Wenbin Wu, Feng Zhang, Zhiguo Wang, Lifang Wu, Dong Liang, Stefano Pignatti , Giovanni Laneve , Liangxiu Han, Yanbo Huang, Chenghai Yang, Jiali Shang, Jadu Dash, Hugh Mortimer、Jon Styles、Andy Shaw.

Funding Information

National Key Research and Development Program of China (2023YFB3906203 and 2021YFE0194800), National Natural Science Foundation of China (42071320, 42071423 and 32271986), Alliance of International Science Organizations (ANSO-CR-KP-2021-06), GEO Community Activities "Global Crop Pest and Disease Habitat Monitoring and Risk Forecasting", etc.

Citation

Report of Monitoring, Early Warning and Assessment of Desert Locust, (2025). *Desert Locust Monitoring and Loss Assessment in Egypt, Saudi Arabia and Pakistan.* Beijing, China: RSCROP.

Disclaimer

This report is a product of the Vegetation Remote Sensing & Pest and Disease Application Research Team of the Aerospace Information Research Institute, Chinese Academy of Sciences. The analyses and conclusions in the report do not represent the views of the Chinese Academy of Sciences or the Aerospace Information Research Institute. Users can legally quote the data in this report and indicate the source. However, any judgments, inferences or opinions made based on the report do not represent the views of the Team. The data published in this report are for reference only. The Team does not bear any legal responsibility arising from the use of the report. Official Chinese boundaries are used in the report.

Contact Us

Tel: +86-010-82178178 Fax: 010-82178177 Email: rscrop@aircas.ac.cn
Address: No.9 Dengzhuang South Road, Haidian District, Beijing 100094, China
Websites: http://www.rscrop.com / http://desertlocust.rscrop.com Post Code: 100094