



Report of Monitoring, Early Warning and Assessment of Desert Locust

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Desert Locust Monitoring and Loss Assessment in Somalia, Saudi Arabia and Yemen (October 2024)

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 October 2024, desert locusts were primarily distributed in the northwestern regions of Somalia and along the northern coastal areas of the Gulf of Aden, the central and southern coastal areas of the Red Sea in Saudi Arabia, and the western inland and coastal areas of Yemen. These areas experienced significant threats to vegetation, impacting 16.5 thousand hectares, 18.3 thousand hectares, and 29.0 thousand hectares, respectively. It is anticipated that, over the next two months, rainfall in the Gulf of Aden coastal areas will increase, promoting healthy vegetation growth and creating favorable conditions for desert locust survival and reproduction. As a result, locust numbers in the northern coastal areas of Somalia are expected to increase slightly. In contrast, decreased rainfall in the inland regions of Saudi Arabia and Yemen will lead to drier vegetation, creating conditions unsuitable for locust survival and reproduction. Consequently, locusts in these inland areas will migrate towards the Red Sea coastal areas, where locust numbers are expected to rise further. This period marks the main planting and growing season for food crops in Somalia and Saudi Arabia, and the peak harvest season for food crops in Yemen. Therefore, continuous monitoring of desert locust dynamics is essential to prevent recurrent losses in agricultural and pastoral production. The specific research results are as

follows.

■ 1. Desert Locust Monitoring and Loss Assessment in Somalia

In October 2024, increased rainfall in the northwestern regions of Somalia and along the northern coastal areas of the Gulf of Aden provided favorable conditions for desert locusts to lay eggs and reproduce, resulting in a rise in their population. Monitoring results indicated that in October, desert locusts affected 16.5 thousand hectares of vegetation in Somalia, including 5.9 thousand hectares of grassland and 10.6 thousand hectares of shrubland (Figure 1), accounting for 0.02% and 0.05% of the total areas of grassland and shrubland, respectively. Compared to September, an additional 2.7 thousand hectares of vegetation were affected, including 1.5 thousand hectares of grassland and 1.2 thousand hectares of shrubland. The Awdal region experienced the most extensive damage, with 6.9 thousand hectares affected, followed by the North-West region, with 4.2 thousand hectares impacted. The Sanaag and Togdheer regions were also affected, with 3.6 thousand hectares and 1.8 thousand hectares of vegetation impacted, respectively.

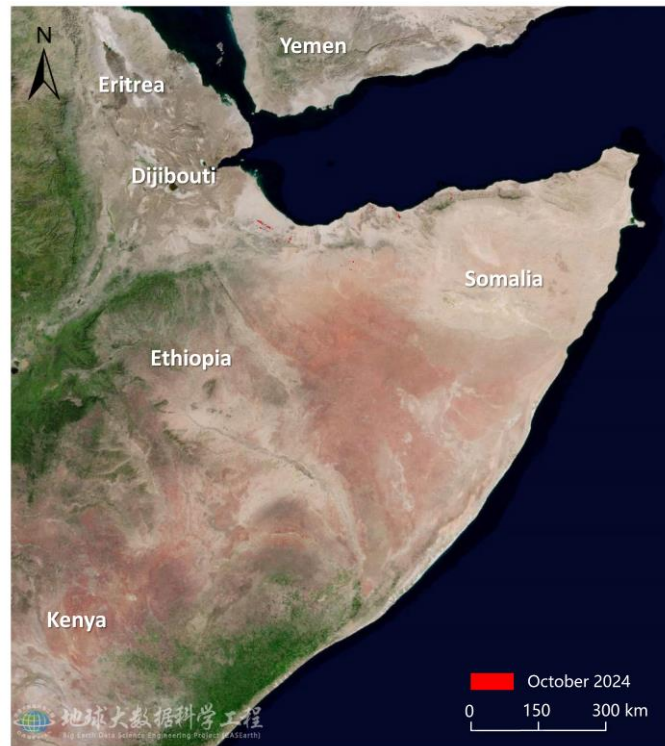


Fig.1 Monitoring of Desert Locust damage in Somalia (October 2024)

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

In October 2024, abundant rainfall along the central and southern coastal areas of the Red Sea in Saudi Arabia provided favorable conditions for desert locusts to lay eggs and reproduce, leading to an increase in their population. Monitoring results indicated that in October, desert locusts affected 18.3 thousand hectares of vegetation in Saudi Arabia, including 3.7 thousand hectares of farmland, 6.9 thousand hectares of grassland, and 7.7 thousand hectares of shrubland (Figure 2), accounting for 1.69%, 0.35%, and 0.19% of the total areas of farmland, grassland, and shrubland, respectively. Compared to September, an

additional 2.7 thousand hectares of vegetation were affected, including 0.8 thousand hectares of farmland, 1.1 thousand hectares of grassland, and 0.8 thousand hectares of shrubland. The Makkah region experienced the most extensive damage, with 9.3 thousand hectares affected, followed by the Jizan region, with 5.9 thousand hectares impacted. The Asir region was also affected, with 3.1 thousand hectares of vegetation impacted.

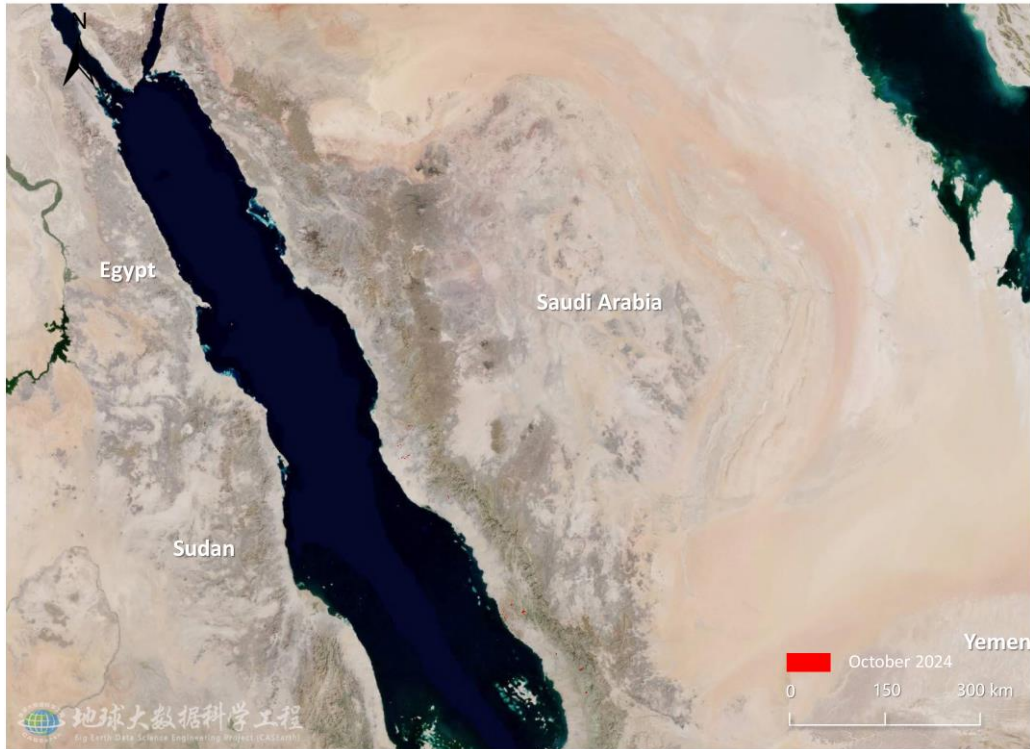


Fig.2 Monitoring of Desert Locust damage in Saudi Arabia (October 2024)

■ 3. Desert Locust Monitoring and Loss Assessment in Yemen

In October 2024, desert locusts were primarily distributed in the western inland and coastal regions of Yemen. Abundant rainfall along the Red Sea coastal areas and favorable vegetation growth provided conducive conditions for locust oviposition and reproduction. Monitoring results indicated that in October, desert locusts affected 29.0 thousand hectares of vegetation in Yemen, including 9.0 thousand hectares of cropland, 9.5 thousand hectares of grassland, and 10.5 thousand hectares of shrubland (Figure 3), accounting for 1.83%, 0.24%, and 0.19% of the total areas of cropland, grassland, and shrubland, respectively. Al Hudaydah province experienced the most significant impact, with 7.9 thousand hectares affected, followed by Ibb province, with 7.2 thousand hectares. The affected areas in Amrān, Raimah, San'ā, and Ta'izz provinces were 6.3 thousand hectares, 3.9 thousand hectares, 2.2 thousand hectares, and 1.5 thousand hectares, respectively.

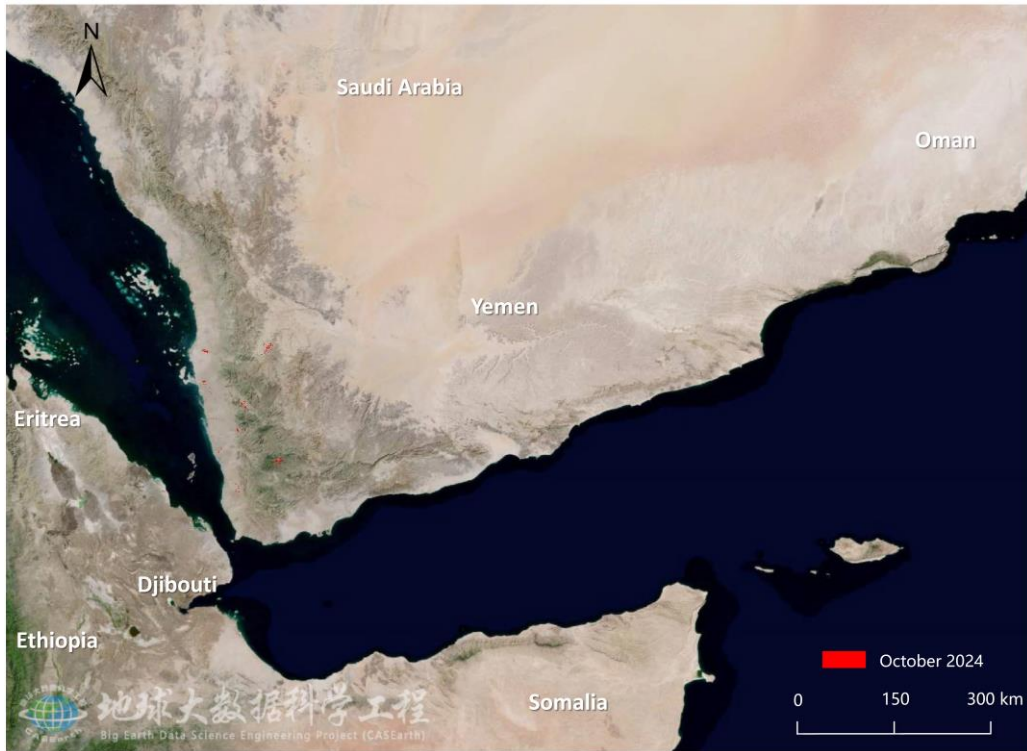


Fig.3 Monitoring of Desert Locust damage in Yemen (October 2024)

The comprehensive analysis suggests that, in the next two months, rainfall in the Gulf of Aden coastal areas will increase, promoting healthy vegetation growth and creating favorable conditions for desert locust survival and reproduction. As a result, locust numbers in the northern coastal areas of Somalia are expected to increase slightly. In contrast, decreased rainfall in the inland regions of Saudi Arabia and Yemen will lead to drier vegetation, creating conditions unsuitable for locust survival and reproduction. Consequently, locusts in these inland areas will migrate towards the Red Sea coastal areas, where locust numbers are expected to rise further. Continuous monitoring of desert locust dynamics in Eritrea, Saudi Arabia, and Yemen is essential to prevent repeated losses in crop growth and agricultural production.

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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.

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