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DESERT LOCUST CONTROL COMMITTEE

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Challenges of preventive control (Agenda Item 7)

Introduction

Preventive control is the strategy that has been adopted by locust-affected countries for management of the Desert Locust. The strategy requires that countries in the recession area maintain small permanent units to detect, monitor and control gregarizing and gregarious populations in order to prevent outbreaks, upsurges and plagues. Successful preventive control relies on (a) the ability to monitor rainfall, ecological conditions and locust populations effectively on a regular basis, (b) near real time dissemination of data, information, warnings and alerts, (c) accurate and timely early warning and prediction over time and space of the scale of locust breeding and migration, and the subsequent threat to other countries, and (d) the ability to rapidly mount and undertake effective control operations. From an operational standpoint, countries must be able to maintain a cadre of well-trained individuals and have sufficient resources on hand to support constant vigilance of the situation and undertake control operations against outbreaks and the initial stages of an upsurge. These activities should be coordinated within the framework of a well-financed national programme. Therefore, timely and coordinated inputs are required from national, regional and international sources.

For the uninitiated, preventive locust control is somewhat analogous to fighting forest fires albeit without considering migration. The goal is to detect the blaze (locust infestations) sufficiently early and put it out when it is still small (an outbreak), before it spreads and becomes a much larger, raging forest fire (a plague) that causes substantial destruction and costs large amounts of resources and funds to bring it under control.

This paper presents a few recent examples of outbreak preventive control (northern Somalia, Eritrea, Saudi Arabia, I.R. Iran and Mauritania) and upsurge preventive control (Yemen and Kenya) in different regions to illustrate the challenges of preventive control which is sometimes successful and sometimes less so. Much of the success depends on the sequence and duration of rainfall that is needed if an uncontrolled outbreak is to develop into an upsurge.

Northern Somalia (winter 2006 / spring 2007)

As a result of good rains and unusually favourable ecological conditions, small-scale breeding occurred during the winter of 2006 on the northwest coast within an area of about 120 km by 35 km. National teams did not carry out surveys in February 2007 but hopper bands and swarms were seen the following month. The infestations were not controlled because the national locust unit in Hargeisa did not have the capacity to undertake ground control operations and aerial operations could not be organized in time by DLCO-EA. As a result, the outbreak was not stopped and, when vegetation dried out, several swarms invaded Ethiopia and southern Yemen.

Eritrea (winter 2006 / spring 2007)

Good rains in the winter breeding areas along the Red Sea coast in northeast Eritrea, an area of about 200 km by 30 km, led to the development of small hopper bands by February 2007 and swarms in March. The ground control campaign commenced in December 2006 but was hampered by mined areas, insufficient resources, and inadequate communications and reporting between the field and Asmara and between Asmara and DLIS. Consequently, the outbreak spread to the adjacent coastal areas in Sudan during January. A combination of control operations that treated 65,000 ha by ground, supplemented by DLCO-EA aerial operations organized by FAO, adult migration and dry conditions brought the situation under control by May.

Saudi Arabia (spring 2007)

Local breeding commenced in October 2006 on the Red Sea coast and locust numbers gradually increased. A second generation of breeding occurred in January 2007. Although ground and aerial control teams treated nearly 58,000 ha, adults formed groups in March and a few swarms moved from the coast to the interior of Saudi Arabia and Yemen in April.

Yemen (summer 2007)

Unusually heavy rains fell in the interior of Yemen in March, April and May 2007 that caused ecological conditions to become favourable in a large and remote area rarely visited in the past because Yemeni teams thought it to be more of transit rather than a breeding zone. Several swarms invaded Yemen in March and April from outbreaks that were not controlled during the winter and spring in Saudi Arabia and northwest Somalia. Two generations of breeding occurred, giving rise to hopper bands and swarms from June to September.

The national authorities were not prepared adequately to combat the locust infestations. Within two weeks of confirming the seriousness of the situation, FAO had obtained USD 5 million from Japan and the UN to mount an aerial control campaign that started on 1 August. New mechanisms were employed for the campaign: WFP supplied logistical support and vehicles, the UN's Central Emergency Response Fund (CERF) provided funds, FAO recruited three locust experts, and Mauritania provided pesticides. Despite these efforts, the effectiveness of control operations (34,500 ha were treated) was hampered by difficult and remote terrain, insecurity, resistance from beekeepers, poorly organized teams, insufficient collaboration between locust officers and non-Arabic speaking FAO experts, ill equipped and unsuitable aircraft, and a lack of awareness and support by locals. For these reasons, some swarms could not be prevented from forming. As further rains did not occur and vegetation dried out, the swarms invaded the Horn of Africa and the eastern Arabian Peninsula in September.

Kenya (winter 2007)

Desert Locust swarms last invaded Kenya in 1961 towards the end of the 1950-63 plague. Nearly 50 years later, mature swarms from eastern Ethiopia (that had originated from summer breeding in Yemen) invaded northeast Kenya in November and December 2007. The swarms immediately

laid eggs that gave rise to hopper bands. A few immature swarms from autumn breeding in eastern Ethiopia invaded northeast Kenya in December. Apart from not having to face Desert Locust for so many decades, the country was already vulnerable due to a major drought during most of 2007 compounded by an unstable political situation. Nevertheless, there was strong support by the Government and national teams were immediately mobilized to the infested areas. DLCO-EA, which has aircraft permanently based in Nairobi, quickly provided experts for on-the-job training, undertook aerial surveys and control against the hopper bands, and assisted national teams with similar operations on the ground. Nearly 1,250 ha were sprayed and, as vegetation had dried out, the situation returned to normal in January.

I.R. Iran (spring 2008)

Undetected breeding that occurred in central Oman in early 2008 led to the formation of several swarms that quickly migrated in late February to Saudi Arabia, the United Arab Emirates and ultimately to southeast I.R. Iran. Ground teams were quickly mobilized in I.R. Iran but could not prevent the swarms from laying eggs. Numerous hopper groups and bands formed in March and April. A ground control campaign was mounted and treated nearly 35,000 ha from February to June. This effort prevented the adults from forming swarms that would have moved to the summer breeding areas along the Indo-Pakistan border at the time when farmers would have been planting.

Mauritania (winter 2008)

Local breeding occurred east of Nouakchott from September to December, causing locust numbers to increase but not reach the same levels as in 2003. Limited control operations were carried out against hopper groups in November. In early December, nomads reported a sharp increase in locust activity as vegetation dried out and late instar hoppers and young adults concentrated in the remaining green vegetation within an area of about 50 km by 40 km and formed numerous small patches and groups. Additional survey and control teams were immediately dispatched to the infested area, which was located between sand dunes and was difficult to access. Ground teams treated more than 14,000 ha in December and successfully prevented the formation of hopper bands and adult swarms and reduced the level of adult emigration from the infested area.

Current challenges

Several lessons can be drawn from the above examples that should be incorporated into the various programmes and activities of FAO, EMPRES and the regional locust commissions:

- Initial outbreaks occur locally within relatively small areas (1,000-6,000 km²) that can be difficult to detect and access
- If control operations had not been undertaken and if unusually good rains would have followed, the infestations and subsequent breeding and migration would have been on a much larger scale
- In some cases, it may not appear sensible to initiate control operations as no further rains fell and unfavourable conditions developed that did not allow locust survival or breeding; however, this is rarely known and difficult to predict at the time of an outbreak
- DLIS could benefit by having access to a synoptic meteorologist who could help assess the probability of additional rainfall and its impact on outbreaks and upsurges
- There is a need to balance the potential wastefulness and environmental effects of using broad spectrum pesticides to treat very small numbers of locusts with the risk that an outbreak could develop and lead to an upsurge
- Control is not always possible due to a lack of resources or insecurity. In such situations, precise forecasts play an even greater role in allowing neighboring countries to plan for potential invasions

- Local sources of information such as nomads are important and should be a part of every national information system but they are not a substitute for proactive field surveys by experienced teams
- Preventive control cannot be achieved without strong national support at all levels and a sufficient level of preparedness of national locust centres
- Adequate resources do not necessarily guarantee success; the effective coordination and timely use of these resources is probably more important
- Insufficient resources, difficult terrain and insecurity impede the ability of conducting ground surveys, which in turn causes gaps in monitoring field conditions, hampers forecasting and preventive control, and should be accounted for in national contingency plans

Insecurity remains the most serious of the aforementioned items. Currently, field surveys cannot be conducted within at least half of the Desert Locust breeding areas in the Sahel of West Africa and Sudan, namely northeast Mali, northwest Niger, eastern Chad, western Sudan (Darfur) and eastern Ethiopia. This represents a significant gap in Desert Locust early warning, which is the foundation of the preventive control strategy.

The DLCC should consider the challenges of implementing successful preventive control, with particular emphasis on the impact of insecurity and the need to bolster DLIS' capacity in synoptic meteorology, in order to provide FAO with the necessary advice and guidance for the way forward.