



Food and Agriculture
Organization of the
United Nations

Southwest Asia

Desert locust crisis appeal

May–December 2020

Rapid response and scaled-up action



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At a glance



USD 30 million required by FAO for control, surveillance and livelihoods support between May and December 2020



In Pakistan, over **3 million people** are already in severe acute food insecurity*



In the Islamic Republic of Iran, current infestations could impact the food security of more than **one-third of the population**, as the affected provinces are the primary breadbasket of the country



1 million ha of land targeted for control in the Islamic Republic of Iran and Pakistan



10 million ha of land targeted for surveillance in both countries



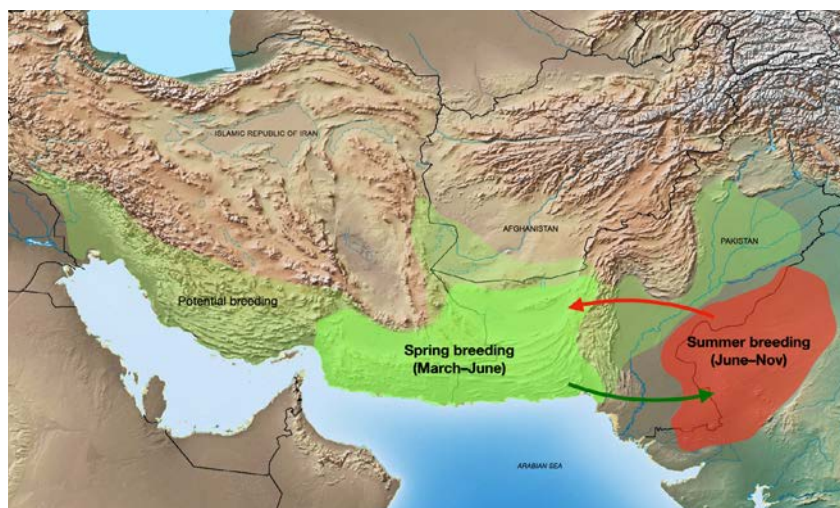
19 500 households targeted for livelihoods support in Pakistan

The desert locust is the world's most dangerous and voracious migratory pest, with a geographical range that could cover the equivalent of 20 percent of the earth's surface. Swarms of desert locust can travel up to 150 kilometres per day in search of food, migrating across long distances and even spreading from one continent to another. The current outbreak is affecting India, the Islamic Republic of Iran and Pakistan, as well as the Greater Horn of Africa and the Red Sea area and threatening Southwest Asia.

As the rainy season begins, another generation of breeding will take place that is expected to cause a dramatic increase in locust numbers in Eastern Africa, which could then migrate to Southwest Asia. This is expected to be followed by several waves of swarms coming from spring breeding areas in the Islamic Republic of Iran and Pakistan in June.

Breeding is ongoing in the spring breeding areas of the Islamic Republic of Iran, where the situation remains worrying and more hopper bands continue to form along the southern coast. Meanwhile mature adult groups have moved north in Sistan and Baluchestan to South Khorasan, where they are laying eggs. In Pakistan, desert locust breeding is ongoing across 38 percent of land area (60 percent in Balochistan, 25 percent in Sindh and 15 percent in Punjab), with the entire country under threat of an invasion if the pest is not contained.

Figure 1. Desert locust breeding areas in Southwest Asia



Source: FAO, 2020. Conforms to UN World map, February 2020.

*No data on food security available for the Islamic Republic of Iran

Crisis overview in Southwest Asia

The Islamic Republic of Iran

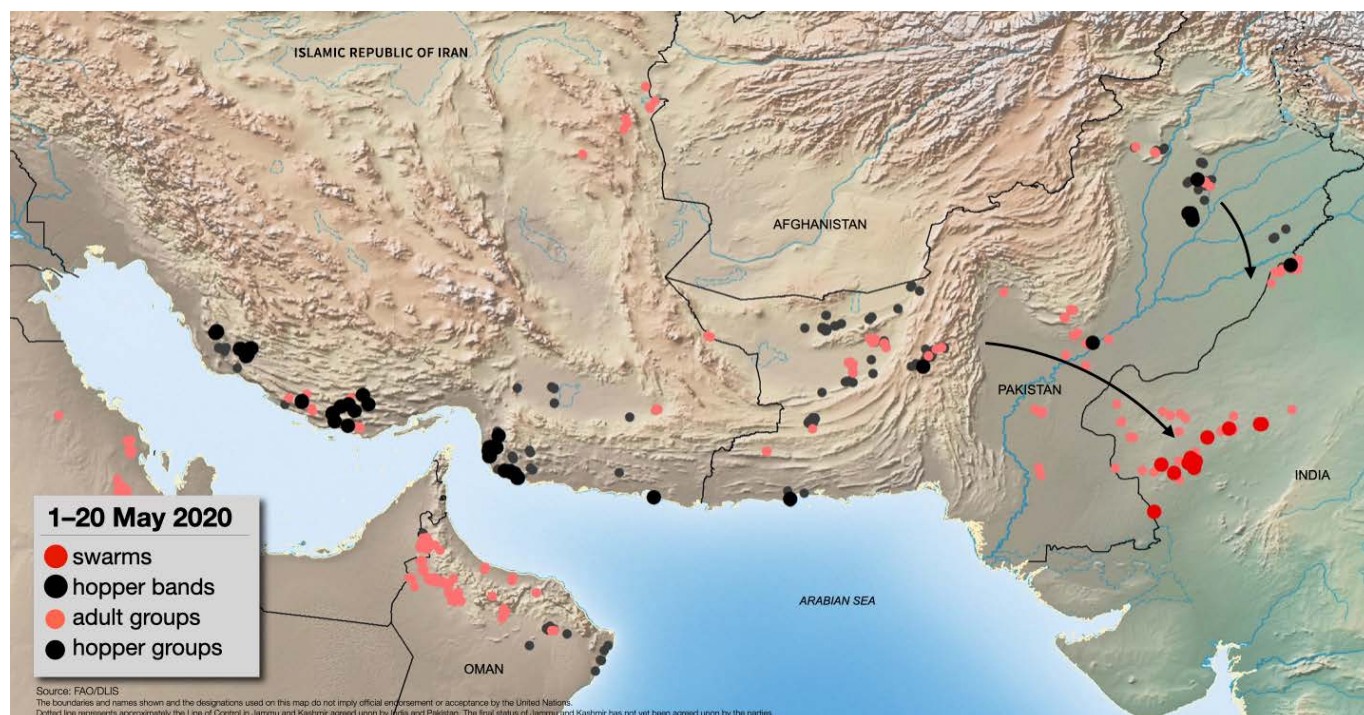
Situation analysis

 **800 000 ha** of land targeted for control

The Islamic Republic of Iran is experiencing its worst desert locust outbreak in 50 years. For the second year in a row, a desert locust upsurge is threatening food security, nutrition and livelihoods as well as environmental and economic development in the country. The pest can reproduce rapidly, migrate long distances and devastate crops and pasture. The situation in the Islamic Republic of Iran is of particular concern given the multiple risks the country is already facing, including the heavy impact of COVID-19. Given the transboundary nature of the desert locust, it is critical to act rapidly and at scale, otherwise more countries in the region could be affected equally badly and just as quickly, if not more so.

The desert locust swarms that invaded the country in late February 2020 spread rapidly and laid eggs along 900 km of the country's southwest coast. These eggs have now hatched and formed hopper bands, which will develop into young adults before forming highly mobile and voracious immature swarms. In the southeast meanwhile, a second generation of breeding recently commenced along the east Hormozgan coast near the Strait of Hormuz, where an increasing number of hopper bands continues to form along the southeast coast and interior. The widespread rains that fell in March and April will allow new swarms to form during May that could be of a substantial scale. This would not only potentially threaten crops that will be ready for harvest in southern Islamic Republic of Iran, but also in Pakistan and India, as swarms will migrate eastwards to summer breeding areas along both sides of the Indo-Pakistan border, laying eggs and causing a further increase in numbers during the monsoon period.

Figure 2. Presence of desert locust in Southwest Asia, May 2020



Source: FAO, 2020. Conforms to UN World map, February 2020.

Figure 3. Desert locust situation overview in the Islamic Republic of Iran, May 2020



Source: FAO, 2020. Conforms to UN Islamic Republic of Iran map, January 2004.

Response to date

Although in 2019 more than 700 000 ha were sprayed for desert locust in the Islamic Republic of Iran, this was not enough to prevent the large-scale migration of swarms to India and Pakistan at the beginning of summer 2019. With the support of the Food and Agriculture Organization of the United Nations (FAO), the Government of the Islamic Republic of Iran started an intensive desert locust control campaign that began in late February 2020, deploying 500 people in the field along with 150 vehicles for surveillance, 40 vehicles for control and ten spraying airplanes. More than 30 000 litres of pesticide have been used so far to treat an equal number of hectares. In March 2020, 536 locations were surveyed, with desert locust found at 317 of these and control operations carried out on 217.

During April 2020, 939 locations were surveyed, with desert locust found at 640 and control operations carried out on 379. As of May 2020, the Ministry of Agriculture's Plant Protection Organization had treated more than 150 000 ha against desert locust through ground and air operations. The latest estimates showed that in order to successfully control infestations during 2020, up to 1 million ha of rangeland, farmland and orchards could require treatment by the end of June, the first annual agricultural season.

Livelihood and food security implications

If control operations are not successful, the current desert locust infestations could impact the food security and nutrition of nearly one-third of the population of the Islamic Republic of Iran, as two of the affected provinces – Fars and Khuzestan – are the country's top agricultural producers. The provinces of Bushehr, Hormozgan, and Sistan and Baluchestan could also be seriously damaged by desert locust infestations. Aside from cereal production, nutrition could therefore worsen dramatically, as Fars, Hormozgan and Khuzestan are the country's top three vegetable producing provinces.

Pakistan

Situation analysis

In January 2020, residual swarms from breeding in 2019 affected numerous districts of the Punjab and Sindh provinces in the east of Pakistan, subsequently spreading to Balochistan in the southwest. Pakistan is an important frontline country for desert locust, as it lies on the route of migratory swarms from both the east and the west and has summer (Sindh, Punjab) as well as winter/spring breeding areas (Balochistan). Coordinated efforts are therefore required to control the infestations and curtail negative consequences affecting the food security, nutrition and livelihoods of farming households across all provinces. The response is ongoing, led by the Government and with the support of FAO and the international community.

Spring breeding will continue in coastal and interior areas of Balochistan during May and June, when an increasing number of hoppers will become adults and form groups as well as perhaps a few small swarms. As vegetation dries out and temperatures increase, adult groups and swarms will move from spring breeding areas in Balochistan and adjacent areas of southeast Islamic Republic of Iran to summer breeding areas along both sides of the Indo-Pakistan border. This movement will continue throughout June and possibly into July. As a result, if several waves of swarms go undetected or untreated in spring breeding areas they are likely to cross the Indus Valley and reach desert areas in Cholistan, Nara and Tharparkar in time for the start of the monsoon rains. This year the situation has been aggravated, as for the first time in many decades there is a second threat of invasion by swarms from Eastern Africa in late June and during July.

Response to date

Desert locust outbreaks are a regular occurrence in parts of Pakistan, and the Government has a robust system of surveillance, control and treatment that predates independence. In 2019, with the support of FAO, the Department of Plant Protection (DPP) under the Ministry of National Food Security and Research (MNFSR) surveyed nearly 1 million ha and

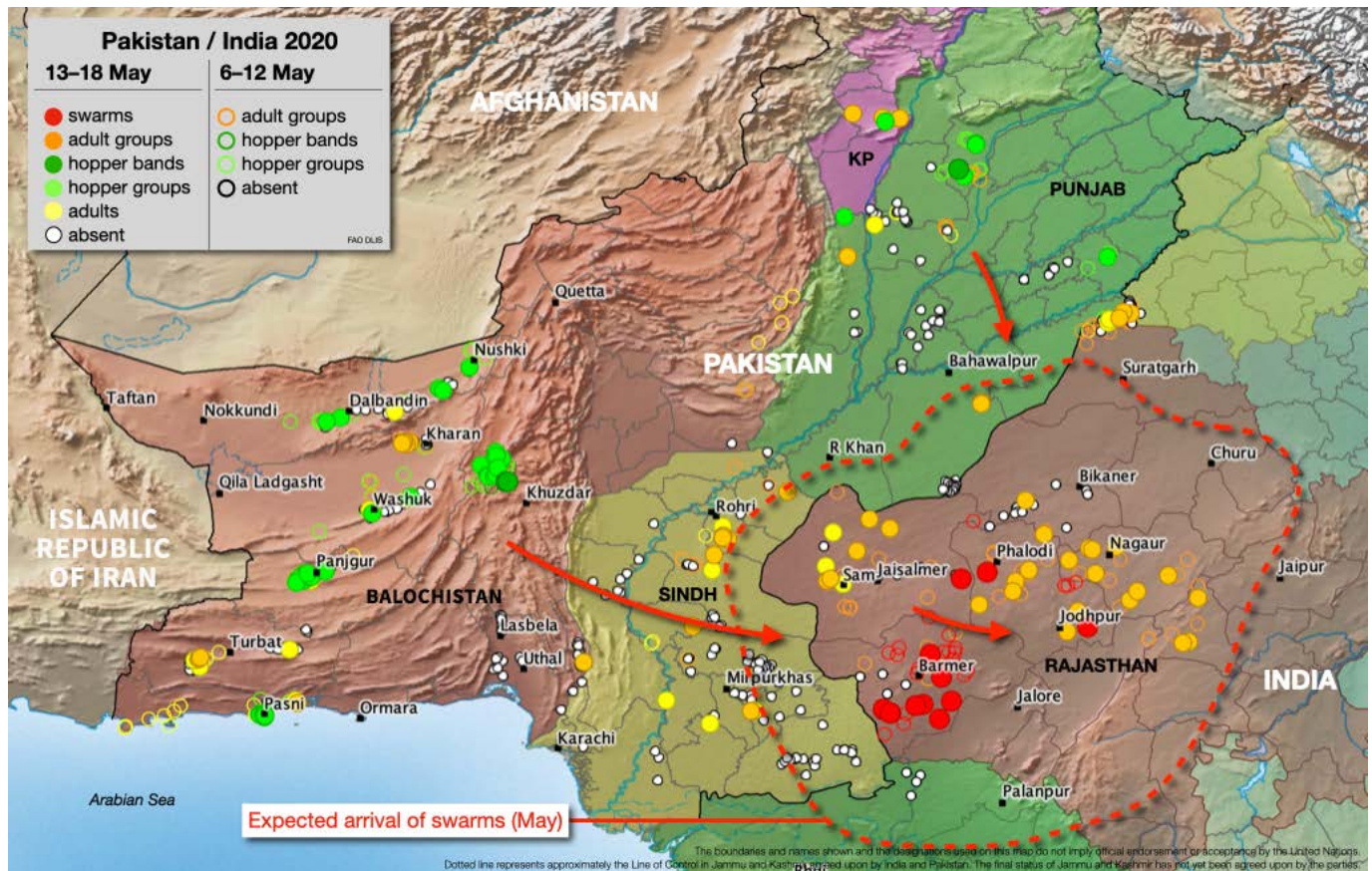


200 000 ha of land
targeted for control



19 500 households
(about **136 500 people**)
targeted for livelihoods support

Figure 4. Desert locust situation overview in Pakistan, May 2020



Source: FAO, 2020. Conforms to UN Pakistan map, January 2004.

treated more than 300 000 ha in three provinces, using 150 839 litres of pesticides. Of the total area treated, nearly 14 000 ha were cleared by aerial spraying.

This year the situation has been aggravated, as for the first time in many decades there is a second threat of invasion by swarms from Eastern Africa in late June and during July.

On 31 January 2020, the Prime Minister of Pakistan declared a national emergency to protect crops from desert locust and help farmers save their assets. The emergency is overseen by a high-level governmental committee comprising the MNFSR, the Ministries of Finance and Defence and agencies including Pakistan International Airlines, the Pakistan Airborne Authority, the Pakistan Aeronautical Complex and the National Disaster Management Authority. At present, the overall surveyed area in the four provinces including Khyber Pakhtunkhwa is 1.5 million ha, while the treated area is over 390 000 ha. Of this, more than 50 000 ha were treated through aerial spraying and the remainder by ground control, using 228 000 litres of pesticides in total. A National Action Plan for Desert Locust Control and Surveillance was endorsed, under which district committees will be formed for coordination.

The DPP provides technical coordination of the control campaign, which is planned as follows: Stage 1 (January–June 2020), Stage 2 (July–December 2020), and Stage 3 (January 2021–June 2021). The Plan is aimed not only at regularly monitoring the ongoing situation, but also at ensuring effective coordination among all stakeholders, timely resource mobilization, surveillance, control and monitoring and awareness raising, as per standard operating procedures designed by FAO.

So far this year, more than 100 teams have been deployed across Pakistan for surveillance and control of desert locust in affected areas.

FAO appointed a National Coordinator at the MNFSR to streamline desert locust control interventions at various levels, including the Ministry itself, the DPP, and provincial governments, and ensuring effective coordination among all governmental and non-governmental stakeholders.

So far this year, more than 100 teams have been deployed across Pakistan for surveillance and control of desert locust in affected areas. Operations are well under way in all the locust-affected provinces of Balochistan, Khyber Pakhtunkhwa, Punjab and Sindh, involving partner organizations and FAO support. As of early May, more than 150 000 ha of land have been treated, with the Government targeting 3 million ha. In collaboration with DPP, FAO has also trained professionals from provincial agriculture departments and provincial disaster management authorities in the use of the mobile application eLocust3m, aimed at ensuring the rapid flow of locust data from specific areas/districts.

Nevertheless, there are capacity gaps at federal, provincial and district levels. FAO continues to provide equipment (eLocust3g handheld devices for data collection and transmission in real time and vehicle-mounted sprayers) coupled with technical capacity building, but more support is needed. Furthermore, the Food Security and Agriculture Working Group (FSAWG) in Pakistan, co-led by FAO and the World Food Programme in coordination with the MNFSR, is jointly planning a needs assessment in 38 districts impacted by desert locust. The FSAWG developed assessment tools in coordination with regional bureaus and is working on remote tool applications with FAO and partners.

Livelihood and food security implications

Pakistan currently has over 3 million people in severe acute food insecurity (Integrated Food Security Phase Classification [IPC] Phase 3 and above), with the situation particularly precarious in Balochistan and Sindh provinces in 2019, mainly due to drought. Further damage to crops at this magnitude is not only a threat to food security in the affected communities, but also poses a challenge for livelihood resilience, as many farmers use money earned from selling crops to pay off debts and survive financially during the off season.

A very preliminary estimate for a worst-case scenario (devastating infestations) foresees about 34 000 households (some 238 000 people) in need across three provinces. If ongoing surveillance and control efforts are taken to be effective mitigation measures, the worst-case scenario at this point seems unlikely. A mid-case impact scenario is therefore considered, which would translate into around 19 500 households (about 136 500 people) in need. The Plan entails estimates of crop damage at 25 percent, 50 percent and 75 percent loss of production of various



Rabi (dry season, such as wheat and barley) and *Kharif* (rainy season, such as rice and maize) crops. The monetary value of the estimated losses at 25 percent, 50 percent and 75 percent for *Rabi* crops are USD 2.2 billion, USD 4.4 billion, and USD 6.6 billion respectively, and for *Kharif* crops USD 2.9 billion, USD 5.8 billion and USD 8.7 billion. While the 2019/20 *Rabi* season is in harvest (sowing begins in September), *Kharif* planting will start in May in Balochistan and Sindh, and in May and June in Khyber Pakhtunkhwa and Punjab provinces.

► 1. Curb the spread of desert locust



Budget required

USD 23.75 million

In the current upsurge, FAO's strategy is to limit desert locust populations to the extent possible in order to prevent a fully-fledged plague from developing. Critical to this is detecting desert locust as early as possible based on ground and aerial survey operations, followed by the application of timely and appropriate control measures.

- **Continuous surveillance**

The successful prevention of desert locust upsurges relies on regular monitoring in the desert, early warning, and timely response. If a swarm is not detected on time, it can have devastating effects on livelihoods. Early detection is enabled through regular monitoring. Identifying the locations of desert locust (and noting their stage of development) is critical to informing response actions for maximum impact. FAO is supporting national survey and control teams using eLocust3 – a handheld tablet tool – to record and transmit data via satellite to national locust centres and FAO's Desert Locust Information Service in Rome. Combined with remote sensing imagery and historical data, the information is used to support early warning, forecasts, planning and prioritization of survey and control operations, issuing regular bulletins and updates with the latest information on the situation, and providing projections of most-likely scenarios. Strengthening the capacity of national stakeholders to conduct robust surveillance activities is critical, and will include not only training for government staff but also for community focal points, so that they can then alert the Government about locust sightings. Key equipment will be supplied to complement existing inventories of sprayers and vehicles. Across the two countries, FAO aims to support the surveillance of 10 million ha.

- **Ground and aerial control**

FAO is supporting national governments to implement ground and aerial control, which help to reduce locust populations through a range of targeted operations. Remote sensing technology and ground surveys are useful for identifying and eliminating locust breeding areas, and drone technology could be used as an additional inexpensive and efficient tool for surveillance.

Surveillance informs the type of action required according to identified populations – for example, breeding and egg-laying areas are monitored to ensure appropriate control measures are applied at the right moment in order to break the cycle of the next generation. National operational bases are alerted when swarms are detected, in order to coordinate necessary action. Control efforts would then prioritize targeting desert locust populations that pose a direct risk to cropping areas, making operations safer, more precise and more effective.

Early detection is critical to limit desert locust populations and prevent a fully-fledged plague from developing.

Pesticides are selected considering the recommendations of the independent Pesticide Referee Group and national registration lists in affected countries. The choice of pesticide also depends on each particular situation (vegetation type, target, stages of the insect, etc.). Non-chemical options will be pursued wherever possible, and buffer zones maintained when spraying to protect water sources and environmental protection areas. Hopper bands are largely controlled by ground control teams, using either insect growth regulators, biopesticides or chemical pesticides. When swarms are too large for ground control, aerial spraying is employed. FAO support includes procuring pesticides and equipment, contracting aircraft, providing logistics services, establishing operational bases, intensive training for government staff on the safe administration of chemical pesticides, and raising community awareness on issues related to desert locust upsurge and control measures. Under this component, FAO aims to support the treatment of 1 million ha in the two countries through interregional as well as regional efforts.

- **Assess impacts and monitor environmental, health and safety standards**

It is imperative to facilitate the collection of data on desert locust impact and control and promote environmental, health and safety measures. FAO pays strict attention to health and environmental safety, using corporate protocols developed to avoid contamination and adverse effects. Assessments will be conducted not only on the impact of the desert locust upsurge on production and livelihoods and on the efficacy of control operations, but also on the related potential environmental and health impacts. In addition to training on safe pesticide handling, capacities will be built in the proper storage and the disposal of drums and containers, along with the use of personal protective equipment.

► 2. Safeguard livelihoods and promote early recovery



Budget required
USD 5 million

- **Provide farming re-engagement packages**

Mitigating the negative impacts of desert locust on the livelihoods and food security of farmers in Pakistan is crucial. As the next generation of mature and immature swarms of desert locust is expected to migrate towards farming areas around the start of the planting season, close monitoring and impact assessments will be key to informing FAO's livelihoods response. FAO will target 17 000 farming households under this component to receive agricultural inputs, of which up to 2 500 households will benefit from cash interventions.

- **Provide livestock-based livelihoods packages**

As desert locust are expected to breed, hatch and mature in grazing areas of arid and semi-arid lands, FAO will closely monitor and conduct impact assessments to inform the Organization’s response in safeguarding the livelihoods of herders. Assuming a best-case scenario, FAO will target 2 500 livestock-keeping, agropastoral households under this component.

Livestock-based livelihoods will be protected through the provision of supplementary feed where pasture has been severely affected by desert locust. Range cubes or multinutrient blocks can boost livestock nutrition and support production (particularly milk yield), resulting in rapid improvements to household food supply and nutrition.

Figure 5. Agricultural calendar (main crops) versus desert locust life cycle in the Islamic Republic of Iran, 2020

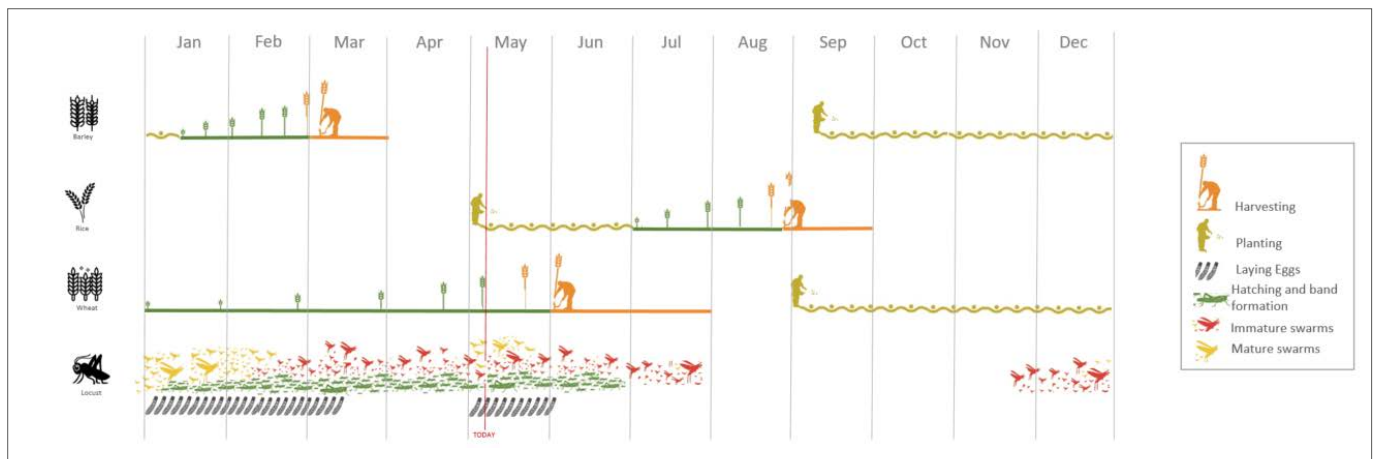
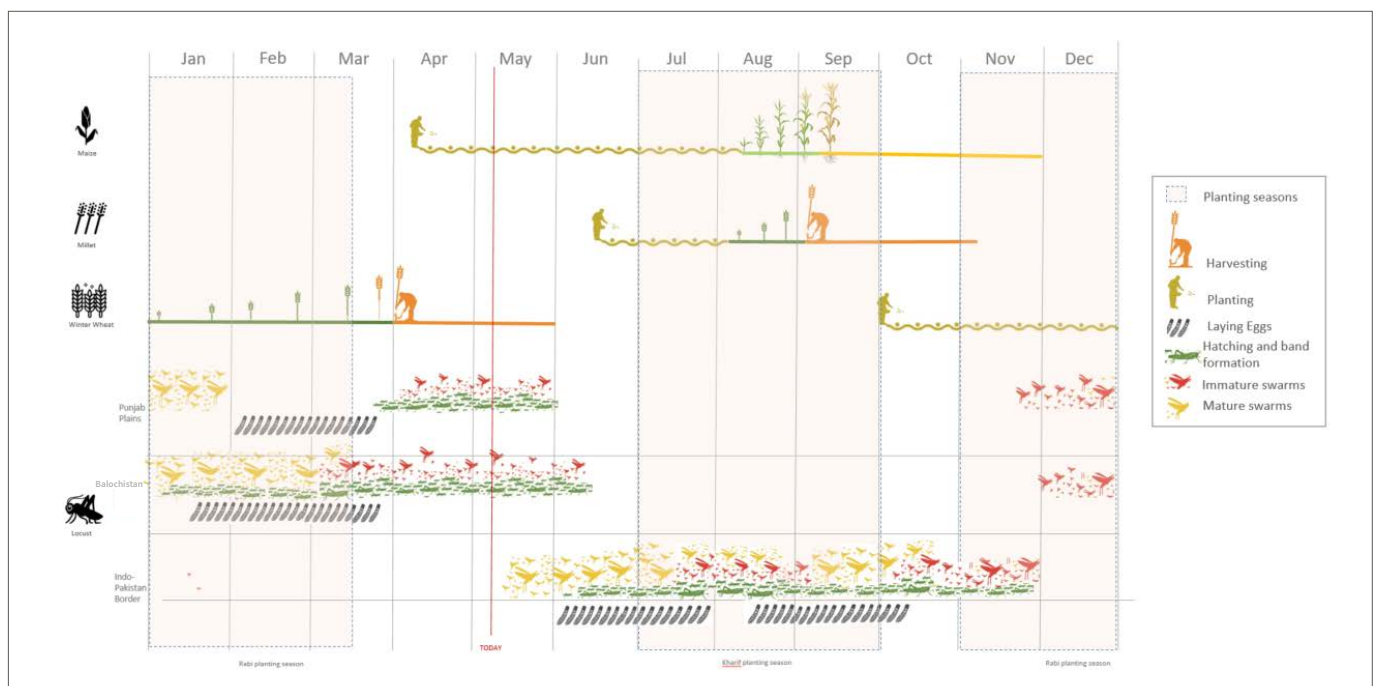


Figure 6. Agricultural calendar (main crops) versus desert locust life cycle in Pakistan, 2020



► 3. Coordination and preparedness



Budget required

USD 1.25 million

- **Deploy rapid surge support**

Technical and operational expertise will be provided to governments and FAO country offices, with a special focus on scaled-up surveillance and control operations. This includes, when required, the deployment of desert locust experts from FAO's global network as well as procurement, logistics, supply chain, operational and programme development officers.

- **Facilitate regional partnerships and collaboration**

The FAO Commission for Controlling the Desert Locust in Southwest Asia (SWAC) was established to promote the Organization's preventive strategy and support member countries in its implementation, in particular by creating autonomous national units. Established in 1964, SWAC is the oldest of the three regional commissions within the global locust early warning and prevention system and consists of four member countries: Afghanistan, India, the Islamic Republic of Iran and Pakistan. SWAC meets on a weekly basis with the technical teams from the four countries to share information, review and analyse the latest developments of the situation within and across the countries, and coordinate surveillance and control operations, in particular along affected border areas.

FAO provides technical and operational support to countries to help them prepare for and control the locust threat and safeguard food security. Currently, technical support is in place to control and limit the infestation. SWAC coordinates this work and provides technical support and regular capacity development programmes to member countries, based on biennial work plans. Regular meetings have been facilitated by FAO among technical specialists of the four countries on a weekly basis, with a focus on surveillance information exchange, analysis, and synchronization of control operations in border areas.

FAO will continue to lead dialogue and advocacy with partners through regular briefings, and facilitate the inclusion of specific desert locust-related livelihoods interventions into country-based coordination.

- **Enhance regional advocacy and national-level coordination**

FAO will continue to lead dialogue and advocacy with partners through regular briefings. It will also facilitate the inclusion of specific desert locust-related livelihoods interventions into country-based coordination, through FSAWG (Pakistan) or government-led working groups where clusters are not activated, as is the case for the Islamic Republic of Iran. Focus should be placed on developing the most workable approach for locust control in Southwest Asia in a participatory manner.

- **Strengthen regional and national capacity and enhance preparedness**

Particularly given the possibility of a cause-effect relationship between climate change and desert locust infestations, it is imperative to strengthen regional and national capacity for surveillance and control. At regional level, this would include training provided through SWAC. At country level, it would include support for the development and updating of regional and national contingency plans for desert locust crises, promoting learning across countries to boost competencies in forecasting, surveillance and control, and exploring the use of new technologies for surveillance, such as drones.

Strategic approach

Applying the right range of control options at the right time

Control methods will be technically sound and adapted to the desert locust life cycle, drawing from FAO's extensive expertise in the area. Controlling large swarms is a coordinated effort to avert a major food security and livelihoods crisis, as well as to mitigate further spread of the pest to other countries. This means supporting national efforts to undertake urgent, large-scale aerial and ground control operations as well as surveillance, trajectory forecasts and data collection.

FAO applies an integrated approach to control the desert locust, through conventional pesticide use combined with safer alternatives. With regard to risks to human health, none of the pesticides used are categorized as Class Ia (Extremely hazardous) or Class Ib (Highly hazardous) by the World Health Organization (WHO). In addition, at least two alternative control options (biopesticides and insect growth regulators) are used. In order to minimize health and environmental risks posed by pesticides, FAO takes special precautions at all stages of the anti-locust campaign, i.e. before, during and after control operations.

Anticipating impacts

While conducting forecasts, surveillance, monitoring and control operations, FAO will also carry out activities to safeguard livelihoods, including cash programming and distribution of livelihoods re-engagement packages for farmers and livestock keepers affected and at risk during the next season in Pakistan. This anticipatory approach to protect food production and livelihoods was a clear recommendation of the independent evaluation of the 2003–2005 locust outbreak in West Africa.

Engaging with the Global Network Against Food Crises

The Global Network Against Food Crises, a partnership created to identify and jointly implement durable solutions to food crises, has been engaged to support coordination, consensus building, and serve as a platform to discuss the most effective programmatic approaches. The Global Network has a key role to play in supporting the uptake and mainstreaming of anticipatory action, as well as ensuring lessons learned are used, documented and disseminated. Anticipatory action is crucial to protect long-term development and resilience gains. The combination of short-term anticipatory action and long-term resilience investment is at the core of the Global Network's work on preventing food crises and building resilient livelihoods.

Establishing the crisis as a corporate priority

In view of the demonstrated scale, complexity and urgency of the crisis, FAO declared a corporate thematic scale-up for desert locust, activating fast-track procedures. The Organization's response to food chain emergencies, such as animal diseases and plant pests and diseases, are managed within the context of the Food Chain Crisis Management Framework. In particular, the current locust response is handled by the Emergency Centre for Transboundary Plant Pests (ECTPP), which integrates the technical and operational capacities of the Plant Production and Protection Division (AGP) and of the Emergency and Resilience Division (PSE), under the overall leadership of Deputy Director-General Laurent Thomas.

Partnering with country governments and key stakeholders

To support country capacities that risk being overwhelmed by the scale of the crisis, FAO is providing technical and operational assistance for control operations and livelihoods support for the most vulnerable. Together with a range of partners working on desert locust management – including governments and organizations such as WHO and the United Nations Environment Programme (UNEP) – FAO has developed standard operating procedures to guide the planning and execution of control campaigns so that responses are safe for human, animal and crop health. FAO has also developed technical guidelines such as the Efficacy Assessment of Control Operations.

Investing in the medium to long term

The desert locust upsurge has highlighted the need for continued investment in national authorities' capacities to deal with locusts. SWAC uses funds from member country contributions to strengthen national capacities as well as field activities, such as the annual Islamic Republic of Iran/Pakistan Joint Survey of Spring Breeding Areas. While robust national locust systems exist in frontline countries, they should be promoted in those currently experiencing infestations, so that they can respond rapidly to emergencies.

For example, FAO has used this desert locust upsurge as an opportunity to increase the use of eLocust3 real-time data collection technologies. This could also be rolled out on a wider scale, using crowdsourcing as a means to intensify and strengthen surveillance and reporting.

FAO is further enhancing data collection and modelling by developing and rolling out the following:

- digital tools for improved data collection in real time (eLocust3g, eLocust3m, eLocust3w);
- remotely-sensed 1km² soil moisture maps that are updated every ten days to improve control, by identifying potential breeding areas; and
- a trajectory model to estimate swarm migrations for improved early warning.

Ensuring transparency in information management

In addition, real-time information is available from the following sites:

Advocating for flexible funding

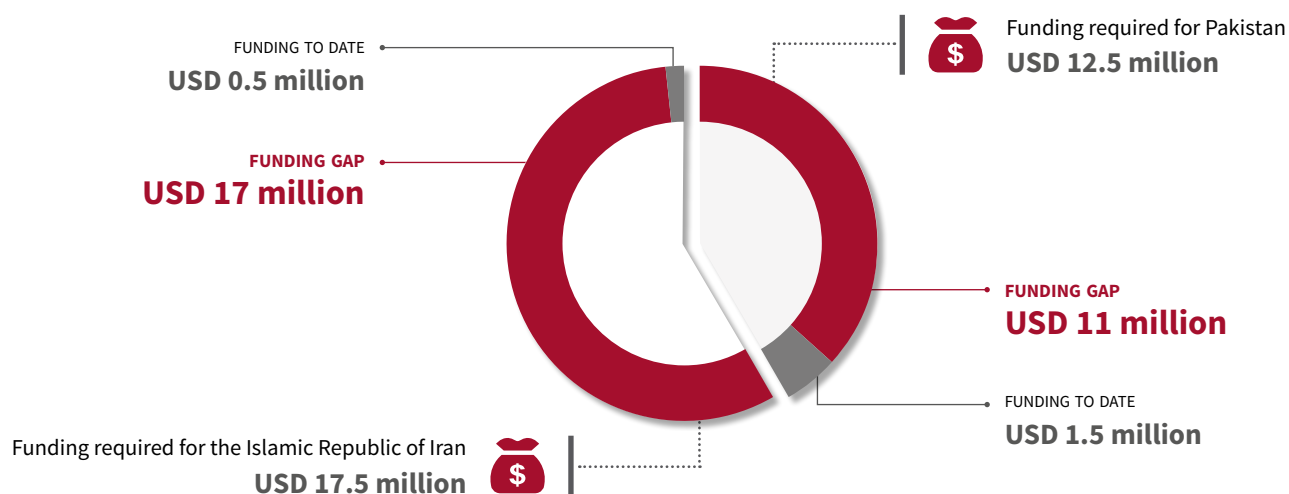
To ensure maximum impact in a rapidly evolving situation, FAO is advocating for resource partners to contribute to the Locust Window of the Special Fund for Emergency and Rehabilitation Activities (SFERA). This mechanism provides FAO with the financial means to react quickly to crises, reducing the time between funding decisions and action on the ground. SFERA's pooled funding approach provides the flexibility to adjust activities and support the geographical and thematic areas of greatest need. Likewise, the programme approach enables operations to adapt as the situation changes, streamlining activities to ensure the most appropriate assistance reaches affected populations sooner.

Table 1. Funding requirements (in USD)

Activities	Iran (Islamic Republic of)	Pakistan	Total
1. Curb the spread of desert locust	16 750 000*	7 000 000**	23 750 000
Continuous surveillance	3 250 000	1 750 000	5 000 000
Ground and aerial control	13 000 000	5 000 000	18 000 000
Assess impacts and monitor environmental, health and safety standards	500 000	250 000	750 000
2. Safeguard livelihoods and promote early recovery	0	5 000 000	5 000 000
Provide farming re-engagement packages	0	2 800 000	2 800 000
Provide livestock-based livelihoods packages	0	2 200 000	2 200 000
3. Coordination and preparedness	750 000	500 000	1 250 000
TOTAL FUNDING REQUIRED**	17 500 000	12 500 000	30 000 000

* Islamic Republic of Iran: FAO has allocated USD 500 000 under the Technical Cooperation Programme for component 1.

** Pakistan: The United Kingdom of Great Britain and Northern Ireland has allocated USD 1.2 million and the Republic of Korea has allocated USD 123 750, both for component 1. FAO has allocated USD 200 000 under the Technical Cooperation Programme for component 1.



Saving livelihoods saves lives

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