Prevention and timely intervention to reduce pesticide use:

Locusts in the Sahel – delayed response is fatal

Relatively heavy rainfall in the countries of the Sahel zone in 2003 and failure to take preventative measures resulted in the swift reproduction of African desert locusts in the area. Since then, the locust plague in the region has returned to the top of the news agenda.

Photo: Thiam/PAN Africa

Dr Abou Thiam
Julienne Kuiseu
Pesticide Action Network (PAN) Africa
Dakar-Fann, Senegal
abouthiam@pan-africa.sn
jkuiseu@pan-africa.sn

A single African desert locust (*Shistocerca gregaria, Forkal, 1775*) is harmless, but a swarm of locusts is frightening in the extreme due to their voraciousness, alarming mobility and rapid reproduction (locusts can multiply tenfold with each new generation, and up to three generations may be produced every year). A swarm can travel 100 to 200 kilometres every day. A tonne of African desert locusts eats as much in a day as 2 500 people or ten elephants.

Since time immemorial, the Sahel countries have repeatedly been plagued by locusts. Attacking swarms occur over an area of 29 million square kilometres, extending across 65 countries of Africa, the near East and southern Asia, inhabited by around a billion people (Lecoq, 2003: *La menace du criquet pèlerin pour le développement agricole et la sécurité alimentaire et le rôle de la FAO pour son contrôle*). The worst locust plagues in recent times hit the Sahel in 1957, 1987 and 1993. African desert locusts can cause devastating damage, devouring entire harvests as well as the pastures needed to support livestock. The plague of locusts in 1987 caused particularly severe losses, as the following examples show:

- In Mauritania, losses reached 60 percent on the pasture land, 70 percent on rain-fed crops and 50 percent on the irrigated crops.
- In Niger, losses of some 50 percent were estimated on the 1 million ha of pasture land.
- In Mali, losses were put at 65 to 90 percent of pasture land, and up to 75 percent on rain-fed crops (FAD, 2003: *Projet d'appui à la lutte préventive contre le criquet pèlerin dans quatre membres de la CLCPRO.* Fonds Africain de Développement, Abidjan).

The costs of anti-locust programmes are substantial, but can be several times higher if intervention is left too late. Between 1986 and 1993 the costs of spraying around 26 million ha of land in Africa alone ran to US$ 315 million (FAD, op.cit).

Heavy rains in 2003 once again created favourable conditions for locusts to breed rapidly. From June 2004, hundreds of swarms of African desert locusts homed in on countries in the Sahel region, primarily Burkina Faso, Mali, Mauritania, Niger and Senegal.

Severe social and economic impact

The plague of locusts ravaging the Sahel in 2005 has very serious consequences for the region's people and their food security, and gives rise to enormous costs.

2 million tonnes of crops devastated! The locusts attacked the Sahel countries at a time when food stores from the previous season had been exhausted and the new harvest was imminent. Farmers from a village in Senegal described their helplessness thus: «The locusts came in July 2004, our village is very badly hit: millet, peanuts, sorghum, manioc, beans and watermelons were badly damaged; there was nothing left for anyone in the village to harvest». (Thiam & Kuiseu, in *Pesticides News N° 66*, 2004).

From another village in Senegal came a similar call for help. «There were just three weeks to go before the harvest, and the villagers had invested all their savings in the seed. We have lost everything.»

There is still no reliable data on the extent of the losses caused by locusts. According to initial estimates, African desert locusts in the Sahel region caused the loss of 2 million tonnes of crops, equivalent to 20 percent of the population's food needs.

A costly battle. The financing required, estimated at around US$ 12 million at the beginning of the plague, has now risen tenfold to US$ 122 million according to FAO data. In Mali alone, costs are expected to reach 8 billion CFA francs (1 euro = 655 CFA francs). Having provisionally budgeted for 1.8 billion CFA francs in June 2004, the Senegalese state finally had to approve 4 billion CFA francs for locust control; this does not include private Senegalese contributions in cash and in kind, or bilateral and multilateral inputs (DPV, 2005: *Bilan d'étape de la lutte contre le criquet pèlerin au 31 janvier 2005 et perspectives,* Dakar, Senegal).

Despite considerable financial resources from international institutions and the governments of the countries affected, and the resolve of these countries to regain control over the plague, not all infested areas could be sprayed. Of the 1.5 million ha of agricultural land affected in Senegal, only 614 297 ha had been treated with pesticides by 21 January 2005. This allowed numerous swarms to escape towards the north, into the countries of the Maghreb.

Organizing control

Locust prevention and control in the Sahel countries is organized on four levels:

- At local level, crisis committees are formed, with members drawn from all the relevant administrative and technical bodies at district authority level. Their role is to mobilize all available personnel and material resources.
- At national level, the crop protection services provide central recording and processing of data and operational guidelines, and oversee control measures in the country. They are supported principally by the agriculture ministry as the coordinating body.
- Within the scope of regional cooperation, workshops are being held in Senegal to train the trainers in data collection and management techniques for locust control purposes, supported by the FAO Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (EMPRES). The countries of the Sahel region are supported in this prevention programme by their neighbours from the Maghreb.
- At international level, the countries which suffer losses due to the plague receive bilateral and multilateral assistance. This aid is generally coordinated by the FAO through its «Commission for controlling the desert locust in the western region» (CLCPRO). This commission appealed to the international donor community for financial support towards anti-locust measures in plenty of time.

Fatal failure to grasp opportunities

Opportunities were missed to take preventative measures to control the present plague of locusts at the right time. The FAO issued warnings as early as October 2003 about substantial increases in African desert locust populations in certain Sahel countries. However the donor community failed to take any concrete action in response. Control measures were only undertaken once the first large swarms had descended upon the countries. For the purposes of active control, pesticides were applied on the ground and from the air.

In their desperate battle against the African desert locust, the farmers themselves used whatever means they had to hand. Given the size of the swarms, however, their efforts had little prospect of success. Some farmers bought pesticides at local markets, raising the level of risk since such chemicals were often out-of-date or unsuitable for use with existing spraying equipment. Farmers also place themselves at risk through unprofessional use of the pesticides acquired.

Consequences of broad-scale pesticide use

The broad-scale use of chemical pesticides for locust control is always bound up with certain risks. Among the most common hazards are cases of poisoning of the pesticide operatives, of the surrounding population and of the livestock. Senegal is registering an unusually high mortality rate in cattle and poultry in the regions treated with pesticides. The pesticide chlorpyrifosethyl may be to blame. On account of its oral toxicity, researchers have classified it as a product which can be toxic to livestock that graze on treated land (Touré et al, 1999. *Etude de la toxicité par administration orale de chlorpyrifos chez le mouton de race peul).*

Major risks also accrue from the incorrect storage of the chemicals. To give an example: In October 2004, Mali was still holding 75 000 litres of pesticides in reserve. Fearing the arrival of further plagues of locusts; other countries also stockpiled pesticides in order to be better prepared for a further invasion.

Another danger in African countries stems from out-of-date pesticide stocks, in many cases left over from past anti-locust campaigns. Most of these products and their containers are in poor condition and represent an immediate environmental hazard. To address this situation, the Africa Stockpiles Programme (ASP) was set up, and PAN Africa has played an active part in its work since it began. Most countries in the Sahel region lack suitable pesticide storage facilities. Often the rural population will find uses for empty pesticide containers around the home, which harbours further toxicity risks. To reduce these risks, those responsible for locust control must take steps to ensure safe and appropriate management of pesticide stocks. Equally, provision must be made for the return and proper disposal of all empty pesticide containers.

Photo: FAO/G. Diana

Undue delays

Responses to the last plague of locusts were unduly hesitant and there were severe delays in embarking upon the necessary measures. «For a year we have been warning the affected countries and the donors about an impending plague of locusts, but so far without success» emphasized the FAO representative in Senegal in October 2004. Only after the losses had taken on extreme proportions did the affected countries launch their own information and control programmes and request assistance from donors and the international community. Despite the calls for help from the affected countries, funds for desert locust control were only released after a further substantial delay. These delays were among the main problems in controlling the plague of locusts, because they allowed the creatures to multiply rapidly before action was taken.

Lessons for the future

The plague of locusts could have been checked with a policy of prevention based on close technical cooperation between the countries concerned, coupled with appropriate regional coordination. Evidently, though, when the first swarms arrived, the local, national and regional mechanisms did not spring into action. The donors and the international community, and even the countries affected by locusts, were much too slow to react to the threat. Belated control measures require considerably more pesticide and are many times more costly. Moreover, they pose increased risks to health and the environment. Locusts cannot be controlled by chemical means alone.

Preventative measures are significantly more effective, and allow for monitoring and early warning. An analysis of different anti-locust campaigns has shown that the recent re-emergence of locust swarms could have been controlled effectively by swift intervention during the early reproductive stages (Showler A., 2001. *Synopsis of the 1997-1998 Desert Locust Campaign in the Red Sea Region).*

On health and environmental grounds, biological controls would be a more benign alternative. But unfortunately the biological pesticide «Green Muscle» developed in 1989 has not yet been used in locust control.