	منظمة الأغذية والزراعة للأمم المتحدة	联合国粮食及农业组织	Food and Agriculture Organization of the United Nations	Organisation des Nations Unies pour l'alimentation et l'agriculture	Продовольственная и сельскохозяйственная организация Объединенных	Organización de las Naciones Unidas para la Agricultura y la Alimentación

COMMISSION FOR CONTROLLING THE DESERT LOCUST IN SOUTHWEST ASIA

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INFORMATION AND REPORTING

1. Introduction

As part of the Desert Locust early warning system within the framework of preventive control adopted by Member Countries, the Desert Locust Information Service (DLIS) at FAO Headquarters monitors the ecological and meteorological conditions and the locust situation in all locust-affected countries throughout the recession area on a daily basis. This is accomplished by combining the results of locust survey and control operations carried out by national teams in affected-countries with rainfall estimates, remote sensing imagery of green vegetation, historical data, models estimating locust development rates, and trajectory models of wind. National teams enter geo-referenced field observations on habitat conditions, locust details and control operations into eLocust2, a handheld data logger[1], which are then transmitted via satellite to the national locust centre in the country where the field operations are being carried out. A nationally designated Locust Information Officer is responsible for downloading this data from a dedicated secure server on the Internet[2], checking the data with a custom application, eLocust2Mapper[3], importing the corrected data into a custom geographic information system, RAMSES, for analysis, exporting the data from RAMSES and sending the resulting MS Excel spreadsheet to FAO DLIS so that it can be imported into their SWARMS GIS for global analysis and forecasting.

The system of data collection, transmission, management and analysis has been standardized since all locust-affected countries use the same version of eLocust2, eLocust2Mapper and RAMSES. This is critical in order to reduce maintenance and training costs and to ensure harmonized analysis of the situation. Therefore, it is critical that all countries use these tools that have replaced the previous methods of completing forms and sending data in tables using MS Word.

It is also essential that countries send RAMSES data and national bulletins (whether decadal, fortnightly or monthly) to FAO DLIS in a timely manner on a regular basis. During calm (green) periods, countries should report at least once per month and send RAMSES data with

[1] eLocust2 consists of a handheld touch screen data logger in English and French that is connected to the vehicle cigarette lighter for power and a small antenna on top of the vehicle for obtaining GPS coordinators and transmitting data via Inmarsat satellite in real time (about ten minutes from anywhere in the field to the nationa locust centre)
[2] Novacom: http://platform.novacom-services.com/novaserv/jsp/novacom/login.jsp
[3] developed and maintained by Mehdi Ghaemian (Plant Protection Organization, I.R. Iran)

a brief interpretation. During periods of increased locust activity, especially when control operations are in progress or during locust outbreaks, upsurges and plagues, RAMSES export files with a brief interpretation should be sent at least twice/week within 48 hours of the latest survey[4]. Affected countries are also encouraged to prepare decadal bulletins summarizing the situation. Every front-line country should send at least one report every month to FAO DLIS, even if no surveys have been carried out or no locusts have been reported.

For more than ten years, FAO DLIS has been evaluating every report and piece of information it receives in terms of quality and timeliness as well as frequency of reporting. In this way, countries can be appraised of reporting strengths and weaknesses.

2. National reporting evaluation

The results of FAO DLIS's evaluation of national reporting for India, I.R. Iran and Pakistan are presented in Annex 1. The following conclusions can be drawn from the results:

India. Reporting quality continued to get better with significant improvements in 2010; however, timeliness declined in 2010 and was below 2007 levels. Reports were received regularly every month and good use was made of eLocust2 and RAMSES.

I.R. Iran. Both reporting quality and timeliness continued to improve in 2009 and 2010 with perfect scores received in 2010. Each report was sent with RAMSES data. However, no reports were received in November 2010. Good use of eLocust2 and RAMSES continued.

Pakistan. Reporting quality improved in 2009 but declined in 2010. There was a significant decline in timeliness in 2009 (the lowest in the past ten years) that improved slightly in 2010 but remained below pre-2002 levels. For example, July 2010 reports were received at the end of the first week in August after FAO had issued its monthly locust bulletin. Although eLocust2 and RAMSES continued to be used, there were significant issues concerning data quality in both systems (see below). RAMSES data was not received in June and July 2010.

Several additional observations are noteworthy regarding the data and reports received from India and Pakistan. In India, there remain consistent gaps in survey coverage in Rajasthan that may lead to inaccurate assessments of the current locust situation. This was most clearly demonstrated in the summer of 2010 when few locusts were reported and then quite suddenly significant infestations appeared even though they were the result of local breeding rather than invasion. It was also noticed that few surveys were conducted near the Pakistani border. When surveys were undertaken in these areas, few if any locusts were found even though scattered adults were present in adjacent areas nearby on the Pakistani side. This is quite unusual and locusts rarely respect international frontiers. During control operations, control data was not entered into eLocust2, which made it difficult for FAO DLIS to assess the impact of control operations on expected locust developments. There was also a lag in reporting in the autumn of 2010 when locust activity increased.

In Pakistan, there is significant room for improving national locust monitoring and reporting. Although Pakistan has one of the highest number of eLocust2 units activated in any country, only about 15% (3 out of 20) are actively engaged in the field. Sometimes unrealistic data is entered into eLocust2 by a national survey team, for example immature adults laying eggs in dry soil. Such data causes confusion and takes time to correct. Field teams should receive

[4] FAO DLIS uses a colour-coded scheme to indicate calm periods (green), and periods of increased locust activity from caution (yellow) to threat (orange) to danger (red). These colours are found in the header of the monthly FAO Desert Locust Bulletin and the Locust Watch web pages (http://www.fao.org/ag/locusts)

regular training on eLocust2 to overcome this problem. It appears that eLocust2 data are not downloaded, checked with eLocust2Mapper and imported into RAMSES; instead, the data are entered manually. It takes much time to do this and it can also introduce many new errors. This suggests that the tools developed by FAO to make the Locust Information Officer's job easier are not being used for one reason or another. It was noticed that the eLocust2 data was quite different than the RAMSES data whereas they both should be identical. This causes substantial confusion and errors between the field, national locust centre and DLIS. Control operations are not included in the data and are, instead, presented in a long table in MS Word. Again, it is very time consuming to enter data in this format into a GIS. Given the aforementioned issues, it is not surprising that RAMSES data are often late or not forthcoming, especially during control campaigns. Despite substantial training and technical backstopping provided by FAO, Pakistan remains the only front-line country that continues to suffer from these problems.

During the summer breeding period, monthly meetings are held on the Indo-Pakistan border, attended by locust officers from both countries to discuss the current situation and exchange information. Unfortunately, FAO DLIS only received four out of six reports in 2009 and only two in 2010 (Annex 1). Reports were usually received several weeks after the meeting. Even though the nationally designated information officer attends most meetings, the report does not contain any RAMSES maps indicating where surveys have been conducted, where locusts are present and the location of control operations.

3. eLocust2 usage

The distribution, usage and expenditures for eLocust2 in the three front-line countries of the SWAC region are presented in Annex 2.

Within the SWAC region, 50 eLocust2 units are presently activated out of a total of 53 units. The usage of eLocust2 units varies according to the season, environmental conditions and the Desert Locust situation. Not surprisingly, the usage is greater during the summer breeding period along both sides of the Indo-Pakistan border compared to the spring in the breeding areas of western Pakistan and southeast Iran. The Commission's Trust Fund pays for the monthly subscription costs, activation fees, and data transmission expenses. The current expenditure is within the estimated budget.

From the data in Annex 2, it can be readily seen that India is making good use of eLocust2. Some 15 out 21 activated units are in use by field teams. This has improved significantly the timely and accurate management of large volumes of field data. The I.R. Iran also makes good use of eLocust2 with nearly half of its activated units being used in the field. In Pakistan, however, not all field teams are using eLocust2. For example, only up to five of the 20 activated units were used in the field during survey and control operations in November 2010.

All countries are reminded to inform FAO DLIS immediately if any eLocust2 unit becomes inoperable so that steps can be taken to replace the faulty unit, cable or antenna.

4. The challenge ahead

Improvements in Desert Locust reporting have continued in all front-line countries during the past two years. Nevertheless, countries must not become complacent. **The Session should examine what areas that require attention, further refinement and improvement**.

Accordingly, **the Commission should address gaps and weaknesses in the progress made in national locust reporting as indicated above and in the annual evaluations** (Annex 1).

The 26th Session made two recommendations regarding the monthly Indo-Pakistan border meetings:

(a) *India and Pakistan should make sure that their Information Officers should continue to attend the monthly Border Meeting during the summer period in order to exchange detailed information including RAMSES maps*.
(b) The delegate from Pakistan should send the monthly India/Pakistan Border Meeting Report to FAO DLIS once each meeting has concluded.

Although information officers are now usually included in the meetings, there is no evidence that RAMSES maps are being used. Furthermore, there remain problems with the timely transmission of the monthly border meeting reports to FAO DLIS on a regular basis. **The Session should examine ways to improve the effectiveness of the meetings, the quality of the reports and their regular and timely distribution to all concerned parties**.

Regarding the usage of eLocust2, one recommendation was made at the 26th session for FAO to procure *eLocust2 units that should have been procured in 2007-08 for Afghanistan (1), India (12) and I.R. Iran (5) and additional units for I.R. Iran (1) and Pakistan (6) to ensure that every survey and control team is properly equipped and uses eLocust2 to record and transmit data to their national locust centre. The operating and repair costs of eLocust2 will be covered by the Trust Fund*. These units have been procured and will be dispatched by FAO DLIS when the need arises in each country.

FAO continues to encourage all countries to ensure that each survey and control team is equipped with an eLocust2 unit, properly trained in its use, and that it is actually used during every field operation, including control. All eLocust2 data should be automatically imported into the RAMSES system for analysis and forwarding to FAO DLIS. Unfortunately, this is not always the case in India and Pakistan, and this can have severe consequences. For example, the absence of RAMSES data from Pakistan in June and July 2010 did not allow FAO to alert India and Pakistan in time about a likely increase in locust populations and the risk of gregarization leading to the formation of hopper bands and swarms. **The Session should provide useful suggestions and recommendations to address these gaps**.

Data transmission costs incurred in 2009-2010 total some US$29,000. This exceeds the amount approved at the 26th Session by more than US$7,000. The difference should be paid from the next biennium budget. **The Session should approve this**.

Annex 1. Evaluation of national locust reporting in 2009-2010

Every message received from locust-affected countries pertaining to the Desert Locust situation, including survey and control results, bulletins and other information, is evaluated for quality and timeliness using a three-point scale[5]. The frequency of reporting is measured by determining if at least one report was received each month.

Annual evaluations are undertaken in order to monitor progress in national locust reporting and identify any gaps and weaknesses to be addressed.

(a) 2002 – 2010: Quality (3 is high, 1 is low)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
India	1.98	2.00	2.14	2.10	2.22	2.62	2.45	2.48	2.98
I.R. Iran	2.80	2.80	2.41	2.40	2.50	2.55	2.16	2.88	3.00
Pakistan	1.97	2.67	2.07	2.20	2.21	2.59	2.13	2.68	2.66

(b) 2002 – 2010: Timeliness (3 is high, 1 is low)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
India	2.11	2.34	2.40	2.50	2.14	2.70	2.75	2.79	2.22
I.R. Iran	2.90	2.70	3.00	3.00	2.80	2.36	2.22	2.96	3.00
Pakistan	2.80	2.52	2.39	2.30	2.55	2.74	2.38	2.04	2.22

(c) 2002 – 2010: Number of reports

	2002	2003	2004	2005	2006	2007	2008	2009	2010
India	124	204	63	81	59	94	56	48	48
I.R. Iran	10	10	17	14	10	11	32	24	13
Pakistan	30	33	28	39	33	34	24	28	32

(d) 2002 – 2010: Frequency (out of 12 months)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
India	12	12	12	12	12	12	12	12	12
I.R. Iran	9	8	12	12	8	9	10	12	11
Pakistan	12	12	12	12	12	12	10	12	12

(e) 2002 – 2010: RAMSES data (the number of RAMSES export files received by DLIS)

	2004	2005	2006	2007	2008	2009	2010
India	35	38	23	73	30	25	19
I.R. Iran	10	12	5	11	33	22	13
Pakistan	3	19	11	17	15	15	18

(f) 2009 – 2010: monthly border meetings attended by locust information officers (date of meeting and date report was received by FAO)

	Jun	Jul	Aug	Sep	Oct	Nov
2009	both (10, 22)	both (7, 23)			(1, 15) both (22, 5/11)	PAK (25, 17/12)
2010		PAK (7, 20)	both (10, 24)			

[5] each report is scored on a scale of 3 (high) to 1 (low):
quality: 3 (data and assessment), 2 (either), 1 (neither)
timeliness: 3 (<6 days of last data date), 2 (6-14 days), 1 (>14 days)

Annex 2. eLocust2 usage

(a) eLocust2 distribution – the number of eLocust2 units in each country that are activated and of those how many are actually being used in the field.

	Activated (in use)	Non-activated	Total
India	21 (15)	0	21
I.R. Iran	9 (4)	3	12
Pakistan	20 (3)	0	20

(b) eLocust2 usage – the number of stops in which eLocust2 was used to record and transmit data, compared to the most active countries in the Central and Western regions.

	Sep	Oct	Nov	Dec	Total
India	556	414	365	244	1,579
I.R. Iran	14	15	46	53	128
Pakistan	266	167	164	97	694
Sudan	16	173	181	353	723
Mauritania	584	983	799	652	3,018

(c) eLocust2 expenditures – the costs of eLocust2 usage consists of the fees for the monthly subscription ($21/unit), activation ($40/unit), and data transmission ($1.35/stop)[6]. The majority of the expenditures is attributed to monthly subscription costs and very little is for data. Therefore, it is important not to let activated units sit idle for long periods of time. The total 2009-2010 expenditures were $30,890, which exceeded the $21,000 approved at the 26th session.

	India	I.R. Iran	Pakistan	Total
Subscription (%)	4,315 (71)	2,211 (74)	5,038 (95)	11,564 (80)
Activation (%)	241 (4)	483 (16)	0 (0)	724 (5)
Data (%)	1,552 (25)	296 (10)	256 (5)	2,104 (15)
2009 total	**$6,108**	**$2,990**	**$5,294**	**$14,392**
Subscription (%)	5,471 (73)	2,510 (91)	5,578 (89)	13,559 (82)
Activation (%)	241 (3)	0	0	241 (2)
Data (%)	1,793 (24)	234 (9)	670 (11)	2,698 (16)
2010 total	**$7,505**	**$2,744**	**$6,248**	**$16,498**
2009-2010 total	**$13,052**	**$5,515**	**$11,055**	**$30,890**

[6] US$ figures are approximate, equivalent at the current exchange rate (1.35) to the original costs for subscription (16 euro/unit), activation (30 euro/unit) and data transmission (1 euro/stop). There is no cost for unit deactivation.