

**CROP PROTECTION RESEARCH PROGRAMME
Semi-Arid Production**



Establishment of satellite ICOSAMP systems

R 8315 (ZA 0585)

FINAL TECHNICAL REPORT

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ICOSAMP PROJECT INFORMATION

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ACRONYMS

AGIS	Agricultural Geographic Information System
ARC	Agricultural Research Council
CPP	Crop Protection Programme
DFID	Department for International Development
DRC	Democratic Republic of the Congo
ESSA	Entomological Society of Southern Africa
FANR	Food, Agriculture & Natural Resources
FAO	Food and Agricultural Organisation
GIS	Geographic Information System
ICOSAMP	Information Core for Southern African Migrant Pests
IRLCO-CSA	International Red Locust Control Organisation for Central and Southern Africa
NRI	Natural Resources Institute
PPRI	Plant Protection Research Institute
SADC	Southern African Development Community
UK	United Kingdom

EXECUTIVE SUMMARY

The **Information Core for Southern African Migrant Pests (ICOSAMP)** has, since its' inception in 2001 (DFID No.R7890; ZA 0439), successfully addressed the problem of a lack of 'reliable and sustainable cross-border communication and collaboration with respect to migrant pests' (Cheke et al, 2000) in the Southern African Development Community (SADC) region.

ICOSAMP established an information network which provides up-to-date migrant pest distribution data, enabling decision makers within the SADC region to forecast impending invasions or outbreaks, and thus reduce the impact of migrant pests on the food security of this semi-arid region (Kieser, 2003a).

However, the initial project focussed on the development of one system only which resided with the coordinator, and where the coordinator was responsible for the manual input of data from all the countries in the network. As a result of a request (2002 workshop) for a system for each country, the concept of satellite systems was put forward for funding, and accepted.

Each SADC country was provided with computer hardware and software, and a country-specific ICOSAMP system. The existing ICOSAMP system was upgraded. Satellite systems were programmed along the structure of the central system, but provide each SADC country collaborator with the ability to produce a map and Bulletin specific to his/her country. Data input, now the responsibility of each country, was also streamlined, and routines were developed for the import and export of data between all the systems. Training was provided to each collaborator on his/her country system., and three User Manuals were written.

Various activities were maintained from the previous project to achieve the goal of reducing the impact of migrant pests on the food security of the region viz. maintaining the communication network, regular issues of the Bulletin, holding of a workshop, and updating of the website.

This project has contributed to the building of national capacity and pest management strategies in each country, assisted with the building of a valuable ongoing database of information that can be drawn on for more detailed understanding, and improved the collection of migrant pest distribution data in SADC.

BACKGROUND

Problem

Migrant pests, a threat to agricultural productivity in the southern African region, annually threaten the livelihood of more than 123 million people. These pests are highly mobile and are able to freely traverse political boundaries, making active co-operation between neighbouring countries with regard to management and control vitally important.

The main migrant pests which threaten food crops are three species of locusts [brown locust (*Locustana pardalina*), African migratory locust (*Locusta migratoria migratorioides*), and the red locust (*Nomadacris septemfasciata*)]; Red-billed Quelea birds (*Quelea quelea*), and the African armyworm (*Spodoptera exempta*).

Preventive control of these pests before they become a serious problem is the major management technique. It is thus important to know the current distribution and scale of infestation, especially in the case of armyworm (Fig.1) where the sudden appearance, rapid development and disappearance of the insect calls for quick action. Cross-country communication is therefore the key to early warning of impending invasions or outbreaks.

ICOSAMP addressed this problem by establishing an information network in 2001 (DFID No.R7890; ZA 0439), and regularly provided up-to-date migrant pest distribution data to decision makers in SADC countries. This assisted them with forecasting impending invasions or outbreaks, and reducing the subsequent impact these pests might have had on the food security of the region.



Fig.1. Armyworm outbreak in Tanzania: February 2004
(Photos: Armyworm Forecasting Service, Tanzania)

Previous situation

From January 2001 to March 2003, SADC country collaborators provided monthly migrant pest reports to the ICOSAMP coordinator via fax. These reports were manually entered into the database by the coordinator, after which a monthly map and Bulletin was issued. During 'quiet' pest seasons in SADC, this data input activity was not a problem. However, there were a few months when large outbreaks of armyworm or Quelea birds occurred simultaneously in the region, and the amount of data to be entered mounted up, causing a backlog in production of monthly bulletins.

How the demand for satellite ICOSAMP systems was identified

During an ICOSAMP workshop held in South Africa (May 2002), collaborators were given the opportunity to test out the newly designed computer based system. It was during discussions at this workshop that delegates enquired about the possibility of the development of "country-specific" ICOSAMP systems to assist them with the input and retrieval of data in their own countries, and to allow for the display of primarily country data, but will still allow users to look at information on a SADC wide basis. Hence the concept was envisaged of "satellite" ICOSAMP systems (linked to a central information collection point), designed along the same structure as the existing ICOSAMP system, but with a focus on 'in-country' data input and retrieval.

PROJECT PURPOSE

The purpose of the second phase of the ICOSAMP project was to:

- Develop and install satellite 'country-specific' systems in SADC;
- Contribute to national pest management strategies in the short term;
- Build a valuable ongoing database (country and regional) of information that can be drawn on for more detailed understanding;
- Improve data collection.

The development and installation of satellite ICOSAMP systems has not only built up national capacity in each of the 13 SADC member countries with respect to provision of modern computer technology, but has streamlined and improved migrant pest reporting and the concomitant data flow between each country and the ICOSAMP coordinator.

RESEARCH ACTIVITIES

ICOSAMP has functioned primarily as a desk based project. All contacts were made via email, telephone or fax. Twelve training sessions were held in South Africa to train collaborators on their new country systems.

Various activities were undertaken to achieve the planned outputs, viz:

1. Existing databases maintained and upgraded
2. Country-specific databases programmed
3. Existing ICOSAMP system upgraded
4. Satellite ICOSAMP systems developed and installed
5. Communication network and website maintained
6. Training provided to each SADC collaborator on new country systems and functions of a coordinator

1. Existing databases maintained and upgraded

The coordinator's databases developed under the previous project (DFID No.R7890; ZA 0439) were maintained, upgraded to accept imports from the country systems, and regularly updated with monthly migrant pest data. These databases include migrant pest data, a bibliography, and a gazetteer.

The preliminary *upgraded* design was decided upon by:

- Identifying default values
- Deciding on the optimal structure
- Redefining look up tables
- Identifying user restrictions
- Designing differences required for country systems
- Designing data transfer interfaces

2. Country-specific databases programmed

The individual database 'sets' developed for each SADC country system (14 in total) were assembled, and programmed to streamline with the upgraded coordinator's database.

A database of country-specific topographic background maps and gazetteers was assembled for each country system.

The field names in the databases remained programmed in English, but additional fields were added to relevant tables for cross referencing to the French and Portuguese words. As the ICOSAMP database is a relational database, tables therefore integrate seamlessly with one another.

3. Existing system upgraded

The existing system, designed for the coordinator, and implemented in 2001 (DFID No.R7890; ZA 0439), was upgraded.

- Input forms were upgraded through the addition of advanced MS Access programming, to a design that ensures referential integrity in the database.
- Additional buttons were included in the forms for the import and export of migrant pest data from satellite systems.
- A button was added to facilitate the input of data into the gazetteer.
- A *search* function for the Bibliography was programmed, giving the user a variety of search options to choose from.
- Log sheets were programmed to automatically generate during the import/export processes so that any data errors with records can be detected (eg. duplicate records, missing geographical coordinates).
- The display of information was improved through the inclusion of more specific individual pest classifications eg. immature, solitary, red locust adults (red) was allocated a different map symbol/colour to mature, solitary, red locust adults (blue) (Fig.2). This was done so that a broader, more versatile display of information could be viewed on the GIS maps.
- The SADC regional maps were updated and improved through the union of individual maps assembled for the country systems (eg. contours of the whole SADC region).

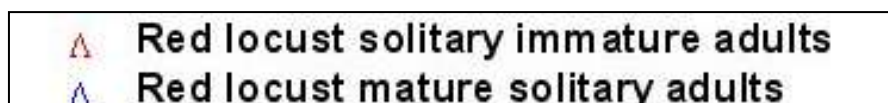


Fig.2. Example of symbols and colours displayed on maps

4. Satellite ICOSAMP systems developed and installed

The satellite country systems were designed according to the structure of the upgraded ICOSAMP coordinators' system and still based on two main inter-dependent sections - a relational database (MS Access 2003) and a Geographical Information System (ArcView 3.3).

Satellite systems were developed for collaborators in:

Angola (Portuguese)	Namibia
Botswana	South Africa (1 x locust, 1 x quelea)
DR of Congo (French)	Swaziland
Lesotho	Tanzania
Malawi	Zambia
Mozambique (Portuguese)	Zimbabwe
IRLCO-CSA	

Development of the satellite systems included the:

1. Programming of table field names and data input boxes to streamline with the upgraded ICOSAMP coordinators' system (Appendix 2).
2. Imposing of rules to regulate input of data eg. user will not be allowed to continue with input until a geographic location is input.
3. Inclusion of an option to draw a regional or country map.
4. Standardisation of the number of crop choices relevant to all three pests.
5. Standardisation of form structure for all 3 migrant pests (armyworm, locust, quelea).
6. Automatic setting of some options depending on choices made eg. when the pesticide is chosen, the 'control (Y/N)' box is automatically ticked.
7. Programming of routines to prevent duplicate input of data.
8. Development of routines for easy transfer of data (import/export) between satellite systems and the coordinators' system (Fig.3).
9. Automatic generation of log sheets during the import/export processes so that users can easily detect any data errors with records.
10. Inclusion of a *search* function for the Bibliography, giving the user a variety of search options to choose from.
11. Programming of an *output* facility for the Bibliography, giving the user the option of either printing or saving the data electronically of a bibliographic search (Fig.4).
12. Addition of a button to facilitate the input of data into the gazetteer.
13. Creation of a template for a Monthly Bulletin to assist users with input of information into their own monthly bulletins, and the addition of a button on the Input form for this purpose.
14. Translation by the South African Department of Language Services of all input forms, menus, and help menus into French and Portuguese (Fig.5). The language of the *underlying* databases for these countries remained programmed in English, so that all the systems could integrate seamlessly in sharing of data.

Export ICOSAMP Data

Data will be Exported to a database.
 SELECT an existing database file by clicking on Browse ...
 OR type the full name (including the path) of a new file in the box below.

C:\PestExchange\alltjul04.mdb Browse ...

Data To Export Click on the sets required Leave unselected for all	Countries required Leave unselected for all countries
Armyworm Locust Quelea Gazetteer	Angola Botswana Congo D R Lesotho

Date range required

From: January 1900
 To: December 2100

Continue Processing table Cancel / Finish

Fig.3. Form for the export of data from the ICOSAMP database

Bibliographic outputs

BIBLIOGRAPHIC OUTPUTS

PRINT OUTS	DIGITAL OUTPUTS
Print the whole bibliography	Export the whole bibliography
Print the results of an author search	Export the results of an author search
Print the results of a word search	Export the results of a word search
Print the results of an author search for a particular pest	Export the results of an author search for a particular pest
Print the results of a word search for a particular pest	Export the results of a word search for a particular pest

Return to GIS

Record: ⏪ ⏴ 1 ⏵ ⏩ of 1

Fig.4. Form for the output of a bibliographic search from ICOSAMP

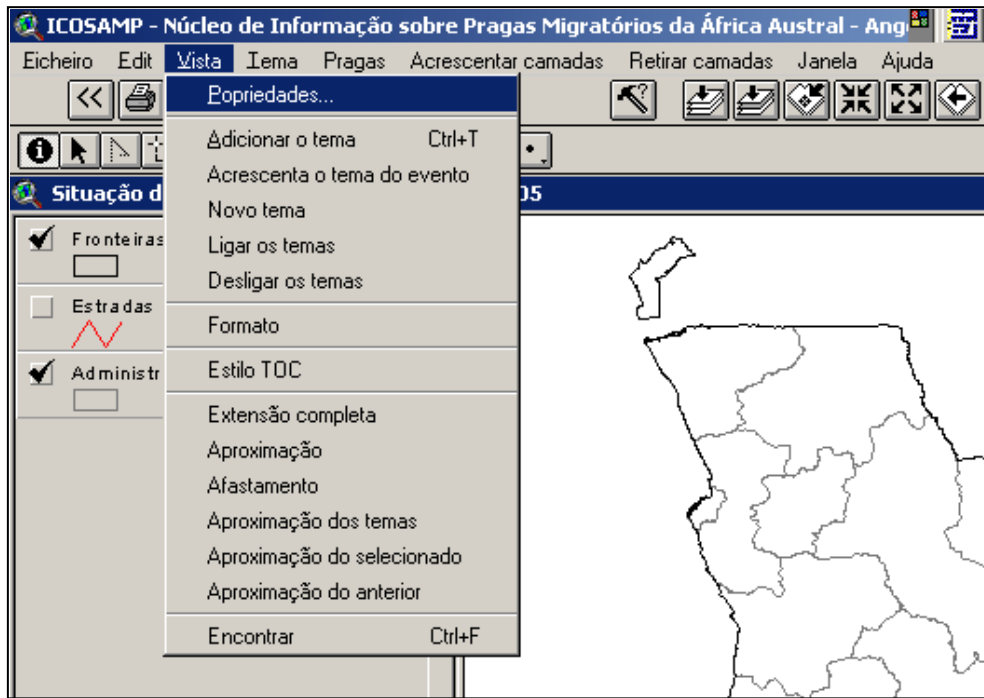


Fig.5. Angolan system translated into Portuguese

15. Country border maps were drawn using ArcView 3.3 GIS software. Monthly pest incidence is mapped from reports given, to an exact latitude/longitude geographical point in the country rather than to an administrative polygon. Where *additional* background maps were digitally available for a country, the following were included in the system (Fig.6):

- Administration levels (districts)
- airfields
- cities
- contours
- lakes
- landcover
- protected areas
- railways
- rivers
- roads
- settlements
- wetlands

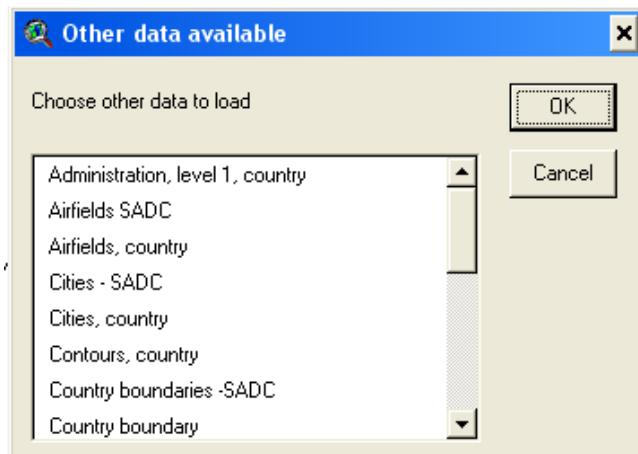


Fig.6. Selection options for additional map layers

Installation of the satellite systems included the provision of the following hardware and software for each ICOSAMP collaborator:

Hardware

Intel P4 (40Gb HD; 506Mb RAM)
 Monitor
 UPS Backup Power Supply
 Keyboard
 Optical Mouse
 External 56K Modem
 HP 1100 Inkjet Printer
 CD writer

Software

Windows 2000 Professional
 Microsoft Office 2003 Professional
 ArcView 3.3 GIS
 Norton Internet Security 2004
 PC Anywhere

All hardware and software was purchased in South Africa. A discounted price was obtained for the ArcView 3.3 software. In addition to the above purchased items, some freeware/shareware software was also loaded (Acrobat Reader v6; WinZip v7; and Ulead Photo Impact).

All the software provided by ICOSAMP was installed, registered, and activated. Original licences are stored at the ARC-PPRI, South Africa. All hardware and software was labelled with the ICOSAMP logo and the country name.

The setup of all the computers was standardised (eg. screensavers, desktop icons, screen resolution etc.) were set to the same settings so that the coordinator could easily assist with any possible future problems.

Before a training session was held, the specific country ICOSAMP system was thoroughly tested by the coordinator, and where problems existed, these were corrected through email discussions with the programmers in the UK.

On completion of the training, the system was written to a CD and given to the country collaborator as a backup disk (Fig.7). The final systems were also backed up and archived onto another CD for the coordinator and programmers.

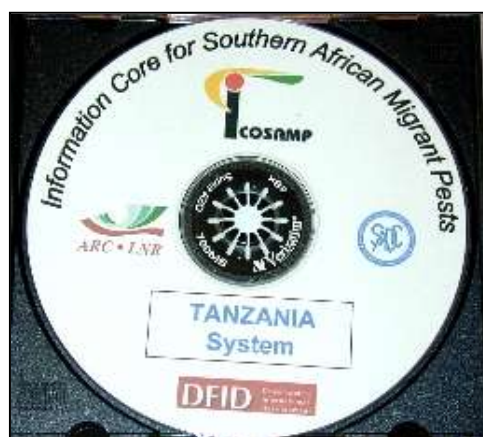


Fig.7. Example of CD with country system.

Each country collaborator was required to complete and return an Agreement Letter in which his organisation acknowledged receipt of the hardware and software, and agreed to maintain the computer equipment in a good working condition.

5. Communication network and website maintained

The existing ICOSAMP network of 14 SADC collaborators was maintained (Angola, Botswana, Democratic Republic of Congo, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe and the International Red Locust Control Organisation for Southern and Central Africa (IRLCO-CSA)).

With the exception of the DRC where communication in the English language appears to be a barrier, all the country collaborators participated on a regular basis. The email list was expanded to include regional as well as international stakeholders.

The coding for the website was manually written by the ICOSAMP co-ordinator using Evrsoft First Page v2.00 software, and uploaded to the server using WS_FTP v4.01 software. The data on the website were maintained and the site is hosted by EcoPort (<http://www.ecoport.org>) an internet based information management forum.

6. Training on country systems and roles of a coordinator

Where possible, two collaborators at a time were brought to South Africa for a 4-day training session on their country system. Each collaborator had direct access to his/her own country's computer and ICOSAMP system. Where circumstances did not allow for two collaborators to attend, training was given to one country collaborator on his/her system.

Training was divided into three individual sessions, each with its' own Users Manual (Pender *et al*, 2004; Kieser, 2004a; Kieser, 2004b) viz.

1. How to set up the ICOSAMP computer,
2. How to use the ICOSAMP country system, and
3. How to undertake the role of a coordinator.

1. Setting up the computer hardware.

Training was given to each collaborator on how to set up their computer hardware (Fig.8). This was necessary to ensure that each person knew how to install his/her computer after it was couriered to his/her country. To make this process easier, each cable - and the corresponding slot in the console - were identically numbered (Kieser, 2004b). The function of the various hardware components was also explained.



Fig.8. Setting up the ICOSAMP computers

2. ICOSAMP system training.

This training spanned 3 days (Fig.9) and was focused on three main ICOSAMP functions.

Data Input	Displaying Data	Outputting Data
Migrant pest data (armyworm, locusts, quelea)	How GIS software works (basic functions)	Import/Export procedure
Updating/changing existing records	Mapping of migrant pest distribution (country and regional)	Creation of a map layout and how to print it out
Bibliographic records	Querying data on the map	Printing of Monthly Bulletins
Geographical locations in the gazetteer	Adding non-migrant pest data (contours etc)	Printing a Bibliographic search
Data for a monthly Bulletin	Searching the Bibliography	Exporting of a Bibliographic search to a digital format
Managing the ICOSAMP system		Saving specific data from the database to a digital format
Importing data to, and exporting data from, the system		

Training was also given on the re-installation of the ICOSAMP system from the CD, in the case of a computer system crash. Detailed instructions were provided in the Users Manual (Pender et al, 2004).



Fig.9. Training on the use of the ICOSAMP system

3. The roles of the ICOSAMP network coordinator.

The necessity of a coordinator was stressed, and to ensure sustainability of this network, EACH collaborator was given detailed training on the roles and activities of the coordinator. The roles of the coordinator were identified as:

1. Maintaining the communication network,
2. Maintaining the SADC database,
3. Creating the monthly ICOSAMP map,
4. Producing the monthly ICOSAMP Bulletin (ICOSAMP News),
5. Producing an Annual Report for the SADC-FANR Technical Committee,
6. Maintaining the website and internet mapper, and
7. *Ad hoc* functions such as organising workshops.

To fulfill these roles, various smaller activities were explained. In particular, time was spent on training each collaborator to set up “queries” using the MS Access software. Not only is this a necessary function of the coordinator, but each collaborator saw the “use” of this programming in their own country! For example, the collaborator could create a query for extracting information from the database about all the quelea colonies controlled during the past year in his/her country, and then display this information on a map, with control operations separated into chemical or explosives.

On the last day of the training (day 4), each collaborator had to complete an Exercise which incorporated the use of all the major activities of the training session (Appendix.1).

Collaborators assisted with the packing up and sealing of their computer hardware, and were then presented with their attendance certificates (Fig.10).



Fig.10. Attendance certificates handed out on completion of the training session.

Problems encountered. Two weeks after training was given to the South African (Quelea) collaborator, the computer and system was returned to the coordinator! The argument was that South Africa could NOT accept the hardware. The 'new' management at the South African Department of Agriculture were apparently not well informed about ICOSAMP or the history involved in establishing the network and South Africa's participation. After lengthy (5 months) discussions and correspondence with the managers at NDA, South Africa granted approval to continue collaborating on ICOSAMP, but that *only* the ICOSAMP system software could be installed on their computers, and that training had to be provided to **3** administrative assistants and not the two existing ICOSAMP collaborators. Again, the argument was that the AAs were recently designated to be responsible for the input of migrant pest data. This change in plan meant that the ICOSAMP coordinator had to travel to 2 distant locations (De Aar and Upington) to train two ladies, and one local (Pretoria) lady. The ICOSAMP coordinator however insisted that when any workshop is arranged that the 'technical' collaborators attend. Hopefully, this arrangement will be maintained!

USER MANUALS

Three ICOSAMP User Manuals were written in English. The manuals for the Portuguese and French systems were written in English, but all the images (screen dumps of the systems) and keywords relevant to these systems were translated into the respective languages.

1. The ICOSAMP Users Manual (Pender et al, 2004) is a user friendly manual explaining step-by-step how to use all the functions of the ICOSAMP computer system. Screen dumps of all the input forms and mapping menus have been included. The manual also explains how to re-install the ICOSAMP software in the case of computer failure.

2. The ICOSAMP Coordinators' Manual (Kieser, 2004a) explains the roles of the coordinator in this network, as well as how to extract additional information from the system (MS Access queries). This information is required for eg. providing the SADC-FANR Secretariat with an annual SADC migrant pest situation report, and extraction of data from the database for the interactive mapper hosted on the ICOSAMP website.
3. ICOSAMP Computer Setup Guidelines (Kieser, 2004b) provides detailed guidelines and images on how to set up the hardware for the ICOSAMP computers provided.

Modifications to the proposed research activities

Due to circumstances beyond the control of the project leader, a few modifications were made to the proposed activities.

1. Due to the delayed signing of the contract by the ARC, the project starting date was held up by a few months. This meant that the development of the country systems and the related training sessions were also delayed.
 2. Initially the monitoring of armyworm/locust and *Quelea* was undertaken by separate organisations in this country. However, after the resignation of Mrs Tracey Couto (the Zimbabwe *quelea* collaborator on ICOSAMP) from the Problem Bird Control Unit in September 2003, the reports on *Quelea* distribution were no longer received at the ICOSAMP office. Upon enquiry by the coordinator via Dr P Chinwada (Plant Protection) in March 2004, it was discovered that the mandate for *Quelea* monitoring and control had been handed over to the Plant Protection Service – without their being aware of this! Since April 2004 therefore all 3 migrant pests are regularly reported on by the Plant Protection collaborators.
 3. South Africa 'threw a spanner in the works' by insisting on a change in the training and system implementation plans (cf. pg.15 above). This meant that 3 and not 2 collaborators had to be trained on the country system.
-

OUTPUTS

Unfortunately not all the anticipated outputs were achieved.

There were 5 outputs in this project:

Output	Result
1. Existing ICOSAMP databases maintained and upgraded. Country specific databases programmed	Completed
2. Existing ICOSAMP system upgraded. Satellite (country-specific) systems developed and installed	Completed
3. Training provided	Completed
4. Marketing undertaken	Delayed to June/July 2005 due to late start of project
5. Ownership transferred	No longer possible

Output 1: Existing databases upgraded, and country databases programmed

COMPLETED

The ICOSAMP database now contains more than 2,500 records of migrant pest control operations undertaken in the SADC region since the inception of the database in 2001. During this project, 450 armyworm, 425 Locust, and 611 Quelea records were added to the database – a significantly higher number than in the first phase of the project (2001-2003). The ICOSAMP gazetteer contains more than 680 entries. These records include reports of the “absence of a pest” and “no reports received”. This database is now a valuable geo-referenced research tool for information relating to the distribution of southern African migrant pests.

14 Country-specific databases were programmed.

14 Sets of country-specific maps and gazetteers were constructed.

Output 2: Existing system maintained, upgraded, and satellite systems developed

COMPLETED

The existing ICOSAMP system was extensively upgraded, from what used to be a system where the coordinator was responsible for manually inputting all the data from 13 countries, to a system that now easily imports electronic data received from country collaborators.

14 Satellite (country-specific) ICOSAMP systems, designed along the structure of the central system, were developed and installed (Fig.11). This allows each country to build national capacity in migrant pest monitoring and reporting. Data can be easily exported as an electronic file and sent to the coordinator for inclusion in the central system.

The input forms and menus of 3 systems were translated: Angola and Mozambique (Portuguese), and the DR of Congo (French).

Complete computer systems (hardware and software) were donated to 14 collaborators.

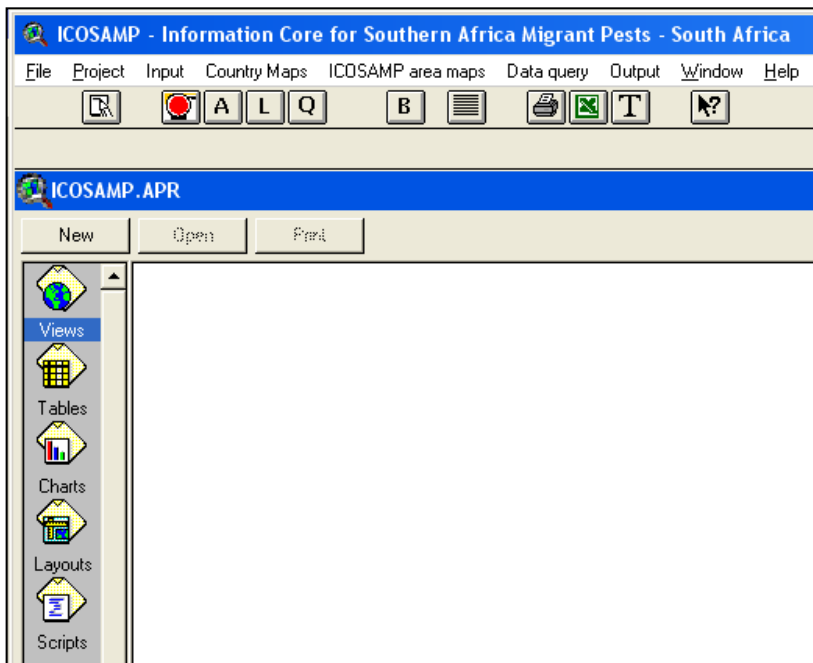
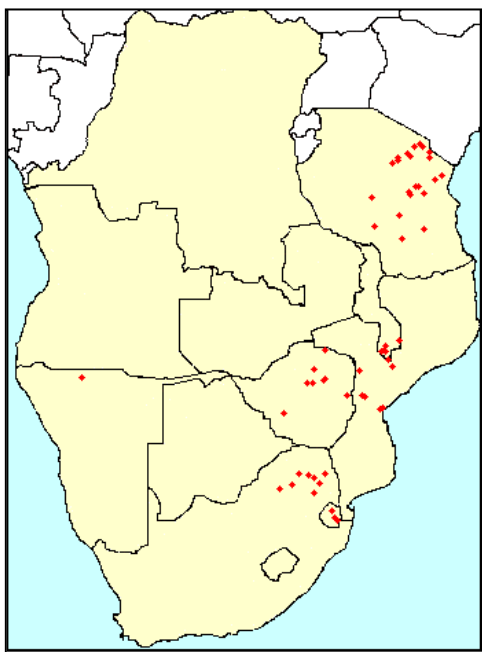


Fig.11. Map viewer designed for the South African system

To sustain the existing network, all communication channels were maintained (email, fax, phone). A few country collaborator changes were made.

Swaziland – Mr Morrison Mbuli who has been with our ‘team’ since it’s inception in 2001, retired from Government service in July 2004. ICOSAMP welcomed two new collaborators viz. Mr Boniface Makhuba and Mr Daniel Khumalo.

Zimbabwe – Since April 2004 all 3 migrant pests are regularly reported on by the Plant Protection collaborators.



The website was maintained and data updated. An interactive mapper (Fig.12) was designed *after* the completion of the first phase of the project (DFID No.R7890; ZA 0439), and is therefore reported on in this Final Report. Data from the central ICOSAMP database are regularly uploaded to support the database on the internet server. This internet mapper enables any person in the world to map the distribution of any one of the 3 migrant pests in SADC, for any specified period of time.

Fig.12. Website map showing armyworm outbreak in SADC (Jan-March 2004)

Monthly Bulletins. Data from the monthly country migrant pest reports were entered into the database of the coordinators' system, and the pest situation summarised for the whole SADC region. This was included in the monthly ICOSAMP Bulletins which were disseminated via the email list, fax and the website.

Twenty-two (22) Bulletins were issued during this project and all Bulletins and monthly maps were archived on the website.

Workshop (Fig.13). A 1-day workshop was held in South Africa (July 2003) and hosted by the Entomological Society of Southern Africa (ESSA). This workshop, funded by SADC via the Belgian Crop Development Project, was held as a parallel session at the 14th Biennial Congress of the ESSA, thus providing ICOSAMP collaborators with the golden opportunity of a training session back-to-back with a scientific congress.

12 Country delegates, 1 regional representative (IRLCO-CSA), the UK collaborator, and the ICOSAMP Co-ordinator presented their annual reports. The progress of another DFID funded project - the Brown Locust Information Support System (BLISS) - was also presented.

Delegates received training on how to use a country gazetteer, completion of the ICOSAMP reporting forms, and held discussions about the future implications of ICOSAMP and Phase II. ICOSAMP reporting forms and guidelines were also revised and updated during the workshop. Each delegate was also given a CD with a gazetteer for his/her own country (Kieser, 2003b).

Fig.13. ICOSAMP Workshop: July 2003



Our ICOSAMP banner



The ICOSAMP delegates



M Kieser (Coordinator) & J Pender (GIS programmer)

Output 3: Training provided

COMPLETED

16 collaborators received training on the ICOSAMP systems specifically designed for their country. Training was also given on the role and activities of a coordinator.

3 English User Manuals were written.

All training sessions were held at the ARC-PPRI offices in Pretoria, South Africa.

Output 4: Marketing undertaken

INCOMPLETE

This output - *the designing and printing of posters and leaflets* - had to be postponed due to the late starting date of this project, but should be finalised by ARC-PPRI in June/July 2005.

On completion, posters and leaflets will be posted to country collaborators for distribution in their countries.

Output 5: Transfer of Ownership

NOT POSSIBLE TO COMPLETE

The transfer of ownership of ICOSAMP to SADC-FANR will no longer be possible. The ICOSAMP coordinator has repeatedly asked SADC officials at annual workshops whether and when they will be able to take over ownership of ICOSAMP and run it from their centralised offices in Botswana.

At the last meeting held in Gaborone (February 2005), this subject was again laid on the table. However, it is now clear that the SADC-FANR Secretariat does NOT have the capacity to coordinate the network, and that funds are NOT available for them to take over this role. SADC has undergone a major restructuring exercise during the last 2 years, which saw the centralisation of all their activities to Gaborone, Botswana. Recently (February 2005), some senior staff members were also made redundant and sent back to their respective countries!

So, to combat this inability to transfer the ownership of ICOSAMP to SADC (where it should belong!), the ARC-PPRI will continue to manage the network from its' offices in Pretoria, South Africa, until such time that a suitable donor / coordinator can be found.

CONTRIBUTION OF OUTPUTS TO DEVELOPMENTAL IMPACT

Contribution of ICOSAMP to DFID goals

ICOSAMP has firmly established itself as *the* migrant pest information centre in southern Africa, and developed regional co-operation between information officers in the region. The network, now improved through the use of modern technology, provides up-to-date migrant pest distribution information to assist decision makers in neighbouring countries to forecast impending invasions or outbreaks, thereby reducing the impact of migrant pests in semi-arid cropping systems, for the benefit of poor people.

Monthly ICOSAMP Bulletins are distributed to collaborators who in turn forward these to their superiors.

Collaborators have expressed their views very strongly that ICOSAMP is of great value to them in meeting their primary responsibilities.

Comments received from country collaborators concerning the usefulness of the ICOSAMP network:

Lesotho: ICOSAMP has greatly improved the efficiency of our work as far as migrant pests are concerned. Although Lesotho rarely has migrant pests outbreak, the network is helping a lot in terms of alerting us on the prospects of having migrant pest outbreaks in the country. For instance in April ISOCAMP alerted us of the outbreak that was reported in Kwazulu Natal (South Africa) the province bordering Lesotho. That report helped because that part of the country is rarely visited due to its topographic nature. The ICOSAMP monthly bulletin is very instrumental and shows how other countries with frequent outbreaks control the migrant pests. This information is very important in case Lesotho has a similar outbreak, and the strategies already implemented in other countries can be adopted.

Malawi: The warning of an unconfirmed report of a locust swarm from Mozambique (ICOSAMP warning May 2003) spurred officials in Malawi to undertake a survey of the red locust outbreak areas bordering Mozambique.

Namibia: Much has been improved since the inception of the ICOSAMP project, especially with respect to early warning of suspected outbreaks. We have also developed our migrant pest reporting format based on the ICOSAMP reporting format.

Zimbabwe: The ICOSAMP network is very useful especially in issuing warnings of likely outbreaks and through notifications via the Bulletin of migrant pest situations in other member countries. This very important information would otherwise be inaccessible and unavailable to member countries operating in isolation.

Follow-up action needed

There have been a few instances where misidentification of a pest has led to a little confusion and erroneous reporting (eg. brown locusts reported in the Caprivi floodplains!). In addition, collaborators have requested training on how to assess pest density and pest damage assessments. These problems could easily be remedied by:

- a) Printing pocket handbooks for the identification of the pests, and methods of assessing density and damage;
- b) A training workshop on pest identification, pest density estimation, and damage assessments.

With the above 2 activities in place, data input will most definitely be improved in the database.

a. What further market studies need to be done?

Feasibility and logistics of printing pocket field guides.

Finding suitable donors for the field guides and a workshop.

b. How will outputs be made available to intended users?

The outputs of this ICOSAMP project are already disseminated to all collaborators. All countries have received their computer equipment and ICOSAMP systems. ICOSAMP Bulletins and the website are regularly distributed. The migrant pest database is available from the ICOSAMP co-ordinator for research purposes.

c. What further stages are needed to develop, test and establish manufacture of product?

At the moment, no further development is needed on the ICOSAMP system. However, as newer computer software is regularly being developed (eg. GIS), it may be expedient to re-programme minor upgrades to the satellite systems at a later date.

d. How, and by whom, will further stages be carried out and paid for?

The current ICOSAMP coordinator will continue to seek funding for 'follow-on' projects, eg. field guides and workshops.

BIOMETRICIANS SIGNATURE

Although a visit was paid to the ARC biometrician at the beginning of this project, it was made very clear that the ICOSAMP project does not lend itself to any biometric analyses. No biometricians' signature is therefore applicable to ICOSAMP.

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APPENDIX 1. ICOSAMP Training Exercise



ICOSAMP

Practical exercises for Training Session


Dear ICOSAMP collaborator,

These exercises are not meant as a 'test' but as a means of ensuring that you are able to use the ICOSAMP system to its' fullest capabilities.

Exercise 1 – Country specific map

- a. INPUT the migrant pest data from the last monthly country report you sent to the co-ordinator. NB ... Remember to ADD a new record each time!
- b. Create a VIEW of this data and switch on the 'administration1' layer.
- c. ADD the *Other* layer of 'contours, country'.
- d. MOVE the contours layer to underneath the 'administration1' layer.
- e. Create a LAYOUT of this map.
- f. Change the title of the layout to read as <your country name> Migrant Pest Situation for <the month> 2004.
- g. Make sure that the legend is visible and is positioned somewhere next to your map.
- h. Print the layout.

Exercise 2 – SADC map

- a. Create a new VIEW of the armyworm situation in the SADC region using the data for the month of February 2004.
- b. Switch on the 'administration 1' layer. Change the colour of the outline of this layer to the lightest grey colour in the colour selector.
- c. ZOOM in to the country of Tanzania to look at the situation in closer detail. Zoom back to previous extent again.
- d. ACTIVATE the "Armyworm moths reported" layer.
- e. Using the  button, take a look at the details of some of these locations.
- f. Open the TABLE of the theme and "sort" the records according to the Location field (ask me for help here!). Highlight (=select) all the records for Mbeya. Close the table.
- g. Open the map again and look at the records selected (highlighted in yellow).
- h. CLEAR the selected records.
- i. ZOOM to the previous extent (=full SADC map).
- j. Create a LAYOUT of this map.
- k. Change the title of the layout to read as "Armyworm Situation in the SADC Region – February 2004".
- l. Make sure that the legend fits on the page.
- m. Print the layout.

Exercise 3 - Exporting and Importing

- a. EXPORT the data you entered in Exercise 1 to the disk provided (a: drive). Export the armyworm, locust, and quelea data sets for your country with the date set for the month's data you input. Create the file name as
a:\<your country>-<the month>2004.mdb
- b. Open the Export LOG and make sure the data you selected was exported.
- c. Swap disks with the country collaborator next to you.
- d. IMPORT the data from the new disk into your database by using the browse button and opening the a:\ drive, and selecting the country file. Leave the datasets 'unselected' as this will import all the data.
- e. Open the Import LOG and make sure the data you selected was imported. Look for any errors.

Exercise 4 - Finding a record

- a. Open the Gazetteer.
- b. FIND the following record using the Edit, Find menu and with the cursor in the Location box. Write down the lat and long co-ordinates. Do not change the record!
Karonga, Malawi.

Exercise 5 - Monthly Bulletin

- a. Open the input form for the MONTHLY Bulletin. NB ... Remember to ADD a new record.
- b. Create a new monthly Bulletin, and write information for the last month's data you just entered.
- c. Print the Bulletin.

Exercise 6 - Output a Bibliographic search

- a. SEARCH the bibliography for all the publications on Quelea written by Elliott, C.
- b. OUTPUT (print) the same search to the printer.

Exercise 7 - Manage the Views and Closing

- a. Please REMOVE all the views (File, Manage views) from the current session.
- b. Close ICOSAMP.

WELL DONE!!

APPENDIX 2. Lookup tables used in the ICOSAMP database

Table: LuAdBehav

Sequence	AdultBehaviour	AdultBehaviourEn	AdultBehaviourFr	AdultBehaviourPo
1	Flying	Flying	En vol	A voar
2	Basking	Basking	Préassement	Aquecer ao sol
3	Copulating	Copulating	Copulation	Copular
4	Laying	Laying	Ponte	Pôr ovos

Table: LuAffirm

Sequence	Explanation	ExplanationEn	ExplanationFr	ExplanationPo
0				
2	No	No	Non	Não
3	Unknown	Unknown	Inconnu	Desconhecido
1	Yes	Yes	Oui	Sim

Table: LuAppear

Sequence	Appearance	AppearanceEn	AppearanceFr	AppearancePo
1	solitary	solitary	solitaire	solitário
2	transient	transient	de passage	transiente
3	gregarious	gregarious	grégaire	gregário
4	unknown	unknown	inconnu	desconhecido

Table: LuAppMethod

Sequence	AppMethod	AppMethodEn	AppMethodFr	AppMethodPo	Code
0					
1	aircraft mounted sprayer	aircraft mounted sprayer	pulvérisateur monté sur avion	pulverizador montado em aeronave	A
2	handheld ULV sprayer	handheld ULV sprayer	pulverisateur ULV à main	pulverizador ULV de mão	H
3	knapsack sprayer	knapsack sprayer	pulvérisateur porté sur le dos	pulverizador portátil	KS
5	other	other	autre	outro	O
4	vehicle mounted sprayer	vehicle mounted sprayer	pulvérisateur monté sur véhicule	pulverizador montado em veículo	VM

Table: Luareaunit

Explanation
ha
km ²
m ²

Table: LuBandNumber

Sequence	BandsNumber	BandsNumberEn	BandsNumberFr	BandsNumberPo
0				
1	0	0	0	0
2	1	1	1	1
3	2	2	2	2
4	3	3	3	3
5	4	4	4	4
6	5	5	5	5
7	>5	>5	>5	>5
8	Unknown	Unknown	Inconnu	Desconhecido
9	Not rec	Not rec	Pas noté	Não registado

Table: LuConfirm

Sequence	Explanation	ExplanationEn	ExplanationFr	ExplanationPo
0				
1	Confirmed	Confirmed	Confirmé	Confirmado
2	Unclear	Unclear	Incertain	Pouco claro

Table: LuContMethodQ

Sequence	Method	MethodEn	MethodFr	MethodPo
2	chemical	chemical	chimique	químico
1	explosion	explosion	explosion	explosão
3	harvesting	harvesting	moisson	colheita
0				
4	other	other	autre	outro

Table: LuContMethodQ

Sequence	Method	MethodEn	MethodFr	MethodPo
1	biological	biological	biologique	biológico
2	chemical	chemical	chimique	químico
3	mechanical	mechanical	mécanique	mecânico
0				

Table: LuCountry

Sequence	Country	CountryEn	CountryFr	CountryPo	CountryCode
0					
1	Angola	Angola	Angola	Angola	AO
2	Botswana	Botswana	Botswana	Botsuana	BT
3	Congo D R	Congo D R	Congo D R	Congo D R	CO
4	Lesotho	Lesotho	Lesotho	Lesoto	LT
5	Malawi	Malawi	Malawi	Malawi	MI
6	Mozambique	Mozambique	Mozambique	Moçambique	MZ
7	Namibia	Namibia	Namibie	Namibia	NA
8	South Africa	South Africa	Afrique du Sud	África do Sul	SF
9	Swaziland	Swaziland	Swaziland	Suazilândia	SW
10	Tanzania	Tanzania	Tanzanie	Tanzânia	TZ
11	Zambia	Zambia	Zambie	Zâmbia	ZA
12	Zimbabwe	Zimbabwe	Zimbabwe	Zimbábue	ZI

Table: LuCrops

Sequence	Crop	CropEn	CropFr	CropPo	CropCode
0					
1	Barley	Barley	Orge	Cevada	B
2	Maize	Maize	Maïs	Milho	M
3	Millet	Millet	Millet	Milho miúdo	Mi
4	Manna	Manna	Manne	Maná	Mn
5	Pasture	Pasture	Pâturage	Pastagem	P
6	Rice	Rice	Riz	Arroz	R
7	Sorghum	Sorghum	Sorgho	Sorgo	S
8	Sugarcane	Sugarcane	Canne à sucre	Cana de açúcar	Sc
9	Tef	Tef	Tef	Tef	T
10	Wheat	Wheat	Blé	Trigo	W
20	Other	Other	Autre	Outro	O

Table: LuCropStage

Sequence	CropStage	CropStagePo	CropStageEn	CropStageFr
1	newly sown	semeado recentemente	newly sown	nouvellement semée
2	vegetative	vegetativo	vegetative	végétative
3	panicle initiation	iniciação de panícula	panicle initiation	apparition des panicules
4	milky	leitoso	milky	laiteux
5	ripening	amadurecer	ripening	murissant
0				

Table: LuDensity

Number	Explanation	ExplanationEn	ExplanationFr	ExplanationPo
0				
1	low	low	basse	baixo
2	medium	medium	moyenne	médio
3	dense	dense	dense	denso

Table: LuDirection

Sequence	Direction	DirectionEn	DirectionFr	DirectionPo
1	N	N	N	N
2	NNE	NNE	NNE	NNE
3	NE	NE	NE	NE
4	ENE	ENE	ENE	ENE
5	E	E	E	E
6	ESE	ESE	ESE	ESE
7	SE	SE	SE	SE
8	SSE	SSE	SSE	SSE
9	S	S	S	S
10	SSW	SSW	SSO	SSO
11	SW	SW	SO	SO
12	WSW	WSW	OSO	OSO
13	W	W	O	O
14	WNW	WNW	ONO	ONO
15	NW	NW	NO	NO
16	NNW	NNW	NNO	NNO
0				

Table: LuEstimate

Sequence	Estimate	EstimateEn	EstimateFr	EstimatePo
1	small	small	petite	pequeno
2	medium	medium	moyenne	médio
3	large	large	grande	grande
4	very large	very large	très grande	muito grande
0				

Table: LuExportDataSets

TableName	DataSet	DataSetEn	DataSetPo	DataSetFr
Armyworm	Armyworm	Armyworm	Lagarta de cereais	Chenille legionnaire
Locust	Locust	Locust	Gafanhotos	Criquets
Quelea	Quelea	Quelea	Quelea	Travailleur à bec rouge
Gazetteer	Gazetteer	Gazetteer	Dicionário geográfico	Index géographique

Table: LuFledgeBehav

Sequence	FledgingBehaviour	FledgingBehaviourEn	FledgingBehaviourFr	FledgingBehaviourPo
1	short fly	short fly	vol court	vôo curto
2	free fly	free fly	vol libre	vôo livre
0				

Table: LuGreen

Sequence	Explanation	ExplanationEn	ExplanationFr	ExplanationPo	PlantStatusCode
1					
2	greening	greening	verdissant	reverdecer	Gr
3	green	green	vert	verde	G
4	drying	drying	séchant	a secar	Dr
5	dry	dry	sec	seco	D
6	unknown	unknown	inconnu	desconhecido	U
7	not rec	not rec	pas noté	não registado	N

Table: LuHabitat

Sequence	Habitat	HabitatEn	HabitatFr	HabitatPo
0				
1	savanna	savanna	savanne	savana
2	wetland	wetland	terre marécageuse	pântano
3	autre	autre	autre	outro

Table: LuHopBeh

Sequence	HBehaviour	HBehaviourEn	HBehaviourPo	HBehaviourFr
2	marching	marching	em marcha	marchant
1	feeding	feeding	alimentar	s'alimentant
0				

Table: LuMaturity

Sequence	Maturity	MaturityEn	MaturityFr	MaturityPo
1	fledging	fledging	oisillon	avezinha
2	immature	immature	immature	imaturo
3	maturing	maturing	jeune adulte	a madurar
4	mature	mature	adulte	maduro
5	unknown	unknown	inconnu	desconhecido
0				

Table: LuMonth

Sequence	Month	MonthEn	MonthFr	MonthPo
1	January	January	Janvier	Janeiro
2	February	February	Février	Fevereiro
3	March	March	Mars	Março
4	April	April	Avril	Abril
5	May	May	Mai	Maio
6	June	June	Juin	Junho
7	July	July	Juillet	Julho
8	August	August	Août	Agosto
9	September	September	Septembre	Setembro
10	October	October	Octobre	Outubro
11	November	November	Novembre	Novembro
12	December	December	Décembre	Dezembro
0				

Table: LuMonthPos

Sequence	Monthpos	MonthPosEn	MonthPosFr	MonthPosPo
1	early	early	début	Início
2	mid	mid	milieu	Meado
3	late	late	fin	Final
4	first week	first week	première semaine	Primeira semana
5	second week	second week	deuxième semaine	Segunda semana
6	third week	third week	troisième semaine	Terceira semana
7	fourth week	fourth week	quatrième semaine	Quarta semana
0				

Table: Lunestling

Sequence	NestlingStage	NestlingStageEn	NestlingStageFr	NestlingStagePo
1	just hatched	just hatched	juste éclos	acabado de chocar
2	feathers visible	feathers visible	plumes visibles	penas visíveis

Table: LungDensity

Number	Explanation	ExplanationEn	ExplanationFr	ExplanationPo
1				
2	Group	Group	Groupe	Grupo
3	Isolated	Isolated	Isolé	Isolado
4	Scattered	Scattered	Epars	Disperso
5	Unknown	Unknown	Inconnu	Desconhecido
6	Not rec	Not rec	Pas noté	Não registado

Table: Lunumbest

Number	Estimation	EstimationEn	EstimationFr	EstimationPo
1				
2	few	few	quelques-uns	poucos
3	several	several	plusieurs	vários
4	many	many	beaucoup	muitos
5	unknown	unknown	inconnu	desconhecido
6	not rec	not rec	pas noté	não registado

Table: LuObserver

Table: Luperunitarea

Sequence	Explanation	ExplanationEn	ExplanationFr	ExplanationPo	Code
0					
1	car transect	car transect	transversale véhicule	Corte transversal por automóvel	C
2	per bush	per bush	par buisson	Por arbusto	B
3	per ha	per ha	par ha	Por hectare	H
4	per sqmeter	per sqmeter	par mètre carré	Por metro quadrado	M
5	per transect	per transect	par transversale	Por corte transversal	T
6	spot check	spot check	contrôle au hasard	Verificação parcial	S

Table: LuPesticide

Sequence	Pesticide	PesticideEn	PesticideFr	PesticidePo	Code
0					
1	decis	decis	decis	decis	D
2	fenitrothion	fenitrothion	fenitrothion	fenitrothion	F
3	fipronil	fipronil	fipronil	fipronil	Fi
4	fastac	fastac	fastac	fastac	Fa
5	dimilin	dimilin	dimilin	dimilin	D
6	myco-insecticide	myco-insecticide	myco-insecticide	myco-insecticide	M
7	other	other	autre	outro	O

Table: LuPesticideA

Sequence	Pesticide	PesticideEn	PesticideFr	PesticidePo
0				
1	Baythroid	Baythroid	Baythroid	Baythroid
2	Carbaryl	Carbaryl	Carbaryl	Carbaryl
3	Cypermethrin	Cypermethrin	Cypermethrin	Cypermethrin
4	Deltamethrin	Deltamethrin	Deltamethrin	Deltamethrin
5	Diazinon	Diazinon	Diazinon	Diazinon
6	Dursban	Dursban	Dursban	Dursban
7	Fenitrothion	Fenitrothion	Fenitrothion	Fenitrothion
8	Malathion	Malathion	Malathion	Malathion
10	other	other	autre	outro
9	Sumicidin	Sumicidin	Sumicidin	Sumicidin

Table: LuPesticideQ

Sequence	Pesticide	PesticideEn	PesticideFr	PesticidePo
0				
1	Carbaryl	Carbaryl	Carbaryl	Carbaryl
2	Cypermethrin	Cypermethrin	Cypermethrin	Cypermethrin
3	Deltamethrin	Deltamethrin	Deltamethrin	Deltamethrin
4	Dursban	Dursban	Dursban	Dursban
5	Falcolan	Falcolan	Falcolan	Falcolan
6	Fenitrothion	Fenitrothion	Fenitrothion	Fenitrothion
7	Malathion	Malathion	Malathion	Malathion
13	other	other	autre	outro
8	Paraffin	Paraffin	Paraffin	Paraffin
9	Petrol	Petrol	Petrol	Petrol
10	Petrol/paraffin	Petrol/paraffin	Petrol/paraffin	Petrol/paraffin
11	Queleatox	Queleatox	Queleatox	Queleatox
12	Queletox	Queletox	Queletox	Queletox

Table: LuPests

Sequence	Pest	PestEn	PestFr	PestPo
1	Armworm	Armworm	Chenille légionnaire	Lagarta de cereais
2	Locust	Locust	Criquet	Gafanhoto
3	Quelea Birds	Quelea Birds	Travailleurs à bec rouge	Pássaros quelea

Table: Lupresarmy

Sequence	Presence	PresenceEn	PresenceFr	PresencePo
0				
1	absent	absent	absent	ausente
2	present	present	présent	presente
3	larvae	larvae	larves	larva
4	moths	moths	phalènes (papillons nocturnes)	traça
5	moths + larvae	moths + larvae	phalènes + larves	traça e larva
9	not Surveyed	not Surveyed	pas d'étude	não observado
10	no report	no report	pas de rapport	não registado

Table: LuPresent

Sequence	Presence	PresenceEn	PresenceFr	PresencePo
0				
1	absent	absent	absent	ausente
2	present	present	présent	presente
3	hoppers	hoppers	bandes larvaires	saltadores
4	adults	adults	adultes	adultos
5	hoppers + adults	hoppers + adults	bande larvaires + Adultes	saltadores e adultos
9	not surveyed	not surveyed	pas d'étude	não observado
10	no report	no report	pas de rapport	não registado

Table: Lupresquelea

Sequence	Presence	PresenceEn	PresenceFr	PresencePo
0.00				
1.00	absent	absent	absent	ausente
2.00	present	present	présent	presente
3.00	roosting	roosting	niché	saltadores
4.00	breeding	breeding	reproduction	adultos
9.00	not surveyed	not surveyed	pas d'étude	saltadores e adultos
10.00	no report	no report	pas de rapport	não observado

Table: Lusizeest

Sequence	Explanation	ExplanationEn	ExplanationFr	ExplanationPo
1				
2	very small	very small	très petit	muito pequeno
3	small	small	petit	pequeno
4	medium	medium	moyen	médio
5	large	large	grand	grande
6	very large	very large	très grand	muito grande

Table: Lusoilmoist

Sequence	Explanation	ExplanationEn	ExplanationFr	ExplanationPo	Code
0					
1	dry	dry	sec	seco	D
2	slightly moist	slightly moist	légèrement humide	ligeiramente húmido	S
3	moist	moist	humide	húmido	M
4	wet	wet	très humide	molhado	W

Table: LuSpecies

id	Common Name	Common NameEn	Common NameFr	Common NamePo	Species Code	Species
0						
2	African migratory	African migratory	criquet migrateur africain	migratório africano	A	Locusta migratoria
3	brown	brown	criquet brun	castanho	B	Locustana pardalina
4	desert	desert	criquet pèlerin	deserto	D	Schistocerca gregaria flaviventris
5	red	red	criquet nomade	vermelho	R	Nomadacris septemfasciata
6	unknown	unknown	inconnu	desconhecido	U	unknown
7	all species	all species	toutes espèces	odas espécies	All	all species

Table: LuStatusQ

Sequence	Status	StatusEn	StatusFr	StatusPo
0				
1	roosting	roosting	niché	empoleirados
2	breeding	breeding	reproduction	reproduzir
3	eggs present	eggs present	oeufs présents	ovos presentes
4	nestlings present	nestlings present	oisillons présents	passarinhos presentes

Table: LuSwDensity

Number	Explanation	ExplanationEn	ExplanationFr	ExplanationPo	ExplanationOld
0					
1	small	small	petit	pequeno	Low
2	medium	medium	moyen	médio	Medium
3	large	large	grand	grande	Dense

Table: LuTrap

Sequence	Trap	TrapEn	TrapFr	TrapPo
1	light	light	lumière	leve
2	pheromone	pheromone	phéromone	feromona
0				

Table: Luyesno

Sequence	Explanation	ExplanationEn	ExplanationFr	ExplanationPo
0				
1	No	No	Non	Não
2	Yes	Yes	Oui	Sim
3	Unknown	Unknown	Inconnu	Desconhecido