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MANAGEMENT REPORT

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AGRICULTURAL POTENTIAL OF INDIGENOUS WATER HARVESTING SYSTEMS IN THE KARAKUM DESERT

Israel

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Turkmenistan

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SCIENTIFIC SUMMARY

The specific objectives of the project are to:

1. determine soil surface characteristics of takyrs;
2. quantify rainfall/runoff characteristics of plots of different lengths within takyrs;
3. assess the efficiency of an innovative water harvesting layout for shrub and tree production;
4. use remote sensing techniques to
    - estimate the total area occupied by takyrs in Turkmenistan
    - evaluate the present status of the surfaces of selected takyrs and their runoff potential
5. evaluate the social and economic potential impact of large scale water harvesting
6. formulate recommendations (based on 1-5) and disseminate them among interested organizations in Central Asia.

In order to meet these objectives the following activities were defined in the proposal (p 19 of final proposal):

1. General meeting for coordination; field trip to the study area.
2. Ordering and purchasing the hardware and software and necessary equipment for the experimental sites.
3. Field work for preliminary location of the experimental sites and the runoff plots on takyrs.
4. Ordering and purchasing of satellite image data, collection of archive cartographic data and aerial photographs.
5. Remote sensing data analysis
6. Runoff plots preparation and instrumentation set-up
7. Rainfall-runoff plots monitoring.
8. Irrigation and sand-trench trials
9. Shrub and trees CSA monitoring, soil water content monitoring
10. Meteorological data analysis and initiation of rainfall-runoff model calibration; preliminary estimation of runoff coefficients.
11. Completion of the calibration procedure and estimation of the runoff coefficients
12. Destructive biomass estimation
13. Takyr management model. Assessment of the social economic and legal requirements for investment in takyr agricultural development.
14. Training of Turkmen scientists.
15. Elaboration of technical recommendations and final report preparation. Workshop

2) Scientific Issues

The following activities (corresponding to the ones described above) were carried out:

1. A number of meetings were carried out during the visit of B. Mamedov to Israel.
2. Partially carried out. The basic hardware was purchased and the equipment installed.
3. Completed. The site for the runoff plots was selected and a suitable takyr on which the innovative water harvesting scheme for tree production will be implemented. The layout of the latter was planned in detail.
4. The necessary aerial photographs and the cartographic data were collected. The necessary images will be purchased.
5. The analysis has begun.
6. All the instrumentation has been installed and tested
7. Ongoing
8. Preparation of the area will commence in spring.
9. No trees planted yet.
10. Preliminary analysis of data obtained during present winter (7)

11-15. Not applicable yet.

There are at this stage no further scientific issues to report on.

3) Managerial Issues

V-C1. Field trip (for all members together). Not necessary. P. Berliner and L. Orlovsky are well acquainted with the area. M. Schwartz will visit the area on his own.

V-C-2. To carry out this part of the project (i, ii and iii) a Turkmen student will be selected by B. Mamedov. The student will come to Israel for a three-month training period, return to Turkmenistan for a six-month measuring period and come once more to Israel for a three months period to analyze data. No funds were requested for the purchase of a tension infiltrometer, which is necessary in view of some of the preliminary results. We request to transfer funds from another item.

V-C-3. B. Mamedov would like to purchase an EC meter to monitor the quality of runoff water. An alternative approach (collecting the samples and sending the bottles to Israel for analysis) was suggested and B. Mamedov will inform the team members on his decision. Two existing instruments used to measure water and atmospheric pressure have to be sent for repairs.

V-C-5 . L. Orlovsky has to visit the site for ground truth measurements. To this effect she needs a GPS (to be purchased from the Turkmen allocation). An aerial photograph from 1998 is available and no additional aerial photographs will be taken, as we anticipate serious logistical problems. To determine the surface characteristics of the takyr P. Berliner & A. Karnieli need soil samples, which will be obtained by B. Mamedov and brought to Israel by the student (V-C-2).

V-C-6 M. Schwartz needs to visit the area and B. Mamedov will find out when the best time for the visit is. His stay will be of two weeks and a student will collect data

during 2-3 months. A local socio-economist is required and B. Mamedov will find the suitable person.

COLLABORATION, TRAVEL, TRAINING AND PUBLICATIONS

Dr. Batyr Mamedov visited Israel during January 2003 in order to meet with the Israeli researchers, report on activities carried out, discuss scientific issues related to the project and fine-tune the work program.

5) Request for A.I.D. Actions.

At this point we have no special requests from the American Embassy in Tel-Aviv, or from the AID staff.