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Report of the CGIAR/TAC Secretariat Mission to ICIPE, Nairobi

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Report of CGIAR/TAC Secretariat Mission to ICIPE, Nairobi, to discuss
possible arrangements for collaborative work between ICIPE and the
International Agricultural Research Centres

Introduction

1. Dr. Coulter and Mr. Webster visited ICIPE from 22-25 September in response to a decision taken at the 10th TAC Meeting that members of the Secretariats of TAC and CGIAR should discuss with representatives of ICIPE the feasibility of collaboration between the International Agricultural Research Centres and ICIPE. A paper entitled "Crop and Livestock Insect Problems Facing CGIAR Centres: A Strategy Towards Their Long-term Solution", had been prepared by ICIPE and submitted to the Centres for comment (Annex I). Written comments from IRRI, IITA and IIRAD, were made available to the discussion group, at which representatives of those Centres were also present.

2. Participants in the discussion, at which Dr. John Coulter, Scientific Adviser to the CGIAR, took the Chair, are listed in Annex II. The discussion took the form of an examination of ICIPE's proposals and budgets in the light of the comments made by the Centres representatives, and of compromise proposals put forward during the course of the meeting by various participants.

Scientific Management

3. In response to a request from the Chair, the Director of ICIPE outlined the Centres proposals for the scientific management of any collaborative work undertaken with the International Centres with possible CGIAR assistance. A Deputy-Director (Science) who would function as a Research Coordinator, had been appointed. This post might eventually be converted to Director of Research. A further post of Assistant Director was being kept open and resident programme leaders were being appointed to all current programmes presently supervised by non-resident research directors. A further two research directors would be appointed to Supporting Services and Training

and Communications. He admitted that these changes in management had not been contemplated and were not a natural evolution, but resulted from a response to comments from the TAC and the Centres. Concurrently with these changes, ICIPE was undertaking a major change of Constitution from a Limited Company, to an International Centre with a Board of Trustees, to be established under Kenya Law.

Installations

4. ICIPE had already outgrown its initial installations on a $4\frac{1}{2}$ acre site at Chiloma provided by the University of Nairobi. Presently available space on this site permitted only limited expansion in the way of laboratories and office facilities, and no suitable area for extensive insectary and insect rearing facilities which might be shared with ILRAD. A chemistry laboratory had now been established, although not originally contemplated, and along with the Sensory Physiology and Fine Structures Unit made up the bulk of the research Supporting Services. Field stations, library and workshops were still lacking however and an electronics workshop was urgently needed to ensure continuous operation of the existing electronic equipment (including two electron microscopes, one a stereo-scanner). This facility could also be shared with ILRAD.

5. Opportunities to acquire land had been offered and a site at Langata (near Nairobi but not adjacent to either the existing ICIPE headquarters or ILRAD) had been surveyed. The current proposal was to abandon the present site (with possible reversion of all ICIPE financed installations to the University of Nairobi), and re-site the ICIPE on the new land. All capital proposals were based on this assumption and also assumed that three field stations would be established. It was readily agreed that before further meaningful discussion of capital requirements could be pursued some agreement should be reached on the research programmes which might prove acceptable for re-submission to the TAC/CGIAR.

Potential for collaborative research with IARC's

6. The original programmes of ICIPE were those on mosquitoes, ticks, tsetse fly, termites and armyworms. To these had been added, as a response to initial TAC reaction to the application, the programmes on cereal stem-borers, sorghum shoot-fly and sources of plant resistance to insect attack.
7. It was fully acknowledged that ICIPE's basic theme was to conduct fundamental research into the physiology and ecology of insects inimical to man, with the longer-term possibility that such studies would elucidate suitable points of attack, perhaps for more unconventional control measures.
8. The response of IRRI, ILRAD and IITA to the amended proposals had been quite positive, all seeing considerable value in the Sources of Resistance programme especially, and anticipating collaboration in an integrated chemical/biological approach to one or more of their outstanding research problems such as stem-borers of cereals, plant hoppers on rice, pod-borers of legumes as well as tick and tsetse physiology. ICRISAT also had already entered into discussions on sorghum shoot-fly.
9. Centre representatives also emphasized that individual Centres could not expect to develop independent capabilities for multi-disciplinary research on insects and that only ICIPE or comparable programmes elsewhere could provide such an approach. However, the Centres, whilst recognizing the advantages of such collaborative research, were not prepared to expand their budgets to pay for such activities outside their own Centres.
10. Neither foraging termites nor armyworm (essentially a sporadic pest) posed a first priority problem for any of the Centres. Similarly work on mosquito vectors of human disease was not within the mandate of the CGIAR and this programme should therefore be continued by ICIPE, with its own resources. Should the range surveys to be conducted by ILCA produce conclusive evidence that the foraging termite was, in fact, a serious competitor with cattle for available foodstuffs, then future consideration

might be given to this programme as a suitable subject for international assistance in collaboration with ILCA. It was already being supported by the UNDP/ICIPE project and UNEP had also expressed interest.

11. With reference to the other programmes, however, there was general agreement that work on ticks and tsetse-fly as vectors of animal disease, and stem- and pod-borers of cereals and legumes, sorghum shoot-fly and Sources of Resistance, should be regarded as suitable projects for inclusion in a programme for consideration by the TAC/CGIAR.

12. In support of this proposal, the Centres' representatives stressed their need for basic information on pest/parasite relationships, the biochemical bases of insect resistance and the increasingly important process of development of insect biotypes capable of surviving on formerly resistant plant varieties. Although the development of insect resistant plant varieties through breeding had been pursued with a fair degree of success by the Centres, an enhanced availability of information on the chemicals responsible for plant resistance could feasibly permit the much more rapid screening of germplasm. Such a screening technique could also be of use in identifying alternate hosts and elucidating some of the anomalies currently being observed with respect to insect attack in mixed cropping.

13. Work on both hard and soft ticks had been started by ICIPE on a speculative basis; it had since been concentrated on the hard tick (vector of East Coast Fever), and important findings on the pheromones controlling sexual behaviour and aggregation, and on population dynamics had already been published. Not only was the hard tick important as a vector of East Coast Fever but it could also be a fatal pest of cattle per se. Joint projects with the East African Veterinary Research Organization (EAVRO) were already underway. The Project Manager of the FAO/UNDP/EAVRO Tick Control Project emphasized that great reliance was being placed on ICIPE for the basic biological and ecological information of vital importance to the project.

14. Likewise the Director of ILRAD indicated the importance of potential inputs by ICIPE to ILRAD's programme, which would be incomplete without basic work being done by both the tick vectors of East Coast Fever and the tsetse-fly vectors of trypanosomiasis. Whilst techniques for breeding Glossina morsitans in captivity were available, and could be put into routine use by ILRAD, no such techniques were available for Glossina pallidipes and ILRAD foresaw a role for ICIPE in the development of such techniques.

15. The meeting concluded therefore that there was a justification for establishing a mission-oriented programme at ICIPE which might be submitted to the TAC/CGIAR.

Proposed CGIAR Sponsored Programme

16. An arbitrary division was made of the ICIPE programme between the medically-oriented sector (Aedes species and other mosquito work); the exploratory sector (soft ticks, insect communication, termites, armyworm, etc.), and the food production oriented sector (Sources of Resistance, Cereal Stem-borers, Sorghum Shoot-Fly, Tsetse flies and Hard-ticks).

17. The Research Support Services, comprising Chemistry, Sensory Physiology, Fine Structure Research, Insect and Animal Breeding Unit, Field Stations, and the Workshop would supply inputs to all programmes and should therefore be considered as a shared service.

18. The food production oriented programme was accepted as that part of ICIPE's total programme which should form a "minimal package" for re-submission to the TAC. ICIPE accepted a division of this programme into two sub-programmes on (i) Crop Pests and (ii) Insect Pests. Sub-programme leaders would be appointed for each, and overall control of the Programme would be allocated to the Deputy-Director (Science) who would spend 75 per cent of his time on the programme; this would legitimately be a charge on the CGIAR sponsored programme.

19. The components of the two sub-programmes would be as follows:

i) Crop pests sub-programme:

a. Sources of Plant Resistance to insect attack.

Target Insects:

b. Stem-borers of rice, maize, sorghum and millet and pod-borer (Maruca spp) of cow pea,

c. Sorghum shoot-fly.

(It was also agreed that if time and resources permitted sorghum gall-midge and rice plant hoppers could be added to this sub-programme.)

ii) Animal pests sub-programme:

Target insects:

d. The brown ear tick (hard tick) R. Appendiculatus, vector of East Coast Fever,

e. The two tsetse flies involved as vectors of cattle trypanosomiasis, G. morsitans and G. pallidipes.

Resources Required

20. Following agreement on the inclusion of the above five elements (a - e) in an internationally sponsored programme, a calculation was made of the minimum resources required in terms of scientist and supporting staff man-years, capital installations and equipment, to carry such a programme forward.

i. Crop Pests Sub-programme

21. It was agreed that not less than one senior scientist should be applied to each type of crop pest within the programme and that a Sub-programme leader be appointed from within the group of five scientists suggested as the minimal cadre necessary. Adequate support staff (calculated by ICIPE as averaging three technical or research assistant grades to each scientist) would also be included in the programme. Although no attempt was made to assign specific disciplines to the above scientists at this juncture it was agreed that at least one insect ecologist and one insect behaviourist should be included in the team.

ii. Animal Pests Sub-programme

22. Again a general Sub-programme leader and two Senior Scientists (Tsetse and Ticks) should be appointed together with a further three scientists. Out of this total of six scientists three should be physiologists and two ecologists. Supporting staff requirements would be concomittantly higher (24) as would be ancillary and daily rated workers.

iii. Research Support Services

23. At present these services made a contribution across the total programme of ICIPE. Clearly this support would need to be continued. ICIPE's own contribution to the proposed CGIAR sponsored programme could most effectively come from this sector of research support in the form of chemistry, electron microscopy, etc. It was therefore agreed that an annual contribution of 4 man-years from ICIPE's core programme would be made in this form.

iv. Additional manpower requirements

24. Minimal additional staff at a senior, if non-professional level, to secure proper support for the above teams were thought to consist of a farm manager, a professional administrator for the field station, an electronics engineer for the proposed workshop, an insectary manager and, eventually, a livestock manager. It was concluded that as the farm/field station operations would be mainly occupied with activities of the proposed CGIAR-sponsored programme it would be rational to charge the farm manager and field station administrator on a shared basis of 75 per cent to CGIAR and 25 per cent to ICIPE core programme. The remaining posts should be funded either by ICIPE, through additional bilateral funds, or on a shared basis with ILRAD in view of the latter's strong interest in the insect and animal rearing facility. Further discussion was desirable on these points.

25. Other posts, likely to be needed in the near future, were additional senior technicians for the proposed insectary, an equipment supervisor and, at the professional level, a statistician. The question of possible snaring of these posts would also need to be discussed further.

Field Stations

26. ICIPE's own proposals (see Annex I) were to develop three field stations, one in Western Kenya, one near the East Coast and another on the plateau 75 Km from Nairobi. Following discussion of priorities it was agreed that the W. Kenya field station was of highest priority, so as to provide a site for ecological and crop-oriented studies on the major target insects in the food production-oriented programme.
27. Examination of the site, at Mbita Point, Homa Bay, indicated its suitability for growing maize, sorghum, millets and beans, and some adjacent areas should prove suitable for rice.
28. Discussion of housing and laboratory requirements on the site led to the conclusion that, with the exception of the farm staff housing, no permanent residences should be provided. Adequate guest house accommodation should be provided for visiting scientists, it being anticipated that a maximum length of stay of three months should be sufficient.
29. Sophisticated laboratory facilities were also deemed to be unnecessary and it was recommended that a re-calculation be made of the needs at the Mbita Point field station, in order to bring these within the compass of a contribution anticipated from a bilateral donor.
30. ICIPE would continue to finance activities at the E. Coast station, at present concerned with work on the mosquito vector of yellow fever, from its core programme resources. Subsequently this work might be terminated and work started on the Anopheles mosquito at Mbita Point.
31. Further field work, in collaboration with IIRAD could possibly be contemplated at the Langata site near Nairobi but the mission urged the re-examination of the possibility of obtaining sufficient land for insectary and animal breeding facilities at Kabete, adjacent to both IIRAD and the Kenyan Department of Veterinary Research.

Programme and Budget

32. The meeting developed some preliminary ideas on the budget for the proposed CGIAR-sponsored programme, starting in 1977. As pointed out in paras. 21-22, eleven scientists plus support staff would be required for the cooperative programmes and, whilst facilities would be provided by the Centres for any staff out-posted to them, additional facilities would be needed at ICIPE headquarters.

33. The original ICIPE submission envisaged the development of a complete new site (at Langata) for the headquarters of the Centre but since the meeting had agreed not to pursue this proposal the modified capital budget proposals would include development of facilities on the present ICIPE site, sufficient only to cater for the additional programme, and of essential facilities still lacking at ICIPE but needed for its expanded role in international research. These would include:

(i) Additional laboratory facility of 1000m². This would almost double the present laboratory space, as well as providing additional space for the existing staff who were at present somewhat cramped - accommodating the eleven scientists in the proposed CG programme. It would also provide additional service facilities.

(ii) An insectary of 700m². This would accommodate a breeding and research programme on tsetse, ticks, stem borers, pod borers and shoot fly. If land at Kabete was definitely unavailable, it might need to be sited at Langata.

(iii) General purpose room of 200m². This would be multi-purpose, and used as a reading room/library, seminar room and, with temporary sub-divisions, for visiting scientists. As part of its cooperative programme, ICIPE would expect to hold regular meetings of both its own and Centre scientists involved in cooperation projects. ICIPE is particularly short of such space at present.

(iv) Room for controlled environment chambers of 200m². This would provide space for the installation of 10-12 such chambers for the growth of crops under controlled conditions. No such facilities existed at ICIPE at the moment.

34. Preliminary estimates for these facilities, based on information from an architectural firm in Nairobi approached by the mission, are given in Table I. These are lower than the unit costs given by ICIPE's architect, and the general feeling of the meeting was that the latter were too high.

TABLE I.

Capital Budget, ICIPE Headquarters

<u>Space Allocation</u>	<u>Function</u>	<u>US \$</u>
1000m ²	(1) Laboratory at \$257/m ²	257,000
	(2) Special services, gas, electricity, plumbing at \$42/m ²	42,000
	(3) Extract systems, fume cupboards, cold rooms etc. at \$83/m ²	83,000
	Total for Laboratory	382,000
700m ²	Insectary at \$257/m ²	180,000
200m ²	General purpose room at \$257/m ²	52,000
200m ²	Room for controlled environment chambers at \$257/m ²	52,000
	GRAND TOTAL	666,000
	Add 35% for circulation space (calculated on basic costs)	190,000
		856,000
	Plus escalation at 20% per annum (over two year period)	342,000
		<u>\$ 1,108,000</u>

35. Operational Costs. ICIPE staff salaries are based on those paid at the University of Nairobi and are thus below those paid at the International Centres. The Director of ICIPE stated that these salaries will need to be increased but he did not

envisage that the increase would bring salaries up to international centre levels. Staff salary differentials for staff posted in collaborative programme[?] to Centres would thus emerge but the meeting felt that this situation would have to be accepted. In fact some of the advantages of ICIPE would be the lower staff costs.

36. The meeting discussed two alternative ways of funding the CGIAR-sponsored programme; either by contracts funded by the Centres, or by direct funding of co-operative programmes developed conjointly by ICIPE and the Centres. The Centres representatives and ICIPE all favoured the latter method of funding, and the meeting agreed that this would be the preferred method. ICIPE's budget shows that its cost per scientist works out at \$70,000 to \$80,000 per annum; on this basis the proposed CGIAR-sponsored programme would cost under \$1 million per annum

Follow-Up Action

37. There was insufficient time at the meeting in Nairobi to develop a detailed programme and budget for the proposed CGIAR-sponsored project. The figures given in Table I and para. 36 are, however, considered reasonable approximations. If the TAC agreed that the strategy outlined in this report was an acceptable one, and if the CGIAR agreed in principle, to the approach, then the CGIAR and TAC Secretariats would work with ICIPE's management in developing a detailed programme and budget for 1977, for discussion at the TAC meeting in May 1976, and presentation at the CGIAR meeting in July. ICIPE would be asked to develop an overall programme and budget for the Centre's activities as a whole. It would indicate those parts of its core programme for which funding was available, those parts for which funding was being sought, as well as the budget for the CGIAR-sponsored cooperative programmes and needs for bridging funds in 1976.