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**Final Evaluation**  
**USAID Project Number 608-0160**

**The Agronomic and Veterinary Institute Hassan II (IAV)**  
**Rabat, Morocco**

**An Organization in Development:**  
**IAV at the Crossroads**

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**"We do not, in our colleges of today, make use of any learning principles in a considered, systematic, professional way. We do not design the college as a learning environment. We do not give anyone a specific responsibility for bringing to the college the best available professional and scientific knowledge for designing that environment."**

**Herbert Simon**

**"The major test of a modern American university is how wisely and how quickly it adjusts to important new possibilities."**

**Clark Kerr**

**"Even if you are on the right track, you'll get run over if you just sit there."**

**Will Rogers**

## **Acknowledgements**

When an organization has been evaluated as many times as the Institute of Agriculture and Veterinary Sciences Hassan II (IAV) has been, there is always the prospect of a diminished level of commitment by those being evaluated. In the present case, our experiences as a team were to the absolute contrary.

It is a genuine pleasure for us to record our most sincere appreciation to all of those with whom we collaborated, for the extremely high level of commitment and the quality of the cooperation we received throughout our evaluation activities. Indeed, we are able to affirm first-hand the reputation we first heard of at Minnesota -- that the folk at IAV are extremely competent at building collaborative relationships. Throughout the assignment, we met nothing but full, open and honest cooperation, and enjoyed the best of hospitality in Minneapolis/St. Paul, Washington, D.C., and Morocco. The Team greatly appreciates the assistance and time given to us by many individuals at the University of Minnesota, the Institute of Agriculture and Veterinary Sciences (at both Rabat and Agadir), the National School of Agriculture, the National School for Forestry Engineers, the Ministry of Agriculture and Agrarian Reform, the National Institute for Agricultural Research, FAO, the EEC Commission, Management Systems International, Development Alternatives Inc., the United States Agency for International Development in Washington and Rabat, and the World Bank.

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## ACRONYMS

AID	Agency for International Development
APESA	Année Préparatoire Aux Etudes Supérieures Agronomiques
CHA	Centre Horticole d'Agadir
CIHEAM	Centre International des Hautes Etudes Agronomiques Méditerranéennes
CII	Centre International d'Irrigation
CRSP	Collaborative Research Support Project
ENA	Ecole Nationale d'Agriculture (Meknés)
ENFI	Ecole Nationale Forestière des Ingénieurs
FAO	Food and Agriculture Organization (United Nations)
GER	Groupeement d'Etudes et de Recherche
GOM	Government of Morocco
IAV	Institut Agronomique et Vétérinaire Hassan II
INRA	Institut National de la Recherche Agronomique
MARA	Ministère de l'Agriculture et de la Réforme Agraire
ORMVA	Office Régional de la Mise en Valeur Agricole
Team	The Three-Member Evaluation Team

INRA  
MARA  
ORMVA

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## **PREFACE**

### **PROJECT PURPOSE AND OUTPUTS**

The purpose of the project was to aid the creation and institutionalization of a "modern" system for higher agricultural education in Morocco, with appropriate linkages to the rest of the technology delivery systems, through faculty training and related institution-building at the Agronomic and Veterinary Institute Hassan II (IAV), the National Agricultural School (ENA), and the National School for Forestry Engineers (ENFI). The planned primary outputs were:

- (a) trained Moroccan faculty who have replaced expatriate faculty members;
- (b) graduate-level programs offered in the agricultural, veterinary and social sciences;
- (c) student theses and publications on agricultural and veterinary research performed in Morocco;
- (d) strengthened linkages with research and extension organizations in the public and private subsectors of Moroccan agriculture; and,
- (e) linkages with U.S. agricultural science and agribusiness, as well as with other international research and educational centers.

### **SCOPE OF WORK**

The Evaluation Plan for the current project (608-0160), as described in the Project Grant Agreement (Article V), called for two evaluations which were conducted in 1986 and 1988. The present evaluation is the third and final one, covering the period 1988-1993.

On September 27, 1988, the PACD was extended from 1990 to September 30, 1992, to allow the remaining 43 doctoral participants to complete their degree requirements. A second, "no-cost extension" was granted from September 30, 1992 to September 30, 1993; this was to allow IAV and the University of Minnesota to complete the implementation of the doctorate training program. The two extensions also allowed USAID, IAV and the University of Minnesota to concentrate on a number of issues of institutional and financial sustainability raised in the first evaluation report, and reinforced in the second, and to put in place a "Sustainability Plan, which included a number of "Strategic Planning Initiatives."

The purposes of the present (final) impact evaluation were to:

- (a) Measure progress made toward the achievement of project outputs and purpose since the last evaluation;
- (b) Assess the present overall mission and long term sustainable development potential of IAV/ENA/ENFI;
- (c) Review the prospects for financial viability of IAV/ENA/ENFI in absence of outside donor financing for a period of five years following PACD;
- (d) Examine post-project institutional linkage options; and
- (e) Assess key lessons learned and recommendations.

The evaluation team was to, among other matters, investigate and comment upon:

- (a) Impact of IAV programs on the Moroccan economy.
- (b) Sustainability
  - Budget
  - Administration
  - Teaching Management and curriculum development
  - Administrative processes for degree granting
  - Adequacy of institution-wide support services
  - Faculty incentive
- (c) Linkages
  - Institutional linkages should be examined in depth to determine the effort and success of the project regarding institutional linkages with other international institutions.
  - Relationship of IAV, ENA and ENFI to other Moroccan institutions
  - Agricultural development and extension.
  - External (non-public sector) Moroccan relations.

## **INDICATORS**

The principal indicator of the extent of project success would be the existence of a "land grant type" institution that is:

- (a) Producing well trained people in critical areas whose scientific and technical skills are relevant to national agricultural development needs of Morocco and who are actively contributing to such development;
- (b) Producing scientific information and solving practical problems through research;
- (c) Assisting appropriate government and private agencies, and institutions, in disseminating such information; and
- (d) Involved in broad-based agricultural development activities in Morocco.

## **LOGISTICS**

The full itinerary of the Evaluation Team is attached as Annex 1 of this Report. The Evaluation commenced with a briefing visit by two team members (RB and RM) to the St. Paul campus of the University of Minnesota (August 29 to September 1). This was followed by a second briefing at Management Systems International in Washington D.C., where the third member of the team (PH) was also present. The full team arrived in Rabat on September 4, 1993 and spent the period through September 26 in-country, visiting with a significant number of people associated, in some way or another, with the Project (details in Annex 1). An open Seminar was presented on Thursday, September 16 at IAV, to facilitate discussions about the general position being assumed by the Evaluation Team. This was followed by a draft report submission to USAID on Monday, September 20. A second draft report was presented to senior officials of USAID and IAV on Friday September 24.

## EXECUTIVE SUMMARY

- (1) Established by royal decree and formally inaugurated in 1968, the Hassan II Agronomic and Veterinary Institute (IAV) in Morocco today stands at a crossroads in its development - a moment of choice about its future, brought about by the coincidence of a number of different events.
- (2) After almost a quarter of a century of continuous assistance, the last of a series of three USAID-funded projects of formal collaboration between IAV and the University of Minnesota ended on September 30, 1993. The fruits of this long relationship have been keenly analyzed over the years from a number of different perspectives. Two previous USAID-funded evaluations, and other literature which has built upon them, have documented extensively the extraordinary progress of IAV over the years, but voiced concern about "post-project sustainability."
- (3) The last impact evaluation, published in 1988, concluded that while "IAV is positioned to play a pivotal role in promoting the development and diffusion of productivity-enhancing agricultural technologies, policy analysis, and collaborative research...the investment in human capital...is extremely fragile". The report also stated that "efforts undertaken in the next two years by IAV, the GOM, AID, and American university Title XII partners will determine whether these investments can be truly sustainable."
- (4) One of the important tasks of this present evaluation team was to explore both the outcome and context of efforts made to that effect over the last five years. Also reviewed from this dual perspective were the various formal "Strategic Planning Exercises" which have been conducted as recommended in the 1988 evaluation. The essential thrust of this final evaluation, however, was on the future strategic role of IAV and its associated institutions of agricultural higher education in the sustainable development of rural Morocco, rather than on the sustainable development of the institutions per se.
- (5) The approach adopted was to engage faculty, administrators, and officials external to the institute in critical conversations about the nature and role of the institutions of agricultural higher education, by focusing on (a) awareness of issues relating to the institute as an interdependent element in the process of sustainable national development, (b) activities of the institute which might be directed to this end, and (c) the extent to which theories and philosophies of development were being used, in addition to practical experiences, to inform such actions. This is consistent with the team's view that the most important issue facing IAV is to organize itself in such a way that it assumes responsibility for its own destiny as a collective of participating stakeholders.
- (6) Between 1988 and 1993, 80 faculty at IAV/ENA/ENFI completed their doctoral studies through USAID assistance, bringing the overall total to 126 - a quite remarkable achievement and a testimony to the quality of the collaborative relationships that have been established between the Moroccan candidates and their senior colleagues across the 29 or so U.S. cooperating universities. The target of "Moroccanization" of the faculty has thus been achieved, with scientists/teachers of a standard comparable with any anywhere.

(7) In addition to increasing the number of American-trained doctoral-level faculty by 150 percent, activities between 1988 and 1993 contributed in a significant way to the further development of a high research capability, which enhances the faculty's long-established reputation as innovative and committed educators and which, through the field work of all of the candidates, also has an impact upon the research database of Moroccan agriculture and rural development. This research contribution has been further extended through a significant number of contract research activities by faculty members following their graduate studies. Between 1974 and 1992 the International Foundation for Science awarded 96 grants to Morocco (placing it third behind Nigeria and the Philippines) - of these, faculty at IAV gained 49, more than double the number received by any other single institution in the world (and they have only been participants since 1982). The vast majority of these grants were in the IFS program areas of Animal Science and Crop Science; this clearly reflects the fact that two-thirds of the total doctoral participants in the University of Minnesota Project were trained in Animal and Veterinary Science, and Plant and Soil Science together. This is in very significant contrast to the "Human Sciences" where only five of the total of 126 (from all three institutions) received doctoral level training in the U.S.

(8) IAV faculty have been active participants in the Small Ruminant CRSP in collaboration with universities in the U.S., Brazil, Peru, Kenya and Indonesia, and in a number of collaborative research projects with colleagues in the U.S. and other countries in Europe and Africa. IAV also hosts an International Irrigation Center in collaboration with the University of Utah. Another parameter of success is the fact that FAO has involved IAV faculty in more than 40 consultancies across a range of discipline areas.

(9) IAV, since the last impact evaluation in 1988, and in collaboration with the University of Minnesota through USAID assistance, has continued to upgrade its faculty, as well as the educational, research and outreach programs with which it is involved. The issues of research sustainability, academic sustainability, outreach and development sustainability, and the sustainability of international linkages, have been identified as demanding urgent attention. These and other issues of sustainability specific to specific discipline groups, including the vital matter of future financial viability, were the topics of discussion by faculty and administrators from both institutions. Of particular significance in this regard were the findings and recommendations from a workshop, "Challenges for Institutional Sustainability in the 21st Century," conducted in June 1993 at the St. Paul campus of the University of Minnesota (UM) and attended by parties from UM and IAV Hassan II. The purposes of that event were to:

- (a) review accomplishments and impacts of the collaborative institution-building project;
- (b) evaluate progress since the "towards sustainability" workshop held in Morocco in June 1990;
- (c) formulate specific recommendations and action plans for future U.S.-Morocco linkages.

The recommendations that were made focused primarily on the importance of sustaining linkages between UM and IAV, with respect to the need for "a common agenda for collaboration in research, teaching and outreach" to be formulated and supported independently of outside donor agencies "for pursuing and sustaining our common institutional agenda and future linkages."

It is significant that commitments to improving the quality of education were among the recommendations made by all four of the discipline-focused Working Groups at that event.

(10) The team concludes that the Agronomic and Veterinary Institute Hassan II stands on one of the firmest scientific and technological foundations for agriculture and rural development in the developing world. The teaching, research, and consultancy activities of its faculty, the field learning experiences of the students, and the professional activities of the many IAV graduates now working within Moroccan agriculture and with rural communities in the country, are all having extremely positive effects on the levels of agricultural production now being achieved.

(11) The team found that many of the issues which have been cited elsewhere as threats to the sustainability of IAV have been, and continue to be, items of vital debate among faculty and administrators at the Institute, as well as among other stakeholders beyond the organization itself. There is, for instance, strong evidence that each of the six areas of concern about institutional sustainability raised by the previous USAID impact evaluation team - (1) Recurrent Costs; (2) Resource Mobilization; (3) Food Policy Analysis; (4) External Relations; (5) Project Resources; and (6) Internal Operating Effectiveness - are being seriously addressed at a number of levels within and without the institute. The formal commitment of the University of Minnesota to continued collaboration with IAV faculty to the process of "strategic planning" and "sustainable futures" through this period since 1988 has been particularly impressive.

(12) The team shares the concerns of previous evaluators regarding future sustainability of IAV, but points out that its concerns derive not from the "Minnesota Project" context of previous evaluators, but from the task of exploring agendas for the strategic future of the Institute, which automatically goes beyond that context.

(13) If IAV is to remain true to its fundamental purpose - that is, to actively contribute to improvements in the quality of life of people in the rural communities of Morocco - it must now organize itself in such a way that it can (a) retain a sense of its own coherence as an organization; (b) organize and utilize effective networks of relationships between itself and its many constituencies; and (c) address as many of those issues which pertain to the sustainable development of rural Morocco as is relevant to its missions in education, research and outreach. It must also be recognized that IAV's future is intimately involved with the Ministry of Agriculture and Agrarian Reform.

(14) IAV will have to deal with issues internal to its own organization -- curriculum reform and management, agendas for research and development, administrative functions, management information systems and organizational structures, issues of accountability, leadership and incentives, and strategic direction-setting and policy development -- in ways which both reflect and influence affairs which are external to it. The assistance it has been receiving over all these years from USAID and other major donors has protected it somewhat from the dynamics of the environments in which it exists, and which it must now face.

(15) If IAV is to remain a viable and relevant institution, it needs to address its own development as an organization as a function of the development of Moroccan agriculture, together with the development of those rural communities and environments which support it,

with an approach that integrates each of the domains, as well as includes strategic policies and innovations, resource allocations and effective operations. Most important, the issues that the Institute addresses must be generated and dealt with, wherever possible, with the most comprehensive constituency of stakeholders that is feasible under the circumstances which prevail.

(16) The team recommends that the Institute make a number of significant adjustments to the way it organizes itself and to the way it carries out its activities, if it is to contribute more proactively to the continuing development of commercial agriculture, and to the sustainable development of rural communities and of the environments in which they live and work. In the face of the emerging challenges, and recognizing that many initiatives are already underway to address some of these issues, it is submitted that IAV needs to develop:

- (a) A stronger, more coherent sense of purpose and mission with regard to its role in the rural sector, beyond the current emphases on provision of highly-competent masters and doctoral graduates, research on basic problems of production, and the extension of knowledge generated through this research.
- (b) A greater capacity to deal with the complex and dynamic factors of its own environments, as it involves itself in the process of assisting others in rural Morocco deal with theirs.
- (c) Mechanisms which will allow it, as an entire institution, to more effectively "learn" from the circumstances which prevail within Morocco and, indeed, which increasingly dominate development agendas in other countries around the world.
- (d) Processes of collaboration in educational, research or outreaching activities with other organizations within Morocco, in strongly integrated ways.
- (e) An organizational structure which will allow increased accountability and responsibility by faculty, and information systems which can be managed in ways which are optimal to their use at strategic, allocational or operational "levels" in the institution.
- (f) The sustainable capacity to attract sufficient core funding from the GOM or its own foundational sources, to support its educational, research and other fundamental development activities.
- (g) Rigorous forms of evaluation of the educational programs to address their relevance, methodologies, and logic in the face of the emerging agricultural and rural development challenges of the country.
- (h) A management system which reduces the load on the currently centralized leadership system by extending more of the responsibilities for academic and administrative leadership among the senior faculty.

(17) To assist in the deliberations that will be necessary to achieve all of this, this report contains a section which introduces the reader to some fresh perspectives on university development. Lessons are drawn from a number of international reviews of agricultural universities in the developing world and presented here. A conceptual framework - of IAV as a critical learning system -- is also presented, as a device for assisting in the deep debates that other institutions have found essential at equivalent points in their development.

## SUMMARY OF RECOMMENDATIONS

### Recommendation 1

That funds be sought to develop a multi-disciplinary research unit (GER) for Organization Development.

Perhaps the most important issue to be researched by faculty at IAV is its own future! Rather than merely setting up an "office of strategic planning" as an administrative device, it should extend its experience in multidisciplinary research to the issues of Organizational Development - using itself as its first client.

### Recommendation 2

That new management structures be developed which will include stronger accountability and responsibility by faculty for their professional activities, and mechanisms for incentives, and if necessary, sanctions. A matrix management system might be appropriate to encourage the full participation of faculty in the development and management of their evolving Institute.

Central to the issue of development as a "whole institution" is the notion of the widespread participation in the process of the major stakeholders. As the present organizational structures are not incurring such participation currently, new management structures are appropriate. Resources should be sought to support a management consultant to help in the process of organizational restructuring.

### Recommendation 3

That mechanisms be developed to facilitate wide-ranging debates across the Institute (at Agadir as well as at Rabat) on (a) the changing environments in which it is operating, and (b) the formulation of strategies to deal with these complex challenges.

In addition to the two formal management mechanisms of the recommendations above, there is clearly much to be gained by the promotion of scholarly debates among the faculty at IAV, about their own future as a coherent institution. Departmental Heads could be asked to set up regular meetings within their departments for discussion about vital strategic issues. Information from these meetings could be taken to interdepartmental forums, and so on. It would be important for the outcomes of all of these meetings to be widely disseminated across the whole institution, and for workshops of representatives from the various constituencies to be held from time to time to generate strategies for the continuing development of the institution.

### Recommendation 4

That IAV explore and, if appropriate, adjust its curricula and research and development agendas to embrace the context of "sustainable" rural development. It would need to actively promote this new mission, and do all it can to encourage GOM agencies to accept the Institute in this expanded and vital role.

Many institutions of agricultural higher education in the developing as well as the developed world, are currently exploring the need to expand their mission to include broader aspects of rural development as a context for agricultural science. IAV has much to gain by following a similar course, particularly given the potential for greatly increased collaboration with ENA and ENFI. A cross-institutional Task Force could be set up to explore the potential for closer collaboration around the issue of "sustainable rural development".

#### Recommendation 5

That a curriculum Task Force be set up to explore the appropriateness of new "systems" paradigms of education in the context of education for "sustainable agricultural and rural development". Other matters that such a task force might consider include (a) the place of a new curriculum for rural development itself, and (b) the place of two-year, four-year, and six-year curricula within the needs of education for "sustainable agricultural development".

Given the considerable expansion of theories and experiences in curriculum transformation around the world, IAV could benefit very significantly by forming a Task Force charged with accessing the international literature, and promoting scholarly debate about the process of curriculum renewal. Of particular importance here is the issue of the four-year course leading to the award of the "Ingenieur d'application." It is the strong recommendation of the team that the decision not to offer this (previously available) option, be very carefully reviewed in the light of both the emerging manpower needs of the rural sector, and the Institute's budgetary situation.

#### Recommendation 6

That IAV itself, along with its constituencies of "friends", do all that it can to assure itself of funds sufficient to support its growing role as a "Key Centre for Sustainable Agricultural and Rural Development". Without adequate core funds, and freedom to raise additional revenue without risk to that core, IAV will not be able to maintain its present level of activities, let alone assume the pressing new responsibilities for the increased agenda of "sustainable development".

In addition to the more general recommendations above, there are a number of specific short-term recommendations that are offered to IAV in the spirit of examples of "issues for critical debate." The team believes that each of the following points deserves the urgent attention of appropriate people or groups at IAV, emphasizing that the process by which the matters are discussed is a fundamental aspect of strategic planning.

#### Recommendation 7.1

That the four-year (two cycle) program (Ingenieur d'Application) be reinstated as a terminating professional course option in agricultural science or development or resource management (begin equivalent to the baccalaureate degree common to most agricultural universities and colleges around the world).

## Recommendation 7.2

That, given the significance of informal education endeavors, both from the perspective (a) of "human resource development" for rural people as well as for professional "in-service" training, and (b) for raising revenue, consideration be given to the development of a Continuing (Recurrent) Education Unit at IAV. The central mission of such a Unit would be to provide both a coordinating/administrating service for the endeavors which are currently being mounted, as well as to raise significantly the level of the practices, exploiting wherever possible, their commercial potential.

## Recommendation 7.3

That, in the spirit of the "critical learning organization" the above developments be conducted in such ways that they involve the participation of the vast majority of the faculty of the entire Institute (in both scholarly debate and practical application).

## Recommendation 7.4

That at this crucial "crossroads" point in its evolution, IAV seriously review the profile of its faculty and move toward correcting any undue distortions, or accommodating new developments, such as initiatives in "sustainable rural development" or "sustainable natural resource management" or "agribusiness, agricultural commerce or agricultural marketing" or "agricultural economics."

## Recommendation 7.5

That the opportunity be taken, with the review of the profile of academic faculty, to concurrently critically appraise the profile of non-academic support staff (in particular clerical and secretarial staff) and make amendments to the balance between them, if appropriate.

## Recommendation 7.6

That immediate steps be taken to review the policies of the library with regard to the location of, and access to, the current holdings. The arguments for centralization would appear to be overwhelming. Further steps will need to be taken to improve significantly the quality and quantity of holdings, as well as to review the future role of information technologies to improve access to "learning resources."

## Recommendation 7.7

That the arguments presented by the publication service be examined in some detail by the administration and financial services with respect to the claims for the cost effectiveness of strengthening the unit and the potential benefits that would flow from its increased capacities.

## INTRODUCTION

There have been two previous evaluations of the collaborative project between the Institut Agronomique et Veterinaire Hassan II (IAV) in Morocco and the University of Minnesota (USAID Project 608-0160). In the first of these, conducted in 1986 and published as AID Project Impact Evaluation Report N° 65 (July 1987) - "The Hassan II Institute of Agriculture and Veterinary Medicine (IAV) in Morocco: Institutional Development and International Partnership"

the evaluators concluded that "The success of the Institute in meeting its objective of training top-quality researcher/trainers for the agriculture sector is unique among similarly financed A.I.D. efforts in Francophone Africa". They also observed, however, that "the Institute's success is still a fragile accomplishment", and highlighted four major factors which they believed represented significant threats to the future sustainability of the Institute:

- The shift in program and institutional management from a phase of "strong charismatic leadership" to "more routine bureaucratic authority";
- The shift in employment patterns of graduates from the public sector to a private sector "which has demonstrated some concern about the relevance of job-related training provided by the Institute";
- A lack of emphasis on "the integration of extension and economic sector analysis into its program"; and
- A continuing critical recurrent cost financing burden."

This theme of sustainability was adopted as the major focus for the second (final interim) evaluation of the project. In their report - published in September 1988 as "supporting Moroccan Agriculture in the 1990's: The Sustainability of the Hassan II Agronomic and Veterinary Institute" - this second team of evaluators (under the leadership of a member of the 1986 team), "IAV's continuing success confronts serious sustainability issues". Reinforcing the conclusions of their predecessors, they concluded that "AID and the GOM (the Government of Morocco) have created an exceptional capacity for training, research, and advisory services in Morocco and the African continent. On the eve of the 1990's, IAV is positioned to play a pivotal role in promoting the development and policy analysis, and collaborative research. The investment in human capital, however, is extremely fragile. Efforts undertaken in the next two years by IAV, the GOM, AID, and American university Title XII partners will determine whether these investments can be truly sustainable". Six areas of recommendations were then promoted in the context of increasing "the probability of medium and long-term sustainability:

- **Recurrent Costs** -- The GOM must make a greater effort to fund the true recurrent costs required to sustain the prior investments in human capital formation.
- **Resource Mobilization** -- In order to assure adequate funding support for IAV's mission as a premier institution of higher agricultural training and research, the GOM, IAV, and its partners (the American Title XII community and AID) must energetically pursue resource mobilization strategies.
- **Food Policy Analysis** -- In order to keep pace with the increasing needs in the economy for graduates with quantitative and food policy analysis skills, IAV must continue the substantial progress made in adapting its agricultural economics curriculum.

- **External Relations** -- IAV must improve its linkages with the potential and current users of its graduates and with the key organizations which provide material and non-material support for its training and research activities.
- **Project Resources** -- A maximum effort must be made to identify additional resources for short-term consultancies designed to improve curriculum (such as proposals from the Universities of Arizona and California), operating effectiveness, and resource mobilization. The PACD should be extended to December 31, 1992 to allow all 130 doctoral candidates to complete their degree training.
- **Internal Operating Effectiveness** -- IAV's increasing maturity requires effective efforts to be made to decentralize resource budgeting and allocate decision-making to departments; recognizing that given limited resources for teaching and research, faculty participation in resource planning has been difficult to pursue.

These six domains of issues were also central to the scope of work presented to the team conducting this third (and final) evaluation of the Agronomic Institute Project. As stated above, the purpose of this evaluation was to:

- a) Measure progress made toward the achievement of project outputs and purpose since the last evaluation;
- b) Assess the present overall mission and long term sustainable development potential of IAV/ENA/ENFI;
- c) Review the prospects for financial viability of IAV/ENA/ENFI in absence of outside donor financing for a period of five years following PACD;
- d) Examine post-project institutional linkage options; and
- e) Assess key lessons learned and recommendations.

While the current team certainly addressed these particular matters, the conceptual framework, and thus the methodology of evaluation which was adopted, differed significantly from those of its two predecessors. Where they had assumed a position of assessing the relative performance of the Institute as a "training and research organization for development," the present perspective examines IAV as a "learning organization" which, in participation with the faculty and administrative staff, must learn to create its own future in close collaboration with the environments in which it exists.

The logic of this approach assumes that any organization which is committed to the sustainable development of sectors within its own nation (and perhaps also beyond), must itself consist of an integrated community which is extremely conscious of how it learns how to manage its own development - how it goes about its own "social knowing" - as well as how to share these learning processes and outcomes with other appropriate communities and organizations in networks of "co-development through learning." Of particular importance in this regard, are the conceptual models, theories and philosophies which inform the learning of the organization.

As an evaluation team, then, our major focus has NOT been on making judgements about the effectiveness of the Institute as it currently exists. Rather, we have been facilitating critical conversations on the theme of how the Institute might learn how to deal strategically with its own

future as an organization which must be closely interdependent with other organizations in its ever-changing environments.

The report itself is divided into three Sections. Section A concerns itself with the outcomes of conversations with a host of stakeholders: about the background to the institution and its linkages with the University of Minnesota in particular (Chapter 1). This is followed by perceptions about the accomplishments achieved at, and by, IAV since the 1988 evaluation (Chapter 2). In Section B, the focus shifts to a "conceptual conversation" about IAV as a "post-neoclassical institution" (Chapter 3), and this is followed by an exploration of IAV as a "critical learning system" as a guide to a way by which the Institute can learn its way forward to selected futures (Chapter 4). Section C comprises a set of conclusions and recommendations for change (Chapter 5). The report ends with a Bibliography of material examined, and a number of Annexes which provide various sets of data relevant to the body of the report.

### **Special Note**

Although interviews were conducted with faculty and administrators at both ENA and ENFI, as well as at IAV, these were extremely limited by virtue of time constraints. The major conclusion drawn was that there were powerful arguments for the development of much stronger bonds of collaboration between the three institutions. From the impressions gathered, there is considerable mutual respect across them, and a general recognition that all three have benefitted greatly from the USAID/Minnesota connection.

While the focus of this Report is on IAV, much of what has been written reflects the belief that an IAV/ENA/ENFI confederation would represent an even stronger case for the arguments being presented.

## SECTION A

This section of the report deals essentially with an ex post facto commentary on the general situation at the Institute (Chapter 1) and those changes made since the last review in 1988 (Chapter 2), as perceived by many of the Institute's stakeholders. While the task here was to record the substance of the "conversations" held between the members of the team and those whom they interviewed, the opportunity was also taken to explore the implications of some suggestions for change.

The two chapters in this section therefore represent perceptions and their analysis.

## CHAPTER 1: IAV -- The Organization

The evaluation team set out in the short time available to become as familiar as possible with IAV as an organization and the perceptions of it held by administrators, faculty and key external stakeholders. They was done through open-ended, in-depth interviews in parallel with analysis of a comprehensive range of documents. The data gathered was collated using a technique (mind-mapping; Buzan, 1989) in which key issues raised in conversation were "mapped" as a series of seven themes arising divergently from the central point of IAV - the Organization. The seven divergent themes explored were: mission, structure, funding, functions, resources, organizational climate, and external relationships. From this "mind-map" a number of overall perceptions emerged; this chapter is a summary of those perceptions drawn from commentaries by a significant number of "stakeholders".

### 1.1 Mission

During discussions with team members, the most commonly stated mission by IAV faculty was "to train manpower" or "to carry out training, research and extension." However, there was little collective indication of the purpose or context for these activities. When prompted, respondents went on to discuss the role of IAV in the "development of Morocco", often in the context of whether the Institute should be a research or development-oriented institution. Expressions like, "IAV was created to solve problems of Moroccan agriculture and we must not lose sight of this," and, "our mission is not to be a research institute, our faculty must be involved with people in the field -- they must be aware, not just in labs delivering research", capture this sentiment well. These discussions also uncovered a concern on some parts that faculty may be losing sight of the basic educational mission of IAV in the face of opportunities and pressures to conduct research. Statements like, "Our primary function is teaching . . . we do not and should not do research purely for the sake of research or development's sake . . . it must be related to teaching", reflected a particular concern about relative importance of the teaching function.

There was a very strong underlying commitment, across the whole Institute, to contribute to Moroccan nationhood, and this echoed the observations made by faculty and administrators at the University of Minnesota during the team's visit there: "Moroccans feel very strongly about Morocco ... hence their need to return to Morocco and contribute" and "there is a pioneering spirit at IAV ... they are going to do something different for Morocco and other francophone African and Arabic people". The Director of the Institute himself said that a "rule" in developing IAV was to concentrate on quality (of training) rather than quantity, and many respondents referred to the intent, since IAV was founded, to merge inputs from various sources into a uniquely Moroccan institution. They were explicit in rejecting the idea that IAV would ever become a clone of a French or U.S. institution.

### 1.2 Structure

IAV is a semi-autonomous institution under the Ministry of Agriculture and Agrarian Reform, governed by a *Conseil d'Administration* which is required to meet at least annually and which is chaired by the Minister. The Director is a member of the *Conseil*, and has complete

discretionary powers for the management of IAV within the constraints imposed by civil service and labor codes.

A remarkable feature of the organizational administration is an apparent contradiction between highly centralized resource control and an informal accommodation of the aspirations and activities of individual faculty members. Perhaps this is characteristic of any organization which has grown to such an extent that, while physical resources can be strongly regulated, human activities cannot. There are other apparent contradictions: The current operational structure of IAV is noticeable for its simplicity and flatness, with strong direct operational linkages between the Director and individual faculty based on a high degree of mutual trust; yet the allocation and control of resources continues to reflect an historically centralized system.

**In essence, the current management processes do not reflect the structures that are in place to support a more decentralized system.** Thus, the Institute is formally structured into three organizational levels: (1) the Office of the Director; (2) three Directorates (Administration, Studies and Co-operation, Teaching); and (3) thirty-five academic departments. Of the three directorates, Administration and Teaching are most active and important; the Director of Administration administers the Division of Materials and Accounting which is responsible for supervision of finance and material resources. The Secretary-General serves as de facto Director of Teaching. The academic departments are coordinating rather than administrative units. Their Heads are elected from the department and have little budgetary or personnel authority.

The whole matter of organizational structures and resource management, however, is now under critical review. It is the vision of the Director that in a "new/ideal" IAV, there would be, "better integration between disciplines . . . less compartmentalization . . . interdisciplinary organization based on local problems . . . flexible enough to recreate as the situation changes".

A concern about the lack of cohesion and need for more horizontal communication and collaboration across departmental boundaries was a frequent comment made during the interviews; the desirability and feasibility of new structures, based on "clusters of departments", and decentralization of resource allocation and control, are being closely examined. The Director and the Secretary-General referred to moves under way to develop the concept of "Sections" as an organizational entity. A Section would comprise a number of departments related to a particular theme, of which eight have been tentatively identified: Agriculture; Veterinary Medicine; Food Science and Technology; Rural Equipment and Irrigation; Mechanization; Topography; Horticulture; and Fisheries. Discussions are currently being held about proposals for new Sections, possibly with revised boundaries, to play a role in the management of educational programs in particular.

### **1.3 Funding**

The core budget for IAV is allocated as a lump sum to cover salaries and an amount for recurrent costs, and is a line item within the MARA budget allocated by the Ministry of Finance. Other GOM funding sources come by way of grants or contracts for services. The budget process is controlled by the Director, assisted by the Director of Administration, who puts the case for the budget to the Ministry of Finance via MARA. An important principle in this process is an

agreement that the allocation from the Ministry is not reduced as a response to IAV's success in generating funds from other sources.

The budget expenditure process is highly centralized. The Director has limited discretionary authority over expenditure after salaries are covered; Heads of Departments have little or no control over budgets. All financial data are collected and analyzed in the Controller's office; there is an impressive capacity to manipulate the data using a computerized data base with Lotus and Harvard Graphics software.

In the absence of significant increases in government funding, non-government funding sources are becoming increasingly important. These include consulting contracts initiated by faculty, with a 17.5 percent allocation to central administration for overheads; grants from international agencies for institutional development; and international sponsorship of students, courses and research projects. In 1992, these sources totaled more than 10 percent of the total funding, with non-government sources contributing \$2 million, adding to the core (GOM) of \$14 million.

Faculty have autonomy over the management of funds from the external grants they generate after the overhead allocation to central administration is subtracted. A characteristic of this autonomy is the level of trust in the good sense and honesty of faculty, with an absolute minimum of hierarchial supervision.

## **1.4 Functions**

A model of management which sees the essential functions of an organization as strategic planning, allocating and operating was used during the evaluation, to further explore the administration system of IAV. Strategic planning involves sensing what is happening within the organization and its external environment, envisioning possible future scenarios and critically reviewing options. Allocating involves distributing resources and coordinating activities. Operating includes the activities characteristic of the type of organization - in the case of IAV they are assumed to be scholarship, education (including extension), research and enterprise.

### **1.4.1 Strategic Planning Functions**

The planning process within IAV is essentially informal, with the Conseil d'Administration the only body with this as a formal function; yet its infrequent meetings are typically taken up with more immediate issues. There are also occasional workshops of a strategic planning nature such as the Sustainability Workshop held in conjunction with the University of Minnesota in June 1993. Additionally, there are occasional planning workshops and meetings that impinge on its strategic developments, such as the commodity research planning workshops held with INRA, in which officials from IAV participate.

**Despite this lack of formal activity, the institution has been significantly well served by the informal process.** Faculty are well informed about developments, internal and external to the Institute, and "sensing what is going on" and discussing the implications, are high on the socio-cultural agenda within the Institute. There is also a well distributed and effective network

of alumni and friends of the institutions who not only ensure that there is a good flow of intelligence, but who are also often activated to lobby on behalf of IAV.

Critically, however, no strategic planning mechanisms exist for taking advantage of this informal sensing and envisioning process by collating the information, interpreting it and critically reviewing it. The Director of IAV consults readily with colleagues, but this is an adjunct rather than an alternative to a conscious and participatory strategic planning process. The freedom given faculty by the Director and his faith in their good sense and judgement has certainly resulted in effective planning and action at the individual, small group and departmental level to date. However, in the absence of a coherent strategic planning process that develops and maintains a corporate sense of mission there is a danger of drift and fragmentation.

Perhaps most importantly, there seem to have been few if any formal or comprehensive attempts to date to nurture any prevailing ethos of strategic development, nor to develop mechanisms for introducing any of the vital scholarly connections between the need for strategic thinking and sustainable development -- connections which are as applicable to the nation as a whole as to IAV itself.

#### **1.4.2 Allocational Functions**

The current allocating function reflects a centralized structure more appropriate to a small, closely-knit group than the large and complex organization that IAV has become in latter years. While enthusiastic about reforms, the Director continues to bear the responsibilities for making decisions about the distribution of resources. In the absence of a clear, and participatively generated strategic plan, mechanisms for resource allocation will continue to be reactive and slow, with informal consultations and lobbying as features of the process. Department Heads were seen as relatively powerless in this process; there is some reluctance among faculty members to accept such positions.

An important example of skewed resource allocation relates to the balance of the academic profile: the team was struck by the fact that social scientists only comprised around seven percent of the faculty total (five PhD and 14 MSc at all three institutions), and there were no management scientists nor marketing economists. It should be noted that this did not come about by design, and there is a widespread appreciation across the whole institution that managing rural development in both the private and public sectors requires greater social science capacity.

There was also some dissatisfaction among faculty with the allocation function as it relates to formal education programs, with perceptions of limited incapacity to review and alter programs, or even monitor program delivery and make appropriate responses. In terms of the allocation of time and energy between teaching and research, the Director was among those who nominated the drift from teaching as an issue: "faculty are slowly leaving the teaching component . . . doing research, publishing papers, going to conferences and getting contracts is more attractive". The organizational review that was underway would be addressing matters such as these.

On the positive side, research, non-formal short courses and services to industry and communities, have grown rapidly and reflect the advantages of an informal, decentralized structure as well as the current freedom given to faculty.

An important feature of the coordinating administrative function at IAV is the relatively recent adoption of a most comprehensive management information service. The institution is now well served by an effective computerized database in the Controller's office and good use is being made of this, for example in the management of the funds generated by contract activities. Information from this source is available on request and is included in annual reports.

A feature of the research function at IAV is the existence of interdisciplinary GERs (*Groupement d'Etudes et de Recherches*) that draw members from across departments and external institutions, and which reflect an awareness of the need to take an integrated approach in meeting development needs. As with other aspects of IAV's management, however, the initiation and management of GERs comes from faculty initiative and is not coordinated across the institution. There is no effective mechanism to collate and distribute information about research and consulting opportunities nor to facilitate the preparation and submission of grant applications. Officially, the research activities of IAV are coordinated with the Institute's Directorate of Teaching, but the evaluation team did not observe this occurring in practice.

### 1.4.3 Operational Functions

The four key operations at IAV can be classified as education, research, enterprise and scholarship.

#### 1.4.3.1 Education

The formal (award) education activities include: (1) Certificate level courses (2 year) for food science technicians at IAV Rabat (40 graduates per annum) and for farm managers at Agadir (60 graduates per annum); and (2) *Ingenieur d'Etat* level courses (3 cycles or 6 years) in Veterinary Medicine at IAV (225 graduates per annum). The *Ingenieur d'Application* course (2 cycles or 4 years) was phased out a few years ago in response to equity problems in salary classifications in the public sector. The result is a graduate profile that is perceived by many as both unbalanced (2 year certificate graduates or 6 year masters equivalent graduates) in meeting the development needs of the country, and unduly expensive.

In addition to the above, some forty students are currently enrolled in the doctoral program, and more than fifty requests for enrollment in this program have been received.

A unique and fundamentally important feature of the education programs at IAV is the adoption and pervasion of a philosophy of "*pedagogie de réel*", or learning through experience. This philosophy is interpreted through an equally unique educational strategy termed "*stages*" (training). These "*stages*" have been a feature of the programs at IAV since its foundation and the structured periods of field experience are integrated into the programs at appropriate points in all three cycles. The intention is to immerse students in the reality of rural life and farming and link their classroom and laboratory experience to the field in a way that ensures relevance.

This has had a profound effect on the nature of the educational experience and the sense of purpose of the institution, and **could also be a profoundly important innovation for introduction in other higher education courses across the globe.** With its unique experience in the conduct of such a curriculum of "pedagogy of reality", IAV has a clear comparative advantage as a regional center for education in agriculture and related disciplines.

The emphasis on a "pedagogy of reality" endows IAV with a further enormous advantage: Around the world, there is a strong imperative to adopt experiential strategies akin to the "stage" system, in the quest for "ecological sustainable development." The merits of IAV's approach to higher agricultural education are well known in international circles, and the model bears very significant expansion into arenas such as natural resource management and development, as well as rural development per se. It is surprising, perhaps, that given these advantages, there are few apparent attempts at IAV to link the "stage" system with critical debates about emerging methodologies which embrace "systems theories and practices" appropriate to the complex learning needed for more sustainable strategies for agriculture and rural development. It is also somewhat surprising to find such a dearth of discussion across the institution about pedagogy and cognition in general, given the commitment to the "stages" and to the philosophy of "pedagogy of reality". While the experiences of IAV are unique in these regards, there is little development at the Institute in either the theories or philosophies which could better inform the experiential practices. The need for an effective Director of Pedagogy to now lead such developments was very evident to the team, and strong endorsement is given to the current proposal to reconstitute the position and fill it with a new appointment. It is strongly recommended that once the appointment has been made, the new Director do all that is possible to access details of key innovations in agricultural education around the world, through contacting such authorities as Dr. Tito Condado, FAO, Rome; Dr. Rick Foster, Kellogg Foundation, Battle Creek, Michigan; and Dr. Gary Hansen, USAID/CDIE, Washington, D.C., USA.

The same need extends to the burgeoning involvement in continuing education/extension activities at IAV. Non-formal (non-award) education programs are becoming a feature, with both national and international courses on offer, usually on a fee-paying basis. Training courses for local functionaries are also common and the IAV is increasingly being viewed as a national and international training center, particularly for francophone Africa. Since 1981 the IAV faculty have organized 352 weeks of non-formal courses on 100 technical and scientific themes attended by 1724 Moroccan engineers and veterinarians, 1322 technicians and 334 international participants.

Informal education is a component of many of the consultancies undertaken by individuals and departmental groups, and some of these are consciously designed with the integration of both students and clients in problem-solving field research in mind. The evaluation team observed such a program at Agadir where a faculty member was experimenting, in collaboration with a farmer and on his farm, with greenhouse heating for tomatoes. The faculty member was supervising two cycle-three students whose research projects were a component of this program. Such an approach improves the quality of research and education, while contributing directly to the development of Morocco. Not many faculty have been as effective in integrating functions, but there is general support for this approach.

It is more difficult for faculty to attract outside (private) financing for work on more general rural development issues, including poverty and the environment; these must largely be addressed through GOM or donor funding, on which there are already many demands. This can be a source of frustration for faculty who are exposed to these issues while working with students in the field, particularly during the "stages". The team met with faculty who are confronting these issues, an example being a nutritionist working with rural families; better relationships with MARA and other line agencies might help improve this.

Enterprise based on expertise within the institution is simultaneously perceived as a source of funds while further developing the pool of expertise. Soil mapping and soil testing are examples. Since 1970, IAV has produced a cadre of soil specialists and land mappers which is now capable of handling all local mapping operations. In collaboration with IAV faculty, this group has classified and mapped over 300,000 hectares in addition to all the irrigated perimeters. The soil testing laboratory of IAV started to provide direct services for farmers and private consultants in 1985 and has the capacity to process 3000 soil and 4000 water samples per annum. Other services include a plant disease clinic, a veterinary medicine clinic, and food science and technology laboratory for quality control of dairy and food products. IAV also has a very effective publishing service with a comprehensive and valuable line of titles authored by faculty.

#### 1.4.3.2 Research

Many IAV faculty are successfully undertaking research, with two categories dominant -- commissioned work requested by external agencies, both national and international, and service-oriented research requested (and funded) by the private sector. Characteristics of the latter are its short-term and applied nature. There is a danger of overemphasis on short-term research given the shortage of core funds from the GOM for longer-term research on priority national issues, with the result that there is inadequate long term research on issues such as rural poverty, rural development strategies, or environmental issues.

The availability of funds from non-government sources is limited to some areas and favors some departments over others. Cultivating the sources and applying for grants is also a time-consuming and, for many, an unsuccessful and frustrating experience. The effect is an uneven distribution of short-term research activity: "We have patches of research".

#### 1.4.3.3 Enterprise

In assuring new sources of funding to support its burgeoning activities, as well as in the development of relationships with international agencies, **IAV has exhibited a level of enterprise which is uncharacteristically strong for an academic institution.** This is a very important aspect of self-development which is not confined solely to the assurance of resource supply. Rather, the spirit of enterprise is an essential aspect of the whole process of self-development; to be able to share such a spirit with its students and its other stakeholders, especially client groups, IAV is able to model behaviors which are of profound importance to its role and its credibility as a key contributor to the development of rural Morocco.

#### **1.4.3.4 Scholarship**

Scholarship, as an academic institutional function, we define as that organized process of critical discourse related to the mission and functions of the institution, which emphasizes the manner by which theory informs practice, and vice versa. There appears to be little emphasis on this within IAV, with the exception of technical issues. As stated above, there is, for example, no ongoing discourse about the education programs that draws on developments in learning theory, or on the mission of the institution that draws on development and organization theory. Nor are there critical debates on the nature of science as it relates to the research function and research methodology, nor on the nature of social knowledge and learning as they are related to the process of extension and "technology transfer".

In interviews, faculty often commented that there was no mechanism for sharing information and insights gained from field experience, nor from the increasing policy development work in Ministries, and critically evaluating its significance for the work of IAV. This seemed to match observations made by faculty at the University of Minnesota: that the collaborative spirit that they themselves take for granted, is still forming in IAV, with competition between individuals tending to inhibit sharing of information and critical debate.

### **1.5 Resources**

Both tangible and non-tangible resources are vital for any institution, and IAV is no exception. An important non-tangible asset for IAV, for instance, is the high level of public esteem it enjoys. It has an exceptional performance history to date, with its graduates recognized as being of high quality, and attuned to the realities of Moroccan rural life and agriculture, and its faculty able and willing to address issues of real consequence to the people of rural Morocco. The high and growing level of research and development contracts with local, national and international clients is a further reflection of this public esteem.

In the resource context there is, within the Institute, an appreciation of the need to maintain good relationships with external stakeholders, and faculty, administrators and students are noticeably open, confident and relaxed in the way they go about this. They are able to accommodate a diverse range of client groups and other stakeholders, including agribusinessmen, commercial farmers, small farmers, and professionals from international development agencies, universities and Moroccan Ministries.

Alumni of IAV are an important and supportive asset. They are well placed in international universities and development organizations and Moroccan Ministries, particularly MARA, where two faculty were recently appointed as Directors. Graduates are also beginning to enter the private sector, with the two-year technicians being trained at Agadir finding ready employment as farm managers, and with a number of the more experienced ones successfully applying for concessional loans to establish their own farms. The two-year food science technicians from Rabat are also being sought by employers in the food processing industry.

Effective leadership is a feature of the history of IAV: Although the leadership styles of each of the previous Directors differed markedly, each was appropriate for his era. In sum they have

resulted in an institution with a unique Moroccan nature, with strong emphases on quality and relevance, a collegiality which has facilitated individual initiative throughout the institution during a period of rapid growth, and a collective sense of ownership of the institution. This collegial style fits well with a widely distributed pattern of informal leadership throughout the organization. The relative lack of formal governance and administrative structures is a major contributor to the flexible, non-bureaucratic nature of leadership within the organization, but is also a factor in the perceived lack of organizational coherence mentioned by some faculty and makes the role of Director an extraordinarily onerous one.

The faculty are an exceptional resource in terms of both quantity and quality. The (full-time) student/staff ratio at IAV of 7 to 1 is low by international standards, and means that the 350 faculty have a capacity to make a significant contribution beyond their formal education role. And this, in fact, is what is taking place, with a major element of faculty time going into research and preparation of short courses and seminars for the Moroccan public to meet specific needs.

Faculty are well educated, each with a minimum six-year *Ingenieur d'Etat* qualification, and the majority also holding doctorates plus significant international university experience in Europe or the U.S. as an aspect of their training. They are also young and enthusiastic, although the relative uniformity of age of the U.S. PhD cohort will create a continuity problem in future years. The overwhelming majority are trained in the physical-biological sciences and this imbalance compared to the social and management sciences (19 social scientists in a combined IAV/ENA faculty of 390) is a limiting factor in both institutions' capacity to take a broad rural development perspective in fulfilling its mission. The students are a committed and intellectually elite group whose exposure to rural life and agriculture through the *stages* and close interaction with faculty in a climate that encourages open communication ensures an active role for them.

For an organization of its size, IAV has only a relatively a small cadre of administrators. These have done well to develop effective management processes including the above-mentioned computerized information system. The small administrative infrastructure reflects the emphasis on initiative rather than control in the management of IAV. This stated, criticism of the level of management and training of the clerical/secretarial support staff was a recurrent theme among the faculty interviewed. It was felt that this lack reduces the current efficiency and effectiveness of the overall performance of IAV as well as threatening the future sustainability of the institution.

The Institute has a well developed basic infrastructure of buildings and services, although there is little in the budget for the purchase of equipment. This is dependent on external grants and contracts (70 percent of the non-salary budget). A major concern with respect again to the issue of sustainability is an incapacity to maintain laboratory equipment, with the result that much of the equipment provided through the Minnesota project for example is steadily becoming inoperable. Equipment originating in the U.S. is particularly susceptible compared with that from Europe.

The library is a marked exception to the general quality of the central resource infrastructure. The centrally housed collection is inadequate and there is minimal provision for it in the budget.

It is also very unbalanced insofar as it concentrates on physical and biological sciences and specialized material compared with basic reference materials for students. Students are largely dependent on notes prepared by faculty, which are not always kept updated. Many important library resources are located out in decentralized departmental libraries or even in the offices of professors, with an implicit discipline-orientation that militates against inter-disciplinary inquiry.

## **1.6 Organizational Climate**

It was very noticeable in meetings with faculty, that morale varied significantly between certain departments and individuals, and was linked in large part to the potential and ability to attract funding for external contracts. The growth of horticulture in the Agadir region meant, for example, that those departments which were able to participate in the development of commercial horticulture were attracting funds and flourishing, whereas those such as the Department of Landscape Architecture, with its emphasis on longer term environmental issues, for which there is currently little external support, were not. Faculty in the Department of Mechanization at Rabat spoke confidently of the future, and pointed to the support they were getting from Germany, and faculty associated with irrigation development emphasized their links with international colleagues and organizations and their status within this network. Food Science faculty spoke of their difficulty in getting support from a local food processing industry which was only slowly becoming aware of the potential of, and need for, modern processing methods and was unused to looking to input from research and development.

Veterinary Medicine faculty highlighted what they saw as the inequity between them and faculty in other disciplines stemming from the former's commitment of time to community clinics. Faculty in the department of Human Sciences felt overwhelmed by the high and growing demands on their limited resources and their inability to redress this.

Perceptions of the future for IAV reflected the level of morale, some faculty seeing an inevitable period of decline following the closure of the Minnesota project and others talking confidently of their capacity to act on opportunities: "We have been taken to the top of the mountain and left without the capacity to stay there" and "the Morocco Project was like all other development projects, there was insufficient attention paid to what happens when it finishes". There is a universal perception that IAV is now in a delicate transition period.

As noted above, there is some sense of dissatisfaction with the unstructured system of organization and administrative control within IAV. There was however an appreciation of the tensions, as reflected in the comment: "We want organization, not bureaucracy," and, "we have fought for our freedom in the past (in response to external bureaucratic controls imposed some years ago) and will do so again". There is also an appreciation that the emphasis on seeking external grants and contracts has been a conscious and effective strategy for securing funding from non-GOM sources and this has to be protected in any revised system.

An observation made by a number of faculty was that before the "Moroccanization" of IAV there was a core of expatriate faculty who played an important advisory role. The rapid growth in the number of young Moroccan faculty was accompanied by a preoccupation with postgraduate study; the result being that they were not socialized into what is involved in managing an

academic institution, which is something that is taken for granted in a mature university like those in which most obtained their doctorates: "We know what is wrong and what we want, but we don't know how to get it".

Faculty referred to the lack of tangible incentives for performance and pointed to their salaries being the same as faculty in Moroccan universities where the only performance requirement was to teach; IAV faculty are expected to participate in research and outreach as well. Tangible incentives such as funding for office equipment and furniture, laboratory equipment and travel, stemmed from capacity to capture external grants. Although dissatisfied with the situation surrounding tangible incentives, there was a pervasive view that these are not the main motivating factors. Faculty are prepared to work harder than the norm in Moroccan universities because of pride in the work they were doing and in IAV as an institution; "we feel we have more competence and potential than other Mahgreb institutions . . . we feel we are unique". There was concern however that this sense of corporate pride might begin to deteriorate.

Of particular concern to faculty was a perceived decline in the attention being paid to teaching relative to obtaining and servicing external grants and contracts. Although there was a universal belief in the primacy of the educational function, there is also a feeling that the current incentive structure does too little to reward commitments to quality teaching and to the planning and evaluation of courses and programs. Specific mention was made of the outmoded teaching materials sometimes distributed by faculty to students, which in the absence of an adequate library is particularly serious. Some mention was made of declining participation by faculty in the "stages" and a reluctance to commit the time to working with the students in the field.

In sum, while the overall climate within the Institute was certainly strongly optimistic and confident, there were many small sources of dissatisfaction that, if unaddressed could grow into serious dissensions or skepticism over time.

## **1.7 External Relationships**

An outstanding feature of IAV is its extensive and well developed links with international development agencies, research institutes and universities.

### **1.7.1 International Linkages**

The emphasis on international links and standards stems right from the roots of the establishment of the institution, with the early links being with European centers, particularly French and Belgian universities. This strong link continues and indeed has recently been considerably strengthened with the creation of a "stage" on French farms for first cycle students, arranged in conjunction with the French Ministry of Agriculture. Linkages have also been developed over a period of more than two decades with universities in North America. The Minnesota project has created an extensive network with U.S. universities, particularly Minnesota, that is both personal and institutional and based on mutual respect and a desire to collaborate for mutual advantage.

IAV is a partner in international research initiatives such as the CRSP on small ruminants and is emerging as a key centre in the Mediterranean and francophone African regions. The Agricultural Engineering Department, for example, is an International Irrigation Center (IIC) and, as such, is part of a worldwide network of irrigation centers formed in collaboration with Utah State University. The IIC has organized 45 short courses which have involved more than 700 international and national participants. The French Agency of Technical and Cultural Cooperation sponsors annually at IAV the training in irrigation management to Masters level of 10 francophone international students, and there is an exchange program with Wye College (UK) focused on irrigation policy. The high priority placed on international linkages is exemplified by the fact that ten percent of the total student establishment at IAV are international students from francophone Africa sponsored by the Government of Morocco.

The evaluation team observed a two week international course on "Halophyte Utilization in Agriculture" at Agadir which was jointly sponsored by CIHEAM/IAM-B, CEC, IDB, UNDP, UNEP, ISESCO and IAV. The pattern of interaction there between senior administrators from the sponsoring institutions reflected the extent and quality of IAV's international links. IAV's Director is on the CIHEAM Board, and a faculty member is on the Scientific Consultative Council of this Mediterranean regional agricultural research organization.

There is universal appreciation of the strength and value of the international links formed by IAV as an institution and individual faculty, and concern about the implications should they be lost. The links are collaborative: "IAV is seen as a collaborator, not a recipient" and "we are pleased that the University of Minnesota has benefitted from our relationship". They were also viewed as central to IAV's policy of maintaining quality by relating to international standards.

The maintenance of "international standards" is regarded as one of the most worrying aspects for faculty at the close of the Minnesota project: "we need oxygen from outside to stay alive". An important issue here, is that of the nature of the so-called "international standards"; as has already been mentioned, in some aspects of the curriculum, IAV really represents the international standard to which others could well aspire. There are also matters concerned with the whole complex debate about reforms of education, research and extension for the emerging "Age of Sustainability", and for which there are few if any established standards yet. The most important aspect here is for faculty at IAV to be involved in the critical international debates about these issues. This will almost inevitably mean that (a) new styles of international linkages will be required, and (b) new mechanisms for debate within IAV will also need to be nurtured as the focus for participation in the global agenda. **There will also be a need for international linkages to be under regular critical review, for they can be demanding of both time and resources.**

### 1.7.2 Relationships Within Morocco

The nature of relationships with other institutions within Morocco is changing: "10 years ago we had to approach external people and agencies to place students, now we get many requests . . . it is a significant and noticeable change . . . initially it was international through Paul Pascon . . . now we are in demand from national agents".

IAV enjoys close links with the Ministry of Agriculture and Rural Development and is increasingly being seen as a source of expertise for policy making as well as training and research. Linkages with respect to extension and the dissemination of technological information, are far less developed, and this represents a potential source of weakness for the future of relationships between IAV, MARA, and the communities that both seek to serve.

In discussions with the newly appointed Director of Training, Research and Rural Development in MARA (Dr. Larbi Firdawcy -- until recently the Secretary General of IAV), the team was told of his brief from the Minister, to promote an approach to rural development in Morocco that is developmental rather than bureaucratic in nature and integrates social, economic and environmental considerations and the inputs of government agencies. IAV was seen as playing a key role in this because of its pool of expertise and the disposition developed over the years characterized by the commitment to the "pedagogy of reality". The positive disposition toward IAV within MARA was further confirmed in other discussions with senior personnel within the Ministry and elsewhere.

The team was impressed by the intellectual sophistication and breadth of vision of rural development expressed by some within MARA, but observed that, although faculty within IAV are often enthusiastic about their role in development, they fall short of conceptualizing what this actually means in operational terms. This probably reflects the predominantly agricultural production focus of the training of faculty members, and the tentative pattern of scholarly discourse within IAV around its mission in the development of Morocco.

Should IAV become increasingly proactive and assertive in establishing a more comprehensive role in the development of rural Morocco, it must be prepared to face the almost inevitable conflicts that such a position will raise with a host of individuals, institutions and organizations with which it has, to date, established and maintained very harmonious relationships.

There is, for instance, potential for strain in the well established relationships between IAV and research organizations like INRA, as well as educational institutions like ENA, as competition for resources, programs, "territory", and even reputations, become more explicit. Interviews with senior personnel at both INRA and MARA revealed some growing concerns about the perceived greater ability of IAV to compete for the limited public sector resources for research to the detriment of the generally less academically qualified research staff at these other two organizations. At MARA, there was the additional concern about the increasing involvement of IAV faculty, and even students, in the functions of "extension" and "technology transfer".

The lack of management science expertise and business experience is inhibiting relationships with the private sector other than at the technical level, but at the same time the growing number of contracts with commercial clients is exposing and sensitizing faculty and students to the particular needs of the private sector. This is particularly the case in the dairying and horticulture industries. Yet this in itself may be the source of another type of conflict -- a conflict of purpose. There are critics in the U.S. who argue that the "land grant" universities are placing themselves in compromising positions because of "unhealthily close" relationships with agribusinesses which, by their potential activities, might well threaten the livelihoods of other, smaller producers, as well as the integrity of rural communities and the quality of the

environments in which they live and work. Already mentioned has been the matter of distortions introduced into the profiles of research, and even curriculum, in the quest of generous private sector sponsorships.

The management of conflict is, of course, a characteristic of organizational transformations, both within the organization itself and between the organization and others to which it is interdependently linked or "coupled". IAV will need to take the management of conflict as a very serious issue, if it is to be more proactive in assuring both more comprehensive roles in the development of rural Morocco, and its own sustainable futures. This will demand attention in all four of the domains mentioned here as functions of the institution, as well as from the perspectives of external relationships and organizational climate. This theme will be further pursued in Chapter 4.

## 1.8 Conclusion

There can be no doubt that the Minnesota Project, as a collaboration between IAV and many American universities as facilitated by the University of Minnesota itself, has brought enormous benefits to the development of rural Morocco as well as to the many institutional partners involved on both sides of the Atlantic. As an institute of higher agricultural education and research, IAV stands confidently poised to face the next round of challenge with which it must deal.

The major resource, the faculty, are trained to high international standards, and IAV graduates have received an education which integrates a unique blending of practical field experience with in-depth training in particular scientific disciplines.

But the institution is indeed now at a new crossroads in its development. It has completed a major phase of faculty upgrading and has a large cadre of highly trained and generally ambitious scientists/educators whose needs include considerable recurrent resources to support the level of research for which they have been prepared. It has also established a wide network of relationships to which it must continue to contribute if it is to be regarded as a full and mutual participant. **The institution is at a point where it must redefine its purpose with regard to the convergence of its resources and the needs of the country.** This convergence must also be examined within a global context which is demanding a host of new perspectives and approaches from the academies -- Approaches appropriate to the newly emerging, complex, and dynamic "Age of Sustainability". And these must be faced with a resource base which itself will demand a most considerable effort to be maintained, let alone be improved or refocused. And all of this must happen at a time when linkages with its major international sponsor -- USAID - - and with its longtime collaborator -- the University of Minnesota -- are to be severely limited by force of resource depletion.

It could be argued that the focus of its past -- on a top quality education in the production sciences of agriculture -- will be inadequate in the face of the new challenges of comprehensive and sustainable strategies for the responsible development of the rural communities of Morocco and the environments in which they live and work.

The immediate challenges for IAV, in the light of these circumstances, is to reorganize itself as a system which can co- evolve with its dynamic environments - a system which must learn to develop itself in ways which are creatively strategic, efficiently allocative, and effectively operational. In other words, if it is to assist in the development of Morocco, it must concurrently learn how to develop itself. The nature of this co-development challenge, and some of the major implications for IAV, are further explored in the subsequent chapters of this report.

## **1.9 Focus Questions**

Some of the key issues raised in this chapter give rise to a number of specific questions which the team believe are crucial in the debates about sustainable futures for the organization. These are presented here in the spirit of contributions to the "critical conversations" about self-development.

Later in the Report these will be reframed as recommendations.

- What mechanisms are being developed to allow discussions about the mission of IAV, to be both widely participatory among the Institute's stakeholders and sufficiently focused to allow them to be operationalized once generated?
- What organizational structures are being developed to facilitate whatever transformations in functions become necessary to reflect the emerging mission?
- What is happening to assure the continued flow of funding sufficient to support the functions dictated by the institution's mission?
- In terms of the emerging functions, how are the processes of (i) strategic planning, (ii) resource allocation, and (iii) institutional operations, being developed and managed?
  - # Specifically, how are the curricula being evaluated and, if necessary, reformed?
  - # How are the research agendas being generated, and programs and projects managed?
  - # What is the institution itself doing to behave in an enterprising manner, to boost its resources to support new initiatives as well as demonstrate the spirit of enterprise as a role model for self-development?
  - # How are scholarly debates about the nature of development, and the contributions of education, research and enterprise to it, being conducted across the institution, and amongst the stakeholders and networkers?
- How is the quality of the resource base being (i) maintained, and (ii) improved, relative to the demands of the emerging mission?

- **How is the climate within the organization being monitored and adjusted in the face of the stresses of transformational change?**
- **What is being done to maintain and increase the quality and extent of the network of external relationships in which the Institute needs to be an active participant?**

## **CHAPTER 2 -- IAV Post 1988**

The context for the first part of this present (the final) impact evaluation, was set by a key conclusion reached by the writers of the report of the previous study of the IAV/Minnesota Project (608-0160) in 1988: "The investment in human capital however, is extremely fragile. Efforts undertaken in the next two years by IAV, the GOM, AID, and American University Title XII partners will determine whether these investments can be truly sustainable."

This issue is addressed under the headings provided in the Scope of Work.

### **2.1 Impact of IAV programs on the Moroccan economy.**

#### **2.1.1 Scientific Manpower Training**

It is obvious that the quality of scientific manpower in agriculture and veterinary medicine, as well as its quantity, has been very significantly improved over the past five years. Thus, an additional 80 faculty at IAV/ENA/ENFI have completed their doctoral studies through USAID assistance, bringing the overall total to 126 -- a quite remarkable achievement and a testimony to the quality of the collaborative relationships that have been established between the Moroccan candidates and their senior colleagues across the 29 or so U.S. universities which have cooperated in the scheme. The target of "Moroccanization" of the faculty has thus been achieved, with a high research capability added to the IAV faculty's long-established reputation as an innovative and committed educators. In this period IAV has also graduated more than 1000 *Engineers d'Etat*, so swelling the ranks of the alumni engaged in Moroccan agriculture. Another further 100 or so foreign graduates have returned to their countries of origin, extending the influence of IAV beyond Morocco.

#### **2.1.2 Research and Development**

In addition to increasing the number of American trained doctoral-level faculty by 150 percent, the activities over the period 1988-1993 must also have significantly improved the research database of Moroccan agriculture and rural development through the field work of all of the candidates. This research contribution to fundamental knowledge of rural Morocco has been further extended through a significant number of contract research activities by faculty members following their graduate studies. In this regard it should be noted that between 1974 and 1992 the International Foundation for Science has awarded 96 grants to Morocco (placing it third behind Nigeria and the Philippines); of these, faculty at IAV have received 49, which is more than double the number received by any other single institution in the world! (And they have only been participants in the scheme since 1982). The vast majority of these grants were in the IFS program areas of Animal Science and Crop Science, which clearly reflects the fact that two thirds of the total doctoral participants in the University of Minnesota Project, were trained in Animal and Veterinary Science, and Plant and Soil Science together. This is in very significant contrast to the situation in the "Human Sciences" where, as noted above, only five out of the total of 126 have received doctoral training in the U.S.

## 2.2 Sustainability Issues

Since the importance of institutional sustainability was first raised in the impact evaluation report of 1986, IAV, in conjunction with its American partners, has been committed to the investigation of strategic issues from the perspective of its own sustainability. A number of key meetings and planning sessions have been held, both in Minnesota and Morocco.

A number of important matters were raised at, and reported from the latest meeting - in June 1993 at the St. Paul campus of the University of Minnesota - of joint parties to discuss "Challenges for Institutional Sustainability in the 21st Century." The purpose of this workshop was to (1) review accomplishments and impact of the collaborative institution-building project; (2) evaluate progress since the "Towards Sustainability" workshop was held in June 1990; and (3) formulate specific recommendations and action plans for future U.S.-Morocco linkages.

The first of the two days concentrated on "the history of the IAV/UM project, the project's impact on fulfilling IAV's mission, progress achieved in implementing the recommendations from the 1990 workshop, and new orientations of Morocco's development policies, sustainable funding mechanisms for public institutions, lessons learned worldwide from institution-building efforts, private sector partnerships with universities, the means for maintaining quality in educational and research environments, and factors contributing to successful university linkages."

On the second day, the focus shifted to the specific issue of "the sustainability of U.S.-Morocco linkage plans." These were organized around four broad discipline areas: (1) Food Science and Nutrition; (2) Animal/Veterinary Sciences; (3) Agricultural Production; and (4) Natural Resources and Water Management.

Three major commitments flowed from this process:

- (1) The need for a common agenda to be formulated for collaboration (between IAV and UM) in research, teaching and outreach, and "external funding sought from local international sources where sufficient interest exists."
- (2) The need for a plan to be developed to secure long-term support, independent of outside donor agencies, for pursuing and sustaining a common institutional agenda and future linkages. The possibility of establishing a foundation to build and manage and endowment was already being explored.
- (3) The need to commit some internal resources to ensure the continuation of at least some level of faculty exchanges and communication between the U.S. and Morocco for "the next several years."

Each of the four working groups addressed the importance of the maintenance of linkages not only for purposes of teaching, research and outreach, but also for matters such as faculty development, resource acquisition and allocation, institutional development, management systems development, distance education process development, and the development of ways of making and maintaining linkages themselves.

Although these discussions could be criticized for their relatively narrow focus on sustainability - that is, essentially of the "linkage" relationship between IAV and UM - a workplan has been generated, and a set of "End-of-Project" criteria established. This has been used as a useful list against which to check progress over the past few years in the six key areas of:

- (1) Recurrent Costs. The GOM must make a greater effort to fund the true recurrent costs required to sustain the prior investments in human capital formation.
- (2) Resource Mobilization. In order to assure adequate funding support for IAV's mission as a premier institution of higher agricultural training and research, the GOM, IAV, and its partners (the American Title XII community and AID) must energetically pursue resource mobilization strategies.
- (3) Food Policy Analysis. In order to keep pace with increasing needs in the economy for graduates with quantitative and food policy analysis skills...IAV must continue the substantial progress made in adapting its agricultural economics curriculum.
- (4) External Relations. IAV must improve its linkages with the potential and current users of its graduates and with the key organizations which provide material and non-material support for its training and research activities.
- (5) Project Resources. A maximum effort must be made to identify additional resources for short-term consultancies designed to improve curriculum (such as proposals from the Universities of Arizona and California), operating effectiveness, and resource mobilization.
- (6) Internal Operating Effectiveness. IAV's increasing maturity requires that effective efforts be made to decentralize resource budgeting and allocate decision-making to departments - recognizing that given limited resources for teaching and research, faculty participation in resource planning has been difficult to pursue.

Central to all of these is the issue of budget and financial management.

## **2.2.1 Budget and Financial Management**

### **2.2.1.1 Assumptions**

In examining the financial affairs of IAV, certain assumptions about the role of higher education need to be stated. In the aggregate, institutions can be grouped into two types. Type one are "service" institutions that attempt to serve the wider interests of society and the economy. This role has been a key determinate for the heavy subsidization of institutions of higher learning. In Morocco, IAV and the universities are good examples of the type one institution. The second group are "commercial" types that are based on producer-consumer relationships, in particular with students. The latter have provided much of the rationale towards greater cost recovery and

tuition fee payments. One example of such an institution in Morocco is the International Institute of Higher Education in Rabat.

In general, many public institutions of higher learning today are some combination of the two. It would seem reasonable to assume that in large part, with the exception of IAV, the present role of public institutions in Morocco will retain their strong service role. Thus their subsidization can be expected to continue with little attempt at cost recovery. In Morocco, IAV seems to be a pioneer in merging the two (service and commercial) roles. These two roles and IAV's position need to be kept in mind when discussing finance.

### **2.2.1.2 Financial Management**

To get a feel for the management system different kinds of information -- personnel, purchases, receipts and contracts -- were requested from the Accounting Office. The efficiency with which the data was produced is a testimony to the effectiveness of the management information system which has been developed. In addition to raw financial data, that office was also able to provide different kinds of analysis (trends, distributions) using data from as far back as 1972.

A local area network from which individuals in different locations can access data on personnel, financial, other institutional assets, is in the process of development. About eighty percent of this network is already operational. Access to data on policy issues by units heads or regular distribution of financial data would be the next step in progress made since the 1988 evaluation.

### **2.2.1.3 GOM Finances**

IAV's financial situation in terms of core funding has not improved very much since the 1988 evaluation. All faculty salaries have been met on a regular basis. There does not appear to be any concern that the situation will be otherwise. However, IAV is still under-funded in terms of an operational budget which is barely able to meet teaching needs, especially for courses that have laboratory sections<sup>1</sup>. IAV's unique *stages* may also begin to be compromised as transportation costs become more difficult to carry. Scientist to scientist relation across institutions is also becoming harder. As the budget crunch forces each institution into seeking ways to reduce costs and generate income, the cost of collaboration goes up. Another hidden but growing problem is the growth in deferred maintenance. Fortunately for IAV, labor costs are low and the bulk of its infrastructure requires minimal maintenance. Still, maintenance is needed and at present priority goes to those with the means (projects) to buy supplies. IAV is accumulating deferred maintenance costs of about Dh 4 million per year.<sup>2</sup>

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<sup>1</sup> Only about two percent of the budget is available for academic purposes.

<sup>2</sup> Price Waterhouse, "Financial Survey of Host Country Contracting Capabilities of the *Institute Agronomique et Veterinaire Hassan II*", May 1992.

### 2.2.1.4 Interpretation

This financial situation can be interpreted differently when viewed in the context of its external environment. In an economic environment where budgetary cutbacks in the public sector are now the norm, IAV's budget, as indicated below, has remained steady and even experienced slight increases. This is a positive statement about IAV's status within Morocco.

**IAV's Operational & Equipment Budget (Dh million)**

	1989	1990	1991	1992	1993
Operational	62	76	84	104	105
Equipment (including construction)	17	14	14	14	13
Total	79	90	98	118	118

Source: IAV Accounting Office

### 2.2.1.5 External Finances

The core funding available to IAV is enough to meet payroll and very minimal teaching needs. Thus the research and extension functions of IAV can only be carried out to the extent that faculty can generate external resources. To this end about one third of the faculty have been extremely successful in obtaining external grants and contracts.

**IAV's External Grants & Contracts (Dh million)**

	1989	1990	1991	1992	1993
National	5	9	8	18	7 + (7)
International	5	4	6	6	5 + (5)
Total	10	13	14	24	24

Note: ( ) = projection from July to December 1993

Source: IAV Accounting Office

Two healthy trends emerge from this information. One is that external funding since the 1988 evaluation has more than doubled because of the ability of faculty to attract funds -- as evidenced by their success in capturing a high proportion of IFS awards.

The second, and perhaps more important, trend is that the bulk of this growth in external funding is coming from national organizations. While it may be too early to make too much of this trend, it does reflect a growing internal appreciation of IAV's capabilities. As the size

and importance of IAV's alumni and clientele grows, this appreciation can also be expected to grow.

#### **2.2.1.6 Some Dilemmas**

As discussed in the previous chapter, this impressive performance in grantsmanship has not been without its negative side. Only about one third of the faculty body have been active in this activity. The remaining two-thirds have not been successful in getting financial support for their research or are not willing to be driven into the all-consuming work of seeking contracts. The very limited staff-support available to faculty means that an inordinate amount of time is spent on grant-seeking activities at the expense of other academic pursuits. Some feel that projects put a faculty member "outside" the administrative system because the guidelines are weak.

The short-term nature of this type of research encourages a "fire-fighting" approach which puts IAV in a less than optimal situation to also address key issues of national importance. This outcome, predicted six years ago in the USAID 1987 Evaluation Report, has indeed subsequently become a reality<sup>3</sup>. In this sense the GOM and Morocco as a whole do not gain the full potential benefit of the research capacity of the Institute. The GOM also loses a very important advantage of IAV's position with respect to its particular potential benefit in conducting long range research into complex issues which demand as much attention to research methodologies as to the research itself!

The lack of an institutional research agenda that would help to guide grant-seeking, and the absence of core funding for research contribute to this situation. There are no indications that the recommendations made in the 1987 Evaluation Report with respect to the latter point -- for the GOM to establish a recurrent cost research account from P.L. 480 resources -- has been accomplished. With respect to the former, there are positive indications that research agendas will now be established at Ministerial level for the whole network of agricultural research institutions in Morocco. This follows a strategic conference on research planning and priorities conducted by MARA in June 1993.

#### **2.2.2 Sustainability as a Theme for Reform**

This focus on the capacity of IAV to survive and indeed prosper in the "post-project period" is commendable; history shows that too many such initiatives have failed in the past simply because such issues were not addressed in time, or with sufficient commitment to the reality of the change. That said, the team believes that the issue of "sustainable development" can usefully be extended far beyond the issue of the "survivability" of IAV itself, which has been the dominant focus since the 1988 review, to now include the whole issue of the "sustainable development" of rural Morocco and the role of IAV in that, in particular. Thus, given the global importance of "sustainability" as the emerging theme of the 90s with respect to "responsible agriculture for lasting improvements in the welfare of rural people, of their communities and of the environments in which they live and work," the post-project sustainability of IAV might be

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<sup>3</sup> AID Project Evaluation Report No 65, July 1987 Agency for International Development. Washington D.C.

better refocused as "the sustainable development of IAV as a vital aspect of the sustainable development of rural Morocco."

In other words, the matter of "sustainability" could be most usefully assumed as the central theme of the next stages of development of IAV - as an institution in co-evolution with its surroundings. Some of the other changes in the organization since the last review reveal the significance of the theme of "sustainability."

### **2.3 General Administration**

Several changes in the Administration have taken place since the 1988 evaluation. On the positive side the administrative and financial section has been strengthened and its management systems for procurement finance, have been enhanced. Both hardware and appropriate software systems are in place and being utilized and, as with any such system, improvements are continually being sought. IAV's "lean" administrative system has been strongly credited with the high degree of individualism, creativity and dynamism that it enjoys. However, the same faculty that praise this system now feel that a tighter organization, without a lot of bureaucracy, would be more appropriate. This is one of a significant number of dilemmas that exist across the whole Institute, at all levels of its organization and ranging across the majority of the issues that are recognized as being crucial elements in its future. That they are freely and frequently discussed is a most positive sign of the increasing level of participation of the faculty in the affairs of their institution.

### **2.4 Academic Administration**

The administration of the academic components of the Institute are a cause of some concern by administrators and faculty alike. In discussions with the faculty, strong and widespread concern about the relative status of the teaching function was expressed. A series of debates and discussions has recently been launched to investigate ways by which the curricula could be better designed and managed. At the time of writing, this concern is being taken up by the administration, and some restructuring is soon to be carried out. It is envisioned that the single directorate for teaching will be replaced with a directorate in each of the eight "Sections" (mentioned above). This change will move the supervision of teaching functions closer to the faculty and the departments.

#### **2.4.1 Management of Teaching and Curriculum Development**

The general situation regarding the management of teaching and curriculum development, and the organizational context in which it operates, is covered in Chapter 1. In this chapter some specific issues will be addressed and critical questions raised.

##### **2.4.1.1 Standards**

The system of standards for degree granting is based on a rigorous process of assessment of theses with internal and external examiners on the panels. The pattern initiated in the formative years of IAV of seeking an international presence on the panels continues. The Minnesota

Project has facilitated the inclusion of U.S. faculty in the process. A set of rules for the Doctoral Program have been promulgated and a Doctoral Committee, under the chairmanship of the Director, has been established.

#### **2.4.1.2. Course Procedures**

IAV has effective autonomy in curriculum development. Procedures for accepting new courses, modifying existing ones and evaluating course content are relatively flexible and effective, enabling the Institute to adapt relatively quickly to changing situations and meet emerging needs.

A *Conseil de Perfectionnement*, chaired by the Secretary General of MARA, is a consulting committee that evaluates the curriculum and provides orientation for training to meet the needs of the agriculture sector in Morocco. This council is composed, in addition to the Secretary General, of representatives of the Ministry of Education and the technical directorates of MARA as well as representatives of professional groups plus the Director, Secretary General and five professors from the Institute. It is supposed to meet at least twice a year by call of its chairman. However, it is not essential for curricula changes to be reviewed and approved in advance by the *Conseil*.

Instead, committees are formed, as needed, to monitor, evaluate and recommend changes in courses or curriculum. These committees are generally nominated by the Director and involve experts from inside and outside the Institute, including experienced professors and heads of departments affected by the reform in question. Following review and presentation of a written document to the Administration, the proposed reform can be approved internally, by a council of the involved departments. This mechanism was used, for example, in the curriculum reform of the Food Science program in 1992/93. Thus, while there may be some concern that the teaching programs are not adapting rapidly enough to the changing circumstances in Morocco, the Director and Administration of the Institute have the authority to address this issue, and do exercise it.

#### **2.4.1.3 Evaluation**

There is as yet no organized system for evaluating teaching performance. The newly appointed Secretary-General is particularly conscious of this issue and hopes to introduce a system within 12 months. He believes the need is greatest in cycles 1 and 2 and least in cycle 3, where the level of interaction between individual students and faculty around common interest in research themes is high. He is aware that there are no tangible rewards for teaching or disincentives for poor performance, but is confident that the inherent desire among faculty for effective teaching programs can be tapped as a source of motivation. He believes a system of collegial support for, and recognition of, good teaching practice can be implemented and will be effective.

#### **2.4.2 Conclusion**

There is some dissatisfaction with the present arrangements for introducing and modifying courses and for evaluating teaching performance. Framing an appropriate response is currently

high on the agenda of the Director and his advisers, and the team is aware that a decision is imminent about a structural response that will emphasize the role of sections in coordinating interaction, activity and decision-making across departments. Such moves will also introduce an element of accountability. The favored response is to have nominated leaders within Sections, but the level of delegated authority and the scope of the role (i.e. whether it is a coordinating role only, or whether it includes allocating of resources, and whether it covers only teaching, or extends to research and outreach) is still being debated.

The team is sensitive to the tension between individual freedom to encourage personal initiatives, and social cohesion to achieve corporate goals. To date IAV has emphasized the former, with good results, but there appears now to be a consensus that a more balanced approach is needed. A difficulty for IAV is that, because of inexperience, there is a lack of corporate management expertise and know-how dispersed through the faculty, thus contributing to a lack of capacity to respond effectively.

A skillful and sensitive organization development practitioner, given a brief to facilitate a process of decision-making on structural reform within IAV, could play a significant role in helping those within the Institute to deal with what is a difficult, and potentially critical, transition.

## **2.5 Adequacy of institution-wide support services**

### **2.5.1 Publication Services.**

As indicated in "Sustainability Workplan, July 1, 1992 to September 30, 1993", there have been two decades of research at IAV and more needs to be done to publish this. The publication services provided by the *d'Actes Edition* are excellent and the quality of this unit is attested to by the winning the 1992 Grand Prize of Morocco for their production of Professor Zahour's book on plant genetics. Recently, international scientists have sent their manuscripts to *d'Actes Edition* for editing and printing. Unfortunately, the present staff and resources are simply being overwhelmed by the volume of work which they are attracting. A little additional support could be most rewarding and the Institute could look into costing out publications expenses for all research projects.

*D'Actes Edition* could also be viewed as an important marketing strategy for IAV, helping to sell IAV's image as a technical powerhouse. The suggestion that IAV do more to market itself was proposed in the 1988 evaluation. One suggestion was that IAV use whatever (project) resources are necessary to support public relations activities and that all such public relations material be professionally produced. While this particular recommendation was based on the USAID/Minnesota project which is now ending, generalized it is a worthwhile idea to pursue.

### **2.5.2. Facilities Maintenance**

While IAV has the necessary skilled personnel to cover most of the routine maintenance that is needed, there is a growing problem with a lack of parts and supplies. There is also the issue of inequity. Units that have project money dominate the maintenance agenda and they consequently receive preferential treatment. The issue of funding is also becoming crucial and, as mentioned

above, it has been calculated that deferred maintenance costs are accumulating at around four million Dirhams per year.

### **2.5.3 Equipment Maintenance**

A major weakness exists in IAV's capability in maintaining its scientific and computer equipment. It appears that too little attention was paid to this issue in the overall development plan of IAV. This deficiency will only get bigger as the present set of equipment begin to age and if funding for replacements is not forthcoming. As pointed out in the IAV/Minnesota workshop on sustainability, this capability to maintain and repair scientific equipment constitutes one of the key factors of the sustainability of research.

### **2.5.4. Administrative, Secretarial and Logistical Support**

Administrative support is not well developed at IAV. Faculty struggle to organize short courses, conferences, workshops, and deliver on their different projects in the absence of the sorts of administrative, secretarial and logistical support that are taken for granted elsewhere. The level of success of faculty in conducting such activities in spite of the lack of good support, suggests that many more external contracts could probably be obtained and implemented if there was an improved support service. IAV's experience with its DDR and the administrative capacity developed through the Minnesota Project at Rabat provide ample examples of what can be achieved under such circumstances. Similar support is also needed at Agadir.

### **2.5.5 Library (CDA)**

As mentioned earlier, the team was surprised by the dearth of books and journals held in the Library stacks. While it was indicated that the departmental libraries of IAV will now be centralized, this still fails to address what is really a chronic and critical aspect of the academic infrastructure at IAV. It is fair to say that, besides the installation of some CD readers and the decision to centralize, the situation at CDA has not changed significantly since the USAID evaluations of 1987 and 1988. The crisis in the development of this important service unit, mentioned in the two previous evaluations, remains a crisis today. A strong campaign needs to be launched to tap as many resources as possible, including alumni and other stakeholders and networkers, to upgrade this vital facility. **Issues of library policies on access, priorities and book selections need urgent attention, and a library committee should be appointed and given the highest priority for marginal resource allocations.**

## **2.6 Faculty Incentives**

There are few concrete incentives and disincentives at the discretion of IAV faculty and administration. In comparing themselves to their colleagues in the universities, some IAV faculty feel that "... the demands on us are not the same, yet the incentives are the same". While there seems to have been little attrition thus far, there are signs that it is now beginning. In the Veterinary Sciences, for example, three faculty have left since the 1988 evaluation. Secondly, the 'traditional' western oriented incentives of salary increases and promotion (or disincentives as penalties) are more a function of the Civil Services, Labor codes and the Unions than of IAV

policy. Salary increases, when available at all, tend to be very marginal, automatic and across the board. Many faculty, at different levels, expressed concern about maintaining motivation under such conditions.

When salary and promotion issues are removed from an institutions's repertoire, it is left with only a weaker set of possible tools of motivation. These would include such matters as overt respect (important/prestigious appointments), permission for travel, support for publication (through d'Actes), frequency and length of sabbaticals, opportunities for professional development, and different forms of recognition. They may be other aspects that have socio-culturally importance. Other aspects that merit serious consideration are issues of professional pride, self-respect, and citizenship. But as indicated by several IAV faculty, the 1987 and 1988 evaluations, and in the June 1993 Workshop, the search for and implementation of some evaluation system is critical.

## **2.7 Linkages**

### **2.7.1 Institutional Linkages in General**

Once again the team was constrained by time to investigate the nature and extent of changes in linkage relationships between IAV and other organizations, since 1988. The extensive round of interviews that were conducted and the literature that was examined, however, did allow the team to develop a strong feel for the way IAV faculty and administrators go about "coupling" their institution with others across a broad spectrum of constituencies: It also revealed the potential weaknesses of informality. Two institutes in particular, are worthy of mention in this regard.

### **2.7.2 Relationships of IAV with ENA and ENFI**

Relationships between IAV and its two sister institutes - The National School of Agriculture (ENA) and The National School for Forestry Engineers (ENFI) - typify the sort of informal relationships that faculty at IAV create and maintain so well. There are many instances of informal collaboration between faculty at all three of the institutions, in research, development, and even personal development projects. IAV faculty have contributed to the production of educational films and other extension education resources, with people from the International Center for Media and Extension Research at ENA. Other more formal arrangements also apply with the educational programs.

- ENFI does not accept any first cycle students. Its national supply of second cycle students into Forestry, come mainly from IAV and ENA (the rest are essentially students from overseas -- where they are currently unable to satisfy the demand for places).
- There is some inter-institutional cooperation between IAV and ENA, with students in the third cycle (particularly with students of animal science). With a strong emphasis at ENA on management, extension and education, there would seem to be some important opportunities for further expansion of cooperation here. The reverse would also be true with particular respect to science and technology.

These are positive initiatives, and reflect the potential for a clear expansion of integrating activities in more formal modes. ENA could develop precisely the type of expertise in cognitive science and curriculum design and evaluation that higher agricultural educational institutions are seeking everywhere; and IAV already has particular needs as has been constantly emphasized throughout this report. The same might be said for the development for education in the management sciences for agribusinesses; ENA could offer third cycle specializations in this domain for those students who complete second cycle studies in the production sciences at IAV for instance. A similar argument could be mounted for extension and agriculture high school teaching specializations.

A reverse flow could occur with respect to ENA second cycle graduates wishing to pursue more research-related studies in the production sciences. Consideration could indeed be given to an amalgamation of all three institutions into a "federated network university" which maximized opportunities for collaboration while minimizing some of the growing trends towards competition. One could imagine a matrix of course options spread across such a network which allowed a flexibility of transfer (or articulation) from one centre to another. Two year, four year, and six year qualifications could comprise one dimension of such a matrix, while the other would be provided by a restricted range of discipline domains at each Centre (as in fact virtually exists to this point). Current evidence suggests moves counter to this spirit: For instance, ENA only recently (1990) introduced the six-year ingénieur d'Etat program, abandoning the four-year Ingénieur d'Application as a consequence. It also intends, in the not too distant future, to introduce its own doctoral program. This, in and of itself, is not necessarily a retrograde step. These two moves do come at a time, however, when they are more likely to result in "competitive exclusion" with IAV, than the synergy that would come from a much more integrated cooperation with it!

Similar synergy of cooperation could be achieved more formally with research and development projects with members of the centers collaborating as full partners in multi-disciplinary teams. Development projects will increasingly demand the collaboration of management and extension specialists, with production scientists, social scientists, and those concerned with natural resource management and the environmental sciences.

These latter aspects also suggest an expanded role for the School for Forestry Engineers (ENFI): Ecologically sustainable development will demand graduates (at all three levels proposed) who have the competencies needed for the management of resources and situations which involve a whole range of complex and dynamic systems. Where forestry will always remain a somewhat limited career option, environmental and resource management offer greatly expanded employment opportunities for graduates.

### **2.7.3 Agricultural development and extension.**

There have been considerable developments in the thinking and practices that relate to the matter of "extension" and technology transfer in various places around the world since 1988. Much of this has to do with the ever-expanding role of informatics and information technologies, which are as applicable to circumstances in Morocco as anywhere else. Perhaps more profoundly however, has been the emergence of the so-called "systems movement" and the application of

systemic thinking and practices to education, research and extension. The motivating forces for such radical shifts in approaches to development emanate from the recognition that many of the development strategies developed in the name of increased agricultural productivity, are of themselves potentially destructive, or at least damaging of both the socio-cultural and bio-physical environments in which the new technologies are introduced.

From being seen as the "solution" to many problems of the third world, agriculture, under some circumstances has become the "problem". While there is some evidence that these matters are of concern at IAV and the other institutes of higher agricultural education in Morocco, they have yet to be reflected seriously in debates about radical transformation of curricula and/or research agendas to meet the challenges of complexity.

It is from this context that the following chapter presents an argument for a fundamental rethinking about the future direction of IAV from its establishment, and current progress toward, a teaching/research institute focused on the almost exclusive quest for improved productivity through the application of science and technology to production limiting situations. However, before investigating such a rethinking it is necessary to address relationships between IAV and the commercial agriculture sector.

## 2.8 Responsiveness to Private Sector

As discussed in Chapter 1, IAV has a well developed network of faculty, alumni and "friends of IAV" who are active in sensing what is happening in the environment of IAV and interpreting the implications for its mission and role. The Institute is highly responsive to this intelligence at the individual and small group level, but the poorly developed organizational mechanisms referred to in the previous section inhibit its capacity to take advantage of it in making proactive corporate decisions. Given this and the institutional inertia associated with the preponderance of production oriented agricultural scientists within IAV, the faculty are surprisingly responsive to changing circumstances, particularly in the private sector.

The "Program for Assistance to Agribusiness in Morocco" prepared by IAV in February 1992 is comprehensive and builds on the strengths of the Institute while recognizing its limitations. The plan proposes that IAV develop a management course in agribusiness in the form of a 3rd cycle managed and taught by a GER including IAV specialists and national and international expertise. This appears to be a feasible and effective way to build IAV's agribusiness capacity concurrent with contributions to actual agribusiness practice in the field, and therefore represents a prime example of the process of co-development mentioned above.

The decision to abolish the 4-year *Ingenieur d'Application* is seen by a number of faculty as a retrograde step in this regard, resulting in a graduate profile that is costly and overly specialized, particularly as far as needs of the private sector and rural development are concerned. It is significant that whereas graduate *Engineers d'Etat* are only slowly finding employment acceptance in the private sector, the two-year Certificate graduates are finding ready employment. There already is a demand for another two year course in Water Management and Environment to provide technicians to play a role in providing sewerage and clean water in rural communities. The absence of relatively low level technical expertise of this type is a major limiting factor in

development, and often tends to be overlooked in favor of more glamorous "high level scientific manpower" training. It is to the considerable credit of IAV that it is responding to this need (even though the team was struck by the lack of awareness among many faculty of the existence of these programs, some faculty at Rabat saying that they were only offered at Agadir). These programs deserve a much higher status than they appear to have among many faculty.

A number of faculty observed that the "best" students they had over the years were those who began in either the Certificate or *Ingenieur d'Application* program and progressed to higher level courses with an intervening period of work in the field. This is to be expected in a course structure format with the link between experience and classroom emphasized within programs at IAV.

**Given that IAV is widening its scope to include the private sector as well as to address the broader rural development needs of Morocco, the original grounds for the abolition of the four year *Ingenieur d'Application*, which were related to public service terms and conditions, surely demand to be revisited.**

## 2.9 Conclusion

There is no doubt that the progress set in train in the mid-1980s for IAV faculty to upgrade themselves through the particular assistance of the Minnesota project has been an unqualified success. The Institute now has a very strong cohort of faculty who will be able to provide the academic leadership, scholarship, education, and research into the twenty first century.

## 2.10 Focus Questions

The challenge, as we have alluded to above, is whether the faculty and administration at IAV, and those at its sister institutions, can develop strong desirable and feasible visions of futures which see those institutions much more closely aligned with their communities, as well as with each other, in a commitment to integrated and systemic development across rural Morocco. And this raises a number of key questions, the substance of which emerged through the process of the "critical conversations" during the evaluation process:

- What has been the real contribution of IAV to the Moroccan economy, and how has this been evaluated?
- How have the functions of budget and financial management been addressed since the last evaluation report in 1988?
- How effective and efficient is the current administrative structure in allowing the institution to face its dynamic futures?
- Where do the constraints to progress now lie in the institution-wide support services?
- What needs to be done to improve the quality of the terms and conditions of employment of the staff at IAV?

- How have inter-institutional linkages been established and maintained over recent years, and how can the closure of the Minnesota Project be compensated for in the foreseeable future?
- How participatory is the decision-making process over such issues facing the Institute as strategic direction setting, resource policy generation (including human resource development), research agendas, and curriculum adjustments and transformations?

## SECTION B

In this Section, the tone of this document changes significantly from that of a fairly conventional report to more that of an academic paper. This change in direction is consistent with our intent in conducting this evaluation in the spirit of a series of "critical conversations" about the strategic future of IAV.

In the material which follows, we first present (Chapter 3) some arguments to suggest that, as the Institute's future is very much in its own hands, it has the opportunity to pursue a mission that is relevant to an emerging view of agriculture. This perspective is somewhat different from that to which the Institute has been exposed through the focus of this particular project with the American land grant schools. Essentially, the challenge is for IAV to come to terms with agricultural education, research and extension in an age where agricultural development is increasingly being viewed as inseparable from the concurrent development of the rural communities and environments in which it must occur.

Having raised the issues, and provided some conceptual dimensions to the issues, we then move (Chapter 4) to providing some examples of how IAV might deal with a future somewhat different to that suggested by its current mission and profile, through a heavy reliance on a model of IAV as a "critical learning system."

### **CHAPTER 3 -- Where to from here? Like Nothing We Have Seen before!**

Throughout this evaluation, we have held to the belief that it is vital that scholarship be brought to bear to inform the choices that IAV must now make about its future. The argument that we have tried to mount, is that IAV now finds itself as an organization which is existing in environments which are both complex and dynamic. As its sustainability will depend on its relationships with those environments, it is crucial that it learn how to deal with them, so that it may reach a position of mutual influence with them.

Given the circumstances surrounding the end of a project of so many years duration, a sense of uncertainty and concern about the future is inevitable. The focus on the future sustainability of the institution to date has been very much on the two aspects of (a) financial viability, and (b) academic relevance of the organization following the end of the "Minnesota Project"; this was a constant theme throughout the interviews and document review.

The team believes that while this is clearly an important issue for the present moment, there are far more profound questions about the future of the Institute, and its role within the development of Morocco, that need to be urgently addressed.

Essentially, the two issues that the Institute faces above all others relate to precisely what type of academic institution IAV now wants to become, and how will it go about making such a decision. To the end of getting this type of discussion on the agenda of discussions about the strategic future of the Institute, the team conducted an open seminar at the Rabat campus of IAV on September 17th. Representatives from INRA and from the Rabat USAID office were also present. The essence of the arguments is captured in a document that was widely circulated as part of the team's seminar (and re-presented here as Annex 2).

#### **3.1 The Submission**

The essential submission was that "as evaluators, we are not sure that you (IAV) quite realize the importance of your achievements." From the perspective of their investigations to that point, and in the spirit of engaging the faculty in "critical conversations", the team suggested that IAV had reached a point of decision about its future and, perhaps even unwittingly, had already made a choice about the particular direction that it wished to pursue into the foreseeable future. In apparently focusing on issues directly related to the development of agriculture and of rural communities in Morocco, at least as manifest by the nature of existing curricula, and of profiles of research and continuing education, the team suggested that IAV could claim to be an unusually innovative and socially relevant institute of agricultural higher education -- indeed, perhaps the first of a new "type" of university in the developing world.

The context for this claim was the team's familiarity with three international studies of agricultural higher education in the developing world, which had been completed since the last impact evaluation of IAV in 1988. As it happened, IAV had featured in all three of the studies, conducted respectively by (i) the Center for Development Information and Evaluation (CDIE) of

USAID<sup>4</sup> (reported 1990), (ii) by FAO<sup>5</sup> (published in 1991) and (iii) by the Operations Evaluation Department of the World Bank<sup>6</sup> (published in 1992) (cf Annex 3).

IAV also featured in a critique published by Mattocks (1991)<sup>7</sup> which made special reference to the development of agricultural universities in Africa. In it, he critically reviews lessons learned from a comparative analysis of 15 agricultural institutions of higher education which had received substantial assistance through USAID:

"The implications of the study for continued institutional development and revitalization initiatives in Africa, suggests that the development of responsive institutions is best accomplished through long term, flexible partnerships."

Citing the particular instance of IAV Hassan II as one of the few success stories in the study, he concluded his essay with the comment that

"...like the example(s) from Morocco (IAV) ....., we must allow Africa to develop institutions that have African characteristics. Such institutions, if allowed to evolve, may exhibit wonderful features like nothing we have seen before."

IAV has much to learn from all of these reports, as the Institute is now at a point where many have been before: The immediate post-project phase with its sudden transition from dependency (or at best interdependency) to independence.

The focus of the critique of Mattocks with respect to the very high rate of failure of "institutional building or revitalization" efforts, was the inappropriateness of the many attempts to simply "transfer" the extant American "land grant model" to other nations, without any real understanding of the conceptual or the cultural complexities inherent in such a task - or indeed of questioning either the desirability or feasibility of even trying!

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<sup>4</sup> USAID "Universities for Development: Lessons for Enhancing the Role of Agricultural Universities in Developing Countries. (CDIE/A.I.D Evaluation Occasional Paper No. 31, August 1989)

<sup>5</sup> FAO "Higher Education in Agriculture: Status, Issues and Ideas for Future Development." (Expert Consultation on Strategy Options for Higher Agricultural Education, Rome, December 16-20, 1991).

<sup>6</sup> World Bank, Assistance to Agricultural Higher Education 1964-1990, Report No. 10751, The World Bank, Washington, D.C, 20433, USA.

<sup>7</sup> Mattocks, D.M. "Institutional Transfer and the Third World: Misguided Policy and Future Institutional Development Initiatives in Africa". (Paper delivered at Ohio State University Annual Symposium of the Center for African Studies, May 23-25 1991).

### 3.2 The Comparative Studies

The USAID study involved 23 agricultural universities in 10 nations: FAO evaluated high level institutions in 20 countries: the World Bank reviewed 41 projects in 25 countries. There were some overlaps across the three studies, including, as already mentioned, IAV Hassan II.

The overall conclusion from all three of these reports was that the outcomes of assistance for the development of agricultural higher education, invariably based on twinning relationships between a "donor" institution, and a "recipient" institution, were not as good as they could, or should, have been. In spite of many millions of assistance dollars invested in "institution building" projects in agricultural higher education, with their primary emphases on faculty upgrading, curriculum reform, transformation of research capacities, infrastructure development and "linkage" establishment, a very high percentage of the initiatives had "stalled" following the termination of the collaborative relationship.

A number of key lessons have been learned, however, through these and other studies, and the reports that have been published from them should be mandatory reading for all concerned with the strategic future of institutions of agricultural higher education and research. Adding to the information presented in the above reviews is an insightful essay<sup>8</sup> by Gary Hansen of CDIE in AID/W, in which he argues the need for a "new model" of university more appropriate "for addressing the challenges that developing country universities face". Identifying the land grant universities with what he terms the "neoclassical age", he poses the questions "Do we now need to pass into a post- neoclassical era? If so, what will be the attributes of the post-neoclassical university?"

### 3.3 The Post-neoclassical Thesis

In his essay, Hansen (1991) suggested that the major lesson from the USAID/CDIE study was that in the face of a host of new environmental, economic, and social challenges, a new type of agricultural university was beginning to emerge around the world: He referred to this "new-order" type of institution as "Post-Neoclassical", and suggested that it would have four particular sets of characteristics which would distinguish it from the more conventional model of agricultural university which is so commonly encountered and whose effectiveness, relevance, and sustainability are under considerable doubt.

He argued that "a new concept of the university is needed" to take institutions of higher agricultural education beyond the limits imposed by particular missions. The original classical universities of medieval Europe, he posits, selected "scholastic thought (particularly theology and philosophy)...and the codification of knowledge" as their mission. In contrast, the neoclassical universities which developed in 18th and 19th century Germany, placed their primary emphasis on research "to advance the boundaries of scientific knowledge." In arguing for the

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<sup>8</sup> USAID, G. Hansen, Beyond the Neoclassical University: Agricultural Higher Education in the Developing World - An Interpretive Essay, AID Program Evaluation Report No. 20, United States Agency for International Development, Washington D.C. 20523, January 1990.

post-neoclassical university, Hansen presents the proposition that the "neoclassical model (and by inference, the classical model too) does not provide answers to how to sustain the university as a vital, innovative and socially relevant institution". As he includes the modern land grant university among the neoclassical institutions, Hansen is suggesting that the mission adopted by universities such as the University of Minnesota is no longer adequate in the face of the complex challenges posed in the pursuit of the enhancement of the welfare of rural people nor, one can add, of the quality of the environments in which they live and work.

Support for this position comes from a variety of sources, both within land grant universities themselves, and from constituents outside who feel that the original "populist", societal orientation mission has been lost.

There are a number of reasons behind these concerns, which Bonnen<sup>9</sup> suggests amount to "a Greek chorus of criticism" of the mission and activities of U.S. agricultural institutions. Bonnen suggests that not enough attention is being paid within these universities to issues such as "...environmental degradation, concerns for animal welfare, impacts on the health and safety of farmers, agricultural workers and consumers."

While these complex issues are of particular relevance to the situation in the U.S., they also reflect a much more general concern about the whole nature of agricultural science and, indeed, about the limitations of the prevailing paradigms of agricultural research, education and extension right around the world. The problem is that agricultural scientists are being trained increasingly in more and more focused specialties, just as it is being increasingly recognized that the issues of agricultural development demand professionals who are able to deal with complex, "messy" situations which typically transcend disciplinary boundaries. It has been argued<sup>10</sup> that the situation will not change "unless as agriculturists, we accept a shift in our thinking and practices of the magnitude of a new paradigm".

A new paradigm for the post-neoclassical age?

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<sup>9</sup> Bonnen (1983) "Historical Sources of U.S. Agricultural Productivity: Implications for R. and D. Policy and Social Science Research" *Amer. J. of Agricultural Economics*, 65:958-966. adverse nutritional effects of production and processing technologies; the extrusion of smaller family farms from agriculture, the erosion of rural communities and the concentration (of ownership) of agricultural production and economic wealth; adequate conservation and commercial exploitation of fragile lands that should not be in cultivation."

<sup>10</sup> Bawden, R.J. (1991) "Systems Thinking and Practice in Agriculture" *J. Dairy Science*, 74: 2362-2373

### **3.4 IAV in a Post-neoclassical Age**

At the seminar, the team argued that the Institute, in some aspects, is already demonstrating some of the characteristics of a "post-neoclassical" academy, and that this could well represent strong advantages both for more sustainable development for Morocco, and comparative advantages for the Institute itself. It is appropriate to expand on this submission at this point.

Hansen argued that the post-neoclassical university would be characterized by four particular concerns: (a) Mission; (b) Activities Profile; (c) Undergraduate Curriculum; and (d) Organizational Structure. These four aspects are developed here as they refer to an institute (IAV) which has already shown an orientation towards most of them, and indeed has even adopted some of them, at least in embryonic form. Each actual quotation of Gary Hansen is followed by a brief expansion of his concepts with particular regard to IAV.

#### **3.4.1 Mission**

First, the purpose of the university will be truly reflected in its mission. Most agricultural universities are by charter supposed to enhance the well being of rural inhabitants. The neoclassical universities have translated this to mean improvements in crop and animal production. The post-neoclassical university will recognize that enhancing rural well-being includes much more than just crop production. Issues of employment, income, equity, education, access to services, debt-bondage, security of tenure, contracting rights, poverty, and rural inhabitant's control over decisions affecting their welfare will assume priority in the concerns and mission of the university.

There is little doubt that the vast majority of IAV faculty and administrators subscribe to a vision of their institution in these more global terms, even though there is no formal statement to that effect. However, if this is indeed a vision for the future that the majority hold, the current development strategies, curricula, research agendas, and organizational structures do little to reflect it in practice. To date, IAV has focused strongly on those physical, life, and social sciences which underpin "production agriculture" with but passing reference to the more complex issues of comprehensive "rural well-being". The shift to embrace this latter context would represent a very profound challenge to the current mission of the institution, with many implications for changes if it were to be pursued; changes in profiles, in policies and in reputation are at stake.

Given that the development of a mission that is considered by the majority of the stakeholders to be both desirable and feasible is a most urgent matter at this "crossroads" juncture, everything should be done to assure that the debates about future direction should include exploration of these more profound perspectives. The key issue here is that critical debates do occur across as wide a constituency as possible within the institute. These debates need to be informed by experience as well as by theory and philosophy, and they need to be coordinated from the point of view of contributing to the overall decision-making process and strategic management of the institution.

### 3.4.2 Development Profile

Second, the role of the university will be seen as one of learning and innovation with respect to devising and testing strategies for achieving its mission, as broadly defined above. In order to be a springboard for strategy innovation, the university will have to assume a much more programmatic and activist orientation in its education and research efforts. In particular, rural areas will become learning laboratories where university faculty and students will work together with rural inhabitants to test strategies for addressing major problems and issues.

IAV faculty and students are foremost among those agricultural universities across the world which are taking the issues of "field experiences and focus" very seriously. Through the *stages* throughout the program, students and faculty alike are involved in observation and analysis of prevailing situations in rural Morocco - and indeed have recently expanded such studies to include rural France. The research projects and programs of many departments and of individuals within them have also been focused on real world problems of rural Morocco or at least of the commercialization of agriculture in order to benefit them. This has been particularly true during the period of faculty doctoral studies through the Minnesota project.

"Being there" and conducting empirical research into the problems as they are perceived by those in rural Morocco, however, is not necessarily the same thing as being very active as partners in the development affairs of those people. This is the very essence of the challenge now facing IAV faculty: Do they now focus on the broader issues of "sustainable rural development" and become more committed than ever to "direct researching action" to improve the typically complex problems of rural Morocco, or do they retreat to a more indirect, passive role as educators and empirical researchers? A post-neoclassical stance would favor the former option, and this would have very significant impacts on the way research and outreaching activities are conducted by IAV faculty. Multi-disciplinary, inter-disciplinary, and even trans-disciplinary projects and programs would assume much greater importance, in turn dictating the need for much greater inter-departmental collaboration as well as for a pluralism of research methodologies. It would also impact significantly upon the curriculum as the faculty began to share their new "pluralistic" perspectives with their students.

### 3.4.3 Curriculum

Third, the educational experience, particularly at the undergraduate level, will be dramatically different from what it is today in most universities. Rather than simply transferring knowledge to passive students, the teacher will become a facilitator who assists students in learning how to learn about concepts and their practical application. Thus, students and faculty working together will, from the first day of the educational process, be challenged by the strategic problems of rural and agricultural development, with the faculty member guiding students in the use of learning resources and experiences that develop skills in analyzing and managing change to improve rural livelihood.

With its commitment to a "pedagogy of reality", IAV has long established itself as presenting one of the most innovative curricula in agricultural higher education anywhere in the world. The *stages* present the opportunity for precisely the sort of interactions around "learning to learn about

concepts and their practical application" from the perspective of "analyzing and managing change to improve rural livelihood." As it now stands (September 1993), every student must complete the following *stages* over the six years of their studies:

First cycle:

(1) Preparatory Year  
*Agricultural Enterprise Stage.*

All 500 or so students must spend three and a half months living as individuals in rural areas and studying rural life and livelihoods, with particular reference to the modernization of agriculture. For the past two years, this *stage* has been carried out in France, through the cooperation of the French Ministry of Agriculture and Forestry.

(2) Second Year  
*Nature Discovery Stage*

Relying heavily on maps, the 250 students in this year, spend a total of sixteen days, in teams of ten, crossing rural terrain within the country. Each team member is allocated a specific set of tasks through the journey which might relate to observations about particular aspects of the ecosystems they pass through, or about the way people living in those environments have adapted to them.

(2) Second Year  
*Rural Community Stage*

Working together in pairs, students must spend seventeen days living in a village and studying its social structures, the culture of its peoples, the local technologies, and any other aspects of the communities which will lead to greater understanding of rural life.

Second Cycle:

(1) Third Year  
*Production Stage*

During this *stage*, which includes a preparation period of seven days, students live and work on individual farm enterprises for three periods (winter, spring and summer) each of around 13 days. Through this period the students learn as much as they can about the operations and resources on the farm, and how they are managed. It ends with a four-day debriefing together with their farmers.

## (2) Fourth Year Development *Stage*

In teams of five or six, and following a preparation period of ten days, the students spend two ten-day periods (in October and in February) studying the constraints to development in small regions. This represents the last opportunity that the students will work in multi-disciplinary teams assisted by faculty from at least ten different departments of the institute.

### Third Cycle:

While in the fifth year of their program, students must complete a program of theoretical studies without a *stage*, their final year consists of research which is almost invariably field based and therefore virtually a *stage* in itself. It is claimed that the choice of specialization that each student must make, and the research project that they conduct for their third cycle of studies, is very often influenced by experiences that they have had during earlier *stages*.

The integration, in the IAV curricula, of theoretical studies with these episodic "stages" of personal experiences of various aspects of rural resources, rural life styles and livelihoods, and the rural environments in which they all occur, do indeed provide a unique opportunity for each student to develop a personal "praxis" - with theory and practice closely interrelated into "professional ways of doing things". Yet the opportunity also exists for this process of "personal development through learning" to be taken to much more sophisticated levels of cognitive development.

The argument can be made that the curriculum would benefit very significantly from a much stronger emphasis on the process of learning/researching than is currently apparent. Thus, while the students are intimately exposed to "real world" rural situations of varying degrees of complexity, they appear to bring the same logic of observation and analysis to each experience. There is little sense of the graduate as a "critically reflective practitioner", questioning the need for different approaches to problems as a function of their degree of complexity. So, the arguments stated above for a much more pluralistic approach to research and development by IAV faculty can be equally extended to the curriculum and the need for pluralistic approaches to learning by the students.

Exposure to the so-called "systems approaches" are of particular relevance here. This notion is explored a little more fully below (Chapter 4).

### 3.4.4 Organizational Structures

Fourth, the structure of the university will become a matrix of interconnected task groups clustered around major programmatic themes. The programmatic themes will be defined by large problem areas and will cut across the entire university. Disciplinary departments, if they exist, will function in a subordinate position in servicing the program themes.

This is perhaps the most radical of the four aspects of the "post-neoclassical" institution although, yet again, IAV has already been exploring such structures with the existence of the GERs. The

notion that the entire institution could be arranged in such a manner, however, does not yet seem to have been debated.

One of the most interesting organizational features of IAV to any outsider observer, is how it achieves a myriad of collaborative functions in the apparent absence of structures that one would expect to find in place to support such activities. The existence of the integrated curricula, the *stages*, the multi-disciplinary research initiatives, and the extensive couplings that exist between IAV faculty and colleagues elsewhere, would suggest a formal organization based around the sort of "task groups" and "programmatic themes" that Hansen postulates. It is possible to conclude that while they often do not exist in any formal sense, such "networks of collaborations" are fundamental to the way that the Institute "hangs together" and actually "works" as a coherent whole.

There have been a number of attempts to create more formal structures based on various aggregations among the 35 discipline-focused departments, including the currently extant, but basically non-operational, system of 8 "Sections". It could be argued that until the Institution becomes quite clear about "what type of university it really wants to become", any suggestions about how it should be structured will be premature.

It should also be noted, that while IAV can claim to have developed many "linkages" with organizations in its various environments -- within Morocco as well as overseas -- these are far more likely to follow the same pattern of informality that characterizes the structure within the Institute as individual to individual, than represent formal bonds, of institute to institute; and this probably even extends to the relationship between IAV and the University of Minnesota.

### 3.5 An Analysis

From this brief analysis, it is clear that IAV has a very strong foundation as a "post-neoclassical" university for agriculture and veterinary science. (i) The Institute has concerned itself with the broader issues of rural development since its establishment almost three decades back. While the major emphasis to date has been on technological aspects of agriculture and animal production and health, the socio-economic and environmental contexts have been far from ignored. (ii) The Institute is clearly committed to direct involvement in rural Morocco and to the affairs of the rural people: That veterinary medicine has stayed in close collaboration with the agronomists is almost evidence enough of this shared commitment. There are many examples of research projects, both single and multi-disciplinary, which are conducted into field problems, there is a growing program of continuing education and other outreach activities, and the faculty often visit rural areas, particularly in association with the *stage* activities of the students. (iii) The *stages* represent one of the most innovative educational strategies in agricultural higher education known to the evaluators. The range of choices faced by the students and the general quality of the material presented to them in their formal class and laboratory sessions, strongly complement the rich experiential base of their programs. (iv) To this point in its history, IAV has avoided structural developments which might have inhibited its flexibility to respond to the changing environmental circumstances to which it is clearly constantly exposed. An impressive system of informal networks, reinforced at various times and various ways with more formal

multi-disciplinary structures (such as the GER's), exists between individuals, not just within the Institute itself, but also between it and a host of other organizations.

IAV has a number of other important attributes too, with particular respect to an expanded international role: It has an incredible language facility and could offer programs with equal ease in Arabic, French, and English. It has well-established relationships with other institutions in the Mediterranean, Africa, Europe, North America, and across the whole Islamic world. It is also well connected to the international development agencies of central importance in the world.

### **3.6 Choicepoint**

So the point of choice -- the crossroads if you will -- has been reached. Does IAV wish to follow the pioneering route of a national/international post-neoclassical university more explicitly, or would it prefer to organize itself more formally along the conventional lines of a regional "land grant type" institute; with a clear commitment to the tripartite mission of "teaching, research, and extension" structured essentially along discipline lines, and with clear responsibilities for each of the three missions in close collaboration with other regional or national agencies? The third possibility, for the Institute to follow the course of becoming an exclusive research institution, restricting its educational involvement to postgraduate students only while pursuing increasingly client-focused or self-focused research programs and projects, would clearly not be politically acceptable at this juncture, even if those at the Institute wished it.

The choice that is now to be made will determine not only (a) the type of role that the Institute will play in the next phase of the development of Morocco, but also (b) the type of curricula it needs to develop, (c) the agendas for research that will need to be established and resourced, (d) the conceptual models, and theoretical and philosophical stances that will need to be adopted to better inform the way activities are carried out, (e) the organizational structures that will be most appropriate to support the necessary functions, (f) the networks that will need to be established both within and beyond the Institute, and perhaps most importantly of all, (f) the type of leadership that will be needed for the future.

### **3.7 The Tensions of Change**

All routes to the future will provide challenges for the Institute, and even with all the strength that its foundations clearly have, change will always be difficult. From the circumstances as they appear to this team of evaluators, IAV Hassan II has a wonderful opportunity, and indeed a strong responsibility, to pursue becoming a national resource which is central to the integrated, systemic development of the rural communities and rural environments, as well as of the commercial agriculture of Morocco -- i.e., to continue along the "post-neoclassical" route.

We recognize, of course, that for all of the "upside" represented by the above examples of IAV as a well-developed "post-neoclassical" university, there are "downsides" which represent sources of tension at this moment of transformation. Thus, while it is tempting to attribute a primary Mission of care for the welfare of ALL rural people to IAV, the fact of the matter is that few, if any, faculty members clearly expressed such a vision when interviewed. Much more common was the response that IAV aims to produce the best quality trained agricultural scientists and

technologists possible. And a similar story is apparent from the pattern of research and development activities across the Institute. The prevailing rhetoric stresses the importance of the "private sector", and there is much talk of needing to adjust the curricula and profiles of research and development to meet the needs of the emerging agribusiness sector of the country. There is also increasing evidence of the trend of individuals to seek research contracts from that sector.

Questions about long-term market prospects for the produce resulting from intensified production and "value-adding" activities will need serious attention; needed, too, will be widespread attention to the potential negative impacts of uncontrolled entrepreneurship on both socio-economic and bio-physical environments. Faculty will need to engage in meaningful debates about issues of rural poverty, equity, social justice with respect to rights to tenure and fair prices, and other socio-economic and socio-cultural aspects of "responsible" rural development. They will also need to seriously address the nature of relationships between intensified agricultural production and the quality of its natural resource base.

### **3.8 Paradigms for Change**

A strong argument could be mounted that there will need to be a significant change in the prevailing paradigm -- the pattern of thinking which emphasizes the primacy of single disciplines -- that currently prevails at the Institute, and which has been reinforced by the intensive doctoral studies that a large number of the faculty have only just completed. Issues which integrate the development of commercial agriculture with that of rural communities and rural environments in general, are exceedingly complex. A vital cadre of agricultural scientists who can deal with such complexity is needed, not just in Morocco but across the whole world.

### **3.9 On Purpose**

Our analysis comes back to the question about the "real purpose" of the Institute, with respect to its role within the processes of Moroccan and indeed international development, and questions about its evolution from its present status as essentially an institute of agricultural science and technology toward something different. If IAV is to develop a more integrated approach to rural development, then it will need to address a number of important conceptual issues as well as institutional ones.

It will need, for instance, to organize itself in such a way that scholarly debates among faculty will be facilitated across discipline boundaries. Such debates will need to address issues of paradigms, just as they will need to address the matter of curriculum reform from such a perspective. They will also need to investigate the needs for, and implications of, multi-disciplinary, inter-disciplinary, and even trans-disciplinary research and development agendas. The matter of academic leadership will therefore be as vital as administrative leadership under these circumstances, and the educational reform agenda will need to include matters of cognition as well as pedagogy.

There will also be the matter of resources to support the continuing development of the Institute in addition to supplying its maintenance needs. To date, the Institute, along with some of its collaborators, has been seeking to establish a secure, sustainable core funding base for its present

profile of activities. Currently this does not extend much beyond its basic educational needs, although these themselves might not represent the most efficient and effective use of resources for a reformed approach to curriculum. While it is true that individuals within IAV have been very successful in gaining grants and consultancies to support their research, there is yet little sense of these activities reflecting a coherent research agenda for the Institute as a whole.

Could it be that a "post-neoclassical" university, with a focus on sustainable rural development in its curricula and research programs, would attract increased support from both national and international sources? IAV could do no worse than to explore such possibilities, and challenge the current rhetoric of the great foundations: It is, after all, uniquely placed to do so.

### **3.10 Conclusions**

In contrast to the two earlier chapters, this chapter has focused on a commentary by the evaluators themselves around a theme of IAV as a "post-neoclassical university". This theme was presented by the team to an open seminar at the Institute, in the spirit of open debate about critical futures for the institution. Four aspects of organization were explored from this novel perspective: (i) Mission; (ii) Development Activism; (iii) Curriculum; and (iv) Organizational Structure. Examples of IAV's current practices were explored using this framework.

The intention has not been to recommend that IAV follow a course of transforming itself from a conventional institution (with some most innovative features already in place) into a post-neoclassical one. Rather, it is the hope of the team that by exploring an unusual perspective of the institution, novel ideas about changes for more desirable futures have been identified as themes for further debate within the organization.

The challenge that the team placed before IAV was one of exploring precisely what type of university it wanted to evolve into, and into what tradition it wanted to place itself in the future, given:

- (a) its foundations as a teaching institution with a commitment to an experiential "pedagogy of reality" as the stated context for the more conventional studies of disciplinary sciences (the major curriculum focus);
- (b) the more recent focus of the faculty, with their doctoral qualifications, wishing, and being expected to pursue, discipline-focused research; and
- (c) the environments in which the Institute is, and will have to be, operating.

As Hansen himself concluded, the adoption of the post-neoclassical model ". . . would result in a more robust and proactive university, thereby legitimating demands that the university be allowed to become a center for innovation and experimentation. It would also lay the foundation for entitling the university to the higher degree of institutional autonomy necessary for building a stronger and more diversified portfolio of financial and political support."

### **3.11 Focus Questions**

- Should IAV consider a shift in its mission from the advancement of science and technology in the cause of increased agricultural productivity to a direct concern for, and involvement in, the much more comprehensive mission of "sustainable rural development"?
- Should IAV consider assuming "a much more programmatic and activist orientation in its education and research efforts" in place of the more passive (but still involved) approach to researching the problems of rural Moroccans that it currently embraces?
- Should IAV mount a major review of its curricula, exploring, as an inherent aspect of that process, many of the newly emerging cognitive theories and practices designed to expose students to a "pluralism" of ways of learning appropriate to the range of problems they are likely to face in committing themselves to more comprehensive aspects of Moroccan rural development?
- Should IAV consider plans for more radical ways of restructuring itself to allow for a "matrix" system which would allow faculty to find academic "homes" in both disciplinary and inter- disciplinary centers?

## **CHAPTER 4 -- IAV as a Critical Learning System. A Model for Debates About Desirable and Feasible Change.**

Much has been said in this document about the need for (a) IAV to take strong control of its own future destiny, and (b) for such "control" to include the development of participatory processes to allow the stakeholders of the institution to be involved in helping the institution "learn its way forward" into the future. This implies that individuals within the Institute, must be prepared to commit themselves to learning about the issues that their organization faces through the nature of the environments in which it must operate. It also implies that ways must be found for this learning of individuals to be shared in such a way that the Institute "itself" seems to learn.

In recent years, much has appeared in the literature from a number of different academic domains, about the process of learning and, in particular, about it as a social process. From this perspective, of people learning from each other or together, it is possible to envisage the sort of "group learning" that could be extended to include an entire organization. The "learning organization" is a metaphor which is increasing in frequency among organizational theorists and developers alike, representing a conceptual framework for guiding debates about changes in the way organizations might function.

In this chapter, the team present a particular version of this metaphor -- the critical learning system -- as a vehicle for the stakeholders at IAV to discuss changes in the way they might do things.

The choice of this particular metaphor is very deliberate -- to expose to faculty, through its use, a number of concepts and methodologies from the so-called "systems movement" which are gaining increasing currency among agricultural researchers and educators in the face of the challenge of complexity. As many agriculturists are actively exploring the application of "systems thinking and systems practices" to complex and "messy" problems of agricultural and rural development, it is entirely appropriate to expose some of the basic characteristics of the approach here.

### **4.1 Systems (= Systemic) Thinking**

There are many examples of formal applications of systemic thinking in agricultural practice. Research approaches such as Cropping Systems Research (CSR), Farming Systems Research and Development (FSR&D), Farming Systems Research and Extension (FSR&E), and Agroecosystems Analysis and development (AEA&D) are all common examples<sup>11 12</sup> from

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<sup>11</sup> Shaner, W.W., Philipp, P.F., and Schmehl, W.R. (1982) "Farming Systems Research and Development: Guidelines for Developing Countries". Westview Press: Boulder Colorado.

<sup>12</sup> Bawden, R.J., Ison, R.L., Macadam, R.D., Packham, R.G. and Valentine, I. (1982) "A Research Paradigm for Systems Agriculture". in "Agricultural Systems Research for Developing Countries," ed. J.V. Remenyi. ACIAR Proceedings No 11, Canberra, ACT Australia

agriculture and rural development. Other examples of the approach are found in domains such as policy-making, economic analysis, and decision support<sup>13 14</sup>, and organizational development<sup>15</sup>.

Systemic thinking is grounded in a number of fundamental assumptions about:

- the nature of reality (ontology); and
- the nature of how one can know about the nature of reality (epistemology).

These might seem very abstract concepts to find in an evaluation report! We defend their inclusion here, again, in the spirit of issues for debate about institutional futures; "systems approaches" could have considerable relevance to the future of IAV, and we are anxious to introduce them into the debate, from a scholarly perspective rather than making mere reference to them. And, the fact of the matter is that they are meriting serious discussion and investigation in many institutions of higher agricultural education around the world; IAV should be party to those discussions.

#### 4.1.1 A Systemic Ontology

Systems researchers hold to an assumption that "whole entities have properties that are different from the sum of their parts." It is the existence of such "emergent properties" that justify the study of whole entities -- farms, communities, industries or organizations -- as systems. Systems are assumed to have a coherence which keeps them from fragmenting into their component parts; such coherence is maintained through information feedback mechanisms and self-regulatory controls.

Self-regulating systems are able to monitor their environments and to adjust themselves in order to both (a) adapt themselves to changing circumstances, and (b) influence the environment itself. Such systems are thus considered to exist in a dynamic state of co-adaptation or co-evolution with their environments.

These concepts have considerable significance to the way people in organizations -- such as the Institute -- design structures and carry out the functions that are optimal to that organization's future. A systems study of IAV would focus on such issues as: (a) its coherence; (b) the nature of its self-regulating mechanisms; (c) the mechanisms it uses to monitor its environments; (d) the impacts it is having on its environments (etc.).

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<sup>13</sup> Teng, P.S. and Penning de Vries, F. eds, (1992) "Systems Approaches for Agricultural Development" Elsevier Applied Science London

<sup>14</sup> Wilson, K. and Morren, G eds. (1991) "Systems Approaches to Agriculture and Resource Development" Macmillan Press New York

<sup>15</sup> Senge, P.M. (1990) "The Fifth Discipline: The Art and Practice of the Learning Organization". Doubleday Currency New York

#### 4.1.2. A Systemic Epistemology

One of the reasons why many past systems studies in agriculture have faltered has been the lack of attention to the nature of the "paradigms" held by those doing the work. Conventional science, like all inquiry processes, is based on a particular set of beliefs about "how one comes to know anything" and about the "nature of knowledge itself". For physical and biological scientists (and even for the majority of social scientists), science is about the pursuit of the "truth" about nature - the search for objective, empirical data which supports explanations (theories) for the "way things are".

The systems paradigm allows for other approaches to "truth"; knowledge from this perspective can be considered as a subjective mental construct rather than a statement about absolute truth.

The point of significance here, is that if systems approaches are being entertained as vehicles for the generation of insights into complex, messy situations, then their use must include the user in a very self-critical analysis of his or her basic beliefs about knowledge. Furthermore, if multi-disciplinary and trans-disciplinary teams are to be effective at research, at education, or even at institutional management, such critical, intellectual self-discovery is essential for true collaboration.

#### 4.2 IAV as a Critical Learning System

Research elsewhere<sup>16</sup> would indicate that key insights can be gained into the future structures and activities of IAV when it is viewed as if it were a coherent system in "learning to be in co-evolution with its environments." It must be emphasized here, however, that such insights will result not through external observation, but through investigations by those who comprise the system itself! IAV as a "critical learning system" would be a coherent group of people learning cooperatively about the environments in which they operate together. And together they would be planning desirable and feasible futures for their system in the face of ever-changing environmental circumstances. Among the key components or "human activity sub-systems" that might however be recognized as necessary for IAV as "critical learning system", are:

- Environment monitoring
- Information processing
- Strategic planning
- Resource allocating
- Operational activities

Leadership, in this context, would assume the particular responsibility for promoting and coordinating high quality learning by the whole IAV community, and for the establishment and maintenance of learning relationships across that community. The sub-systems above provide a basic design to allow IAV to be "interrogated" from a systems perspective.

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<sup>16</sup> Macadam, R.D. and Packham, R.G. (1989) "A Case Study in the Use of Soft Systems Methodology: Restructuring an Academic Organization to Facilitate the Education of Systems Agriculturalists" *Agricultural Systems* 30:351-367

#### **4.2.1 Environment Monitoring Sub-system**

From such a perspective, for example, the concept of "linkages" between the institute and other organizations takes on the much more profound meaning of "mutual coupling" -- sets of relationships of (potentially) mutual influence between the system and its environments. Questions of interrogation here might include:

What are the important environments which affect IAV as a coherent system, and which of them, in turn, might be influenced by that system?

What are the major environmental forces currently operating to which IAV (as a system) must respond, and how is information about them being gathered (by the system)?

How is information about the changing environments in which IAV (as a system) finds itself being shared and processed by those who comprise the system?

Under many circumstances, of course, changes in the macro-environment can rarely be influenced at all by a single institutional system like IAV. Yet situations can exist where such systems can cooperate with others in ways which can indeed result in changes in the macro-environment. As chaos theory suggests, a small change in one location can, in the end, result in a massively augmented force somewhere else.

Examples of macro-environmental changes to which IAV-as-system is currently being exposed include:

- The major geo-political shifts in Eastern Europe and the Middle East, and their implications for Morocco as a country that is equally a part of the Middle East, Northern Africa and Southern Europe.
- The changing relationships with the EEC, and with France as an individual country within it, that could see marked reductions in both preferential trade of agricultural goods and opportunities for emigrant Moroccans as "guest workers".
- The liberalization programs of commerce and trade, first introduced in 1983 and reinforced in 1987, encouraging investment in agribusiness among other industries, yet also exposing them to increased international competition.
- The problem of the very heavy debt load carried by the country (around US\$20.5 billion) and the need to service that burden through increasing revenues and cutting cost.
- The next round of elections in October 1993, and the possibility of increased regionalization in the country.
- High rates of unemployment, poverty and illiteracy, particularly in rural areas.

- The growing demand for food production for a steadily growing human population which is increasingly urbanized with growing disposable incomes, and the concomitant attraction to those interested in increasing the intensification of agricultural production.
- The depletion and degradation of natural resources, especially of water, soils and forests, and the risks that uninformed quests for intensified agricultural production pose to this situation.
- Changes in paradigms of agricultural science and rural development across the globe, to embrace an ethic of "ecological sustainability".

Some of the particular characteristics of Morocco which are important to the future of IAV are included in Annex Four. At more micro-levels:

- Changes in the structure of relevant Ministries and of key officials within them, and recent policy and strategic initiatives that have been undertaken between MARA and the various educational institutes and research organizations.
- Significant changes in the relationships between IAV, USAID, and American universities (and Minnesota in particular).

The structural question that needs to be addressed here is:

- How is IAV currently structured to facilitate the gathering and sharing of "environmental intelligence"?

#### **4.2.2 Information Processing Sub-system**

Once information has been gathered and shared across the "system" it needs to be transformed into "knowledge for appropriate action". It is this gathering of information (sensing) and its transformation into knowledge (meaning-making) as the basis for action (doing), that gives the system its "learning character".

It is important, in this context, to acknowledge that both the processes and outcomes of the learning being done by the "whole system" need to be critically reviewed to assure their quality. And this concept of "critical learning" is an important characteristic of the educational and research activities of both individual faculty and of the collective whole in bringing about the continued development of their institution.

### **4.2.3 Strategic Planning Sub-system**

With all that is constantly being learned about the environment, the system should be in a position to design and plan strategies of action that will allow it to adjust its activities in ways that enable it to benefit from such changes whenever possible (or to minimize negative impacts which are unavoidable.) Strategic planning from a systems perspective would therefore be characterized by: (a) the active participation of the majority of the Institute's stakeholders; (b) broad ranging discussions about the nature of environmental dynamics; (c) focused debates about responses to such dynamics, in terms of curriculum reform, research agenda reviews, outreaching activities, and structural adjustments within the institution; and (d) a rigorous methodology (such as Soft Systems Methodology) which would itself reflect the practical application of systems theories.

Participatory strategic planning is therefore a prime example of a system which is critically learning.

### **4.2.4 Resource Allocating Sub-system**

Once the strategic plans for an institutional system have been created and adopted, the available resources can be allocated in such a manner that they enable the plans to be effected. Because the plans themselves are relatively dynamic, resource allocation mechanisms must have considerable inherent flexibility. The proportion of discretionary funds in the budget must therefore be as high as is necessary to allow significant shifts in funding priorities to occur from time to time.

Again within the spirit of "systemicity", the resource allocating functions should be as "informed" as possible, by (a) information about environmental conditions, and (b) the strategic decisions, in particular those which have been generated through participatory pathways.

### **4.2.5 Operational Activities Sub-system**

Given that we are trying to mount the case for IAV as a learning system, it follows that learning principles need to be explicitly brought to bear in the design (and indeed conduct) of the operational activities of the institution. Four operational areas come to mind: Curriculum, research, extension, and organizational management.

#### **4.2.5.1 Curriculum**

Favorable comment has already been made about the nature of the IAV curriculum with particular reference to the *stages*. Reference has also been made however, to the advantages that would accrue if a more pluralistic view were taken of "methodologies of learning". Much has appeared in the literature over recent years on innovative approaches to curriculum for higher education, for both agriculture and a host of other academic domains. Such work has been based on research into cognitive sciences as well as on critical reflections on actual experiences with "pluralistic" education strategies. The writers are aware of current attempts to organize an

international electronic network for "innovative" educators<sup>17</sup> in addition to existing networks such as UNESCO's "Asia Program for Educational Innovation for Development" (APEID)<sup>18</sup>. Such networks represent possibilities in the context of "coupling" between IAV and other institutions around the world which are concerned with "education for development".

#### **4.2.5.2 Research**

As mentioned above, there is a burgeoning literature on the topic of complementary research methodologies for agriculture and rural development by which complexity and "messiness" are dealt with "in their entirety" through the use of systems methodologies. Many agricultural universities, especially those in the "developing world," are exploring and promoting the use of approaches such as Cropping Systems Research, Farming Systems Research and Development, and Agroecosystem Analysis. IAV could benefit significantly through interaction with such groups.

#### **4.2.5.3 Extension**

One of the clear differences between the "traditional" land grant university model and IAV in its present profile of activities, is the very low emphasis on, and poorly developed connections for, "extension". While IAV is becoming increasingly active in "continuing education activities", it is not heavily involved with the national extension service as it currently exists. Whether or not IAV should assume a more active role directly in the extension function is one of the issues now under debate in MARA and elsewhere. On the other hand, there is little to dispute in the submission that the Institute should be more actively involved into research and development of "extension services" appropriate to more systemic views of learning. Relationships between IAV and ENA, in this regard, also bear review, as ENA has been building its own capacities in the extension education arena.

#### **4.2.5.4 Organizational Management**

And finally comes the matter of IAV exploring itself as a critical learning system, and being prepared, if appropriate, to develop management structures and leadership styles to encourage this transformation.

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<sup>17</sup> The W. Kellogg Foundation sponsored an international workshop on this matter at Battle Creek Michigan in July 1993. Dr. Rick Foster of the Foundation, is the key contact.

<sup>18</sup> The University of Western Sydney, Hawkesbury, is a node in the APEID network which has its central headquarters in Bangkok, Thailand

### **4.3 Conclusions**

In this chapter, some of the issues relating to emerging "systems" perspectives on agricultural and rural development have been raised in the context of IAV as a "critical learning system". The matters have been discussed in such a way that the discussion itself has illustrated some of the dimensions of "systems in action". The point has been made that many institutions of higher agricultural education and research around the world have been actively exploring systems approaches to agriculture and resource management for a number of years already. One of the important aspects of these initiatives has been the need to explore, as part of the practical experiences, some fundamental philosophical dimensions (of ontology and epistemology). The argument has been presented here that if "systems" approaches are to be investigated in any way other than superficially, they merit scholarly investigation. Readers of this report have been provided with a number of key reference citations to facilitate further readings on the topic.

### **4.4 Focus Questions**

- Should IAV explore systemic paradigms to reinforce its curricula and research approaches and agendas?
- If so, how should the faculty proceed to familiarize themselves with the basic theories, philosophies and practices of the "systems movement?"
- Should IAV consider a critical self-appraisal as a "learning organization," and if so, who should be involved in such a review?
- Is the systems model as presented in this chapter a useful framework for a reconceptualization of the Institute?
- If so, how can its usefulness be further advanced and exploited?

## SECTION C

This final section comprises a set of Conclusions and Recommendations which, in their nature, are somewhat different from those which might be expected in an evaluation report.

As we have taken care to emphasize, this particular exercise was construed essentially as a participatory one which "facilitated critical conversations" across as wide a spectrum of IAV stakeholders as possible, about the strategic future of their own organization.

We have deliberately tried to avoid providing what we might term "first order recommendations" -- prescriptions for change to meet specific criticisms which we might feel are desirable and feasible from our viewpoint. Rather, we have posed focus questions throughout the document in the spirit of fostering debate about critical issues, and will now conclude with some "second order" issues of recommendation -- recommendations about those change which IAV itself (as a critical learning system) may wish to consider and debate.

This mechanism is consistent with our strongly held belief that the biggest challenge for IAV at this moment is to "learn its own way forward" to achieve futures which the IAV community and other stakeholders believe is most appropriate under the circumstances that they will come to know better than anyone else.

## **CHAPTER 5 -- Overall Conclusions and Recommendations**

There are essentially two conclusions which can be drawn from the present evaluation exercise:

- That IAV has benefitted a great deal from its longstanding triangular relationship with USAID and the University of Minnesota:
- That IAV must now learn how to deal itself with a number of very fundamental challenges; not just with the termination of that particular relationship, but with a host of changes which are occurring (and will continue to occur) in its environment.

To us, this means that IAV now needs to transform itself into a "self-developing organization". We have offered the metaphor of the "critical learning system" as a framework for such transformation; we have also presented the submission that IAV could explore the concept of "the post-neoclassical university".

Thus, the team concludes that IAV has one of the best opportunities in the world, at the moment, to take the lead in becoming a new type of agricultural university -- a university committed to developing itself in ways which model the sustainable development of the rural communities it was created to serve. In other words, the faculty and administrators of the Institute could now achieve both national and international reputations as a Key Centre for Sustainable Rural Development which sits at the heart of the nation's emerging needs:

As is now evident from many studies around the world, commercial agriculture cannot be developed in isolation from concerns about (a) the socio-economic and (b) the bio-physical impacts it has on the environments in which it is conducted. In other words, developments in agricultural science and technology must pay heed to the welfare of all rural people just as it must to the state of the natural resource base with which it impacts. Through curriculum and research and development activities embracing this crucial perspective, IAV would see itself participating in global, as well as local, programs of agricultural development and agrarian reform, which addressed the need for continuing focus on the quality of life as well as the quality of the natural resource base and natural environment of rural areas.

IAV Hassan II is positioned to respond to the challenges of being one of the leading "post-neoclassical" universities in the world, and could attract very significant international support in this vital cause. In order to be able to respond to such a challenge, however, the Institute would need to organize and manage itself in a more coherent way than it has yet had to do. Indeed the team concludes, as others have done before, that whatever strategic future IAV chooses to follow, it must now address a number of important matters of management and organization if it is to remain sustainable itself.

## **5.1 IAV as a Coherent Organization.**

The challenge posed by the need for widespread participation in the development of the institution focuses the thought that currently there does seem to be a relatively low sense of coherence within IAV, of the Institute as a whole organization. Individual faculty, fresh from their focused doctoral studies, housed in single discipline departments and committed to fairly specialized teaching and research/consultancy roles, now need to address the issue of the unity of the whole Institute. The opportunity can be taken to encourage the faculty to address the issues of the development of their own organization with as much critical scholarship (of theory-informed practice) as possible.

### **Recommendation 1**

That funds be sought to develop a multi-disciplinary research unit (GER) for Organization Development: This would have the dual purpose of (a) investigating issues concerning the development of organizations which are crucial to the development of rural Morocco (cooperatives, businesses, management groups, watershed groups, "extension" groups, etc.) as well as (b) focusing on the development of IAV itself as a model for participatory organizational development.

## **5.2 The Emerging Challenge for Management at IAV**

To date, IAV has been able to manage itself as if it were a loose federation of individuals or small groups of individuals, roughly committed to the common cause of providing scientific/technological manpower and discipline-focused science and technology for Moroccan agriculture. Centralized leadership has not been inappropriate under these circumstances, especially while the Institute remained a relatively small organization with a faculty focused clearly on their own self-development. But now, as is clearly recognized within the Institute itself, there needs to be put in place a new management structure, more appropriate to the larger, multi-purpose organization that IAV has become. A whole host of new "post project" management needs will become apparent over the upcoming years: These will range from relatively simple issues, such as instrument and other infrastructure maintenance and repair and the continuation of international journal subscriptions, to the vital need for faculty renewal and continued training as the big cohorts of U.S. and European trained doctorates pass through and eventually out of the system. (26 percent of the faculty currently fall within 31-35 age group, and 43 percent within the 36-40 group)

### **Recommendation 2**

That new management structures be developed which will include stronger accountability and responsibility by faculty for their professional activities, along with mechanisms for incentives and, if necessary, sanctions. A matrix management system might be appropriate to encourage the full participation of faculty in the development and management of their evolving Institute.

### **5.3 The Strategic Future of IAV**

As this team has been attempting to illustrate through its interactions with IAV stakeholders, the Institute has now reached a crossroads in its development. The termination of a number of key international assistance programs, like that of USAID with the University of Minnesota, now present it with the need to reassess its strategic future. This also comes at a time of significant changes of "climate" in the country as a whole, and within the key Ministry of Agriculture and Agrarian Reform. The liberalization of the country's economy is bringing with it, a strong opportunity for commercial advantage to agriculture, and this, plus demands from the ever-growing human population, will strongly reinforce the call for innovative technologies for the development of rural Morocco. This commercial force for change, however, must be tempered with a greatly increased concern for the other dimensions of rural development, especially the quality of the natural resource base and the quality of life of rural people throughout the countryside.

#### **Recommendation 3**

That mechanisms be developed to facilitate wide-ranging debates across the Institute (at Agadir as well as at Rabat) on (a) the changing environments in which it is operating, and (b) the formulation of strategies to deal with these complex challenges.

### **5.4 IAV as a Learning Organization**

If it is to respond effectively and efficiently to the challenges of its dynamic environments, IAV needs to develop mechanisms for accurately "scanning" its environments, for interpreting these matters as a whole institute, and for responding to them through appropriate changes in curricula and research and development programs. It also needs to be able to influence the environments in which it exists, at the level of policies and national strategies, as well as at regional and local rural community levels. IAV could do much to broaden (a) the perception it has of itself, and (b) the perception others have of it -- i.e., from the idea of an institute essentially for training and research into the science and technology of agriculture, to that of the key resource for the "sustainable" development of rural Morocco.

#### **Recommendation 4**

That IAV explore and, if appropriate, adjust its curricula and research and development agendas to embrace the context of "sustainable" rural development. It would need to actively promote this new mission, and do all it can to encourage GOM agencies to accept the Institute in this expanded and vital role.

### **5.5 The Educational Challenge**

The complex dimensions of "sustainable agricultural and rural development" are really demanding what is equivalent to a new paradigm of education and research. There are a number of initiatives around the world that are already exploring such developments, as well as a growing literature to support the creation of innovative curricula and research methodologies. The

curriculum of "pedagogy of reality" that IAV has been developing and practicing over the past 25 years or so represents an ideal foundation on which to further develop such initiatives. Consideration could be given to joining the emerging international network of "post-neoclassical" type universities which is being facilitated by groups such as the Kellogg and Ford Foundations.

### **Recommendation 5**

That a curriculum task force be set up to explore the appropriateness of new "systems" paradigms of education in the context of education for "sustainable agricultural and rural development". Other matters that such a task force might consider include (a) the place of a new curriculum for rural development itself, and (b) the place of two-year, four-year, and six-year curricula within the needs of education for "sustainable agricultural development".

## **5.6 IAV and Core Budget**

There is no doubt that if IAV is to respond to the calls for it to play a more central role in the "sustainable development" of the nation, it must be assured of a much more certain and significantly increased core budget. As it is, the Institute is barely able to maintain the quality of its uniquely important educational programs, let alone support research activities of any consequence. Both educational and research programs will call for increased investment and recurrent support, if they are to reflect the emerging challenges mentioned above.

### **Recommendation 6**

That IAV itself, along with its constituencies of "friends", do all that it can to assure itself of funds sufficient to support its growing role as a "Key Centre for Sustainable Agricultural and Rural Development". Without adequate core funds, and freedom to raise additional revenue without risk to that core, IAV will not be able to maintain its present level of activities, let alone assume the pressing new responsibilities for the increased agenda of "sustainable development".

## **5.7 Short-term Specifics**

In addition to the more general recommendations above, there are a number of specific short-term recommendations that are offered to IAV in the spirit of examples of "issues for critical debate." The team believes that each of the following points deserves the urgent attention of appropriate people or groups at IAV, emphasizing that the process by which the matters are discussed is a fundamental aspect of strategic planning. (The numbers following each entry below relate to the section reference in the text.)

### **Recommendation 7.1**

That the four-year (two cycle) program (Ingenieur d'Application) be reinstated as a terminating professional course option in agricultural science or development or resource management (begin equivalent to the baccalaureate degree common to most agricultural universities and colleges around the world) (1.4.3.1 and 2.8 *inter alia*).

## **Recommendation 7.2**

That a small curriculum review task force be established, under the chairmanship of the incoming Director of Pedagogy, to critically research international developments in pedagogical theory, philosophy and methodologies, and where appropriate, apply their findings through a process of curriculum renewal, to the design and management of more effective and more efficient educational strategies. This is of particular importance with respect to the overall philosophy of the "pedagogy of reality" - and its structural interpretation through the stages - neither aspect of which seems to have been the subject of critical review in the above terms, at least for many years (1.4.3.1 and 1.4.3.4). The incorporation of key aspects of the debate about "agriculture within the context of sustainable rural development will also be vital in this regard (3.4.3).

## **Recommendation 7.3**

That, given the significance of informal education endeavors (1.4.3.1) both from the perspective (a) of "human resource development" for rural people as well as for professional "in-service" training, and (b) for raising revenue (1.4.3.3), consideration be given to the development of a Continuing (Recurrent) Education Unit at IAV. The central mission of such a Unit would be to provide both a coordinating/administrating service for the endeavors which are currently being mounted, as well as to raise significantly the level of the practices, exploiting wherever possible, their commercial potential.

## **Recommendation 7.4**

That, in the spirit of the "critical learning organization" (4.2), the above developments be conducted in such ways that they involve the participation of the vast majority of the faculty of the entire Institute (in both scholarly debate and practical application).

## **Recommendation 7.5**

That at this crucial "crossroads" point in its evolution, IAV seriously review the profile of its faculty and move toward correcting any undue distortions, or accommodating new developments, such as initiatives in "sustainable rural development" or "sustainable natural resource management" (3.4.1) or "agribusiness, agricultural commerce or agricultural marketing" or "agricultural economics." In this regard, there would seem to be particularly strong arguments for increasing the number of both social and environmental scientists (1.4.3.1, 1.4.3.2, 3.6 and 3.7). As far as the social sciences are concerned (1.4.2), there would seem to be a strong case for more economists, management specialists, marketers, rural sociologists, and educators. From the environmental perspective (3.6), an equally strong case can be made for the strengthening of agricultural ecology, natural resource management and farming systems.

## **Recommendation 7.6**

That the opportunity be taken, with the review of the profile of academic faculty, to concurrently critically appraise the profile of non-academic support staff (in particular clerical and secretarial

staff) and make amendments to the balance between them, if appropriate. There are certainly enough indications to suggest that significant repercussions on the quality of both teaching and research already exist (1.5) because of the lack of appropriately qualified secretarial staff out in the departments.

### **Recommendation 7.7**

That immediate steps be taken to review the policies of the library with regard to the location of, and access to, the current holdings (2.5.5). The arguments for centralization (1.5) would appear to be overwhelming. A second step in the upgrade of the library would be to ask all faculty to contribute a book and journal "wish list" for new acquisitions. Thirdly, as the process of curriculum renewal proceeds, further additions will need to be made to the "desirable acquisitions" list. Following the prioritization of such lists by an appropriate library committee (or task force), a budget needs to be drawn up to convert the "desirable" to the "potentially feasible." Finally, all efforts need to be made to gain sufficient financial support to convert the "potential" to "actual," and this needs to be examined particularly in the light of the call for more enterprising activities by IAV (1.4.3.3) both nationally and internationally.

### **Recommendation 7.8**

That the arguments presented by the publication service be examined in some detail by the administration and financial services with respect to the claims for the cost effectiveness of strengthening the unit (2.5.1) and the potential benefits that would flow from its increased capacities. These must be considered in the light of the potential for (a) earning significantly more revenue from commercial activities, and (b) allowing a significant increase in the ability of the Institute to bring its achievements and capabilities to the notice of those international communities that would use its services and/or support it in other ways, as enhanced public relations.

## **5.8 Linkages and "Coupling"**

Much of what has been recommended above reflects the need for IAV to continue to expand the contacts it has as an organization with other organizations around the world, while recognizing that, as an institute of higher education in agriculture, it is already as well known internationally as any such organization from the so-called "developing world." There are essentially three reasons for doing this - all critical to the future of the Institute: (i) to remain current in its approaches to agricultural education, research and outreach with respect to the needs of its "clients;" (ii) to spread its reputation as broadly as possible to enhance the prospects of its graduates and faculty for employment opportunities, and for research, training and consulting commissions; and (iii) to gain such respect among potential donors that it invites strong and sustainable resource support.

The following recommendations reflect ways by which these missions can be enhanced.

### **Recommendation 8.1**

To do all that can be done to continue its longstanding and strong relationships with those American universities with which it has "coupled itself" historically through graduate training and research collaboration. The University of Minnesota will obviously be primary in this regard.

### **Recommendation 8.2**

To make contact with those international agencies which have established international networks for "development education" across institutions of higher education (e.g., UNESCO), or who are associated with other emerging and innovative initiatives in this or related domains in agricultural and rural development (e.g., Ford and W.K. Kellogg Foundations in the U.S.A. and FAO). A short list of contact names and addresses is provided in Annex 4.)

### **Recommendation 8.3**

To offer to host an international workshop on a topic such as "Strategic Developments in Agricultural Education and Research" in 1995, and seek support for doing so from potential sponsors such as A.I.D., the World Bank, the Ford, Kellogg and Winrock Foundations, FAO/UNDP, the EEC, etc.

### **Recommendation 8.4**

To build up a reference holding in literature relating to developments in, and reviews of, agricultural universities and colleges, and education reviews in agricultural and other higher education domains. (The bibliography of this report contains a number of key references in this regard.)

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## **ANNEX ONE**

### **ITINERARY**

Saturday, September 11, Rabat. Documentation and reflection.

Sunday, September 12, Rabat. Macadam and Hartmann travel to Agadir.

Monday, September 13, Agadir (Macadam and Hartmann). Attend opening of International Course on Halophyte Utilization in Agriculture; meetings with Dr. L. Kenny (Tissue Culture and Arid Agriculture); Ms. Z. Terji (Nematology); Drs. A. Benazoun and A. Hanafi (Integrated Pest Management) Rabat (Bawden).

Tuesday, September 14, Agadir (Macadam and Hartmann). Meetings with Drs. M. Acchouri and A. Att Oubahou (Postharvest Physiology and Pathology); Drs. B. Hafidi and A. Ramah (Virology); Drs. A. El Tadi, A. Alami and Mr. A. Amellouki (Soil Science and Irrigation); Dr. A Hilali (Vegetable Breeding); Dr. H. Ellatir (Water Management and Climate Control in Greenhouse); farm visit in Souss valley. Meknes (Bawden).

Wednesday, September 15. Preparation for seminar presentation at IAV.

Thursday, September 16. Presentation of seminar at IAV.

Friday, September 17. Collation and analysis of data for report.

Saturday, September 18. Collation and analysis.

Sunday, September 19. Report writing.

Monday, September 20. Meetings with EEC and FAO representatives (Macadam and Bawden) and Director. MARA (Hartmann).

Tuesday, September 21. Meeting with IAV Secretary-General Dr. Guessous and Dr. A. Debarrh. Report writing.

Wednesday, September 22. Report writing. Lunch at IAV with Director Fehdavoy, Dr. A. Debarrh and Mr. M. Hanafi.

Thursday, September 23. Presentation of draft report to Mission director and staff. USAID Rabat. Dinner with Dr. William Fenster and Mr. Steve Clarke.

Friday, September 24. Report presentation. Lunch with USAID officials and Dr. A. Debarrh at IAV. Presentation of draft report to IAV Director Dr. Sedrati.

Saturday, September 25. Finalization and printing of draft report.

Sunday, September 26. Printing of draft report. Depart Rabat.

Monday, August 30, University of Minnesota - Mr. Steve Clarke (Morocco Project Officer), Dr. William Fenster (Director of International Agricultural Programs). Dr. Richard Jones (Dean of College of Agriculture); lunch with Drs. H.H. Chang, Paul Bloom, Al Ek and Ken Brooks; Dr. Joe Warthesen (Food Science); Drs. Ashley Robinson, Bill Olson, Bob Dunlop, Mike Pullen, Ahmed Tibary, Bert Stromberg, George Ruth, Sagar Goyal, Mike Murphy (Veterinary medicine).

Tuesday, August 31, University of Minnesota - Drs. Terry Roe and Jerry Hammond (Agricultural Economics), Dr. Eugene Allen (Vice President, Institute of Agriculture Forestry and Home Economics); Drs. Ken Crookston, Don Baines, Don Wyse, Don Rassmussen (Agronomy); Drs. Bud Markhart and Mark Ascerno (Entomology); lunch with Dr. Vern Cardwell (President, American Society of Crop Sciences); Morocco Project Faculty Advisory Committee.

Wednesday, September 1. Mr. Steve Clarke; travel to Washington, D.C.

(Richard Bawden, Robert Macadem and Peter Hartmann)

Thursday, September 2. MSI, Washington D.C. Planning meeting with Dr. Larry Cooley; discussions with Ms. Robyn Goodkind and Roberta Warren.

Friday, September 3, MSI, Washington, D.C. Ms. Joan Favor; depart from Rabat.

Saturday, September 4. Travel to Rabat, Morocco.

Sunday, September 5, Rabat. Meeting with Drs. Guessous (Secretary General, IAV), Abdelhafid Debarh (Project Site Co-ordinator), Mohamad Hanafi (Program Officer, USAID).

Monday, September 6, Rabat. Meeting with Dr. Mohamad Sadrati (Director, IAV); planning session.

Tuesday, September 7, Rabat. Meeting with Dr. Fahdaway (Director, MARA); James Lowenthal (Deputy Mission Director), Charles Uphaus (Program Officer). Rick Scott (Evaluation Officer), Mohamed Hanafi and Abdelhafid Debarh at USAID.

Wednesday, September 7, Rabat. Meetings at IAV with Drs. Ahmed Facuzi Senhaji (Food Technology); Mohamad Beeri and Mohamad Ammati (Plant Pathology); Tayab Ameziane (Agronomy); M. Attalibi (ACTES); A. Zine-Filali (Parasitology), M. Sediki (Agronomy).

Thursday, September 9, Rabat. Meetings at IAV with Drs. Lareen Ababouch (Food Science); Ahmed Bartali el Housine, Mahamed Bazza. Abdelhafid Debarh (Hydraulics); Rachid Doukkeli and A. Zougari (Human Sciences and Stages).

Friday, September 10, Rabat. Meetings at IAV with Drs. El Hassan Bouraracsh, Jenane Jhakib, Azougagh (Machinism); Mahomed Badraoui and Mahomed Tayae (Soil Science); L. Dergueoui (Reproduction); Amar Kaanane (Chemistry and Biochemistry); Hassan Bouyad (Pathology and

**Medical Surgery); Ahmed El Idrissi (Microbiology). Meeting at INRA with Dr. Abdelhaziz Arifi (Director) and Head of Agricultural Education Dept.**

## **ANNEX TWO      THE DEVELOPMENT OF IAV: LESSONS FROM ELSEWHERE**

Seminar  
Rabat, 17 September 1993

- 1      We are a team of three evaluators, two Australians from the Hawkesbury School of Agriculture and Rural Development at the University of Western Sydney, and an American, from the University of Florida, Gainesville, hired by USAID to complete the third and final evaluation of the so-called Minnesota Project which ends at the close of this month after nearly 24 years of AID funded collaboration.
- 2      We have two jobs to accomplish: (i) to measure progress made toward the achievement of project outputs and purpose since the last evaluation (Supporting Moroccan Agriculture in the 1990's: The Sustainability of the Hassan II Agronomic and Veterinary Institute. September 1988) (ii) to discuss, with a broad range of stakeholders both at the Institute and beyond, strategic futures for IAV/ENA/ENFI in the context of their joint roles as educational, research and development centers for the Kingdom of Morocco.
- 3      As far as the first task is concerned, our conclusions have not been that difficult to reach: We have spoken to many of you within the Institute, at Rabat and Agadir, with faculty and administrators at ENA at Meknes, and at the University of Minnesota in Minneapolis/St Paul, with senior people at the Ministry of Agriculture and Agrarian Reform and at INRA, and with senior representatives of the EEC and FAO, as well as of USAID itself. We have also read a whole lot of literature.
- 4      From all of these sources, we conclude that this is an institutional complex of agricultural higher education, research and development, which has made truly outstanding progress, to become an institution of virtually unique quality in the developing world. This is not to say that you are free from problems: Every institution has problems and we are aware of many of yours, because you have been very open and honest with us during our interview. We will refer to these in our final report; here we want to concentrate on the future, and to the opportunities you now face given the foundation you have built over the past thirty years.
- 5      Our confidence lies in our observation that every challenge that has been placed before you, has been met with the same integrity and commitment to the institution, which now rates as a resource which is central to the sustainable development of the agriculture of the Kingdom of Morocco. And all concerned, deserve our profound respect and congratulations.
- 6      We are not sure that you yourselves quite realize the importance of your achievements: To briefly reinforce our submission, we can refer to three very extensive, and recently completed evaluation reviews of higher agricultural education, around the world, conducted and reported by three of the most significant international aid agencies - USAID, FAO, and the World Bank. And we should mention that a couple of us in this team, were personally involved with some of these studies.

- 7 The USAID study involved 23 agricultural universities in 10 nations: FAO evaluated high level institutions in 20 countries: the World Bank reviewed 41 projects in 25 countries. There were some overlaps across the three studies, including, interestingly enough, Hassan II IAV.
- 8 The overall conclusion from all three of these reports was that the outcomes of assistance for the development of agricultural higher education was not as good as they could, or should, have been. A number of key lessons have been learnt, however. Of particular significance, from our point of view here today, was a commentary made by Dr. Gary Hansen of USAID's Center for Development Information and Evaluation, in Washington, in an interpretative essay he wrote. Dr. Hansen was the coordinator for the USAID evaluation review mentioned above. In his essay, Hansen suggested that the major lesson from the international study he coordinated, was that in the face of a host of new environmental, economic, and social challenges, a new type of agricultural university was beginning to emerge around the world: He referred to this "new-order" type of institution as "POST-NEOCLASSICAL" and suggested that it would have four particular sets of characteristics which would differ from the more conventional model of agricultural university which is so commonly encountered and whose effectiveness, relevance, and sustainability were under considerable doubt. (Overhead transparencies #1 - #4)
- #1 First, the purpose of the university will be truly reflected in its mission. Most agricultural universities are by charter supposed to enhance the well being of rural inhabitants. The neoclassical universities have translated this to mean improvements in crop and animal production. The post-neoclassical university will recognize that enhancing rural well-being includes much more than just crop production. Issues of employment, income, equity, education, access to services, debt-bondage, security of tenure, contracting rights, poverty, and rural inhabitant's control over decisions affecting their welfare will assume priority in the concerns and mission of the university.
- #2 Second, the role of the university will be seen as one of learning and innovation with respect to devising and testing strategies for achieving its mission, as broadly defined above. In order to be a springboard for strategy innovation, the university will have to assume a much more programmatic and activist orientation in its education and research efforts. In particular, rural areas will become learning laboratories where university faculty and students will work together with rural inhabitants to test strategies for addressing major problems and issues.
- #3 Third, the educational experience, particularly at the undergraduate level, will be dramatically different from what it is today in most universities. Rather than simply transferring knowledge to passive students, the teacher will become a facilitator who assists students in learning how to learn about concepts and their practical application. Thus, students and faculty working together will, from the first day of the educational process, be challenged by the strategic problems of rural and agricultural development, with the faculty member guiding students in

the use of learning resources and experiences that develop skills in analyzing and managing change to improve rural livelihood.

- #4 Fourth, the structure of the university will become a matrix of interconnected task groups clustered around major programmatic themes. The programmatic themes will be defined by large problem areas and will cut across the entire university. Disciplinary departments, if they exist, will function in a subordinate position in servicing the program themes.

"These four elements would result in a more robust and proactive university, thereby legitimating demands that the university be allowed to become a center for innovation and experimentation. They would also lay the foundation for entitling the university to the higher degree of institutional autonomy necessary for building a stronger and more diversified portfolio of financial and political support."

- 10 These comments are recorded here in full, because it is our belief that the Institut Agronomique et Veterinaire Hassan II along with its sister institutes - Ecole Nationale d'Agriculture de Meknes, and Ecole Nationale Forestiere des Engineers - already has many of these attributes, and indeed, is among only a handful of innovative agricultural universities around the world, which are leading-in this "post-neoclassical" era.
- 11 The key question for us is:

"DOES IT WANT TO CONTINUE TO DO THIS?"

or would it prefer to follow the "classical" pattern of development as a teaching/research/extension institute?

- 12 IAV is clearly at a crossroads in its development - it has reached a fourth stage of development in organizational terms.
- (i) It has SURVIVED (over more than thirty years).
  - (ii) It has GROWN (particularly over the past decade)
  - (iii) It has become VIABLE (as part of a national system) and now it must make sure that:
  - (iv) It is SUSTAINABLE (long into the future).
- 13 The important point here, is that the Institute itself needs to decide AS A WHOLE COMMUNITY on: What does it want to sustain itself as? (What purposes does it want to assume?) and then: What mechanisms does it need to create, to allow it to achieve sustainability in this context?

14 As part of our second task in this evaluation - of discussing strategic futures with "key stakeholders" - we believe that we should be posing questions to you which would allow these issues to be brought into particular focus.

15 Let us return to Gary Hansen's four "attributes", and ask one question from each:

(i) Given the major thrust towards commercialization of agriculture and agribusiness:

How are the faculty dealing with the inevitable tensions that arise between the three aspects of

commercial production

poverty alleviation

environmental protection

(ii) Given the need to closely integrate education and research with active development:

How are the faculty becoming more pro-active and enterprising, in their development activities (a) on farms, (b) in rural communities, (c) in the domains of rural policy making, (d) in pursuit of resources, and (e) in the development of national and international networks of collaboration?

(iii) Given the resource implications of the "Pedagogie de réel," and emerging pressures for research, consultancies and other outreach activities on faculty time and energy: How will the marvelously innovative curricula at IAV/ENA/ENFI retain their participatory character, and how will their quality be maintained, through monitoring and adjustment, from theoretical and practical experience perspectives?

(iv) Given the need for a "strategically focused" university to be a coherent entity which is inter-dependent and in co-evolution with its environments: How will the IAV/ENA/ENFI "system" organize itself in such a way that it maximizes opportunities for the synergy that comes from close (and especially inter-disciplinary) collaboration, both within each institution, and between them (as well as between all three of the institutions and other organizations with which they should be cooperating)?

16 This is a bold challenge we place before you: to pioneer an unknown future in the sense that no one has done this before, although many are trying. We are suggesting that you accept a leadership role in exploring ways of becoming a POST-NEOCLASSICAL university committed to working as a community of practical scholars on the integrated development of the agribusinesses, poor rural communities, and degraded rural environments of Morocco. It will mean new curricula, new research agendas, new development practices, and a new sense of integrated community of yourselves as an

organization; We would be very pleased to hear from you in response to this memorandum. Please send comments to the Evaluation Team via the Minnesota Project Office as soon as you are able. Thank you.

Richard Bawden; Bob Macadam; Peter Hartman.

## **ANNEX THREE UNIVERSITIES IN DEVELOPMENT: LESSONS FROM ELSEWHERE**

### **Introduction**

Over recent years, a series of evaluative studies have been conducted of the characteristics and impacts of international programs of assistance to agricultural higher education in the developing world. Among the published findings of these studies are a number of lessons which have been learned which are vital to the future development of institutions of higher education and research in agriculture around the world. As it happens, they are being presented at a time which is coinciding with debates about a number of other key issues which are relevant here; including the concepts of "sustainable development", the application of new theories from cognitive sciences as well as systems sciences to both curriculum and organizational reform, and increasingly vocal critiques about the nature and role of universities within the societies that support them. And all of these initiatives are occurring at a time of unprecedented geo-political changes across the globe.

As these issues are relevant to the strategic future of institutions like IAV Hassan II, it is important that their implications are explored with participants from the faculty and administration of the Institute as an essential part of this evaluation.

### **Key Reviews**

#### **A. USAID**

In 1985, the Center for Development Information and Evaluation (CDIE) of the United States Agency for International Development (USAID), commenced an evaluation study on agricultural higher education in the developing world to which the United States had been providing assistance. Since the time that this program of assistance was first launched in 1952, it had been extended to 40 different countries and had involved 64 universities in those countries in partnership with around 45 US universities (mostly land grant colleges).

The evaluation study selected as its sample, 23 agricultural universities and faculties in 10 countries (India, Indonesia, Thailand, Brazil, Mexico, the Dominican Republic, Ethiopia, Malawi, Nigeria, and Morocco). Field visits were made to all of these academies by teams of specialists drawn from the USA as well as from Australia, the United Kingdom and Canada. In addition to individual reports from each of the institutions studied, the project also held a major strategic planning forum at Reston in Virginia, and produced a number of consolidated reports and an interpretative essay. Dr Gary Hansen of CDIE was the coordinator of this major initiative as well as the author of the key syntheses (Hansen, 1989a; 1989b) and interpretive essay (Hansen 1990).

The major findings from this work were as follows:

- 1 Faculty Development
  - (a) Most of the faculty trained at American universities through USAID assistance, returned to their own countries after their education in the USA.
  - (b) Over the last decade, overseas training opportunities have declined significantly and a danger of inbreeding now exists as institutions educate their own faculty replacements.
- 2 Project Duration
  - (a) University projects around 25 years duration seem optimal: 10 to 15 years direct involvement in faculty training, followed by a further 10 years of research collaboration.
  - (b) US advisors have proved to be very important in providing support networks for faculty researchers post their returns.
- 3 Financial Support
  - (a) Chronic underfunding of agricultural universities by their own governments at project-end, are weakening education and research programs; this is further exacerbated by the attraction of private consultancies to faculty whose salaries remain unadjusted for inflation.
  - (b) A lack of close linkages to ministries of agriculture and other ministries and key bureaucracies, the lack of institutional autonomy, and a restricted focus on production agriculture, are all factors contributing to generally declining levels of financial support following the withdrawal of USAID assistance.
- 4 Political and Community Support
  - (a) In many centralized political systems, national agencies frequently control decisions about curricula, program priorities, faculty establishments, and enrollments in addition to finances, to such an extent that the universities themselves can be reduced to passive or reactive institutes.
  - (b) Even in less centralized systems, political support of relatively autonomous agricultural universities "can fall between two stools"; that of the Ministry of Agriculture on the one hand, and the Ministry of Education on the other.
  - (c) In the absence of strong collaborative research and development (including extension) initiatives, between themselves, Ministries, and national and state bureaucracies, the universities risk marginalization in the eyes of government.

- (d) An emphasis on production agriculture, often to the virtual exclusion of other aspects of rural development, has prevented the universities from building important constituencies in the public and private sectors, and in rural communities. A lack of focus on improving the policy and institutional factors that constrain production, income and employment in the rural sector, has been of particular importance in this regard. Of particular importance here is the observation that the social sciences typically receive only scant attention as the universities are developed.

In his synthesis, Hansen (1989a; 1989b) proposed six major lessons which had been learnt from the field visits, the forum, and relevant literature:

- University development efforts should focus greater attention on issues of institutional sustainability in ensuring that the university has the capacity to constantly renew itself. Once the institution is built, attention must be focused on sustaining its long-term vitality. In particular, new strategies are needed for enhancing institutional learning so that the university can become more responsive to a changing environment.
- University development efforts should emphasize the development of strong linkages with external constituencies and policy arenas. Such linkages with farmer groups, agro-industrial organizations, and other relevant public and private organizations provide the university with information and resources for improving and sustaining its education and research programs.
- University research and education should address policy and institutional concerns as well as technological factors that contribute to rural and agricultural development. Improvements in agricultural production are closely linked with improvements in micro and macro institutional arrangements for input delivery, marketing, and pricing within the rural sector. Developing expertise in these areas can enable the university to exercise a greater leadership role in policy dialogue.
- Strategic planning concepts and methods should be used in university agenda setting, management and linkage development. Many universities lack a coherent sense of mission and a clearly defined set of strategies for enhancing their contributions to development. As a consequence, they are finding it difficult to thwart academic drift and inertia. The application of strategic planning tools can be a means for supporting university renewal and redirection.
- Universities should pioneer innovative rural development strategies, particularly for complex problems in natural resource use, income growth and poverty alleviation. A more activist and interdisciplinary approach to research and education in addressing these problems can contribute to university learning as well as produce prototype innovations for more widespread adoption.
- Government agencies should expand their vision of the role of the university and serve as facilitators rather than regulators of university innovations. More autonomy from

centralized controls is necessary to encourage a university's initiatives in building sources of strong support and linkage with its environment.

## **B. FAO**

In 1991, a discussion paper (FAO 1991) was prepared for an FAO expert consultation on Agricultural Higher Education and presented at a meeting held in Rome in December of that year. It was based on the findings of case studies which FAO had commissioned between 1988 and 1990, and which reported on the status of institutional and program development for agricultural universities in 20 countries of the world; with a significant number of overlaps with the USAID assisted institutions. The findings and preliminary analysis of the case studies, as well as the series of issues and ideas which were proposed for further consideration, were striking in the manner they reinforced the observations of the major CDIE evaluation review above.

### **1 Organizational Mandates**

- (a) Where mission statements emphasized the trinity of equal functions of education, research and extension (in the land grant tradition), in reality, the time allocated by staff, and the flow of other resources to them, were far from equal.
- (b) Manpower development was generally perceived to be the primary function of the institutions and in some instances there were government designated specific human resource requirements assigned to the universities. (c) The role of the university in influencing the national agriculture and rural development research agenda, and the extent which it benefitted from it, was frequently marginal, and in contradiction to the wishes of the institutions themselves. The size of research programs not directly linked to graduate training programs, was often very limited with low budgetary allocations and associated poor quality research infrastructures.
- (d) The role of universities in formal extension activities was invariably negligible, beyond some involvement in the education of extension professionals, while enthusiasm and commitment to other outreach and public service activities, was generally low on the part of both administrators and faculty; save in the latter case in those instances where private contracts for research or consultancies were involved.

### **2 Relationships between the Institutions and the State**

- (a) The great majority of agricultural universities were strictly dependent on governments for their budgets and even their systems of accounting and budgeting procedures. The case studies revealed an alarming level of underfunding in many instances, accompanied by severe institutional impediments to self-help through entrepreneurial activities.

- (b) The quality of relationship between agricultural universities and governments was generally not perceived as very good and this resulted in "lack of constructive consultation on program goals, structures and contents".

### 3 Program Focus

- (a) In many countries there was almost a crisis developing as result of lack of opportunities for graduates to gain employment commensurate with their qualifications in agricultural science.@@ This was a consequence of both near-saturation of public service positions at a time of universally severe economic constraints, and a certain lack of flexibility in curricula to allow adjustment towards emerging careers, particularly in agribusiness.
- (b) There was also a strong reticence for the universities to address the issue of curricula for the direct management of farms or for any other individual entrepreneurial enterprises.

### 4 Organizational and Management Structure

- (a) Most universities continued to rely on single discipline departments as the dominant administrative structure in spite of (i) many indications of the need for multi-disciplinary or inter-disciplinary approaches to development, as well as (ii) the need for larger units in a decentralized institution.
- (b) Mechanisms to engage in strategic planning for the future of the institutions were rarely encountered, as were adequate procedures to monitor the relevance and efficiencies of existing educational programs. (c) Efforts to broaden the financial base of the universities were usually inadequate.

Finally, the FAO paper also presented a number of suggestions for improving the management and effectiveness of agricultural universities:

- Enhancing functional in-country linkages to policy makers, government departments and bureaucracies, major employer groups, and other educational and research institutions, extension services and rural communities;
- Enhancing linkages among agricultural universities and colleges across the world through the exchange of information, students and faculty;
- Encouraging management structures which foster decentralized decision-making and the development of inter-disciplinary programs; and
- Strengthening financial management through reduced dependency on governments and increased financial self-management including (i) access to increased revenue through the entrepreneurial provision of a range of services, (ii) liberation from bureaucratic budgeting and accounting procedures, and (iii) freedom from government interference.

### **C. World Bank**

In June 1992, the Operations Evaluation Department of the World Bank, issued a critical review (Anon 1992) of the Bank's assistance to agricultural higher education spanning the period of 1964-1990 and involving appraisal of 41 education projects in 25 countries that contained agricultural higher education components. While the focus of this document was essentially internal to the Bank itself, - the nature of the approach it had taken and the outcomes which had been achieved - the author(s) also drew attention to a number of key findings about the development of agricultural universities in the developing world. As at least half of the Bank's initiatives in agricultural higher education were in countries in which USAID was also involved and a half a dozen in common with the FAO initiatives, the lessons learned reinforce much of what has been recorded above.

- University development - like any institution-building exercise - is a lengthy process. While external assistance can encourage and even accelerate consensus building, outside support cannot replace this inherently internal iteration which ends with the institution being politically and financially sustainable.
- The conditions of projects successful in promoting the stability, relevance and effectiveness of agricultural universities included (i) ensuring an adequate flow of resources to the institution; (ii) engendering conditions - including good governance and management at the university level - to promote institutional autonomy and accountability; (iii) creating linkages to clients and colleagues; and (iv) coordinating agricultural research and extension investments with those in agricultural higher education to promote institutional synergies, responsiveness and adaptability.
- Where governments remained heavily involved in the regulation of the universities, momentum was frequently paralyzed and the independence essential to self- governance and good university performance, including the capacity for institutional responsiveness and innovator, was destroyed.
- The development of agricultural universities should start with assistance to the institutions to manage themselves, both individually and as part of a larger body of tertiary institutions. University administration and managerial processes need to be strengthened as a first priority.
- Certain functions, particularly those relating to university planning, graduate programs, maintenance systems, continuing education, graduate placement, and research and extension functions need to be properly programmed and financed. Universities should be encouraged to seek means of self financing and to derive economic benefits from there.
- The most successful projects enabled and encouraged institutions to form linkages with clients. This was the single best way for keeping university programs relevant to needs, while avoiding duplication of effort between organizations with a comprehensive role in

rural development and poverty alleviation. Local attitudes were often prejudiced against agricultural universities becoming more involved in research.

- Too often, poor facilities, scanty libraries, lack of journals, lack of outlets to publish research findings, weak professional associations, and inadequate contact with other researchers, hampers the quality of the studies of graduate students and thus their research experience.

### **Conceptual Frameworks**

Central to virtually all of the initiatives referred to above, is the tripartite model - teaching, research and extension - of the agricultural university, developed to its most advanced extent in the land grant colleges in the United States of America. However, as quoted in the World Bank Report:

"Leaving aside for a moment questions of the inherent desirability or applicability of the land grant model for developing countries, it is interesting to note that, in the final analysis, the model was not fully absorbed by any countries in the cohort (of Bank supported Agriculture Higher Education Institutions). In many cases the key elements of land grant institutions - tripartite functions, strong university governance, strong constituent support (manifested in both financial and political support) - and the interaction of these elements in a check-and-balance environment that encouraged both institutional autonomy and accountability, simply did not obtain for the institutions supported by the two institutions (Bank and USAID). In most cases, the enabling conditions which spurred the growth of the agricultural economy in the United States and kept university programs relevant to this development - such as the type of agricultural pricing policies, inputs or services or "ownership" by client groups - did not prevail either. Finally, the basically stable funding from multiple sources at the local and national level - which allowed for the maintenance of relatively open enrollment and fairly low student fees - was certainly not present in the majority of countries.

Although Bank financed projects frequently paid lip service to the land grant model, very few carried through to providing: (i) serious attention to the extension function; (ii) support for building research contract capacity; or (iii) support to devolve control of university programs to university management and local farm communities. Ironically, even though USAID was explicit in its attempts at institutional transfer, it was equally unsuccessful in these areas. Some analysts in the United States have suggested that the USAID approach represents a failed attempt at social engineering which led to the development of non-responsive institutions which did not fit within their environmental context (See, for example: Mattocks, David, "Institutional Transfer and the Third World: Misguided Policy and Future Institutional Development Initiatives in Africa." Paper delivered at the Annual Symposium of the Center for African Studies, Ohio State University, May 23-25 1991.) Whether a conscious attempt at social engineering or a leitmotif underpinning assistance, the desire to make universities

of social change and active participants in agricultural research and extension was rarely accomplished under either World Bank or USAID assistance, and this has been picked up in recent FAO evaluations as well as in the findings of the donors."

In his interpretive essay, Hansen (1991) presents a fresh perspective on the issue by suggesting that the land grant model, which he categorizes as being neo-classical, "does not provide answers to how to sustain the university as a vital, innovative, and socially relevant institution." Rather, he suggests that already there are "glimmerings of the post-neoclassical era" and poses the question: "What might be the attributes of the new- order university?" which he then proceeds to answer;

- First, the purpose of the university will be truly reflected in its mission.
- Second, the role of the university will be seen as one of learning and innovation with respect to devising and testing strategies for achieving its mission, as broadly defined above.
- Third, the educational experience, particularly at the undergraduate level, will be dramatically different from what it is today in most universities.
- Fourth, the structure of the university will become a matrix of interconnected task groups clustered around major programmatic themes.

"These four elements would result in a more robust and proactive university, thereby legitimating demands that the university be allowed to become a center for innovation and experimentation. They would also lay the foundation for entitling the university to the higher degree of institutional autonomy necessary for building a stronger and more diversified portfolio of financial and political support."

These views of the role and functions of agricultural universities from critics within two of the most significant agencies for development in the world, support the proposition that such institutions need to rethink the conceptual framework upon which they are basing their own organizational developments. And this is the area we now intend to explore from the perspective of our own experiences as agricultural academics ourselves, and as evaluators of quite a number of other agricultural universities in different parts of the world.

### **Some Personal Experiences**

Two of the members of this evaluation team (RB and RM) were active participants in the USAID evaluation of Agricultural Higher Education reported above, as well as being long serving colleagues at the innovative Hawkesbury School of Agriculture and Rural Development at the University of Western Sydney in Australia. The third member (PH) is currently Director of International Programs at the University of Florida at Gainesville after projects with universities in Cameroon, Malawi and Kenya. Furthermore, all three team members have been closely associated with a significant number of programs and projects concerned with the development

of agricultural universities and colleges in various parts of the world including Europe, Africa, South and Central America, the Caribbean, the Middle East, South and South East Asia, Australasia, Oceania, and the United States of America.

To all of these experiences, the three of us bring a number of theories, philosophies and conceptual frameworks, that we believe are most relevant to the strategic futures of agricultural universities in general and which might have particular relevance to the present initiatives in Morocco and the strategic future of agricultural higher education, research and development, here.

Fundamentally, we recognize that agricultural educators, researchers and developers, face a set of profoundly new challenges. On the one hand, all the old challenges of increasing the productivity and profitability of agricultural systems remain; but these must now be accomplished within a context of the simultaneous development of rural environments and rural communities in ways which are sustainable long into the future.

We might say that we are entering a new age of agricultural development - the age of sustainable development. Let us submit that there have already been three ages or stages of development in which agriculture in most countries of the world has entered:

- Traditional or pioneering agriculture;
- Scientific or production agriculture; and o Economic or productivity agriculture.

According to our thesis, each "new age" builds on the previous ones rather than replacing them, and so farmers around the world are faced with the need to complement their indigenous knowledge of traditional methods of farming, with knowledge of modern technologies developed through the application of science, as well as with knowledge of commerce grounded in sound economic theories. Now, we argue, they must develop a fourth type of knowledge too: knowledge about the ecology of the natural and social environments with which the systems they manage, interact.

- Sustainable or persistent agriculture.

The evidence of the need for this new "age", is almost overwhelming:

- \* Deforestation to increase land use for agriculture, is leading to severe soil erosion, loss of soil fertility, ascending water tables and thus salinization, and maybe even contributing in a major way to global warming.
- \* Increased grazing pressure from intensified animal systems is also contributing to soil erosion, as well as causing impaction, and destruction of native vegetation.
- \* Increased cropping intensities are leading to soil erosion, desertification, loss of soil fertility, soil acidification, and alkalization.
- \* Irrigation is leading to salinization, and can contribute to the spread of chemical pollution in water courses.

- \* Indiscriminate use of chemical biocides is leading to unsafe working environments, polluted habitats and human settlements, as well as resulting in the development of biocide resistant pests, pathogens, and parasites.
- \* And all of this is leading to serious declines in biodiversity.

The impacts of intensified farming systems is not confined to the bio-physical environment:

- \* Commercialization of agriculture can easily lead to the concentration of ownership in rural communities, and to further distortions in income and status between different socio-economic groups within the same community.
- \* The substitution of capital for labor such as through mechanization, can lead to unemployment or at least severe underemployment, and further social degradation.

And so on!

The message here then, is that it must be recognized that all technological and/or management innovations created by scientists and developers, have got some negative environmental and/or social impacts which must be seriously considered before their application is recommended. This demands not only a new way of thinking about technological progress in agriculture , but also highlights the importance of issues of social justice, ethics, and morality, to the idea of sustainable rural development.

If the notion of a "new age" of agriculture and rural development is accepted along these lines, then it will impact very significantly on (i) curriculum design and management; (ii) research agendas and methodologies; (iii) outreach activities; and, perhaps most importantly of all, (iv) the nature of the organization of the institution itself.

## **ANNEX FOUR      The IAV Environment Agriculture and Rural Development in Morocco**

Assuming that IAV intends to pursue a mission of being central to the development of agriculture, rural communities and rural environments in Morocco, it is appropriate to present a brief national overview as a context for this review.

### **Overview of the Moroccan Economy**

Over the past decade, few developing countries have equalled the economic progress made by Morocco. As a result of profound adjustments associated with a liberalization of the economy commenced in the 80's, stabilization has been achieved without recession and with a rate of inflation which has stayed below 5% since 1987. Average real growth of GDP has averaged more than 5% over the same time period, while both the current account deficit and budget deficit have been substantially reduced from their previous high levels. The challenge as recognized, is for the country to bring its large debt burden and budget deficit down to manageable levels without curtailing growth.

### **Agriculture and Development**

Agriculture and agribusiness are activities central to both the economy of Morocco and to the lives and welfare of a very significant proportion of its peoples. Approximately 2 million households, or 40% of the workforce, rely on agriculture. Recent estimates (USAID January 1993) place agribusiness as the single most important source of commodity export earnings of the country, comprising some 32% of the total. It also comprises approximately 19% of direct GDP (and probably as much as 50% if one includes all of the value-adding activities with which it is associated) while providing employment for around 37% of the population of the country. While the annual rate of increase of that population has shown a marked decline, even over the past decade from around 3.2% to 2.6%, and yields of staple foods have generally increased over the same period, the general rate of production of such staple crops as cereals, pulses, and edible oils continues to fail to keep pace with ever increasing domestic demand. Furthermore, the intensification of agriculture has not been without some very significant environmental costs, with problems associated with resource degradation contributing in part also to the high (4.6% per annum) rate of urbanization.

With the prospect of a doubling of the current population of 25 million within two decades or so, Moroccan agriculture faces some very profound challenges, particularly given the relatively harsh environments in which it is conducted.

### **General Climatic Conditions**

Morocco is essentially an arid to semi-arid country, experiencing low and erratic rainfall, with over half of the arable land receiving less than 400 mm of annual rainfall. Severe drought conditions are not uncommon and indeed they prevailed in the early 80's and are again prevailing now. In the face of these climatic conditions, it is not surprising that gross agricultural production can vary more than 35-40% around the long term mean.

## **Agro-ecological Characteristics**

Of a total land mass of around 60 million hectares, only 8 million hectares are arable, and of this, about 20% has the potential for irrigation. A further 20 million hectares of land are used for grazing. Four major agro-ecological zones can be distinguished: (1) The plains, with good but erratic rainfall, which support relatively large scale arable agriculture based essentially on cereals, pulses, oil seeds, and forage crops, in addition to orchards of fruits trees.@@(2) The foothills and plateaus, which support rain-fed and medium scale irrigation agriculture.@@(3) The mountainous areas, which support cereal production and rain-fed and small scale irrigated fruit and nut-tree culture.@@(4) The steppes, which are essentially grazing lands with some scale, rain-fed arable activities.

Livestock production, which involves some 11 million sheep, 5 million goats, and 1.5 million draught animals, represents more than one third of the total gross agricultural production.

## **Socio-economic Characteristics**

While the intensification of agriculture, significantly in the irrigated areas, has led to an increasingly vigorous agribusiness sector, much of rural Morocco remains economically depressed and socially undeveloped. More than 1 million households rely on rain-fed agriculture, while a further one half million depend on forestry and other miscellaneous rural activities. Based on data gathered in a 1991 Standard of Living study, and a carefully constructed sample of sample of some 10,000 farm households:

- (1) Over 70% of the labor force in the lowest two standard of living quintiles, work in agriculture.
- (2) In irrigated areas, where more than 25% of the households are landless, and the level of income that can be generated on holdings of less than 2 hectares is very low, 65% of the households live in poverty.
- (3) In rain-fed areas, this level rises to 85%.
- (4) Literacy rates remain very low in rural areas, at only 45% of men and 13% of women, although some 65% of rural children now currently attended primary school.

## **Natural Resource Base and Environmental Quality**

There is no doubt that the intensification of agriculture, over the past decade or so, has had an increasing negative impact on the quality of the environment and natural resource base of Morocco. Unless significant steps are taken to better manage this situation, the current pressures of consumption growth, complicated by market and policy imperfections, will lead to increased rates of resource depletion and environmental degradation. Some of the more pressing issues include

## **Water resources**

There is mounting concern in Morocco about the rate of depletion of the water resource in this arid land, about the impact of intersectoral competition for it as a scarce resource, and about the degradation of its quality from a variety of resources - much of it associated with agricultural practices. Plans are in place to markedly increase the area of land which is irrigated from reservoirs, with the recognition that already the 10% of the arable land that is irrigated, accounts for around 45% of all agricultural value added and 65% of agricultural exports. The continuing high rates of urbanization however, will place considerable pressure on the need for a reallocation of water, for more efficient utilization of it, and for increased levels of capture of supply. There is also need for much greater attention to be paid to reducing the current extent of pollution of water through siltation, salinization, and chemical contamination from pesticide, fertilizer, and industrial and domestic wastes.

## **Forests**

Both the 9 million hectares of natural forests and the half million or so coniferous and eucalyptus plantations in Morocco, are being seriously depleted through rapid deforestation through timber harvesting, fuelwood gathering, and supplementary grazing. The rate and extent of reforestation remain far too low to redress this worsening situation, and as the pressure of depletion will continue to increase, there is cause for considerable concern.

## **Grasslands**

As the density of grazing continues to increase, the over exploitation of rangelands leads not just to pressures on the forests, but also on to rangeland pastures; and in particular, on the 3 million or so hectares of the natural esparto grass areas, which are beginning to suffer noticeable degradation.

## **Soils**

Soil erosion constitutes a major ecological problem in Morocco; in the north of the country, the major issue of concern is washaway in the mountainous catchments, while in the south the basic problem is wind erosion. Inappropriate catchment management techniques and poor land utilization practices, such as deep cultivation, denudation of grasslands through overgrazing, and overexploitation of forests for timber and firewood, are the principle causes. It has been estimated by the Moroccan Government, that of nearly 23 million hectares studies, more than half were highly vulnerable to erosion.

## **A Global Context**

This recognition, of the need for concurrency in the development of agriculture, with that of the environments in which it is conducted, is certainly not unique to Morocco. The issues of "sustainable development" has been on the international agenda for a number of years, receiving a major reinforcement with the publication, in 1987, of the Report of the World Commission of Environment and Development (also often referred to as the "Brundtland Report) and entitled

"Our Common Future." Many believe that this represents more than simply a broadening of the perspectives from which agricultural progress should be viewed. Instead, they see it as the need for major shifts in both the purposes and paradigms of the institutions of agricultural higher education across the world - heralding in a whole new type of University for what Gary Hansen of USAID has called "A post- neoclassical age."

### **The Situation in Morocco in Summary**

The picture that emerges here, is that in spite of the generally unfavorable agro-ecological conditions of the country, very important developments have occurred in Moroccan agriculture over the three decades since the establishment of the Institut Agronomique et Veterinaire Hassan II. As the graduates from this and the other two major institutions - Ecole Nationale d'Agriculture (ENA) and Ecole Nationale Forestiere des Ingenieurs (ENFI) - represent, along with the country, one can claim that their impacts on productivity in the rural sector, have been extremely significant. And the challenges are by no means diminished by this progress; indeed, it can be argued that a whole new generation of issues now face these institutions, and the other organizations committed to the continuing development of the natural resources of Morocco.

The fact is, that for all the progress that has been achieved in raising the productivity in the rural sector, a high percentage of the people who live in the rural communities in the country, remain in a poverty trap. Furthermore, the intensification of production methods, exacerbated by ever-increasing demands for food and for value-added products for export, has led to a range of problems of resource depletion and environmental degradation, of varying both these socio-economic and bio-physical aspects, if development is to be as ethically defensible as it is commercially sustainable. This is the real challenge for IAV/ENA/ENFI and for the organizations with which it must liaise and cooperate in both public and private sectors - to deal now with rural development and agrarian reform in all of their complexity.

It is not a matter of whether or not the institutions per se are sustainable, but whether their emerging functions and structures lead to national policies, strategies and processes, which promote the sustainable and concurrent development of commercial agriculture with the quality of life in rural Morocco as a whole.

Reinforcement of the arguments for a new context for agricultural education and research, can be gained from a brief review of literature of evaluations made by major development agencies, in which the stories of assistance so frequently have ended less than successfully.

When viewed from this particular perspective, IAV can be seen to possess a number of vital attributes which represent a very sound foundation for its future as an organization which is central to the integrated development of the peoples and environments of rural Morocco. There are also lessons to be learned from these global reviews, which might help IAV avoid some of the pitfalls of other agricultural universities around the world, which also once found themselves with foundations as strong as those which IAV currently enjoys, yet they are institutions which have proved to be less than optimally sustainable.

**ANNEX FIVE      Contact List for Potential Linkages**

**UNESCO**  
(Asia and Pacific Program of Educational Innovation for Development)  
**APEID**

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