STUDY TOUR REPORT

Institut National de la Recherche Agronomique (INRA)
Joint Research Unit – Innovation,
Montpellier,
France
(24-28 June 2002)

by:

Andy Brown
Rice CRC PhD Student
Charles Sturt University
School of Agriculture
Locked Bag 588
WAGGA WAGGA NSW 2678

Summary

This brief discussion paper documents key points arising from the Overseas Visit (24-28 June 2002) to the Institut National de la Recherche Agronomique (INRA) Joint Research Unit – Innovation in Montpellier, France[1]. The purpose of the visit was to:

1. Investigate the relevance of INRA agricultural extension practice to CRC Rice Project 5204;
2. Explore the potential for INRA – CRC Rice collaboration in agricultural extension.

Key points arising from the visit are as follows:

1. Elements common to the French and Australian contexts of agricultural extension and rice production were identified during the course of the visit;
2. Social theory central to the research framework of CRC Rice Project 5204 was recognised as critically informing INRA agricultural extension practice;
3. INRA require an authoritative statement of CRC Rice intent in agricultural extension if the opportunity for collaboration is to be further developed.

Introduction

The INRA Joint Research Unit – Innovation was established in 2001 following an evaluation of INRA agricultural extension practice. In order to more fully address environmental issues associated with rice production, the evaluation recommended that INRA move beyond the provision of an agronomic service to farmers. INRA's response was to build upon its expertise in agronomy and construct a multidisciplinary extension approach to the agricultural environment of the Camargue.

The Camargue, located within the Rhône river delta, is a Mediterranean wetland of high conservation value (Tour du Valat 2001). Much of the region is a designated nature reserve that includes protected areas (Appendix 2). The presence of pink flamingoes gives the wetland a distinctive character, and aspects of farming culture, particularly the breeding of white horses and sporting bulls, adds to a unique sense of place. Rice production is a lesser-known component of Camargue farming, and a more recent element. The cultivated rice area expanded considerably after the end of World War II and subsequent implementation of the Marshall Plan (ITCF 1995, p. 21). Currently, the cultivated rice area amounts to around fifteen thousand hectares (Appendix 3). Some two hundred and twenty farming households invest in rice production to varying degrees of intensity. Average yields stand at around six tonnes per hectare.

I propose that common elements are apparent in the French and Australian contexts of agricultural extension and rice production. The emergence of the INRA Joint Research Unit – Innovation was a response to a perceived narrowness of previous extension practice. A recent evaluation of the 'rice extension system' in Australia recommended the facilitation of an emerging "farm and regional sustainability perspective" (Rural Enablers 2002, p. xi). It remains to be seen how the system will respond to this key recommendation. A multidisciplinary extension approach to the rice-farming environment of the Riverina can be considered a valid option.

The INRA Joint Research Unit – Innovation aims to address the problem of variable rice yields, but also seeks to reduce the deleterious impact of rice-farming relative to the environment, and develop positive contributions. The issue is the impact of on-farm water management upon the regional landscape. I argue that the integration of rice cultivation and management of the Camargue wetland area reflects broader processes of rural change which

[1] See Appendix 1 for a diary of activities.

are also evident in our localised agricultural environment in the form of integrating Riverina rice production within the catchment management framework of the Murray-Darling Basin. In both instances, a critical challenge for agricultural extension is to facilitate the incorporation of rice agriculture into rural landscape management processes.

Given the common contextual elements outlined above, a more detailed consideration of INRA extension practice should offer further insights relevant to CRC Rice.

Theory and Practice

The INRA Joint Research Unit – Innovation program is described as "evolving, from an organised action system monitored by agronomists to a collective action system in which each other contributes to the production of a common knowledge" (Dreyfus & Mouret 2002, p. 1). Producing this common knowledge "requires specific and articulated learning activities like simulation learning, group learning and multidisciplinary cooperation" (*ibid.*). INRA's extension work with rice farmers has evolved over a period spanning almost twenty years.

INRA's work in the Camargue began in 1984 with the establishment of sample plots located in diverse agroecological environments. Analysis of these plots identified crop establishment, weed control and inadequate fertiliser management as the main constraints to rice production. Subsequent trials explored various fertilising regimes and crop establishment techniques. In addition, an inventory of weed species was compiled. The increasing involvement of the French Rice Centre in such activities coincided with a growing interest within the INRA Camargue team in the organisation of work as a determining factor in farm dynamics. This interest led to the design of a computer enhanced simulation model that assisted farmers in decision-making processes.

In 1995, INRA research again identified the constraints to rice production as crop establishment, weed control and inadequate fertiliser management. These constraints had persisted since 1984 despite major changes in rice-farming practices such as mono cropping, laser levelling, increased water-use efficiency, and the cultivation of dwarf long-grained varieties. INRA responded to the persisting constraints by establishing a reference network in 1998.

The reference network was regarded as an organised action system formally charged with the observation of plots in rice fields. The production of data resulted from the activity of agronomists and participating farmers who engaged with other rice stakehoders in evaluating and acting upon research outputs. Plots on farms and partnerships with farmers were established with the aim of sampling from diverse farming enterprises. In 2001, the total of forty plots included sixteen located in organic rice fields. A central concern for all participants in the network was the improvement of rice farm economics.

INRA argue that organic rice production emerged from farmer concerns to enhance the economics of rice production. Subsequently, a focus on the practicality of integrating agricultural and environmental management arose amongst participants. This new focus is considered to be partly the result of a social learning process in that rice actors have reflected upon their role within a society which has placed an increasing value on 'the environment'.

The uncertainty associated with conventional rice farming can be addressed, to a large extent, by the organised action system. Agronomists conduct a trial and error process that aims to identify economically viable farming practices within an established framework of normative values. However, Dreyfus and Mouret (2002) argue that this system cannot address the uncertainty surrounding the viability of continuing with conventional rice farming in view of the increasing demand to integrate agricultural and environmental management. Further, the organised action system cannot address the uncertainty regarding organic production due to

the absence of an established framework of normative values. Hence, the move from an organised action system to a collective action system.

The collective action system is not driven by questions framed by established values. Rather, Dreyfus and Mouret (*ibid.)* argue the dynamic arises from the requirement to address uncertainties caused by unfamiliar problems, in this case, the need to assess agricultural practices within a framework of emerging environmental concerns. Activities are initiated with the identification of potential solutions, in this instance, organic production. The experts of this novel practice are not researchers but innovative farmers with experience of the potential solution. The role of agronomists then necessarily changes from providing technical information from an established reservoir of knowledge, to collating practical information to produce a common good, in this example, a shared knowledge of organic rice farming.

In such a scenario, agronomists are compelled to enter into partnerships with actors from different disciplines in order that normative values pertinent to the new state of affairs and potential solution can be established, thus reducing uncertainty. And so, for example, economists consider market trends and the organisation of commodity chains. Sociologists contribute by considering the diversity of principles apparent in the shifting landscape, the reorientation of values in response to unfamiliarity, and the creation of learning environments with the potential to facilitate desired outcomes relative to the new context. Learning tools, such as the modelling of potential outcomes, can be practically informed by including variables considered critical by actors in their evaluation of possible courses of action. Becoming an effective participant in the collective action system requires a commitment to address the unfamiliar problem (rather than denying the existence of the problem) in a spirit of multidisciplinary cooperation. What does this involve?

The INRA approach combines social and technical science expertise. The social sciences are represented by (macro/micro) economics, by anthropology in the form of the actor-oriented perspective on rural development (*c.f.* Long 2001), and related symbolic interactionism (*c.f.* White 1992) and sociology of organisations (*c.f.* Crozier & Friedberg 1977). The technical sciences are applied in the form of agronomy and expertise in food processing and product development. Bridging the gap between the biophysical and social sciences is regarded as a fundamental imperative, and is facilitated by the creation of a common field. The common field consists of objects of action, actors, and coordinating structures. The disciplinary gap is bridged within the common field by a focus on intermediary objects.

Organic rice seed can be considered an example of an intermediary object. Agronomists consider quality, economists deliberate on supply and demand, and sociologists can reflect on the motivations of farmers (and other actors) to seek/reject organic rice, and so on. The various disciplinary interpretations of the intermediary object are considered in critical moments of discussion. These discussions involve stakeholders working with the INRA Joint Research Unit – Innovation, such as the French Rice Producer's Union, the French Rice Centre, and La Tour du Valat (ecological research station based in the Camargue). Each discipline and stakeholder presents an analysis of the intermediary object. Having reviewed the various presentations a multidisciplinary approach is consolidated via agreement between the participants regarding future work on the intermediary object. Such agreements establish and develop the common field.

The INRA Joint Research Unit – Innovation argue that they have not adopted an ideological position regarding organic rice production. Rather, they consider that scientific inquiry must address the emergence of this innovation in practice in order to establish common frames of reference to enable rice farmers to deal with unfamiliar landscapes and uncertain solutions.

For CRC Rice Project 5204, the theoretical basis of the extension approach described above is a familiar one. The research framework of 5204 is fully informed by the actor-oriented

perspective on rural development (see proposal). Therefore, a significant outcome of the Overseas Visit was to observe the application of this social theory in a professional agricultural extension program. Further, INRA practice is also informed by related approaches, namely, symbolic interactionism and the sociology of organisations. These approaches will be explored to consider their relevance to Project 5204.

Exploring the Potential for Collaboration

The preceding sections have documented a commonality of context and theory that illustrates the relevance of INRA Joint Research Unit – Innovation agricultural extension practice to CRC Rice Project 5204. This research project was presented to the INRA Joint Research Unit – Innovation. The presentation generated pertinent questions regarding theoretical orientation, the nature of agricultural extension, and the practicality of establishing a collaborative project in this field. The latter point was raised in the presentation by referring to concept notes (Appendix 4) written as part of the CRC Rice rebid process in consultation with Shahbaz Khan (CRC Rice Sub-Program 1.4 Leader, Project 1201 Leader). The concept of integrating biophysical and socioeconomic analyses was considered relevant. However, the INRA Joint Research Unit – Innovation requires further evidence of CRC Rice activity in agricultural extension than that provided by this Overseas Visit to clarify collaborative capacity.

Outcomes and Recommendations

Key outcomes arising from the Overseas Visit to INRA Joint Research Unit – Innovation in Montpellier, France are as follows:

1. The visit provided an opportunity to reflect upon the shift from an agronomy focused agricultural extension service to a multidisciplinary agricultural extension service focusing on the integration of rice production into landscape management processes;
2. The observation of INRA agricultural extension practice informed by theory central to CRC Rice Project 5204 suggests this research project has the potential to practically inform the Australian 'rice extension system'.
3. The lack of a coherent CRC Rice statement/program of activity in agricultural extension was found to be a constraint to further developing a collaborative project in this field with INRA Joint Research Unit – Innovation.

Key recommendations arising from the Overseas Visit to INRA Joint Research Unit – Innovation in Montpellier, France are as follows:

1. CRC Rice considers the relevance of INRA agricultural extension practice relative to the current Australian 'rice extension system', and anticipated future challenges.
2. CRC Rice identifies appropriate shared learning opportunities that can arise from further collaboration with INRA Joint Research Unit – Innovation.

References

Crozier, M. & Friedberg, E. 1977, *L'acteur et le système: les constraintes de l'action collective*. Sueil; Sociologie Politique. Paris.

Dreyfus, F. & Mouret, J. C. 2002, *The Emergence of Environmental Concerns in Camargue: Re-thinking a reference network in a learning tool for stakeholders.* INRA. Montpellier.

Institut Technique des Céréals et des Fourrages 1995, *Riz: du débouché à la culture.* ITCF. Paris.

Long, N. 2001, *Development Sociology: actor perspectives.* Routledge. London & New York.

Rural Enablers 2002, *Building capacity for Change in the Rice Industry: A report of a review of the extension services of the rice industry*. Rural Industries Research and Development Corporation. Kingston ACT.

Tour du Valat (Station Biologique) 2001, *Annual Report.* Tour du Valat. Arles.

White, H. C. 1992, *Identity and Control.* Princeton University Press. New Jersey.

Appendix 1

Diary of Activities:
Overseas Visit to INRA Joint Research Unit – Innovation (Montpellier, France)

24 June 2002

Attended two formal presentations. Firstly, Fabrice Dreyfus, Director of INRA Joint Research Unit – Innovation, provided introductory presentation of 'The Unit'. Secondly, Jean-Claude Mouret, Agronomist of INRA Joint Research Unit – Innovation, provided presentation focusing on the work of 'The Unit' in the field of rice production.

25 June 2002

Attended two formal meetings with INRA partners. Firstly, Lucien Lamarque, Agronomist and Director of International Relations with the Ecole Nationale Superieure Agronomique de Montpellier (ENSAM), presented an overview of ENSAM agronomic studies, facilities, and international research networks. Secondly, Patrik Durand, Delegate for Asia and the Pacific with the Centre de coopération Internationale en Recherche Agronomique pour le Dévelopment (CIRAD), discussed aspects of international agricultural development.

26 June 2002

Participated in Field Trip to Camargue region with INRA agronomist Jean-Claude Mouret and research assistant who had organised meetings in the field to coincide with a day of data gathering (crop and weed growth in sample plots on conventional and organic rice fields. Field trip included meetings with: (1) organic rice farmer; (2) French Rice Producer's Union; (3) French Rice Centre; (4) Tour du Valat (Station Biologique).

27 June 2002

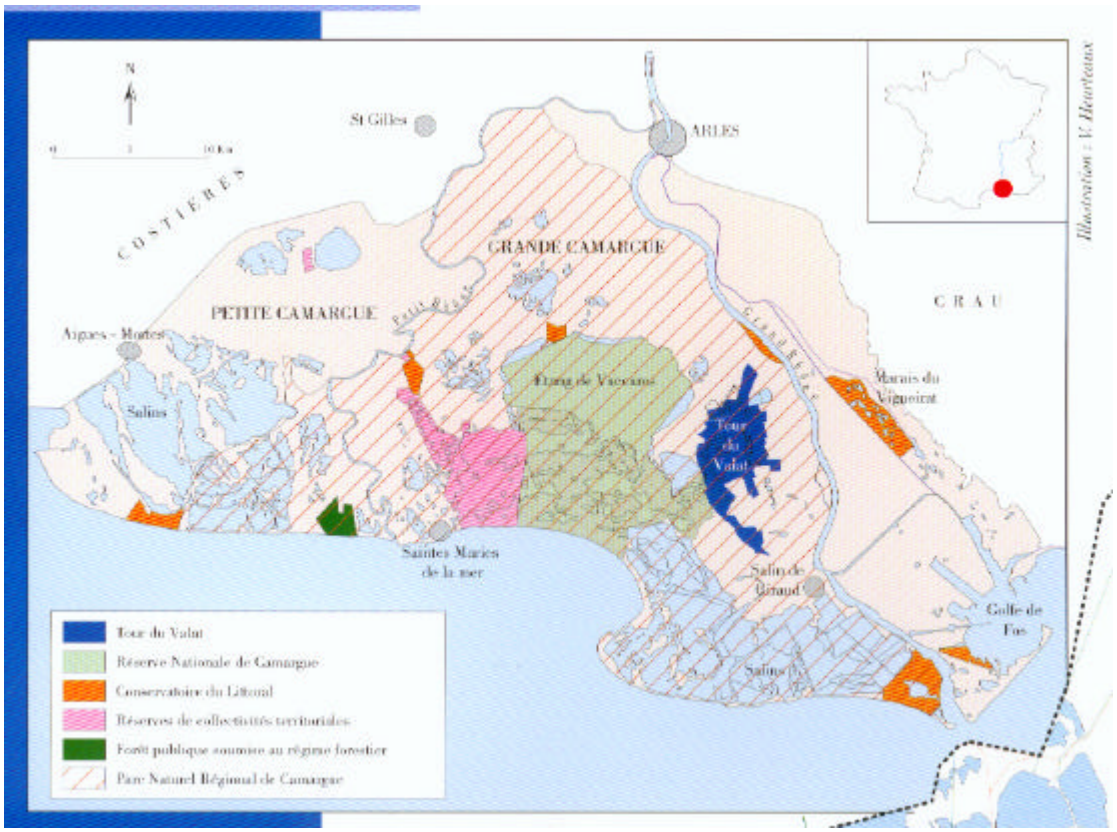
Engaged in informal discussions with INRA director Fabrice Dreyfus, agronomist Jean-Claude Mouret and research assistant regarding outcomes of field trip and desired content of proposed presentation of CRC Rice Project 5204 to INRA scheduled for following day. Began preparing presentation.

28 June 2002

Completed and delivered one hour presentation of CRC Rice Project 5204 to INRA Joint Research Unit – Innovation staff. Director Fabrice Dreyfus, Jean-Claude Mouret and other agronomy staff, agricultural economists, sociologists, and various research scholars currently working on INRA projects were in attendance.

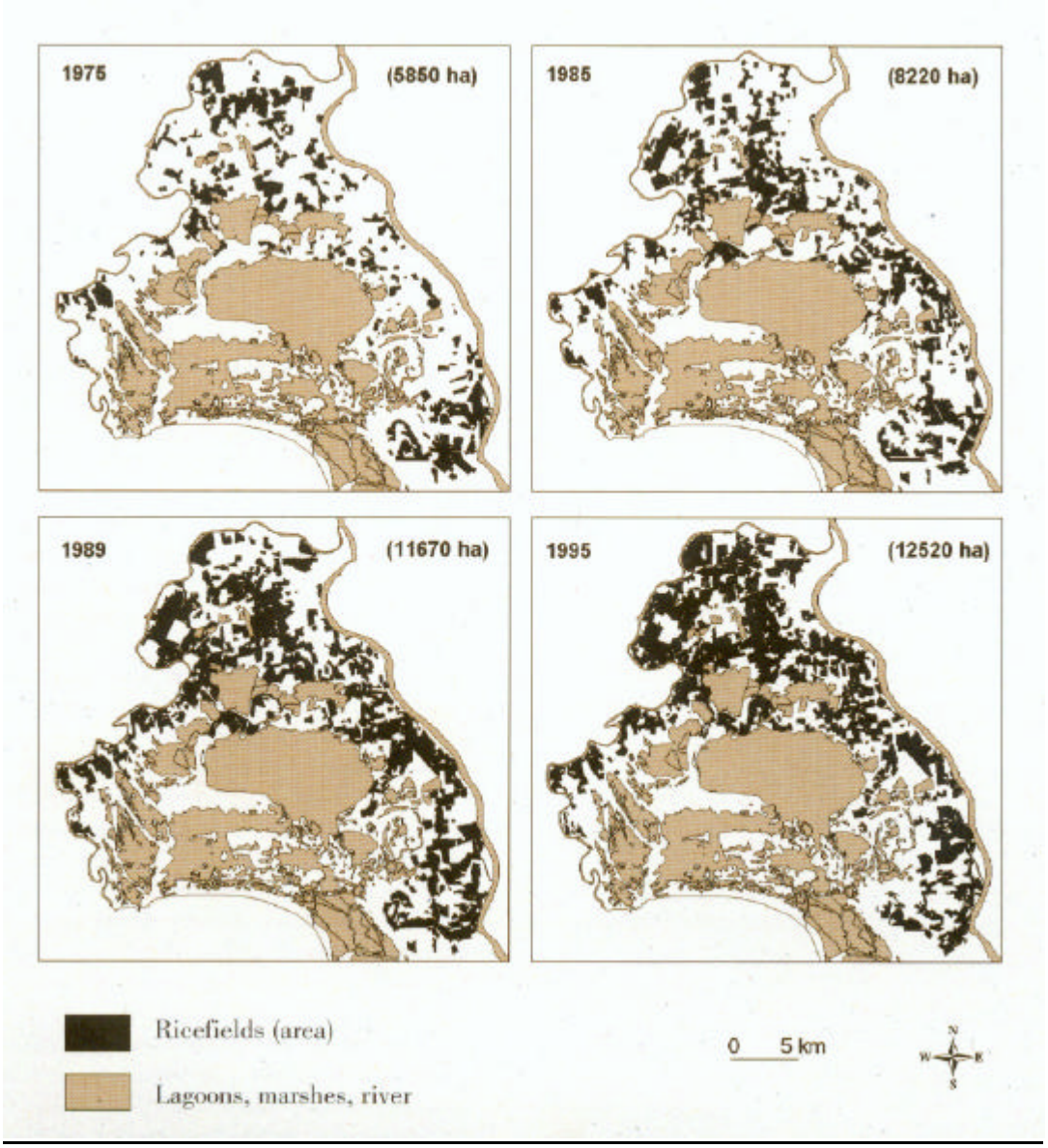
Appendix 2

The Rhône River Delta



Appendix 3

Cultivated rice area of the Camargue



Appendix 4

Integrating Biophysical and Socioeconomic Analyses: Concept Notes for CRC Rice (Program 1) Rebid Process

Socioeconomic Aspects of Salinity Management

Background

In moving towards the sustainable development of localised agricultural economies, enabling a convergence between farm and catchment management goals is a critical concern. Previous research and experience indicates computer modelling can assist farmers in decision-making processes generating satisfactory outcomes relative to profitable production, and salinity management at farm and sub-catchment levels. Further research would consider a more representative farming clientele. Prevalent perceptions of constraints and opportunities presented by the policy environment and new information technologies would be analysed in a social learning process informed by computer modelling. Assessing the extent to which this process assists agricultural communities to successfully manage farm and sub-catchment salinity targets would be the principal objective of this research.

Key Question

To what extent can computer modelling of salinity dynamics enhance the ability of agricultural communities to profitably manage farm and sub-catchment salinity targets?

Methodology

Previous research would be employed as a baseline from which to initiate a more comprehensive engagement with agricultural community members. The perception of constraints and opportunities prior to and arising from a learning process informed by computer modelling would be documented via questionnaires, focus groups and the consideration of current and potential land-use scenarios.

Socioeconomic Aspects of CAP and Environmental Flows at the Irrigation Area and Catchment Levels

Background

Contemporary rural development aims to balance agricultural, environmental, social and economic demands across local and regional scales. Interested parties contest the distribution of private and public costs and benefits involved in managing the complexity of multiple aspirations. Opportunities to facilitate an informed dialogue are presented by new information technologies and economic models. The integrated analysis of agroecological and socioeconomic dynamics can consider factors traditionally regarded as externalities at farm and catchment scales. Such an analysis provides a framework for local and regional participants to engage in a learning process addressing the equitability of cost and benefit distributions over time. Assessing the extent to which this process enables a realistic and shared vision of future landscapes would be a principal objective of this research.

Key Questions

To what extent can:

1. Integrated analysis and social learning enable local and regional partnerships?
2. Critical private and public demands concerning landscape options be delivered in an equitable fashion?

Methodology

An integrated agroecological and socioeconomic analysis would initiate a learning process shared by local and regional representatives. Participants would consider past, present and potential costs and benefits currently experienced or anticipated in likely future landscapes.

The process would then be oriented towards the identification of mutually beneficial strategies capable of enhancing sustainable development.