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Research Partnerships: Issues, Lessons, Results and Dreams for Sustainable Development

Gelia T. Castillo

This paper examines the need for and the nature of partnerships in agricultural research. Most of these, it maintains, are North-South partnerships. Though increasing South-South collaboration has been evident over the past decade, South-South partnerships are usually dependent for funding on northern countries which makes them vulnerable in the longer term. South-South partnerships are also less likely to find themselves at the cutting edge of scientific thought which makes it important that South-based institutions continue to partner with their counterparts in the North. The paper argues that so long as adequate attention is devoted to defining the terms of partnership and choosing the 'right' partner, research partnerships can yield enormous benefits. It takes the view that many 'sins' have been committed in past partnerships but that we should be able to learn from these. It also maintains that partnerships between the 'strong' and the 'weak' are possible so long as both sides recognise what they can gain from partnerships and that this accords with their overall institutional priorities. Finally, it gives some examples of successful partnerships and suggests that many of the characteristics of these are not pre-conditions but are aspirations which can be pursued through the lifetime of the partnership itself.

Gelia Castillo is Professor Emeritus at the University of the Philippines at Los Baños and Academician, Philippine National Academy of Science and Technology. She can be contacted at:

Department of Agricultural Education and Rural Studies
University of the Philippines at Los Baños
College, Laguna
Philippines 4031
Fax: +63 (2) 891 1292

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ACRONYMS

CGIAR	Consultative Group on International Agricultural Research
CIAT	International Centre for Tropical Agriculture
IITA	International Institute for Tropical Agriculture
INGER	International Network for Genetic .Evaluation of Rice
IRRI	International Rice Research Institute
NARS	National Agricultural Research System
NGO	Non-governmental organisation
RCS	Research capacity strengthening
SARP	Simulation and Systems Analysis for Rice Production
TDR	Tropical Disease Research Programme
UNDP	United Nations Development Programme
UPWARD	Users' Perspective with Agricultural Research and Development (a network)
WARDA	West African Rice Development Association
WHO	World Health Organisation

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1 Introduction

Let me begin with three illustrations of the importance of agricultural research. First, there is the Filipino wife who says, 'When the rice jar is full, my face can wear a smile'. Second, the statement that 'When Vietnamese leaders, most of whom are politicians, talk about development, they talk about rice' (Xuan, 1995) and third the observation that, 'World rice prices rise due to limited supplies' (Manila Bulletin, 1995). Whether the rice jar continues to be full and whether rice prices rise or fall both depend in no small measure on the relevance and productivity of the agricultural research system. The importance of this is underlined by the fact that, as the quotation indicates, politicians continue to talk about rice as development.

In the case of rice, which is the basic food of nearly half the people on earth, it is argued that:

> 'Expanding populations and intensifying rice production are highlighting the extent of the food-resources-environment conundrum. This is a puzzle no single institution working alone can possibly solve.' (IRRI, 1991-92)

This brings us to the issue of partnership, the focus of this paper. As Fischer notes, 'The enormity of the research challenge - particularly when the focus is on the need for fotid — during a time of *diminishing research support* requires strong partnerships that harness all available resources'(Fischer, 1991—92).

Along with 'participation' and 'sustainability', 'partnership' is one of the new buzz-words of development. Partnerships between different actors — public and private organisations, NGOs, universities, farmer groups etc. - and at different levels - from the local through to the national and the international level — are conceived as a mechanism which enables us to capitalise on the comparative advantage of all partners and thereby increase the efficiency of research (Zeigler and Hossain, 1995). They are considered to be particularly important when conducting research in rainfed and marginal environments due to the heterogeneity of these which makes it impossible for any single institution to solve all or even most of the problems (Ingram, 1995).

Overall, the case for research partnerships has been argued in terms of: greater *efficiency* in dealing with heterogeneity in unfavourable environments; *effectiveness* in finding solutions to location-specific problems; *relevance and sharing of responsibilities; synergy;* and *mobilising the conscience of science* to address the problems of poverty. But other factors which should not be dismissed are that research partnerships are formed as a response to.- *declining research support,* even for traditionally well-endowed research establishments; and the *increasing political awareness* and *demand for equality* of one-time clients and intended recipients or beneficiaries.

This paper reviews a number of the issues surrounding research partnerships. It is organised into sections as follows:

- Types of partnerships.
- North-South and South-South partnerships.
- The requirements of partnership:
  - — choosing the right partner: the strong and the weak;
  - — research capacity strengthening;
  - — interdisciplinarity.
- The costs of partnerships.
- Partnerships that promise to make a difference; and
- Dreaming dreams for sustainability and a common future.

2 Types of partnerships

There are several modalities for organising research partnerships, including: country projects carried out through bilateral arrangements; scientist-to-scientist collaboration; shuttle research; networks; and consortia. Though all these arrangements might be known as partnerships, they vary considerably in key aspects. For example, networks are usually more informal with almost unlimited (open) participation by interested institutions or individuals. Though this 'open access' may be an advantage in that it allows participation from organisations whose resource endowments vary across time and space, it also has its disadvantages. It is often quite some time before networks really begin to function as networks. The tendency is for a pattern of 'hub and spoke' interaction between centre (coordinating office) and periphery to develop before a 'rim' effect, whereby participants relate to each other more than to the centre, becomes evident.

Consortia which involve institutions from a number of countries tend, on the other hand, to be more formally organised and limited in membership. Members agree on a 'common research agenda with clearly defined areas of responsibility, division of labour and sharing of resources' (IRRI, 1991). These can be highly successful (see section 7), but the benefits that they generate tend to spread over a more limited area. Deliberate efforts must then be made to extend their reach — perhaps through the formation of

new partnerships - if this is considered a priority.

Despite the nobility of purpose and scientific rationale behind the formation of research partnerships, there is a grey side to all partnerships which must not be swept under the rug. Perhaps more attention should be paid to the Filipino saying: 'Truthfulness in partnership is the key to lasting relationship.'

Over the years, we have witnessed a genre of partnerships — particularly those between North and South - which might be characterised as rather 'unhealthy'. Although most of them are things of the past, we must be reminded of what must not be allowed to recur. Box 1 details and characterises some of the less healthy types of partnership. The common feature of all these arrangements is a lack of mutual learning, shared objectives, long-term commitment and joint achievement, the characteristics which bring unique value to partnerships.

Lest we think that all the 'sins' are committed by the North, let me touch on 'reverse exploitation' of the North by the South. This can be manifested in: mis-appropriation of funds; mis-representation of facts; and mis-use of the resources and power derived from association with the research partnership. We also have scientists from the South based in the North who enjoy the status, privileges, perks, and acquired values of the North but nevertheless pass themselves off as representatives of the South in the North-South partnership (which is therefore such a partnership in name only and is often designed only as a means of accessing funds). One of the greatest 'sins' of all can be committed by either partner. This occurs when those who receive research funds and travel abroad for project meetings never submit a research report or submit work which was prepared by someone else.

However, the news is not all bad. We have also witnessed more desirable partnerships such as those which are collegial, in which a continuing mentoring relationship develops or which are evolutionary so the student eventually becomes the teacher. Most robust are the interactive intellectual partnerships which prosper through good and bad weather, in fields and in laboratories, through harmony and conflicts and which endure throughout the research process and beyond.

3 North-South and South-South partnerships

Traditionally research partnerships have tended to follow North-South patterns of colonial history. However, with the advent of research programmes funded from multiple sources, this is changing. Although the North is still the predominant source of funds, new programmes are designed to meet the needs of a wide audience and are therefore compelled to develop links with a number of regions, countries, and even local communities in order to have any impact. For demonstrated impact - however measured - is the *sine qua non* for securing continuing funding from any source.

With regional developments and political alliances among countries of the South, South-South research partnerships have become more fashionable. No one can dispute the inherent value of South-South connections for: developing solidarity and consciousness of kind; addressing common problems and interests; exploiting the complementarity of assets; learning and sharing together; and for increasing collective self-reliance and voice. But rather ironically, South-South partnerships are dependent, more often than not, on support from the North.

Since this is the case and since South-South partnerships lack a constituency in the northern donor countries, support for South-South research collaboration is unlikely to endure. Indeed this problem has already been witnessed. Well-respected donor agencies have lavished attention on developing South-South relations with minimal involvement of their own research community, but the partnerships

Box 1. A typology of 'unhealthy' partnerships

- *Partnerships of convenience* in which the function of the southern partners is simply to legitimise the entry of a research project into their country. This can also be an *assisting partnership* in which the South-based partner assists the North-based partner in what the latter wishes to do but has no input into the research design.
- *Contractual partnerships* in which those from the South are financed by the North to gather data which the northern partner then owns. Eventually the North becomes the expert on the problems of the South. This type of partnership has been particularly common within socioeconomic research projects which cover several countries. This can constitute a major data-exporting enterprise. There is minimal, if any, research capability building; the researchers from the North have no time for this.
- *Division of labour partnerships* in which the North thinks of the research problem, develops the protocol and finds the funds. The South implements the research with appropriate funds and logistical support. The North analyses the data, writes up the results and publishes – with or without an acknowledgement of the South's role. Sometimes, in a great patronising gesture, the southern partner is made senior author whether or not s/he has written anything.
- *Reluctant partnership* with reluctant partners whose main preoccupation is how to take advantage of resources made available to both sides.
- *Non-partnering partnerships* in which the strong partner brings the research problem, research funds, equipment and expertise, while the weak partner provides the research site.

Box 2. Excerpts from the Swiss Strategy for the Promotion of Research in Developing Countries

- The proposed strategy will only be successful if it finds the support of a *large part of the scientific community in Switzerland and abroad.*
- In the long run, both the Swiss economy and the Swiss scientific community would profit from a powerful Swiss scientific research community with strong international ties, both in view of scientific cooperation with developing countries as well as with Europe. North/South relationships are becoming increasingly important and Switzerland can and must come to the fore in this field.
- A Swiss contribution to the solution of global problems will also improve Swiss research.
- It is the fundamental idea underlying the new approach not to just help but to *cooperate* on the solution of problems.
- Research partnership with developing countries is an instrument specifically designed to attain the common goals of Swiss authorities concerned with research or with development policies, respectively.
- Switzerland has no clearly defined research programme of its own aimed at integrating developing countries. In this respect, *Switzerland lags far behind internationally.*

have subsequently crumbled. It is too much to expect the countries of the North to display pure altruism for the benefit of developing countries over a prolonged period. Furthermore, as long as we partner only with each other and not with the North, we southerners risk the perpetuation of our second-class research status. Finally, relations amongst southern partners are not necessarily 'healthy'. The countries of the South are not homogeneous: there is the *advanced South,* the *developing South* and the *least developed South.* It is not yet clear whether partners from the advanced South will treat their 'lesser' partners with more dignity and benevolence than the North has been credited with.

At present, then, the dominant research partnerships are North-South. In order to influence the course of international scientific research, we in the South must actively and intellectually participate in these North-South research programmes. Otherwise so-called *world-class research* will continue to be defined as *North-class.* This being the case, it is particularly important to apply ourselves to improving the parameters of such partnerships.

The Swiss Strategy for the Promotion of Research in Developing Countries presented in Box 2 is illustrative of some forward thinking in this area. This strategy for partnering with southern institutions stems from a desire to strengthen the position of Swiss scientific research within the international research community. It is honest about the elements of self-interest which underpin the strategy. The statements made are forthright and provide an auspicious basis upon which to develop a relationship based on mutual respect. Without *mutuality of benefit* no research partnership can endure.

Despite all the hazards of North-South partnerships, a very important lesson learned through the years is that it is easier to network and partner regionally and internationally than it is to promote intra- and inter-institutional research collaboration within the same country. Quite often, it takes external entities to loosen up the tightly guarded 'turfs' of local institutions. We therefore urge those who promote North-South or South-South partnerships to be conscious of this and deliberately play role of catalyst rather than driving a wedge between local institutions.

4 The requirements of partnership

Choosing the right partner: the strong and the weak

In any joint venture, the choice of partner is a critical variable. Who partners with whom? There are any number of potential partners in both the private (non-profit and commercial) and public sectors. However, the 'watchdog' function played by many NGOs - standing on the outside as observers - and the sensitivity of potential research partners to intellectual property rights, access to genetic resources etc. may make partnerships with the private sector more difficult to forge and mutuality of trust and of benefit more elusive. In this paper we shall, then, focus on the more common public sector partnerships.

Besides the typical North-South, South-South partnerships discussed earlier, another pattern of research partnership is between national and international research institutions. Apparently, physical location is not as important as funding source and power structure in our perception of what is North and what is South as the latter — that is international research institutions - are usually identified with the North even if they are physically located in the South, as is the case with most CGIAR (Consultative Group on International Agricultural Research) institutions.

The CGIAR has recently been through an 18-month renewal process and is engaged in broadening partnerships with national research systems in both the North and the South. It has been recognised that if the CGIAR is to make the impact that it should be able to make (and therefore be in a position to secure continued funding) National Agricultural Research Systems (NARS) must begin to play a stronger role both in the setting and the implementation of the CGIAR research agenda. The problem is, however, that 'NARS in general remain lamentably weak' (Nickel, 1995). Ravnborg (1992) concurs:

'... the reality remains that many national systems

> are too weak to benefit from research carried out by the CG (Consultative Group) Centres, in other words, to absorb, combine and adapt research results coming from the Centres in order to develop technical solutions which are useful under their specific conditions.'

The question then becomes, can the weak partner the strong? Is there any alternative? Ravnborg notes that, 'only very few agricultural problems are of a nature which makes the option of by-passing national research systems feasible'. This makes strengthening weaker partners, often part of NARS 'the only viable recourse' (Ravnborg, 1992).

In order to do this, it is necessary to understand NARS as systems with assets of their own to contribute to the research partnership. Whether characterised as 'weak' or 'strong' NARS can bring much to partnerships, including knowledge of and access to rich genetic resources, ecosystem diversity, farmer versatility and indigenous knowledge. There are plenty of talented individuals working within them, though they may not have had access to adequate resources to enable them to flourish in the past.

If we set aside pre-conceived views of strong and weak and proceed where the opportunities take us, research partnerships between very 'unequal' partners can endure and can strengthen research capacity for both national and international partners. So long as they recognise the needs and capacities of both sides, such partnerships can produce research results which are not just destined for prestigious publications but can also be translated into actual production, food security and economic benefits for farmers. However, a requirement for success is that the weaker, southern partners enter into partnerships only in areas which are of genuine priority for them. Many partnerships - which may be considered to have developed the 'partnership syndrome' - are driven by the North and are destined for failure from the outset. This is because the southern partner looks only for the benefits and does not anticipate the costs involved. These costs are both human and financial but also relate to other opportunities foregone and priorities which do not fall within the realm of the research partnership and are therefore left unaddressed.

Notable examples of productive partnerships are those which have been formed for rice research between IRRI (the International Rice Research Institute) and the NARS of Vietnam, Bhutan, Myanmar, Cambodia and Laos (IRRI, 1991-92). At the time that collaboration commenced, none of these countries would have been viewed as possessing a strong research system but all are now practically self sufficient in rice or have regained their former status as rice exporters. The partnerships with IRRI have been highly productive despite differences in political ideology and levels of economic development. They have prospered despite the ravages of war and internal conflicts in these countries which have devastated the agricultural base and the national research systems themselves. The Vietnam-IRRI and Bhutan-IRRI research partnerships are particularly interesting because neither programme had international scientists in residence. Both countries are rightly proud of this.

Xuan (1995) describes the situation in Vietnam thus:

> 'Virtually every Vietnamese agricultural scientist does something with rice, hence in collaborative projects, the IRRI scientists can usually find an experienced Vietnamese scientist counterpart. Therefore IRRI scientists can feel confident that a research project will be carried out with high scientific standards. This could be why at present there are no IRRI scientists resident in Vietnam.'

In the case of Bhutan, Gementiza (1995) reports that:

> 'In general, the IRRI training model is based on the ideals of participatory development: the importance of felt needs, joint planning, shared decision-making, diminished role of the donor agency and sense of project 'ownership' in the client system.' (Minnick, 1990)

This paradigm has been largely translated in actual operations, including needs assessment by a joint team. Participants are chosen by Bhutan and training is conducted consultatively and collaboratively. The same is true of the negotiating and bargaining process. Project plans and decisions are made with equal contributions from IRRI and the Bhutanese. However, during in-country training the national system takes full control of the administration and management; Gementiza (1995) considers this to be on the highest step of the 'ladder' of types of participation.

Research capacity strengthening

Research partnerships between the strong and the weak are not possible without research capacity strengthening (RCS). If this does not take place, it will be like 'parachuting science' without the capacity to use it (Mendis, 1995). We all recognise the need for RCS. However, experience has repeatedly shown that it is easier to *build* than to *utilise* and *maintain.* This is because after capacity building, the institutions to which the individuals belong must provide position, career opportunities, salaries, facilities, a meaningful research agenda, research funds and a generally supportive research environment if capacity is to be maintained. If they fail to do this the 'capacity' (i.e. the trained researchers) will become unproductive, rebellious, or will leave for greener pastures. Maintaining the conditions which lead to productive research and nurturing scientists into promising research careers is an expensive and long-term activity.

Experience has also shown that while there is now a wealth of experience on which to draw, we do not

always learn from each other. Indeed, many of us seem to display an intellectual immunity to cross-learning, especially when it comes to drawing lessons between sectors, such as agriculture to health research and vice versa. For example, the Tropical Disease Research (TDR) programme of the United Nations Development Programme/World Bank/World Health Organisation — which is a special programme managed by WHO - has had a very innovative RCS strategy for the past 20 years. RCS, which accounts for 25% of total TDR funds, is implemented in a pyramid scheme, at the apex of which lie grants for partnership with prestigious research institutions. At lower levels are the usual degree and non-degree training courses, re-entry grants and career development awards. The underlying philosophy of the programme is 'learning research by doing research'. Training is not an independent activity but is intimately linked in with the research programme.

The TDR programme has faced the common dilemma of whether to focus on the development of institutions as a whole or of key individuals. It has now resolved to concentrate on the latter, 'the training of promising and motivated young researchers, and support for career development of outstanding scientists' around whom novel institution-strengthening strategies should be built (1994 Prospective Thematic Review of the TDR). Dr Yeyoa Touré, a medical entomologist from Mali, is one such key individual. Dr Touré himself has identified three key determinants of productive research capacity strengthening and partnerships:

(1) The southern partner must have resources to work with and something to sustain it. It needs scientific capacity, personality and leadership to be able to tell the partner from the North - '*Yes!*' or '*No!*'. It must not be just a tool to be used.
(2) The South must maintain partnerships with external institutions so that its domestic researchers can visit periodically to update their knowledge (although Dr Touré himself has never been overseas for more than three months at a time).
(3) "Within the country, the South must begin to train a lot of people because some people reach doctoral level and then go to sleep!

The review also advocated the notion that research groups in advanced developing countries which have reached high levels of scientific maturity and potential should now take their place as partners in providing advanced training to less developed countries.

Interdisciplinarity

One strong rationale for forming research partnerships is to bring in new skills and particularly to increase the interdisciplinarity of research. For example, the Simulation and Systems Analysis for Rice Production (SARP) project (a joint undertaking of DLO - Research Institute for Agrobiology and Soil Fertility (Wageningen), Wageningen Agricultural University Department of Theoretical Production Ecology, and IRRI), seeks partnerships to provide it with socio-economic input. An external review team which evaluated the project specifically recommended that:

> 'The SARP project should retain its focus at the crop and cropping systems levels and *should not attempt to integrate* socioeconomic components into the SARP models.'

However the recommendation also stated that:

> 'SARP scientists should encourage national scientists' interaction with other researchers and institutions to facilitate demonstrations of the use of socioeconomic factors, *ex-ante* to shape technical parameters in the model when appropriate, and *ex-post* to evaluate model predictions.' (Ten Berge, Kropff and Wopereis, 1994)

Often interdisciplinarity is more nominal than real since it takes place, for example, only within the biological sciences. Socio-economics may be ignored unless socio-economists themselves push to work with scientists from other disciplines. It may be international partnerships which provide the initial catalyst for such relationships to form or which help demonstrate the value of cross-disciplinary work in countries where it has not been the norm.

5 The costs of partnerships

Though the rewards of partnerships are potentially very high, the costs can also be significant. This should be taken into consideration at the planning stage. Financial and human resources are required for research capacity strengthening. In addition, research partnerships will rarely yield fruit over the short-term. If research products which will make a difference in sustainable development are to be produced, the partners themselves, but also any donors who are involved, must commit for a period of several years. This is not always easy.

To do mono-disciplinary research in one institute in one country is difficult enough; the transaction costs of cross country, multi-disciplinary research partnerships are considerably higher. Research partnerships involve a complex chemistry of personalities, cross-cultural relationships, inter-institutional interactions and interdisciplinary encounters which can be very emotionally and intellectually draining for research coordinators. The challenge of coming through all this and ending up with scientifically respectable research reports, produced on time, is enough to make one's hair turn grey overnight.

Fulfilling the bureaucratic and technical requirements necessary to obtain project approval, to

negotiate institutional arrangements, to obtain funding releases from donor agencies and to seek government clearances can be a horrendous task. The so-called 'gestation period' of a project - the time it takes to find a way around all these problems - can severely retard actual research implementation. It is not, however, a one-off task; equally important is the ongoing 'negotiation and renegotiation of roles and responsibilities, as well as the exchange of information needed to maintain the vitality and effectiveness of partnerships' (Denning and Bernardo, 1995). Too often it is field allowances and vehicles pushed in the right direction which ease this complex and hazardous process of negotiation.

6 Partnerships that promise to make a difference

An examination of the partnerships and research capacity strengthening experience of the TDR programme has shown that:

> 'Success was associated with: capable, committed leadership; stable, long-term linkage to other institutions, particularly in the North — which can help institutions through times of internal or external adversity; and the ability to attract talented youth and provide them with the freedom to pursue their research.'

Failure was associated with: weak commitment from senior scientists (including their diversion to other, often political, duties); early limitation to merely descriptive research; and external political and economic adversity (WHO, 1995). The academic qualifications of the principal researchers provided no indication of likely success or failure.

Agricultural research partnerships seem likely to have the same requirements and face the same threats. In agricultural research the talents of researchers from the South are often diverted to consultancies (domestic and international) or else these people are over-committed to research projects because of the need to earn more money. It is not unusual for some researchers to be engaged in multiple research partnerships. This is likely to severely impede the development of partnerships. Another danger which must be guarded against is mistaking *research management* training for *research capacity development.* The former may be vital but it does not substitute for the latter; management capacity cannot replace research capacity.

Partnerships are, then, unlikely to be successful unless they exhibit the following characteristics: long term commitment, sustainability, interdisciplinarity, critical mass, regional relevance and international participation. This is, however, a long and demanding list - in terms of time, effort and resources - and it is my view that we cannot afford to wait for all these prerequisites to materialise before we decide to collaborate. As a matter of fact, I do not regard them as *preconditions for partnership* but rather as *aspirations or targets,* many of which we shall hope to nurture through the process of research partnering itself.

The following cites various promising examples of research partnership which will serve to underline the benefits that these can bring. I am sure there are hundreds of other examples from elsewhere. These cases indicate only the promise but not yet the evidence that sustainability has indeed been 'delivered'. Part of the reason for this is that we have so much difficulty in translating the concept of sustainability into operationally significant terms. It seems easier to define what is unsustainable than it is to agree on what is sustainable. It is easier to single out a poor partnership than to determine what makes a good partnership.

1) The IRRI-Bhutan rice farming systems project has contributed to the formation of a strong and dynamic research system in a country which, at the project's outset, had practically no formal agricultural research system. Franzel and Carpenter (1994) note that, 'Although IRRI has been a major player in this process, what is especially impressive about IRRI's role is *their low profile* in this project. There is little differentiation ... between project activities and [non-project] activities ... all project activities are associated with the main task at hand ... building the national rice research system.' This is one of the highest compliments that can be paid to an institution such as IRRI in managing a project.

2) Decentralised breeding for flood-prone rice is now taking place in a programme which places Thai scientists in full command of the Southeast Asia deepwater rice improvement programme. Participating Thai scientists continue to conduct research within their national programmes, but also travel on assignment from IRRI to strengthen international links and evaluate breeding trials in the field. To speed up progress IRRI collaborates with advanced research laboratories in the UK, Australia and the USA. Rice scientists from south and southeast Asia visit Thailand to observe deepwater rice growing in the field and to select material for their domestic programmes. Deepwater rice breeders collaborating with IRRI have released new varieties which exhibit tolerance to excess flooding and problem soils. The biophysical and socioeconomic environments are better understood and new cropping systems have increased production (IRRI, 1994).

3) The UPWARD network (Users' Perspective with Agricultural Research and Development), which currently consists of 47 researchers based in six Asian countries, is engaged in research activities which stimulate a dynamic process of research

focused on understanding and incorporating the user's perspective. Current research priorities include *production system* work (e.g. user management of soil fertility in root crop systems; community-based management of diseases; home garden technology development); *genetic resources* work (e.g. biodiversity conservation and family food security; and *marketing, processing and consumption* (e.g. small-scale root crop processing enterprises; root crops in household livestock feed systems). UPWARD promotes partnerships between 'local experts' and 'global experts' who jointly identify local needs and problems and seek solutions locally and 'globally' based on an understanding of local circumstances. (Campilan, Prain and Bagalanon, 1995)

4) The Rockefeller Foundation's International Programme on Rice Biotechnology is an 'integrated set of research training, technology transfer and capacity building activities structured to produce improved rice varieties that will benefit low income rice producers and consumers in developing countries' (Toenniessen, 1995). The programme, which in the period 1984-94 invested $63 million, involves 46 laboratories in the USA, Europe and Japan which work collaboratively with 76 research institutions in more than 15 developing countries. This programme has a number of important features:
   - It is an interactive, interdependent, interdisciplinary, international (North-South) research programme dedicated to rice. It has mobilised the research capacity of the North to a crop that is of great importance to the South.
   - Besides the biological science inter-disciplinarity, social scientists play a significant role in developing research priorities and in assessing the likely impact of applying rice biotechnology in Asia.
   - Annual programme meetings are characterised by an ethic of openness, sharing credit for work done, sharing research results, materials, methods etc. There is a clear recognition that no scientist, however brilliant, can succeed in isolation. Any scientists who is not inclined to share his/her work is denied further support.
   - The large group of scientists brought together by the programme has developed into a rice biotechnology research community with a mission beyond science as science. This community transcends age, gender, nationality, discipline, length of experience, language and even ideology.

   Although it is not yet clear what benefits the techniques and skills developed within the programme (e.g. tissue culture, rice genome maps and markers, genetic maps and markers of rice pathogens, rice genetic engineering) will bring to the rice farmer, there is much promise. The Rockefeller Foundation is known for providing long-term support to programmes which it believes can make a difference.
5) The 20-year old International Network for Genetic Evaluation of Rice (INGER) is my favourite example of how seemingly 'romantic' notions of interdependence, exchange, reciprocity and sharing, actually work in real life. In this network, no country is too poor to give and no one is too rich to receive. About 1,000 rice scientists from 95 national agricultural research systems in Asia, Africa, and Latin America and four international centres (IRRI, CIAT, IITA and WARDA) participate in the network. Plant breeders, agronomists, physiologists, plant pathologists, entomologists and soil scientists are involved. Selected breeding lines and varieties developed in these national and international centres are combined into a series of nurseries for evaluation in about 800 locations. There are two types of nursery: ecosystem-oriented and stress-oriented nurseries. INGER is not just a promise. It has made a difference. From 1975-95 over 40,000 test entries were evaluated and out of these, 413 entries originating from 49 countries have been released as 591 varieties in *64* countries in Asia, Africa and Latin America. Germplasm has moved not only from one continent to another but also between countries within a continent, even when the countries themselves shared no diplomatic relations. The political neutrality of INGER has helped these countries overcome their barriers to change. Besides broadening the genetic base of farmers' varieties - native germplasm from almost all of the 49 breeding countries was used - the economic value of each variety released is estimated to be US$2.5 million (Chaudhary and Ahn, 1995).

7 Dreaming dreams for sustainability and a common future

Research partnerships foster a global science which unites humankind across cultures, countries, ideologies, disciplines and personalities. Research partnerships produce more than research results; they produce human relationships. Setter (pers. comm., 1995), a plant physiologist, underscores the import-ance of people whom he thinks we often forget in our discussions of workplans and targets. He likewise points out the value-added within partnerships derived from: synergy; a healthy, diverse diet of perspectives in research; and the development of a strong bond between national and international scientists in the process of discovering solutions to problems and facing the tough tasks of mutual learning and developing mutual respect across all skill levels.

In a world which is so fraught with hostilities, we have deliberately to invest in the forces which bring us together as part of a common cause, rather than to dwell on those elements which pull us apart in destructive conflicts. It has been shown that research partnerships can cross 'enemy' lines. When the best of science and scientists are devoted to the problems of those who have less in life, science brings equity and humanity in development. In our search for sustainability, science also forges an alliance with indigenous knowledge. Even the 'weak' can contribute to the 'strong'. Finally, research partnerships enable us collectively to discover the empirical basis for the faith we have in our common future.

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