

# **CRISP POLICY BRIEF**

## **INNOVATING IN COALITION:**

### **Scientists, Industry and Farmers Marketing Sorghum in Andhra Pradesh**

**Emma Crewe**

#### **Summary**

The Andhra Pradesh sorghum coalition illustrates the value added by working in coalition. By combining different perspectives to give rise to new, synthesised ideas, the member organisations worked at a faster pace and achieved their objectives more successfully and sustainably than they could have done if working separately. The methodology of their research was designed collaboratively. As a result, scientists carried out repeat experiments on poultry, at the request of poultry farmers and feed manufacturers, which greatly increased their confidence in the evidence. It is likely that if the scientists had been working in isolation, the poultry farmers and feed manufacturers would have been dissatisfied and ignored the results. The way the organisations worked – for the first time for all members – offers lessons for both strategic alliances and all institutional partnerships.

#### **Moving beyond the traditional approach to agricultural research**

Until the late 1980s the conventional approach to using science and technology to help farmers was to follow a series of steps:

1. Research institutes or technologists explored a problem and devised a solution for increasing productivity.
2. Researchers handed it over to extension services or NGOs.
3. Extension agents transferred new technologies to farmers through training and technical assistance.<sup>1</sup>

The relationship between researcher and farmer was distant and usually confined to consultation or pilot testing. Two of the main shortcomings of this approach were that research could be remote from the needs of potential and especially marginalised or small-scale users, and the research system was slow to react to change.

Private sector companies – which survive only if they respond to demand and continually innovate – had become involved in research during the ‘green revolution’ but the benefits

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<sup>1</sup> Hall et al. 2004.

did not reach poorer farmers. Participatory methods for research and technology development adopted by a range of development agencies redressed this problem, and the rigidity of the research system. By the 1990s there is a growing realisation that a more fundamental reform of institutional relationships was needed.

Among those adopting a more sophisticated approach to research was the Crop Post-Harvest Programme (CPHP).<sup>2</sup> Since its inception in 1995 the CPHP South Asia programme has become increasingly aware of importance of the institutional context of research. This context consists of the grouping of partners associated with projects, the skills and norms which they bring with them, the roles they play and the agendas they pursue. CPHP experience indicated that innovation – not only new technologies but new ways of working as well – is only successful when appropriate groups of actors, including producers and users of new knowledge and practices, work effectively as a *system*. Furthermore it is the institutional context that to a large extent determines the winners and losers of the research and innovation process. As a result of this learning CPHP adopted what it called a ‘coalition approach’ based on three principles:

1. *Strength through diversity*: the combined efforts of many organizations including government, NGOs, scientific research establishments, universities, entrepreneurs in the market chain, producers, and consumers.
2. *An appreciation of partnership dynamics*: the way partnerships between organizations emerge and the nature of relationships involved play an important role in determining how research priorities are negotiated and selected, and what impact the research has on different stakeholder groups.
3. *The joint value of technological and institutional development*: technology alone may only provide short-term solutions. For the long term it is necessary to get the right groups of organizations to innovate jointly. It is such coalitions that will collectively form the future capacity of local systems to generate, promote and sustain innovations relevant to the livelihoods of poor people.<sup>3</sup>

## **A new approach - the example of sorghum in Andhra Pradesh**

Sorghum is an important cereal crop grown in the semi-arid regions of the world and is one of the mandated crops of International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). It is a crop of poorer households – both as staple food and as fodder<sup>4</sup> – but has witnessed a decline due to changed preferences in diet, reduced profitability, technical problems of grain mold, and inadequate linkages to alternate markets. Past projects of the CPHP in South Asia looked at constraints affecting the quality and safety

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<sup>2</sup> Funded by the Department for International Development, managed by Natural Resources International with regional co-ordinating agencies in Africa and Asia.

<sup>3</sup> <http://www.cphpsouthasia.com>.

<sup>4</sup> While post-rainy season sorghum is almost entirely for human consumption, rainy season sorghum is sold for non-food purposes such as poultry/livestock feed, starch manufacturing, and alcohol.

of traditional foods, post-harvest losses and technical, economic and social factors affecting utilisation of sorghum. The projects showed that while the crop has significant industrial potential as starch and alcohol, it has been constrained by weak links between private sector enterprise and public research.<sup>5</sup>

As a leading research centre on the crop, ICRISAT realised the importance of collaborating with the private sector for better uptake of its improved varieties by farmers. Their scientists had played a nurturing role to an emerging private sorghum seed industry and relied on them to ensure that new material reach farmers. In 2000 ICRISAT signed an agreement with eight seed companies to develop sorghum hybrid parents. The improved institutional arrangements that brought in private sector funds for research was matched by the private sector not claiming exclusive rights to ICRISAT’s research. But ICRISAT scientists were aware that sorghum had not reached its market potential and the institutional links between different stakeholders in the marketing chain were weak. Better use of sorghum would require the involvement of all the actors in the sorghum innovation system including farmers, poultry industry, poultry researchers as well as institutions such as markets and farmers’ organisations from the outset of the research.<sup>6</sup>

As a result of this thinking, in 2002 ICRISAT established a coalition to create new marketing opportunities for poorer farmers in Andhra Pradesh. The idea was to enable small farmers to establish new markets for sorghum by increasing its industrial use in poultry feed. The careful selection of member organisations relied on both long experience and personal contacts. The two key scientists - Dr B. Reddy and Mr P. Parthasarathy Rao - did not invite the individuals that they knew into the new coalition, but they used their contacts to find out easily and quickly who would have appropriate expertise. Reddy and Rao drew up a list of eleven organisations that might take part in the sorghum coalition and then narrowed it down to four, in addition to ICRISAT, one from each interest group (see box 2.).

**Box 2. The members of the sorghum coalition**

Organisations	Sector	Role
International Crops Research Institute for Semi Arid Tropics (ICRISAT)	International public research institute	<ul style="list-style-type: none"> <li>developing improved sorghum ‘cultivars’</li> <li>networking, project co-ordination, and monitoring</li> </ul>
Acharya N G Ranga Agricultural University (ANGRAU)	National public research institute	<ul style="list-style-type: none"> <li>poultry feed trials with sorghum</li> <li>providing technical assistance on poultry feeds</li> </ul>
Federation of Farmers Association (FFA)	National civil society organisation	<ul style="list-style-type: none"> <li>identifying sorghum growing areas and farmers</li> </ul>

<sup>5</sup> Marsland and Rao 1999, and Hall 2000.

<sup>6</sup> Hall et al. 2001.

		<ul style="list-style-type: none"> <li>• disseminating information to farmers</li> <li>• fostering effective linkages with end users</li> </ul>
Andhra Pradesh Poultry Federation	State civil society organisation	<ul style="list-style-type: none"> <li>• leading the interaction with poultry farmers</li> <li>• conducting on-farm poultry feed trials</li> </ul>
Janaki Feeds	Private sector organisation	<ul style="list-style-type: none"> <li>• preparing feed formulations</li> <li>• up-scaling the project in long-term</li> </ul>

ICRISAT understood that the coalition would only work if good relationships were developed between those involved and with the farmer groups who were undertaking production. Initially the poultry feed manufacturers – Janaki Feeds – were sceptical. They had had doubts about the nutritional value of replacing large quantities of maize with sorghum, but they attended the early meetings because they had a high opinion of the value of science and they trusted ICRISAT. The five organisations jointly planned the project and, in the words of one, developed a

*“feeling of win-win situation for all the partners – breeders seeking the dissemination of their products to farmers, poultry scientists in developing new poultry feed rations, farmers looking for high productivity and high market value, feed manufacturers seeking alternative supplies grain in bulk quantities”.*

The clarity and appropriateness of roles – agreed in coalition at the beginning of the project – were recognised as an important ingredient of success. The monitoring plan, for example, stipulated the precise responsibilities of each partner organisation in relation to objectives and outputs. The question of who should lead the coalition provoked considerable debate. Since the key beneficiaries were sorghum growing farmers, the FFA felt that they could lead the coalition. ICRISAT did not press its own case to be convenors but other members favoured them, saying that a research institute would be more appropriate because there were neutral – that is, not pushing for any particular interests, but rather the success of the whole project – transparent, and accountable. ICRISAT established a small secretariat and co-ordinated the coalition.

All the stakeholders were formally represented, with the exception of women. As the people who sow and harvest sorghum, feed it to livestock and prepare it for household consumption, women have a major stake in the production and use of sorghum. But their views were only expressed informally at farmers’ meetings.

For all members this was their first experience of such a broad-based coalition involving different types of organisation (public, NGO, private), and different skills and expertise (science, farming, commerce). All claimed that not only had they learned from working as a coalition but that collectively they had worked at a faster pace and achieved their objectives more quickly, than they could have done if working separately. The ‘coalition allowed [us] to capitalize on the synergies from sharing of skills from different disciplines with each member playing his/her role in the project,’ one member explained.

## Learning from the Sorghum Coalition

The work of the coalition began when four improved cultivars of sorghum were selected by ICRISAT<sup>7</sup> and grain produced by seventy-four farmers during the kharif (rainy season) harvest of 2002 was analysed for threshed grain mold severity and chemical traits. The poultry feed efficiency of this grain was assessed by ANGRAU. The tests on broilers<sup>8</sup> showed that sorghum can entirely replace maize in poultry rations with no ill-effects when consumed by the birds. Contrary to popular opinion, they demonstrated that when sorghum replaces maize the level of tannins and toxins remain low.

As this research progressed, the coalition achieved various institutional innovations in the way that they worked:

- despite their different remits, they worked out a shared goal and complementary interests and roles. The clear vision of labour kept the need for complex communication to a minimum;
- they held face-to-face meetings, kept up regular information communication and prized peaceful, consensus-building with partner organisations to convey information but also to nurture relationships outside their own organisation and establish trust;
- they recognised the need for different forms of validation. While scientists relied on their traditional methods, they respected farmers' assumptions that 'seeing is believing' and reports from other farmers are more reliable than those of outsiders;
- rather than classifying data and codifying their knowledge, they emphasised the need to facilitate learning within a community of practice.

The mode or channel of communication used by the sorghum coalition varied according to context. Although regular communication was achieved by email and telephone, especially for quick updates, straightforward decisions or arranging meetings, face-to-face discussion was critical at certain points, especially for consensual decision-making. Cognitive understanding of different points of view was vastly easier when people sat around a table rather than communicated through impersonal technology. This is much more effectively achieved through direct contact partly because non-verbal communication plays such an important part in conveying messages.

The culture of the coalition – created in part by the consensus-building approach of the ICRISAT convenors, but also nurtured by all coalition members – put a high value on

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<sup>7</sup> Three had already been developed by ICRISAT, and one by ANGRAU, to be higher yielding and to reduce the risk of grain mold.

<sup>8</sup> There are two types of poultry: birds produced for meat are 'broilers', while 'layers' are kept for egg production. The former eat more pellets, or processed feed, that is designed for faster growth, while 'layers' are given either but tend to eat mash, or ground feed, with the same ingredients but in different proportions.

courtesy. Polite forms of address, showing concern, patience and flexibility for each other, seeking peaceful resolutions to problems rather than throwing down aggressive challenges, and following the customary rituals during more formal meetings<sup>9</sup>, all contributed to this culture. The importance of the “personal touch” in communication was stressed by one participant.

In conjunction with shared interests, and a non-domineering approach by all members, the individuals who belong to the coalition all work and reside in the same city (with one exception: a scientist who is based two hours drive away). All agreed that geographical proximity makes a difference. It allowed frequent meetings (see box 3.), at short notice if necessary, with the minimum expenditure of time or other resources. Although underplayed by coalition members, the shared language and identity of all coalition members may have reduced the potential for misunderstanding. All were from the state of Andhra Pradesh, shared the same framework of references (cultural, ecological, social, economic and political), and were Telugu speakers (most could also speak Hindi and English).

### Box 3. KEYS MEETINGS OF COALITION

Date	Nature of the meeting
October 2002	Discussion with coalition partners to finalise project plan
October 2002	Discussion with coalition partners to finalise project plan
November 2002	Discussion with coalition partners to finalise project plan Preliminary poultry feed trials
February 2003	Detailed activities finalised with the partners
February 2003	Donor approval communicated & agreements sought with all partners
March 2003	Milestones discussed and finalised with partners
May 2003	Monitoring and Evaluation training workshop of donor
May 2003	Formation of coalition Steering Committee
June 2003	Review meeting and study villages selected by coalition
June-Nov 2003	Frequent visits to villages to give advice and training
July 2003	Two partners visit ANGRAU experimentation station
September 2003	Two partners conduct meeting at Gangapur village
October 2003	Review and planning workshop with all partners and seven farmers
October 2003	ICRISAT holds meetings with farmers and visits sorghum fields
November 2003	Visit from donor's representative to evaluate progress
December 2003	Review meeting of coalition partners
December 2003	Surplus grain was procured from farmers and supplied to feed manufacturers for large-scale poultry trials and chemical analysis
January 2004	Reports on trials received and results of poultry feed trial presented to partners and poultry producers
March 2004	CPHP holds 2 day 'writeshop' for analysing their institutional outputs

<sup>9</sup> These include a large number of introductory speakers, handing out of flowers to the speakers, plenty of concluding remarks and thanks, and refreshments.

March 2004	Visit from donor's representative to evaluate progress
March 2004	Hybrid sorghum seed procured from private sector seed companies for distribution to farmers
May 2004	Review meeting of coalition partners and reports for donor compiled
June 2004	ICRISAT visits ANGRAU experimentation station
June-Nov 2004	Frequent meetings in villages to give advice and training
August 2004	Review meeting of coalition partners and reports for donor compiled
November 2004	Presentation of poultry feed trial results to partners, poultry farmers & media
December 2004	Second 'writeshop' held at ICRISAT on institutional histories

Informal communication or contact has been found to be a critical factor in the success of many networks.<sup>10</sup> Workshops during which results of trials were disseminated may have been as important in providing opportunities for making and consolidating links as they were for conveying information. Two particularly close members of the coalition from one organisation also reported that their ability to exchange information, and discuss the best ways forward for the project, were greatly enhanced by very regular informal contact. Such informal discussion – without the strictures of an agenda or any emphasis on formal performance – allowed for creative and spontaneous thinking and consolidating relationships based on trust.

The institutional innovations allowed them to achieve various technical developments. The method of testing the sorghum was refined by the coalition to meet the interests of all. They developed two methodologies for testing the quality of feed to satisfy both the conditions of laboratory and farm and repeated the tests on different breeds and they devised a method for improving the skin colour of broilers that matched what was easily available to partners (see box 4.).

#### **Box 4. Technical innovations achieved in coalition**

Poultry feed manufacturers asked the scientists to test the specific cultivators that ICRISAT were hoping to promote. These tests were also repeated, on the recommendation of a Steering Committee that the coalition set up to oversee the poultry feed trails, with a slightly different method. In the first ANGRAU test after the replacement of sorghum at different levels – at 25%, 50%, 75% or 100% – the scientists adjusted the energy content so that it was equal in each case. This ensured that the experiment was not affected by other variables, that is, in this case energy content. But the poultry farmers and feed manufacturers, who do not all have computers and so are not able to adjust energy levels as precisely, wanted to know the effects without changing the energy content. So in the second test ANGRAU agreed to repeat the experiment with a simpler method keeping the energy constant. A feed manufacturer's mill was used to prepare the poultry feed rations for the second 'part-by-part replacement trial', again to replicate real conditions. Another innovation to the methodology emerged from the poultry farmers' concern that the tests should be valid for different breeds. At their suggestion the tests were repeated on another breed, and the results confirm that sorghum is healthy for all. Even though previous research informed ANGRAU that all breeds would react the same

<sup>10</sup> Church et al. 2002.

way, they understood that these additional tests were necessary for the success of the coalition, which depended upon confidence in the results on all sides. They respected the need for different forms of validation. Although the results were favourable to sorghum, the light colour of the skin of the broilers remained a concern as it might deter consumers from purchasing them. ANGRAU thought of adding *Stylosanthes* leaf meal to return at least 50% of the yellow to the skin colour. This idea came out of an earlier ICRISAT/ANGRAU project and was one of several possibilities (such as synthetic colouring or marigold) but was chosen because they knew that partners had supplies of the *Stylosanthes* leaf meal. It was the joint working that made all these technology innovations possible.

It seems highly probable that without the coalition either the cost of this research would have been far higher or the results would not have been used at all. If the scientists had been working in isolation, the poultry farmers and feed manufacturers would have been less satisfied with the methods. The testing would not have reflected their own practices and concerns and they would not have been in a position to make requests for adjustments after the results had been published. Useful innovation within the project appears to have been clearly propelled by linkages between people.

After only two years the coalition led to three clear benefits:

1. the dealers who buy grain from the farmers and sell to the feed manufacturers are being made redundant thereby increasing the profit to both farmers and feed manufacturers;
2. the direct link gives the farmers the incentive to operate collectively and this increases their bargaining power and reduces marketing and transportation costs;
3. the farmers and feed manufacturers work together to ensure the quality of the grain is high enough.

As far as the donor, CHPH, was concerned, the project was completed in March 2005. But the coalition remains active. Until 2005 ANGRAU re-ran poultry feed experiments at the request of poultry farmers, and ICRISAT and the FFA have been responding to the farmers' requests for improved seeds and expanding the project to new areas in Andhra Pradesh. ICRISAT has also formed partnerships with ten organisations in India (Maharashtra), Thailand and China and secured a grant of \$1.5 million from the United Nations Common Fund for Commodities to facilitate new coalitions on marketing sorghum and pearl millet in each place.

This new series of projects is designed to build on past successes and redress various weaknesses of the past. The Indian coalition members were aware of the need to influence government to make sure their policies support the marketing of sorghum, but while the project was small they knew it would be difficult to make an impression. With the scaling up of initiative, they plan to involve government – especially at the district

level in India – making the most of the private sector’s participation because government listen more readily to the well-organised industrial lobbies than they do to farmers. The project plan has also innovated at the village level. Not only will villages be organised into clusters, with the Panchayat or village associations receiving grants for storage facilities, but women’s representation will be actively encouraged. While the project has already proved that farmers, private sector companies, and scientists can increase the security of farmers’ livelihoods more effectively by doing research in coalition, this phase of expansion will scale-up impact, influence the government, ensure inclusivity and test out coalitions in two other Asian countries.

## Policy Implications

Managing innovation so that it contributes to poverty reduction in cost-effective ways is the challenge. This case study highlights the importance of nurturing relationships between individuals, responding to different interests and worldviews, balancing creativity with consolidation, and having a fixed time-bound plan for achieving innovations that meet the interests of client groups.

### Box 4. What is needed for successful coalition?

#### Planning:

- ⇒ careful selection of partners
- ⇒ clear shared objectives or strategy for dealing with conflict
- ⇒ openness and transparency about the budget
- ⇒ an understanding of the comparative advantage of each member (for example, the Indian government is more influenced by organised lobbies than informal groups)

#### Management:

- ⇒ adequate administrative capacity to co-ordinate the coalition
- ⇒ collective planning, innovation and learning and consensual decision-making
- ⇒ trust in partners’ abilities, including co-ordinators
- ⇒ appropriate division of tasks, stakeholders involved only when it meets their interests
- ⇒ flexibility, creativity and continual innovation in technical fields and institutional ways of working

#### Communication:

- ⇒ communication to build relationships and informal networking and contact, for example, regular face-to-face meetings
- ⇒ recognising different forms of validation (for example, repeating tests until all members were satisfied)
- ⇒ matching evidence and communication to the audience

#### Impact:

- ⇒ monitoring of processes and impact, not just economic assessment of outputs, on indirect as well as direct stakeholders
- ⇒ credible and ‘legitimate’ representatives of stakeholders
- ⇒ inclusivity required to ensure equitable impact
- ⇒ strategies for expanding to new areas

The sorghum coalition’s shared interest at the level of overall goal, and complementary interests expressed through outputs at the lower level, allowed them to work as a team. The over-arching interest, and complementary sub-interests, allowed the coalition to develop what they perceived as a ‘win-win’ situation. This entailed the creation of incentives that drew each member into the coalition but also kept them investing in it. These incentives were primarily economic but not entirely. All could potentially increase their financial profit, or their economic security, if the coalition succeeded. But a more elusive gain in social status possibly also encouraged participation. The concern that ICRISAT – an international organisation with a substantial reputation – should be the convenors, and the impression given by the way that members talked about their experience, reveals that their stake in the enterprise is more than purely financial. The considerable planning and management needed to sustain coalition highlights the main lesson for policy makers: that research in coalitions deserves support, including financial aid, to allow careful planning, sufficient co-ordination, appropriate communication, and the establishment of trust.

The private sector literature on strategic alliances and networks reveals that 60 % fail or under-perform in part because relationships between partners were not built carefully in advance.<sup>11</sup> The care with which the sorghum coalition was formed substantiates this point very clearly. Knowledge management studies have demonstrated that it is not necessarily useful for networks to attempt to formally codify knowledge – partly because it changes too quickly but also because much of it is tacit and taken for granted rather than explicit – but rather a shift is needed from ‘classifying data to facilitating learning between people’ within communities of practice.<sup>12</sup> In the case of the sorghum coalition, rather than separating knowledge generation and dissemination, these processes were jointly directed by the whole coalition from the outset of the project. This encouraged shared innovation, ownership over, and confidence in, the results.

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<sup>11</sup> Creech and Willard (2001:58).

<sup>12</sup> Creech and Willard (2001:40).

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