

## AICRP programme: In need of rebirth?

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*All India Co-ordinated Research Project (AICRP) in agriculture has yielded results beyond expectations and has been instrumental in bringing about green revolution in the country. But the dependence of the entire system on borrowed inputs of knowledge and material is threatening the future potential of AICRP. In the changing global scenario of property rights, the basic science, the technological strength and the material base required for the success of AICRP are dangerously dwindling. This is solely because AICRP system alienated itself from the corridors of science and did not facilitate generating its own knowledge base. Further, because of the unique mode of managing and evaluating the human resources, the scientific staff in AICRP is sub-optimally utilized. Any introspection needs to seriously consider these issues in giving it a rebirth.*

A fortuitous combination of several factors prevailing in the 1960s – a steely political will to become self-sufficient in food production, new technology of hybrid seed production, provisioning of farm inputs, a band of dedicated scientists led by a visionary top brass at the ICAR contributed to the phenomenal success of agricultural research. A quantum jump in wheat production with the use of improved varieties led to the formulation of research programmes in a mission-mode to achieve similar results in other crops as well; thus was born the concept of All India Coordinated Research Project (AICRP) in the early 1970s. In fact, the AICRP is one of the most successful research programmes undertaken in the country. The AICRP programme has been recognized the world over for its innovative approach in addressing the food security of the country.

The philosophy of AICRP involves continuous and structured interactions among the working scientists for identifying the emerging problems and national challenges, and addressing them by the combined wisdom of several teams of scientists. A selected set of experts and scientists drawn from the entire country develop protocols to redress these problems through inputs drawn from diverse sources, including unfettered exchange of research material and ideas among the research centres established for the purpose. This process is now recognized as an effective strategy for addressing national goals other than food production as well. Its remarkable success in some ways can be credited to the absence of interventions from the ‘babus’.

### The shifting confidence

In recent years however, the remarks on AICRP are gradually shifting from ear-

lier appreciation to negative compliments. Some of them touch that thin line between left-handed to negative compliments. For instance, a highly reputed scientist of the country and a former member of the Prime Minister’s Scientific Advisory Committee, commenting on the dumping of truckloads of vegetables such as tomato and onion by farmers during the glut implied that agricultural scientists are responsible for such painful scenes. His claim was that effective planning and a right approach by the agricultural scientists could have thwarted such disasters. An issue that is not appreciated by laypersons and even scientists is that dumping of truckloads of agro-products is a reflection of the great success and effectiveness of the approaches taken by the agricultural scientists in improving agricultural productivity. The mandate given to them through AICRP was loud and clear – develop technology for increasing productivity. The AICRPs dedicated to many crops delivered their goods with a bang: the whole world stood up and took note of a nation turn into a ‘food-bowl’ from being a ‘begging-bowl’ in a mere span of ten years. The dumping of agro-products on roads represents levels of production far above the demand. The market slumps and gluts are a consequence of the poor economic planning and market policies – a territory over which agricultural scientists have had little or no control. While it is true that these issues need to be addressed, it is important to note that this had never been the priority, at least till the late 1990s.

Over the years the scope of the AICRP was allowed to grow unhindered, often losing focus and bordering on the trivial. Fortunately, the scientific community within the AICRP and the ICAR has always been responsive to changes. As a

reflection of this, certain sections of scientists at the AICRP and the top management at ICAR have themselves been introspecting on the purpose of a continued role for the system in the changing scenario of world agriculture and trade<sup>1</sup>. These scientists have suggested a critical review of the entire programme and hinted the need for a total overhaul. The ICAR on its part has been quick to ring in changes and has scaled down AICRPs to smaller ‘networked’ projects – AICRPs are now called All India Network Projects (AINPs). While these are steps in the right direction, there cannot be anymore shying away from major issues plaguing agricultural research, some of which are outlined here:

### *The growing poverty of knowledge and information base*

When AICRP began there was a lot of ‘free raw material’ of knowledge, material inputs and important technical information in the published literature and the world was a more liberal place as far as access to information and knowledge is concerned. For instance, the tools and techniques of crop improvement and associated principles of genetics, the techniques of synthesizing chemical fertilizers and pesticides, and other information on crop production and protection were freely available. Genetic material could be freely exchanged among plant breeders. The application potential of these free inputs was strongly and effectively exploited by the AICRP system. But these resources are exhaustible and most of them are already exhausted. Emerging challenges in agriculture demand new tools, novel techniques and fresh insights. Unfortunately, the AICRP system ignored the need for growing this

'raw material', which could have sustained the programme in the long run. There was an innocently erroneous assumption that the information, tools, knowledge and other inputs required for the AICRP will always be available from 'outside' the system. Unfortunately, the world in general, and the world of science and information in particular, became more 'capitalistic'. More and more information came to be controlled by the rich and powerful, particularly from the North. This obviously led to a gradual strangling of the available information and raw material inputs. More controls were brought in the name of IPRs and trade rules. Consequently, a new set of problems emerged that were not anticipated when the AICRP system began.

*The declining information base:* The knowledge base of agricultural sciences such as genetics of crop plants, sciences of genetic improvement, plant protection and production, etc. was deeply rooted in the concepts and information publicly available, world over till The AICRP began. Unfortunately, in the last few decades, there was no serious attempt in the AICRP to generate any new information base. Today, there is a serious bankruptcy of fresh information base on which the AICRP can rest. Consequently, the working protocols of AICRP are still struggling to milk the cow of old concepts and its scientists are mostly, if not completely, ignorant of new developments in sciences related to these areas. For instance, less than one per cent of the AICRP breeders are exposed to new techniques of recombinant DNA and genetic transformation techniques; far less can take up any serious work in these areas. Similarly, less than one per cent of the entomologists are involved in developing entirely new approaches to pest control. The system never found a reason to have this knowledge base developed. It was always thought that these new tools will be available on a platter forever. This has resulted in the AICRPs being more of redundant, repetitive and consequently less productive. Clearly, there was an overemphasis on the application of existing science and little or none on generating new science in the programme.

Strategically, though state universities were given the responsibility of fulfilling this knowledge gap, a major portion of the ICAR research budget was available

to the AICRP systems and very little for the research component of the university system. Almost all of that contributions by the ICAR system for the state universities is being invested in the other competitive components of establishment and salaries with little, if any, left for research. The concept of competitive grants in the ICAR rarely, if ever, was encouraged, especially so for the areas of work that did not sound an immediate application. As a result, the basic sciences that could have fed the knowledge to the AICRP system, suffered heavily.

Further, much of science base required for technology development of the AICRP, is restricted to sophisticated laboratories in India and outside, but most of these are disconnected from the AICRP. All this has proved expensive in the long run, and if the AICRP system has to continue as a productive system over decades, it cannot run only on borrowed information and a knowledge base which is gradually on the decline and not freely available.

*Alienation of scientific institutes and universities:* Though not intended, the AICRP system grew up by alienating itself from the corridors of science. In fact, there was hardly any pro-active process to link the science in the universities and institutes with the applied work of the AICRP system. If anything, there was undeclared *condemnation* of the faculty who indulged in the basic sciences. In fact, the entire AICRP system began to view basic sciences as a drain on the taxpayers. The isolation was so severe that the staff of the AICRP with committed interest in basic sciences had to willingly locate themselves in other institutes. This clearly led to a brain drain from the AICRP system. The initial graceful view of the AICRP began to deteriorate and it gave way for an intellectually impoverished system. Unfortunately, not many of those nurturing the AICRP system, for reasons best known to them, wish to acknowledge this. As an eventual consequence of this attitude, the AICRP itself is turning out to be a drain on public resources.

*Dwindling material resources:* About two decades ago, there was a distinct feeling of sharing the material resources across continents. Male sterile lines, dwarf wheat genotypes, the paddy lines, the chemical formulations of pesticides, parasites and predators could be easily

exchanged across countries. But with the new system of IPR and trade rules, most of these material resources are in the possession of private hands and not easily available for several reasons. Those who possess them have made rules that have strangled those who immediately need them. For instance, twenty years ago dwarf genes of wheat were not for sale; it was not even visualized that one day a similar gene – *Bt* gene would have to be bought or produced by us. In fact, even if we were to produce a transgenic *Bt*-crop on our own, we need to get around patent hurdles! Further, consequent to the unpreparedness of the AICRP, there are hardly any laboratories capable of addressing these requirements. Those that exist are too few to meet the immediate and vast needs of our country.

Thus there appears to be a need for revamping the system to ensure the continuous generation of information base and material needs for meeting the needs of our country's agriculture. More importantly, we need to install mechanisms that facilitate an active interaction among the scientists of the ICAR system and those from the science institutes and universities. The system also needs to encourage the process of harvesting the science generated in all spheres of research for agriculture.

## Management system

*Management and accountability of human resources:* One of the strange features of the ICAR system is its peculiar management of human resources. The scientists are employed by and paid through the administrative machinery of State Agricultural Universities, but they work for and report to the ICAR. Obviously, the ICAR has little control over its working staff (ICAR shares 75% of the cost); it pays them without directly employing them and has no way of evaluating the performance of the staff! Whatever the reasons behind this, it has cost the system adversely and scientists have not been given the right parameters to express their accountability, although an attempt has been made to bring in accountability, through workshops and group meetings of each AICRP.

*Sub-optimal way of engaging the human resources:* Another significant problem with this system has been that the ICAR

is not directly involved in finding the right person for the defined tasks (except of course, the project coordinators). The staff are chosen on the basis of universities' internal codes, undeclared equations and local political milieu. Obviously, the ICAR cannot ensure that the right person with required interest and skills is chosen for executing a specified job. In the process, the AICRP has been the greatest sufferer. But when the universities themselves are given the responsibility of setting the task and executing it, the existing slackness in finding the right person may at least be partly reduced. The issues here may be complex and defy easy solutions, but no attempts seem to have been made to even recognize them.

*Managing projects and monetary resources:* For historical reasons, the ICAR has a weird system of setting objectives for its programmes. It has been following more or less a top-down approach in identifying the research themes and programmes for its scientists. The scientists are expected to faithfully adhere to the programme and the experimental protocol<sup>2</sup>. This pattern was in fact the most useful approach almost 30 years ago when the system was facing the single most important agenda of securing and stabilizing the agricultural productivity of the country. But continuing with the same approach may not be profitable anymore. A particular problem with this top-down approach was that funds were not allocated on a competitive basis for new and novel problems and approaches. The work plans are decided at an annual meeting – a ritual meal, where only the pecking-order decides as to who dispenses 'technical expertise'; there is little opportunity for the lower rungs to even voice their opinion, leave aside offering a critical analysis of what comes down from the top. The programme thus decided is thrust upon a set of young scientists whose enthusiasm to go beyond these mundane protocols is curtailed. Too frequently, it has been heard that the young scientists who indulge in working beyond these programmes are either ignored, hindered or even punished, rather than encouraged. Young scientists at the ICAR institutes apparently face more of these problems than those in the universities. Some of us are lucky to be located in the universities!

It is thus important that the ICAR evolves a system that encourages the right scientists to execute what they can do best. The funding process should be made more competitive and must aim at problems identified by the scientists working in their local contexts. Perhaps, the ICAR may benefit by following the procedure set forth by DST and DBT in funding and evaluating projects.

### **Strengthening agricultural research – Need for rejuvenating AICRP**

Social changes are slow to come by, but when they are triggered by introspection, critical analysis, debate and all the necessary intellectual churning, they are often stable and effective. Large organizations and institutions such as the ICAR are also like societies. Changes are obviously slow, but they do indeed come by and the time appears ripe for major changes in the approach of the ICAR to fostering high-quality research in agriculture. If and when the winds of change begin to blow, it would be important to ensure that the new system incorporates the following.

First, the new system should harvest the best brains in the country for the specified tasks. Right now, the ICAR is a rather closed compartment with little interaction with other science and technology institutions. The new system should encourage collaborative ventures between the ICAR institutions and others in a proactive manner. Second, the system should get complete control over the staff working for it in a scaled-down system – it should work out modalities in consultation with universities for better management of faculty. Third, the resources saved by scaling down of AICRPs should be used to sustain research output by switching over predominantly to competitive grants: the ICAR can consider allocating the existing research grants to individuals or groups working in the state agricultural universities and other institutes in the form of competitive grants to address local and national problems in agriculture<sup>2</sup>. The respective institutes would obviously maintain the research staff and the output from the project modes can be evaluated such that only those individuals, groups or institutes that deliver the goods can continue to derive assistance in the form of grants. This obviously

resolves the accounting system of the working scientists. It also ensures that the best scientists get the opportunity to work in the area of their interest. The bottom line would be to put in place an approach that would encourage generation of information, knowledge and scientific base required for a sustained growth of the system through original research.

This is not to say that the AICRP in the existing mode be completely abandoned. The existing network of AICRPs needs to be thoroughly evaluated. Only those which are essential and functionally effective should be continued in the existing mode<sup>2</sup>. The AICRPs in fact should continue to play a major role in fine-tuning technologies for different regions. However, it should be noted that there are several AICRPs which have outlived their utility, but continue to eat into dwindling research grants and such projects need to be abandoned forthwith – in the XI Plan at least! Such dead branches need to be pruned if the tree of agricultural research is to be rejuvenated and made to bear fruits for many more years to come. And, we believe that the ICAR and the agricultural scientists are certainly equipped with the necessary tools and knowledge to undertake this important horticultural operation! The only missing ingredient perhaps is the willingness to accept the writing on the wall; the sooner we do so, the better it will be for the country and the scientists as well.

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1. Anonymous, *Management of Change in All India Co-ordinated Crop Improvement Projects*, ICAR, New Delhi, 1992, p. 216.
  2. Appa Rao, V., *Management of Change in All India Co-ordinated Crop Improvement Projects*, ICAR, New Delhi, 1992, pp. 173–177.
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