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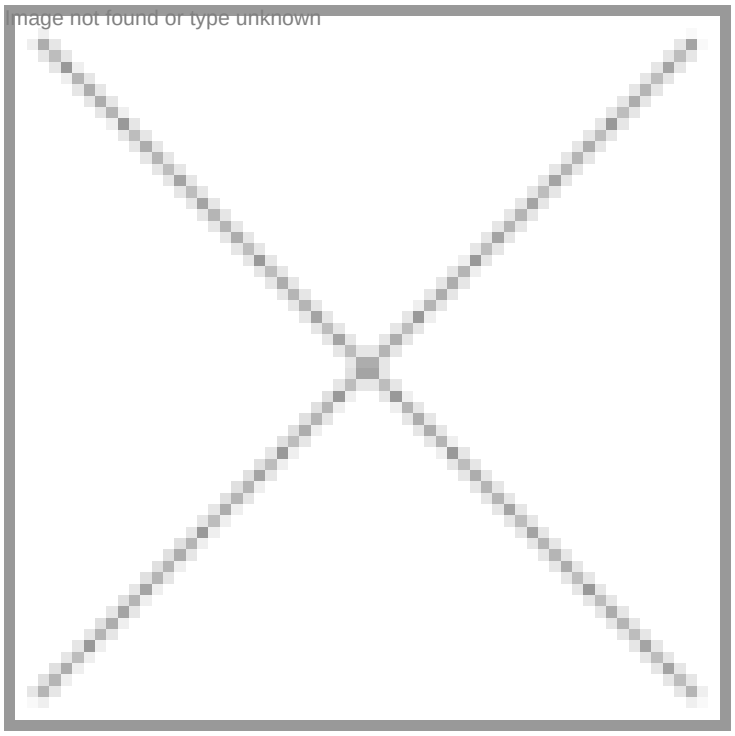
10 January 2007 | News



"Agronomic research along with extension machinery needs to be strengthened"

Dr SA Patil, who took over as the director of the Indian Agricultural Research Institute (IARI) in September 2006, is a seasoned agricultural scientist with first hand knowledge of farmer's needs. In an exclusive interview with BioSpectrum, he outlines his vision for bringing about agricultural progress in the country. Excerpts:

Given the current status of agricultural research in the country, what steps are needed to take it forward and usher in another green revolution?

The national agriculture research system, that is, both what the Indian Council of Agricultural Research (ICAR) and the State Agricultural Universities (SAUs) are doing, has to be relooked into. Now the approach is through coordinated research projects, networked and innovative projects. The national agricultural research system has done a commendable job in research but the extension machinery to take this knowledge to the doors of farmers is weak. For example, now the variety release and notification is at the national level whereas many varieties are developed and recognized at the state level for location-specific areas. The cumbersome notification procedure does not allow these varieties to be put in the seed multiplication chain and therefore there has to be special permission for location specific varieties, farmer recognized varieties, and varieties with novel properties.

Second, agronomic research and agricultural engineering research have not taken the roots for adoption. For example, soil and water conservation measures, rainwater harvesting, efficient water use systems, high income oriented cropping pattern

and integrated farming system has not garnered adequate attention and always much of the focus is only on newer varieties and hybrids. There should be concerted effort to spread these technologies. And these can make the second green revolution equally or more successful than the first one.

What is the relevance of modern techniques like molecular biology, recombinant technology in bringing about agricultural progress?

These are very much essential. Man took thousands of years to domesticate wild weedy plants into crops which are currently feeding the human race. Otherwise, man would have still been hunting for his food. With the population increasing enormously and the land being limited, the human civilization has to constantly use newer and newer technologies to increase the yield per unit area along with the nutritional quality of the food. In the 20th century, with the tools available from traditional breeding methods through mutation and hybridization, he has been able to sustain the population. Now with the developments in physics, chemistry and biology, biotechnology has taken birth at the end of the 20th century and the whole 21st century will again be a biological scientist's century.

There is nothing wrong in extending the principles of reproduction, which was otherwise limited to within species, to interspecific and intergeneric and even between animal and plant kingdom. The whole biological (both animal and plant) kingdom, both genera and species, can be looked as a single gene pool and the improvement what the breeders are doing within a species gene pool is now extended to the whole biological kingdom. For human welfare, gene from any organism is desirable and it can be put from one organism to another organism for the benefit of human kind. However, sufficient biosafety measures through systematic toxicology studies need to be undertaken before it is released for multiplication and general cultivation. In addition, the aspect of GM products should be seen in the perspective of ecology as well. I believe that any country adopting the biotechnological tools have sufficient regulatory measures put on the agenda before they are adopted for cultivation. This being the case, there is an urgent need to adopt molecular biology techniques for agricultural progress.

What are your comments regarding the sustained opposition against GM crops. How can this be countered?

I am from Karnataka, where there is considerably more anti-activism against GM crops. However, we could convince many of the so-called anti-activists regarding the gains from modern technology. We even held one-to-one discussions with a large number of farmers and anti-activists along with students and scientists of the university on one platform. Although the general populace was convinced about the benefits of GM crops, they had a notion that this (research on GM crops) is mostly done by multinationals and they are quite okay if the same is done by the national system.

Like your BioSpectrum magazine, I think there is scope to have a one-page column in the daily newspapers to give the benefits of biotechnology through success stories achieved by farmers with facts and figures. In this way the effectiveness of modern technologies will enter the minds of even the common man. In addition, people opposing the new technologies can be brought on a common platform to discuss the merits and demerits of GM crops.

What is your future vision for the India's agricultural community? And how can it be achieved?

India is full of small and marginal farmers with a lot of illiteracy and poverty and they are unable to utilize the modern technologies. Therefore, the government has to come out with massive infrastructure and technology backup through product multiplication at village level and distribute it amongst the farmers with their full participation. For example, the service sector for land preparation, irrigation, land protection, and post harvest technology can reduce the expenditure at individual farmer level to about one third. Similarly, establishment of seed banks, fodder banks and food grain banks can avoid cost on administration, transport, etc, and these products will be available at the village level at half or even less than half the price. This requires strengthening and training of wise farmers and using them as leaders for transfer of technology. I feel that the microfinance model, which the Nobel Laureate Mohammad Yunus has shown at Bangladesh can be inducted into the country. An organized marketing system with credit facility at the village level will solve many problems related to the unscrupulous money lenders.

Since taking over the reins of IARI, what are the important issues on your agenda?

I am very happy and feel lucky that from a state organization (as vice chancellor of Dharwad University) I got a chance to serve at a national institute like IARI, which is the most premier institute of the country, both in academics and research. As everybody knows that the seeds of the green revolution were sown first at IARI, I feel that the seeds for the second green revolution also will go from this premier institute. I would like to put the institute at the international level in the modern basic and strategic sciences like biotechnology, nanotechnology, post harvest technology, high tech horticulture, organic farming and provide leadership to the entire country. On the other hand, I would like to establish a direct channel for progressive

farmers in the country to visit to IARI and take the product and knowledge directly, and train SAU scientists in the modern technology so that they can quickly spread it to the different agro climatic regions of the country.

Trained manpower is the biggest hurdle facing any knowledge-based sector today. How can India develop a pool of trained human resources in this sector?

I feel that presently we are producing around 20,000 graduates and 7,500 post graduates which is not even equal to one state like Karnataka which produces 35,000 engineers annually. Although 70 percent of the population in India is dependent on agriculture, the meager member of graduates that we produce should be increased with skill, quality and entrepreneurship. There has to be cutting edge technology degree program with management backup so that agriculture also takes the status of an industry in the coming years. Every individual human wants to live more than a century with quality food today. And this can happen only if the poor farmers get the benefit of modern technology at an affordable rate. To bridge the gap between modern technology and 70 percent of the farming population, trained manpower is needed at the graduate and post graduate level and also there is need for intermediary and lower level skilled manpower in paramedical and para engineering segments today. Depending on the technology, process and systems, based on the potential of the agro climatic zones of India, the human resource development program should be planned accordingly, pooled and used. I am sure that a day will come when trained farmers will be required to take care of agriculture in other countries as well. I feel that the Indian population can take advantage of this factor, as already Africans and Canadians are demanding farmers from India.

Rolly Dureha