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GUEST EDITORIAL

Of launches and lunches

In the last few months, the Indian Space Research Organisation (ISRO) did something remarkable, i.e. launching by far the largest number of satellites (104) at one go, a South Asia Satellite for friends in the country's neighbourhood and finally, the heaviest GSLV Mk III satellite yet in the history of Indian space science. Besides re-asserting its place as a major space power, the launches did a sea of good to the country's image internationally.

Like everyone else, perhaps, I have been amazed at the regularity at which these successes are launched by ISRO. Surely conceiving, designing and building a rocket is rocket science and should have required a great deal of planning and vision. Rightly, Kiran Kumar (Chairman, ISRO) credited the success of the GSLV Mk III launch to the hard work begun about 25 years ago and the vision set by his predecessors such as Satish Dhawan, U. R. Rao, Kasturirangan and others.

Besides providing a groundswell of feel-good factor, the launches have provided massive support to things that we normally take for granted – the mobile telephony, our telecast beam, the radio, agricultural planning and disaster management among others. The successful launches have also meant a steady flow of grants from the Government and overseas user agencies.

The last few months also saw another remarkable feat by India, this time by the Indian Council of Agricultural Research (ICAR). A record 310 varieties of agricultural crops were released for cultivation, the highest so far in a year. In other words, save for Sundays, scientists at ICAR have been launching a new variety every working day of the year. This by any standards of productivity is simply stupendous. Unfortunately, except for a stray coverage in some newspapers, the news of the launch of these varieties has been totally ignored by the press, people and politicians. Development of crop varieties is no rocket science, as much as rocket science is no agricultural science. Each to its own accord, and in fair measure, has contributed to the growth and development of the country. Yet, as was recently witnessed, achievements in agricultural research have often been underplayed, unheralded.

Being an agricultural scientist, I have often wondered about this skewed attention. What ails agricultural sci-

ence and agricultural scientists that we end up being poor cousins of scientists from other areas? To analyse this, we need to first understand the psyche of a typical agricultural scientist. For one, they may not be as suave as others. Coming mostly from rural background, they tend to be modest and often, are less articulate about their work and themselves. Their work, especially of plant and animal breeders, is a thankless one. Tucked deep in research farms and stations that most often are situated in the country's hinterland, plant and animal breeders employ tools from simple and straightforward selection to cross-breeding to bring forth newer and novel genotypes that can out-yield the existing ones. There have been and are countless such breeders, who toil each day to develop a variety or breed better than the existing ones.

Let me relate a couple of examples that I am familiar with. One Lakshmanaiah (late), a ragi breeder, spent all his lifetime in a small research station at Mandya trying to breed better varieties of ragi, the staple food crop of Karnataka. Modest-looking, simply clad, he could easily go unrecognized in a crowd; in fact, he would frequently be confused for a farmer in the field than being recognized as a great breeder. After years of toil, he succeeded in genetically combining Indian and African genotypes to develop the famous IndAf (Indo-African) ragi variety. This variety and its variants soon became a much sought-after material by farmers in large parts of Karnataka. While Mandya might not compare with Sriharikota, it helped launch these varieties to change the productivity of ragi forever and push Karnataka towards a self-sustained state in food production. Another example is of Patel, a cotton breeder from Gujarat. An unassuming person, clad in white cotton shirt and trouser, often in chapals, he single-handedly developed a variety of cotton that ruled the roost in most of the cotton-growing belt of Deccan India, until being replaced by *Bt* cotton. India is dotted with hundreds of unassuming breeders like Lakshmanaiahs and Patels, who go about their work, unsung and unseen, even as I write this editorial.

Besides, not being suave, another typical feature of most agricultural scientists is to do with their science and its publication. Unlike basic sciences, which get published in journals of high impact (because of their fundamental discoveries), agricultural sciences are mostly

published in local, regional or national journals, and do not attract wider attention. They are provincial, and may often lack the intellectual intensity and the conceptual depth that a typical research paper in basic sciences might assert. No wonder then, the development of a novel breed of yak (yes, there is even a ICAR-National Research Centre on Yak in Arunachal Pradesh) hardly gets noticed by mainstream media as does the development of seedless oranges.

Added to these woes is the fact that few agricultural scientists file patents or stake appropriate intellectual property rights on their products. Thus the IndAf variety developed by Lakshmanaiah became a free commodity once it was passed onto the farmers or private seed producers. While the variety is still being cultivated, there is a disconnect with its synthesizer-father. Or, even when referred, it might be vaguely attributed to the university or research station that helped produce it. Thus there is an opaqueness or anonymity of the creator. Beyond all these factors, there is also an unidentifiable act of altruism. How else can one explain the phenomenon of the development of an improved basmati rice by breeders led by V. P. Singh and A. K. Singh (IARI, New Delhi) that today earns billion of dollars for the country or the development of an improved wheat variety by K. V. Prabhu (IARI) that is grown in more than six million hectares with thousands of farmers as its beneficiaries?

A close friend of mine, Swamy, was for some time a sugarcane breeder at the Regional Research Station in Mandya. He could be good example of an agricultural scientist who is rustic, simple and kind-hearted, no pretense or claim to scholarship as exhibited or advertised by white-collared scientists sitting and working in their air-conditioned laboratories, no clipped English. But what he did, all alone, was to apply his mind to breeding sugarcane, in mosquito-ridden fields, for higher yield and sucrose content. After a decade or so, he met with success and developed a sugarcane variety which is now grown in many parts of southern India. The beneficiaries of Swamy's efforts are the several thousands of sugarcane farmers in the Cauvery command area in Karnataka. Next Swamy moved to Bengaluru, developed and released another variety of soybean and thereafter retired to further anonymity. This tale is replicable for most breeders and agricultural scientists in the country.

Improvement and development of new varieties and breeds of crops and animals over the last few decades has been one of the most defining scientific successes of independent India. While it might have not contributed to

a paradigm shift in the knowledge of the science of agriculture, be in genetics and plant breeding, or agronomy or entomology, it has through steadfast application of these sciences, led to a profound improvement in crop productivity. Thanks to the breeders, incorporation of dwarfing genes from Mexican wheat genotype could result in a four- to five-fold increase in wheat yields, thus ushering in the green revolution in the country.

A few years ago, I was in Uppsala, Sweden, passing by the city square with my Swedish colleague. Standing by the kerbside, were a group of nurses with placards that read: 'Please honk your horn, if you support our strike.' And honk did a few passing cars, obviously sympathizing with the cause of the nurses. I wonder if a similar response would be offered to agricultural scientists, if they ever went on strike. Unlikely, given the fact that so few, even in the mainstream, are aware of the toil that has gone behind producing the sugar in one's tea, wheat and oats in breakfast, rice and dhal in lunch, not to speak of the eggs, milk, fish and mutton in one's meal.

While lamenting the fact that in today's world, launches (blasts) are heard better than lunches (bread), I think the mistake is entirely ours. Agricultural sciences and the scientists badly need a spokesperson. A spokesperson who is articulate, sensitive as he is to advancement of agricultural sciences as he is to the challenges that are faced by a hungry country. A spokesperson who can infuse pride into people that selflessly toil to secure the country's food needs. Starting from the late 1960s and through the most tiring times that independent India had to face to enable every Indian to have square meal, up until the last decade, agricultural sciences and for that matter Indian agriculture, had one of the best spokesperson in M. S. Swaminathan. He held fort, negotiated nationally and internationally, and drew attention of the press, people and politicians. It is time that we had someone who can fit into Swaminathan's shoes. This will ensure that in the years to come, India will be secure in its lunch and enable the country to launch into frontiers of science and technology like never before.

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