In Remembrance

Gurcharan Singh Kalkat (1926-2018)

Photo: Courtesy of *The Tribune*, Chandigarh

The Punjab Agricultural University salutes the august, noble and iconic visionary, Dr G.S. Kalkat, who not only made Punjab a food surplus state, but also transformed the agricultural face of the country. He will always be remembered as an architect of Green Revolution as well as Soybean Revolution in India.

A visionary scientist par excellence, Dr Gurcharan Singh Kalkat dedicated a substantial part of his time, energy and life to the farming community. The right mix of brain, heart, talent and faith, Dr Kalkat worked with the farmers at the grass-root level to solve their problems and understand their needs.

Born at village Sahora in Hoshiarpur on June 17, 1926, Dr Kalkat obtained his B.Sc. (Agriculture) from Punjab Agriculture College, Lyallpur (now in Pakistan) and his Masters in Agriculture from the Panjab University, Solan. He completed his Ph.D. in Agricultural Zoology Entomology from the Ohio State University, wherein he was honoured with the "Distinguished International Student Award."

An academically brilliant young man, Dr Kalkat was also an exceptionally humane and generous man. Truly, life's experiences not only shape the course of our life; but also mould our persona, the way we think and feel. He was a sensitive young man of 21, when partition turmoil wreaked havoc in the country. Amidst the horror of bloodbath, he vividly remembered how his mother carried only the picture of her son before boarding the train to Jalandhar. The pain of losing his loved ones, the unthinkable trauma of migration, dislocation and alienation, the uphill struggle and toil to survive - all made him an exemplary human - a combination of tough will and a soft heart.

An All-Round Best Student in his graduation, his first job was as Agricultural Assistant at Land Reclamation Centre, Ladowal, Ludhiana. It was here that he learnt his first professional lesson, "Look for solutions, not excuses." Thereafter, there was no looking back. One after the other, lucrative posts were offered to him. Dr Kalkat was selected as Entomologist (Senior Class-II Officer) by the GOI, but he preferred to stay connected to his roots in Punjab and joined as Deputy Director, Agriculture, Punjab, in 1960. In 1965, he was offered the post of Director, Extension Education, Hisar Campus of PAU; and also a post of FAO of UN, Rome. The Punjab state government was reluctant to relieve the prodigious leader, and offered eleven advance increments to Dr Kalkat. Such an instance has been the rarest of rare ever, which is a testimony to the fact that Dr Kalkat had no parallel.

Dr Kalkat believed in a total decentralization of power, so that more important challenges and issues could be focused upon. He was not a man who restricted himself to his office desk; he would be on the move, travelling and mingling with the field staff, working out plans and devising means for efficient transfer of technology to the target beneficiary - the farmer. Scientists from Punjab Agricultural University regularly conducted experiments at the 600 acre farm at Hansi, which came under the purview of Dr Kalkat. He used this golden chance to invite farmers onto the fields to witness live demonstrations. Their queries were routed to the scientists. Such live interactions between the farmers and the scientists were beneficial and boosted the produce. Dr Kalkat wasn't one to shy away from tough decisions. Numerous occasions saw him acting beyond the call of duty, for he felt a bonding with the farming community. Their welfare was always his prime concern and he understood the alarming need to bring progressive agriculture to their doorstep.

Dr Kalkat was appointed as Joint Director Agriculture, Punjab in 1967. His vast experience and innate understanding of the state and agricultural affairs and above all, his empathy for the farming fraternity helped him to evolve as an able agricultural administrator. His sharp, perceptive skills directed towards agriculture, propelled him to devise an exemplary system of coordination between Punjab Agricultural University and the Department of Agriculture, both at the Headquarters and at the field level, which ensured an efficient transfer of scientific and technical information to the agricultural field staff and the farmers. In addition, he established coordination with the Punjab State Cooperative Marketing Federation, and field level cooperatives, to enable timely lifting of agricultural produce and providing necessary credit to the farmers. He rose to become the Director of Agriculture, Punjab, in 1971. His chief emphasis remained an increase in productivity and reduction in the cost of production. With a view to increasing the coverage under high yielding varieties of wheat and rice, Dr Kalkat made concerted efforts to increase irrigation mainly through ground water developments. The crop yields improved and the cropping intensity also increased. The yield of wheat/rice which was 12.4 qtl/ha and 10.4 qtl/ha, respectively, during 1961, increased to 22 qtl/ha and 20 qtl/ha, respectively, during 1973. Undoubtedly, farmers needed credit and inputs in time to install tubewells and apply fertilizer; which was arranged in a timely fashion through coordinated efforts with Cooperatives, Irrigation Department and the State Electricity Board. The surplus made available to the central pool, which was 17.1 lakh tonnes during the 1968 marketing season, increased to 36 lakh tonnes during the 1973 marketing season.

Under Dr Kalkat's farsighted vision and tutelage, Punjab started churning out enormous amounts of wheat and paddy. The Government of India, too, was pleased with the results and decided to divert more funds towards Punjab rather than scattering them in areas which were not giving good results. By 1972, the import of food grains was reduced. Though a very severe drought occurred in 1973 in the country, it did not affect Punjab much. Such was the vision of this erudite leader that Punjab rose to an esteemed position in the comparative ranking of the Indian states as far as food productivity was concerned.

Another higher honour came his way in 1973 when he was appointed the Agriculture Commissioner, Ministry of Agriculture, Government of India, an office he held from 1973 till 1978. Here, his chief responsibility at the national level remained to coordinate various agricultural

development programmes of the states, as well as to coordinate with the Indian Council of Agriculture Research and National Seeds Corporation for requisite production of seeds of varieties/hybrids needed for different regions of the country.

It was during this time that he suggested the 'Community Nursery Scheme' where nursery could not be planted on time due to lack of irrigation sources. Late sowing of paddy, apart from facing aggressive monsoon, also led to the late maturity of the crop, which in turn, affected the wheat sowing. This initiative took off and resulted in huge yield of paddy in states like UP and Bihar. It led to the consequent increase in wheat productivity as well. Such was the judicious thinking of Dr Kalkat that brought about a substantial increase in crop produce.

Certainly, Dr Kalkat's name will be etched in the annals of history for leading Punjab as a pioneer state in the Green Revolution. However, there remains a golden chapter of his yet another singular contribution that has largely gone uncelebrated, and which I seek to unfold. Apart from wheat and paddy, there have been other crops which have paved the way for agricultural revolution in our country. The impact of such crops on the nation's agricultural profile is equally significant. One such example is the soybean revolution; but unlike the Green Revolution and its flag bearers, neither did the Soybean Revolution get a due appreciation, nor did the scientists who steered it, got any recognition.

In the latter years of the 1960s, the Indian government decided to promote the soybean cultivation. American varieties of the same were introduced and tested. Dr. G.S. Kalkat, who was at the helm of affairs as Agriculture Production Commissioner, Government of India, from 1973-1978, played a significant role in triggering this revolution.

Dr Kalkat noted in one of his visits to Madhya Pradesh that about 6 million ha of agricultural area (almost 1½ times of Punjab's cultivated area) remained fallow during kharif (the main rainy season). The rain water was collected in the fields and, towards the end of the rainy season, the farmers opened the bunds. The standing water would flow out and, thereafter, they would sow wheat, gram and sarson, etc. The farmers, however, did grow some area during kharif under a soybean variety locally called "Kali Tuar". Dr Kalkat advised the State and helped introduce higher yielding varieties available at that time in the Terai area of UP during the kharif season. The fields were ploughed and bunds were made soon after the harvest of wheat, when there was some residual

moisture in the soil. The soybean seeds were planted just before the onset of rains.

Dr Kalkat introduced the seeds of Punjab Soybean-1 (which was being recommended in Punjab) to be tested in Madhya Pradesh and thereafter, recommended the cultivation of this variety there. In the subsequent years, it became a leading soybean variety in Central India, the main soybean growing region. This variety remained in seed production chain till 1999. Dr Kalkat drafted a Developmental Policy to ensure the provision of good quality soybean seed, *rhizobium* culture and insecticides to the farmers, which was hailed by the Government of India.

In the initial years, the available soybean seed was not enough to meet the capacity of a processing plant and the farmers wouldn't have increased the area under soybean if they had no marketing outlet. Therefore, Dr Kalkat suggested setting up of a processing plant. Today, Madhya Pradesh has about 6½ million hectare (which was earlier kept fallow) under soybean and a large number of processing plants. The state of Punjab which had maximum impact of Green Revolution, recorded 6.0 times increase in area and 19.0 times increase in production of paddy from 1965-1985; and 2.0 and 5.7 times increase, respectively, in case of wheat during the same period (1965-1985). In contrast, Madhya Pradesh, the epicentre of soybean revolution, experienced about 60 fold increase in soybean area from 1970-1980 and emerged as the soy state of India. This has certainly been one of the most exceptional landmarks in Indian Agricultural history. The due credit for such a milestone decision was, however, never accorded to the gentle and committed scientist, for whom the prosperity of the farmers was of prime significance.

It is widely known that soybean revolution in India is a result of well-coordinated and collaborated efforts of committed individuals, national and international organizations and policy decisions. Dr Kalkat heralded the soybean revolution through his consistent and untiring efforts. It was also a phenomenal step towards paving the way for diversification in agriculture. It is unfortunate that this story remains untold in the agricultural accomplishments of the country. I opine that the trend for soybean cultivation in India is of vital importance. The soybean revolution may have gone unnoticed, but, whenever the story of Indian agriculture and its diversification gets told, the name of Dr Kalkat will inevitably surface in similar reverence as it does in Green Revolution.

Dr Kalkat also served as a Senior Agriculturist with the World Bank at Washington DC, USA, from 1978 to 1989. As a member of the Project

Preparation Team, a number of Agriculture Development Projects were strategized which included training of extension staff and farmers, giving demonstrations, construction of roads in rural areas, ponds for irrigation etc. He worked for the World Bank assisted projects in India, Sri Lanka, Nepal, Bangladesh and Indonesia, where his chief task was to review the implementation of these projects and draft the project completion reports. He also worked for Bank Funded Projects in Ghana. He travelled extensively and offered his distinguished services in various capacities in the agriculture sector, making stellar contributions to the same.

Being just a scientist was never enough for Dr Kalkat. He was philosophically grounded in the belief that good communication is essential to building trust, gaining commitment, inspiring and uniting people to work together to accomplish a common goal. He championed the cause of feeble agriculture by creating an open communication culture, by asking questions and actively listening and by engaging the people in conversations that helped prepare projects in consonance with their aspirations. As a result, he got an excellent response from both the Government functionaries and farmers.

During his tenure as Vice Chancellor, PAU from 1998 to 2001, he earmarked the prime areas in agricultural research and reinforced the line of communication between the scientists and farmers. Under his able administration, the University was granted sixty five projects, fully funded by the ICAR, for extensive research into the various realms of agriculture. Dr Kalkat realized that though the productivity of wheat and paddy had substantially hiked, yet, the farmers felt the economic pinch and for ameliorating the poor economic condition of small and marginal farmers in Punjab, simultaneous action was required in an integrated manner. It was imperative to shift some area from rice to high value crops and discourage early transplanting of rice; to upgrade genetic potential of cattle to promote dairy farming; to create facilities for enhancing shelf life and marketability of vegetables and fruits; to provide intensive continuous training and facilities for bee-keeping, mushroom production, fishery, etc.; and to shift rural population from agriculture to industry by imparting vocational training, quality education and promoting rural industrialization.

The ambit of his work profile was enormous. Dr Kalkat realized that for progressive agriculture in Punjab, it was imperative to link science and research at the global level. Therefore, he encouraged PAU scientists to pursue technical training from abroad. He also identified priority areas to

seek plausible solutions to farmers' problems in consultation with economic experts and farm scientists. It is imperative to note that owing to his calm and humble temperament, he created a peaceful and pleasant ambience at the University.

Fully content with the efforts that he had made to streamline research and the general working at PAU, Dr Kalkat decided to put in his papers one year before his term was to expire. He did not continue for the full term as Vice Chancellor of PAU. Certainly, "Uneasy lies the head that wears the crown"; and Dr Kalkat felt the urge to don various other roles wherein his services could prove beneficial to the agriculture of his state in particular.

Soon after, the Punjab Government set up the Punjab State Farmers' Commission in 2005 and Dr Kalkat was appointed as the first Chairman of the Commission from 2005, an office he ably chaired till January 2017, a few days before his sad passing away. He felt the need to constitute a Governing Body of the Commission, which comprised the Financial Commissioner (Development), Vice Chancellor (PAU), and technical consultants in various agriculture and allied disciplines. He also constituted a Farmers' Advisory Committee which was instrumental in formulating policies and programmes on agrarian concerns. He advised the State Government on new technologies, declining water table, commercial dairy farming, various policy issues concerning farmers and farming, particularly the economy of farmers. The Commission, under his aegis, conducted massive surveys on rural suicides in Punjab and suggested measures to mitigate the distress of the affected families; the flow of credit and indebtedness of farmers; and the overall agricultural and rural development in Punjab.

Many prestigious institutions bestowed on Dr Kalkat their highest awards and honours in recognition of his extensive contributions. The Government of India felicitated this doyen of agricultural science with Padma Shri in 1981 and Padma Bhushan Award in March 2007. He was awarded degree of Doctor of Science (*Honoris Causa*) by Punjab Agricultural University, Ludhiana in 2013 and Punjabi University, Patiala in 2014. A laboratory in the Department of Entomology, PAU, has been dedicated to the erudite scientist. The Punjab Agricultural University has also attempted a humble compilation of his outstanding contributions in a Select Biography- *Dr Gurcharan Singh Kalkat: A Great Hero of Indian Agriculture.*

His departure from this world at the ripe old age of 92 is indeed an irreparable loss. Punjab has lost its dedicated son, and the nation at large shall forever reel under the void left by his passing away. He shall be remembered by posterity for his pioneering role in ushering in the Green Revolution and the Soybean Revolution, besides introducing uncountable key reforms to enhance qualitative and quantitative productivity in the agriculture sector. Long live the cherished memories of Dr G.S. Kalkat, the outstanding Agricultural Scientist.

Baldev Singh Dhillon, Vice Chancellor, PAU
March 2018