**[Using nuclear technology in health and agriculture](https://nation.com.pk/03-Dec-2020/using-nuclear-technology-in-health-and-agriculture" \t "_new)**

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In yesterday’s article, we discussed nuclear energy and the ways nuclear power plants can solve the problem of electricity shortage in Pakistan. The general public in Pakistan has some sort of awareness about producing electricity by using nuclear power plants. Today, two more sectors are highlighted where nuclear technology can play an effective role in the betterment of the masses. One is the use of nuclear energy in medical science and the other is nuclear agriculture. Both of these benefits are largely ignored in third world countries like Pakistan.

At present, nuclear technology is playing an effective role in medical sciences. Radiation is used to identify, treat, and prevent disease nowadays and it is being used on a massive scale. Today, around one-third of all techniques that are used in medical science involve radioactivity. The methods of treatment using nuclear technology are among the best and they even reduce human suffering, because they have a minimised number of surgeries that were done for human treatment. Many techniques we have faced in our lifetime like X-rays, MRI scanners, CAT scans, and ultrasound use nuclear technologies.

Pakistan is among the most populous countries in the world. Currently, it is rated as the sixth largest population with a weak medical infrastructure. Pakistan Atomic Energy Commission, since its establishment tried too hard to use nuclear technologies to provide better medical facilities for the masses. PAEC established its first hospital in 1960 and the very first that could employ radiation therapy was established in 1965. The number of these medical institutes has now reached 18. These are working to curb many diseases but their main focus is on the cancer issue. Unfortunately, Pakistan is among those countries that have the most number of cancer patients. In Pakistan, almost 150000 cancer patients are diagnosed every year. The number of cancer patients is increasing at an alarming rate of 8-10 percent in Pakistan. PAEC hospitals deal with more than 80 percent of cancer patients. Likewise, PAEC also plays an active role in spreading awareness to guide the general public about this deadly disease.

Another good example of the use of nuclear technology is in agriculture. Nuclear agriculture as it is called uses radiation and isotopes to improve different sections of the agriculture sector. 20-25 percent of crops are lost even after harvesting because of the decay and it was not distributed to the masses. This problem can be solved effectively by using nuclear techniques. Today the world is facing an immense problem of food shortage and food security. Around 690 million people in the world are not getting enough food. This problem can only be solved by improving the agriculture sector. At present, nuclear technology is playing a significant role in “combating pests and diseases, increasing crop production, protecting land and resources, ensuring food safety, increasing livestock production” in many countries in the world.

The Food and Agriculture Organisation of the United Nations and the International Atomic Energy Agency are also working jointly to use nuclear technology to solve the problem of food security. While western states are already benefiting from the use of radiation and isotopes there is a need to transform third world countries from traditional methods of agriculture towards modern techniques.

Pakistan is commonly labelled an agrarian state. Agriculture in Pakistan contributed to 18 percent of its share in total GDP while around forty-two percent of total labour in Pakistan is working in the agriculture sector. These agriproducts are playing an important role in food supply with in-state and increase in exports. But the agri-sector in Pakistan is not much aware of the use of nuclear technology. PAEC is the only institution in Pakistan that is working passionately to develop technologies and research institutes that could help Pakistan in improving its agri-production by using nuclear methods. In this regard, PAEC established its first institute in 1963 in Tandojam. It was named the nuclear institute of agriculture. At present four such institutes are working in Pakistan under the supervision of PAEC. Despite constraints, these institutes are working effectively in improving agriculture products to solve the problem of food security in Pakistan. Production of new crops by using nuclear technology is a long and exhausting process. It takes almost 12-15 in reaching the production level. Still, institutes under PAEC have already developed 111 new types of crops that are more productive in Pakistan’s climate. These crops are also more resilient against insects and diseases. India and China, both neighbouring states of Pakistan are also using widely nuclear techniques in the agriculture sector.

Despite these efforts from PAEC Pakistan could not do enough in the field of nuclear agriculture. It is the need of time to develop more institutions of research and production in this field. Moreover, nuclear techniques are also used in the improvement of the health and productivity of livestock. With the growing population and continuous rise in the food shortage nuclear agriculture can play a vital role in Pakistan. This will not only help in fulfilling the basic human need of the people of Pakistan but it can also play a significant role in the overall economic boost of Pakistan.