



FEEDBACK

from the field

This bulletin provides information about application of the World Vegetable Center's technologies in the field and other topics of interest regarding vegetable production and consumption constraints around the world. It is issued quarterly. We welcome everyone to share any interesting news about vegetables – please send a short article with photos to tech_dissemination@worldveg.org. Thank you!

Protected cultivation – the future of Pothwar region, Punjab, Pakistan



Mr. Saqib Bhatti harvests fresh tomatoes in his improved tunnel structure (**top**); wheat field for subsistence farming (**below**) in Kallar Syedan, Pothwar, Punjab, Pakistan

A Pakistani subsistence wheat farmer has totally changed his family's life and is leading a community transformation after World Vegetable Center (WorldVeg) scientists introduced him to the opportunities provided by protected cultivation of vegetables.

Mr. Saqib Rafique Bhatti and his family were poor subsistence wheat farmers from Kallar Syedan-Rawalpindi, Pothwar region in the far north of Punjab province of Pakistan. In this part of the country, if rain does not fall on time, the crops fail and cropping options are very limited.

To address this situation, the WorldVeg team in Pakistan conducted surveys across the Rawalpindi district and found that the highly fertile land (sandy loam and moderately well-drained soil) and limited water resources could be much better utilized for vegetable production than for the struggling cereals. A cluster of 15 interested farmers was formed, including Mr. Bhatti.





Healthy seedlings produced with compost in plastic plug trays (left); winter leafy vegetables – spinach & coriander – raised in summer under green netting (right)

In 2013, WorldVeg introduced the concept of tunnel farming off-season vegetables to Mr. Bhatti through the USAID-funded “Agricultural Innovation Program for Pakistan” project. He was encouraged and decided to invest in two small walk-in tunnels for growing indeterminate tomatoes. As the pioneer for trying the protected cultivation system in the Kallar Syedan-Rawalpindi district, he earned good profits and decided to expand into high tunnels in 2014.

Additional income of US\$961 was generated during 2015-2016 from selling the side shoots of improved varieties of indeterminate tomato as planting materials.

With continuous and additional training provided by WorldVeg, Mr. Bhatti was able to set up the netting structures with a drip irrigation system for protected cultivation over longer periods. He earned about US\$1,250 from only 250 m² under tunnels during 2014-2015 and he realized that there was more opportunity under the protected structure than just fresh produce.

Mr. Bhatti has become a passionate advocate for transforming his region through what he has learned from WorldVeg. He recently appeared on the air in a Live Talk Show along with representatives of USAID and WorldVeg to encourage his fellow farmers in Pothwar to shift from subsistence wheat production to growing off-season vegetables under protected cultivation. His latest foray is into growing winter crops such as coriander and spinach under green shade nets in summer when the prices for the produce are very high. New ideas have changed his life and he has become an inspiration to many farmers that farming in Pothwar has a brighter future than just subsistence.

After receiving training in healthy seedling production, Mr. Bhatti started to promote the concept of healthy and quality seedlings to other farmers. He utilized the readily available plastic plug trays and high quality compost to raise vegetable seedlings. He turned this into a business as well and earned US\$1,057 from selling the healthy vegetable seedlings.

Source and photos:

Saqib Rafique Bhatti, Huma Abbas and Mansab Ali, World Vegetable Center, Pakistan Office, Islamabad; Warwick Easdown, World Vegetable Center, South Asia/Central Asia, Hyderabad, India



Mr. Bhatti shares his experiences on protected cultivation on a live radio talk show (left); farmers explain the process of managing the tomato crop under plastic tunnels to John Groake, the USAID-Pakistan Mission Director (right)

Carrot cleaning machine revolutionizes carrot production and marketing in north India



Carrot cleaning machines developed by a 6th grade-educated mechanic in Bahawalpur village of Hisar district (top & below)

Haryana is a rice-wheat belt of north India, which contributes about 18% of food grain production for the country. Recently, farmers of Haryana have started to diversify cropping practices from rice-wheat to vegetable and other non-cereal crop production. Bahawalpur is a village located 15 km northeast of Hisar town in Haryana state, and carrot has become a very highly remunerative crop of the village in the last 10 years. However, fresh harvested carrot without cleaning usually fetches lower prices (INR3/kg) in the market. Cleaning carrots immediately after uprooting is a very tough task for farmers, especially in cold winter weather. Around 25-30 tonnes of carrots are produced per ha in this area. Cleaning is usually done through hand washing and largely by women or children laborers in many parts of India. Thus, traders and retailers usually do the cleaning before selling and they capture large margin profit.

Fortunately the cleaning process is now revolutionized due to the invention of a carrot cleaning machine. Mr. Mahaveer Jagada is a 6th grade-educated mechanic in Bahawalpur village and he developed a simple carrot cleaning machine in 2000 that is powered by a tractor engine. He continues to refine and enhance its efficiency and effectiveness. The capacity of the recent model he developed with a self-mounted motor engine is 3 tonnes per hour. The cost is about INR135,000 (US\$2,000). He also provides carrot cleaning machine rental services to village entrepreneurs.



These entrepreneurs then operate the machine on a seasonal basis of rent with Mr. Mahaveer, and provide washing services to carrot farmers.

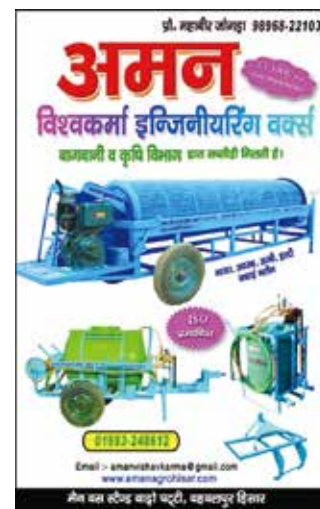
Washed and cleaned carrots attract a good market price. Farmers can sell the cleaned carrots right at the washing yard to traders at INR8-10/kg. On average, the net profit of carrot cultivation per ha is INR12,000 to 20,000 (around US\$180-300). With help from the locally-made carrot washer, carrot cleaning has become much easier and has provided a catalytic force for expanding the carrot production areas in Hisar district. Farmers grow different varieties of carrot in the rainy season (August- September), where paddy rice was the main crop in these fields just a few years ago. Carrot is harvested by late October to early November and after that wheat is cultivated in the field.



Farmers grow different varieties of carrot in the rainy season (August- September) in Hisar district (**top**); a brochure showing the carrot washer and other equipment that are manufactured and sold by Mr. Mahaveer (**below**)

The carrot washer has also helped to develop a new market/value chain system in the area. Traders visit the yard where the carrots are cleaned, purchase the carrots and load them on their trucks. Therefore, the carrot-cleaning yard is also functioning as a market yard for carrot. Traders from New Delhi and other mega cities visit and ship the carrots from production areas to major vegetable markets in north India. Farmers have reported the carrot production areas have been increasing more than 5% annually which is mainly due to higher profit from carrot than alternative crops (such as paddy).

A small innovation from a mechanic and true entrepreneur has caused a real revolution at the grassroots level. This innovation has contributed to the creation of net additional values of millions of USD annually in Bahawalpur village and its surrounding areas by facilitating farmers to improve postharvest handling and management of carrot, and to create a new market. Furthermore, the



state government and public agencies have also supported such innovations, which provided synergistic impact in this process.

Source: Madhusudan Bhattarai, Consultant - Economist

Photos: Madhusudan Bhattarai, Mahaveer Jagada

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