CONSTRAINTS AND REMEDIES IN THE ADOPTION OF NON-CHEMICAL METHYL BROMIDE ALTERNATIVES FOR VEGETABLE PRODUCTION IN LEBANON

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Methyl bromide phase out project in Lebanon for the first and second year accomplished the phase out of 28.5 ODP tons and 36 ODP tons of methyl bromide in the first and second year through the non-chemical alternatives such as soil solarization, biofumigation, grafting and 1-3, Dichloropropene as a chemical alternative.

One of the major successes of the project is the creation of environmental awareness among the growers and consciousness of reward from the technology on the alternatives. There is a progressive increase in the percentage of growers who adopt the non-chemical alternatives (96.5 %) as compared to the growers who prefer chemical alternatives (3.5%). Out of the 2,049 farmers trained on the alternative techniques, 1,689 farmers selected soil solarization (80.0%), 111 selected biofumigation (5.0%), and 180 for grafted plants (11.4%) while only 69 farmers applied the chemical 1-3, Dichloropropene (3.5%). As a result of enthusiasm among the growers and constant encouragement from the Ministry of Environment personnel, the project so far eliminated 61.8 ODP tons of MeBr. There are several factors, which makes the farmers to select the viable alternative technologies and fit into their cropping system. These include efficiency of the technology in controlling the target pests, low application cost, high yields, and environment friendliness to mention a few. Additionally, uniform plant growth resulting from soil solarization and biofumigation is an encouraging factor.

While adapting the alternative technologies in vegetable production, the project faced some constraints in the implementation process. One of the major constraints is the environmental hazard caused by traditional methods of disposal like dumping away, burying or burning of the used polyethylene. In order to resolve this problem, a PE recycling plant (5tons/day) has been established in an extensively agricultural area, and provided with the necessary technical information for adding a new parallel line to the factory. Through an extensive training program, farmers were encouraged to return the used PE to the recycling plant and a compensation plan was elaborated to reimburse farmers. This initiative created a new opportunity for the industrial sector. The Ministry of Environment and the municipalities were contented.

This experience encouraged the project management to tackle another environmental issue, caused by the burning of plant residues at the end of each season. To overcome this problem the project purchased 2 chopper-shredder machines and made them available to the farmers of all regions. Training sessions were organized to get farmers acquainted with the benefits of using natural compost as soil amendment. Farmers have been trained on using the choppers, in addition to the composting steps and techniques. In a matter of few months, several tons of tomato and cucumber plant residues have been composted and added to the soil. This initiative

also helped farmers avoiding the purchase of preparatory organic fertilizers, thus reducing production costs by 5-7 %.

In conclusion, the project phase out 97% of the total annual projected phase out of methyl bromide in the vegetable sector by using the soil solarization, biofumigation, grafting and minimal use of 1-3, Dichloropropene as a chemical alternative.