Alternatives to Methyl Bromide for preplant protected cultivation of vegetables in the mediterranean developing countries

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In the last thirty years, protected cultivation of vegetables has known an important development in the mediterranean countries and particularly in North Africa and in the Middle east regions. Only few years ago,a yield of 60 T/ha of tomato under plastic cover was considered a fair production. Now,yields of more than 200 T/ha can be attained in many mediterranean countries.

There has been a revolution in the greenhouse production technologies: Greenhouse type, quality of the plastic cover, ferti-irrigation, plastic mulch, new high yielding hybrids, plant grafting, specific pesticides, soil fumigation, etc.. However, the intensification of vegetable productionÝhas created new optimal conditions for the development of soil-borne pests. Pest problems were relatively simple in the early years, but they increased in importance as intensive cultivation continued.

To control soil borne pests,non-chemical and chemical control methods are used.In many vegetables growing areas, the water salt content is very high. This salinity increases the susceptibility of the plants to many diseases such as Fusarium and Verticillium wilts. Crop rotation and greenhouse rotation are not effective, because the alternative crops are often susceptible to the same diseases. In addition, many weeds act as alternative hosts to diseases and should, therefore, be controlled. The use of resistant varieties is the cheapest, easiest, safest and most effective means of controlling soil borne pathogens. However,such resistant varieties are not always available. Nematodes resistant high yielding varieties of many vegetable crops such as tomato and cucurbits are lacking. Plant breeders are spending more time and effort into the improvement of yield and quality, rather than into breeding for disease varietal resistance. The other non chemical control methods such as nursery management, elimination of crop residues,sowing and planting time, choice of the plant spacing,

pathogen free seeds and transplants, grafting, biofumigation with allelopathic plants, organic amendments, etc... are unknown or are not always properly adopted.Soil and agricultural material solarization is a promising method for pathogens and weeds

control.However,the efficiency of this alternative varies from one region to another is not always efficient for the nematodes control.

The attitude that Methyl Bromide is the universal panacea to control soil-borne pathogens is still prevailing among many vegetable growers in the Mediterranean developing countries. Soil fumigation with Methyl Bromide to control soil fungi ,bacteria and rootknot nematodes is considered as one of the main factors for production success in greenhouses.

In many developed countries such as holland, Methyl Bromide is not used any more. The Methyl Bromide Technical Option Committee (MBTOC) reported some success stories on alternatives to Methyl Bromide to control pest of various crops. However,most of the alternatives used in holland or in other developed countries can not be adopted in the Mediterranean and Middle East conditions because the green house type, the environmental control,the existing pests ,the agricultural practices, etc..are different.To be efficient and to generate adapted technologies, each country has to develop locally its own alternatives to methyl Bromide.These alternatives should be used in an Integrated Pest Management program for the main economically important crops and soil borne pests.

Developing countries should replace Methyl Bromide with sustainable economic alternatives in the near future. Research and demonstration projects,the introduction and adoption by the farmers of environmentally sound alternatives to Methyl Bromide should be done with the technical assistance and financial support of developed countries. However,to be efficient and to generate technologies adapted to the mediterranean and middle east developing countries,it is necessary to start conducting surveys in these countries as it was done in some sub-saharan countries. During these surveys,data will be collected on the various Methyl Bromide uses,the commodity crops for which the product is used,the importance of these crops for the national economies,the existing alternatives to Methyl Bromide,the research conducted etc...Based on these data, national and regional research and demonstration programs will be developed. The results obtained in developing countries could also be transferred to developed countries.

In the case of industrialized countries will not provide economic and technical assistance to replace Methyl Bromide with alternative control methods,the mediterranean developing countries will be used in the future as a "dumping ground" for Methyl Bromide and also for other obsolete pesticides.

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