EVALUATION OF SUBSTITUTES FOR METHYL BROMIDE IN DECIDUOUS FRUIT REPLANT SITUATIONS - A SOUTH AFRICAN PERSPECTIVE

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Based on field research and surveys in South Africa, the so called specific replant disease is mainly encountered in apples, pears and prunes. In the case of apples, serious replant symptoms occur in approximately 40 % of replantings. Pear plantings after apple have also shown poor growth.

The first statistical fumigation field trials to combat the specific replant disease were initiated in 1967. The fumigant Chloropicrin (Nitromethane) proved to be very effective in controlling the problem and was widely used until 1974, when the use of this product was terminated due to safety reasons. Compounds such as Formaldehyde, Ditrapex, Telone, DD and Basamid were evaluated, but only the implementation of Methyl Bromide in 1978 solved the problem efficiently. Environment friendly treatments including Potting soil, kelp drenches and Mono Ammonium Phosphate plant hole application, were also evaluated, without significant growth improvement. Methyl Bromide is currently applied manually by probe injection or mechanically with a rippertooth at 300 g per running meter.

The phasing out of Methyl Bromide has led to a more integrated management program. A bio test (Pot test) was implemented to assist producers in making a decision whether to fumigate or not. The importance of nursery stock quality, cultivar and rootstock selection is also emphasised. In the case of apples, MM109 or M25 rootstocks are preferred. Producers are advised against planting spur types or a cultivar like Braeburn on replant sites. In the case of pears, BP3 or in some situations BP1 are suggested.

As to the recent evaluation of fumigants, Metam Sodium and Chloropicrin (Registered as Bacfume for use on potatoes) have been tested extensively. Chloropicrin is an effective compound, but unpleasant to work with and

extremely corrosive to apparatus and implements. Although Metham-Sodium is used commercially by a few producers, a more practical application method is needed for treating large areas. Not one of the two above mentioned fumigants is presently registered specifically for controlling replant disease. It is expected that the current field trials comparing Methyl Bromide (Metabrom), Nitromethane (Chloropicrin), Metham-Sodium (Herbifume) and Sodium tetrathiocarbonate (Enzone) in apples and pears, will supply definite answers by 1997 as to the best alternative option for Methyl Bromide fumigation. The finding of a real good substitute for an outstanding product like Methyl Bromide is a formidable task and it is foreseen that at the end, a combination of fumigant and other methods or practises might be the solution. It is realised by producers, researchers and technical advisors that in future special emphasis on management of all factors concerning replant, including soil preparation, plant material, time of fumigation and planting, fertilization, irrigation and weed control will be needed to secure successful new planting on old orchard soils.