Strawberry Nursery Production: Alternatives and Results from trials in Different Geographic Regions

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Content

- Importance of soil disinfestation
- MB Results from Trials in Different Regions
- Remaining issues globally
Methyl Bromide Fumigation: Strawberry Runner Industry

Methyl Bromide biggest chemical in agriculture by amount
Issues

Methyl Bromide 50:50

Untreated
Application Issues: Improvements being made!

Cyanogen?
Methyl iodide/Pic - hot gas

Telone/Pic broadcast

Telone/Pic and Pic EC???

Metham
What can be Used to Replace Methyl Bromide?
1. Soil disinfestants
   • Telone C35,
   • Chloropicrin alone?
   (Weeds)
   • Methyl iodide
   • Solarisation
   • Metham and dazomet
   • Cyanogen??
   • Sodium azide?
   • Propylene oxide?

2. IPM
   • Resistant varieties
   • Biofumigants
   • Strategic pesticides
     and herbicides

3. Methods which avoid MB
   • Substrates
   • Propane Burners (Weeds)
## Results in Australia

Telone was phytotoxic in low pH/cool soils
Strawberry Runner Production

Methyl Bromide 50:50

Telone C35

Untreated
Black Root Rot Rating (0-5)

Rate 500kg/ha - No VIF
Strawberry Plugs

25% of world production?
USA trials: Oxnard 2001/2002

Methyl bromide

Telone C35
Plug Plants:

- Short season and early season production
- Cost 17-21 cf. 8 cents per plant

In US $3 million out of $1 billion

Widely accepted in Northern Europe
Biofumigation

Excellent rotation and trap crop!

Pathogen control too unreliable!

Total MITC concentration in soil from a biofumigant crop vs metham sodium (nmol/g soil)
Influence of MB phaseout on development of New Technologies
Developing IPM alternatives to MB

- a runner dip to surface sterilise roots +
- soil amendment with BCDMH (bromochlorodimethyl hydantoin) +
- slow release ammonium fertilisers +
- pre-emergent herbicides

![Graph showing Relative Fruit Yield (%) for Untreated, IPM, and MB treatments]
Issues for Alternatives for Strawberry Nurseries

- Cool climates
- Disease tolerance data cf. methyl bromide
- Broad acre treatments
- Product which controls weeds as effectively as pathogens
- New effective herbicides (Presently limited)
- Commercial scale up difficult because of disease loss
Factors Influencing Change

Research Trials (Technical efficacy) + Commercial Scale Up, Regulatory & Economics Issues = Acceptance?
Transitional Strategy to Reduce MB Consumption

Fruit Yield
kg/ha

- 70:30
- 50:50
- 30:70
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<th>Unt</th>
<th>TC35</th>
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*Telone was phytotoxic in low pH/cool soils*
Barrier Films (eg. VIF) : Methods to Reduce MB Rate and Emissions

**Linear low density polyethylene (LLDPE)**

- ~35 µm monolayer
- Rate 20 g/m²

**Virtually impermeable film (VIF)**

- ~35 µm, multi layer sandwich
- Rate 10 - 12.5 g/m²
Issues for Alternatives for Strawberry Nurseries

- **Transition:** MB/Pic formulations of 50:50 effective, so do not use higher formulations
- **Transition:** Rate reduction by use of VIF < 20g/m² (15g/m²)
- **Plug plants:** Economics Hygiene (Colletotrichum)
Summary

• Alternatives are proving more difficult than for strawberry fruit because of the high disease tolerance required and the broad spectrum control for weeds.

• MS and Pic, TelC35 followed by metham, methyl iodide offer the best opportunity for short term alternatives and plug plants for longer term.

• So far only poor commercial scale, but limited trials limited to USA, Australia and Spain.

• More effort in commercial scale up of alternatives.
The Future??
‘You must be the Change
You want to see in the World?’

‘Ghandi’