Alternative to MeBr in Cut Flower production

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HISTORY

During the last years AQL company has had 70-80% of the distribution and application of MeBr in Spain.

From 1992 MeBr was officially listed as a substance that depletes O_3 layer. In 1995 the production and use of MeBr was frozen at levels of 1991, and from 1998 started a programme of restrictions and phase out of this fumigant.

R + D Programme

-1997, AQL started a programme of R+D looking for alternatives to MeBr.
-The trials were centrered on the mixtures of 1,3-D + pic.
-We collaborated with MAPA in the Five-years Programme that they approved to look for "Viable Technical and Economical Alternatives to MeBr and respectful with environment" (with INIA (Alfredo Lacasa) and IVIA (Vicent Cebolla).

Trial Field-I.V.I.A.

Trials in Huelva. Year 1998

OBJETIVES of R+D programme

- Development of 1,3-D/Pic mixtures (AGROCELHONE) as soil fumigant and alternative to MeBr destined for several crops with economic importance:

Strawberry	Carrot
Pepper	Raspberry
Tomato	Tobacco
Cut Flower, ...	

- For the Control of:

  nematodes

  soil-borne fungi

  weeds

PROPERTIES OF AGROCELHONE

AGROCELHONE N

Composition: Dichloropropene 81,9% (61,1% w/w) w/v

Chloropicrin 46,5% (34,7% w/w) w/v

Formulation type: Injectable liquid Fumigant (AL)

Density: 1,327 kg/l

AGROCELHONE NE

Composition: Dichloropropene 80,3% (60,8% w/w) w/v

Chloropicrin 44% (33,3% w/w) w/v

Formulation type: Emulsifiable Concentrated (EC) for application by drip irrigation

Density: 1,302 kg/l

TRIALS CONDUCTED AND LOCATION

Example of a trial in Carnation Crop

OBJETIVE:

Assess the efficacy of AGROCELHONE NE (1,3-D/pic) product on control of pathogenic soil fungi in fields where Carnation crop will be planted after fumigation (pest species present: *Verticillium sp., Rhizoctonia sp., Phytium sp., Fusarium sp.,Cylindrocarpon sp.,* and others)

LOCATION:

Los Palacios (Sevilla)

METHOD OF APPLICATION AND RATE

MATERIAL AND METHODS:

Variety: “Orange Magic”

The soil was prepared in the normal way: cultivator, rotovator, and making of beds (tables).

Experimental design comprised random blocks with 3 variants and 4 repetitions.

Treatments:

1 AGROCELHONE NE at 400 l/Ha. PE

2 MeBr (98/2) at 600 kg/Ha. PE

3 METHAMNA at 1000 kg/Ha. PE

4 Untreated control

METHOD OF APPLICATION AND RATE

APPLICATION:

The application of AGROCELHONE NE was done using a pump through the drip irrigation system. Prior to this, the PE film was overlapped.

CONTROLS

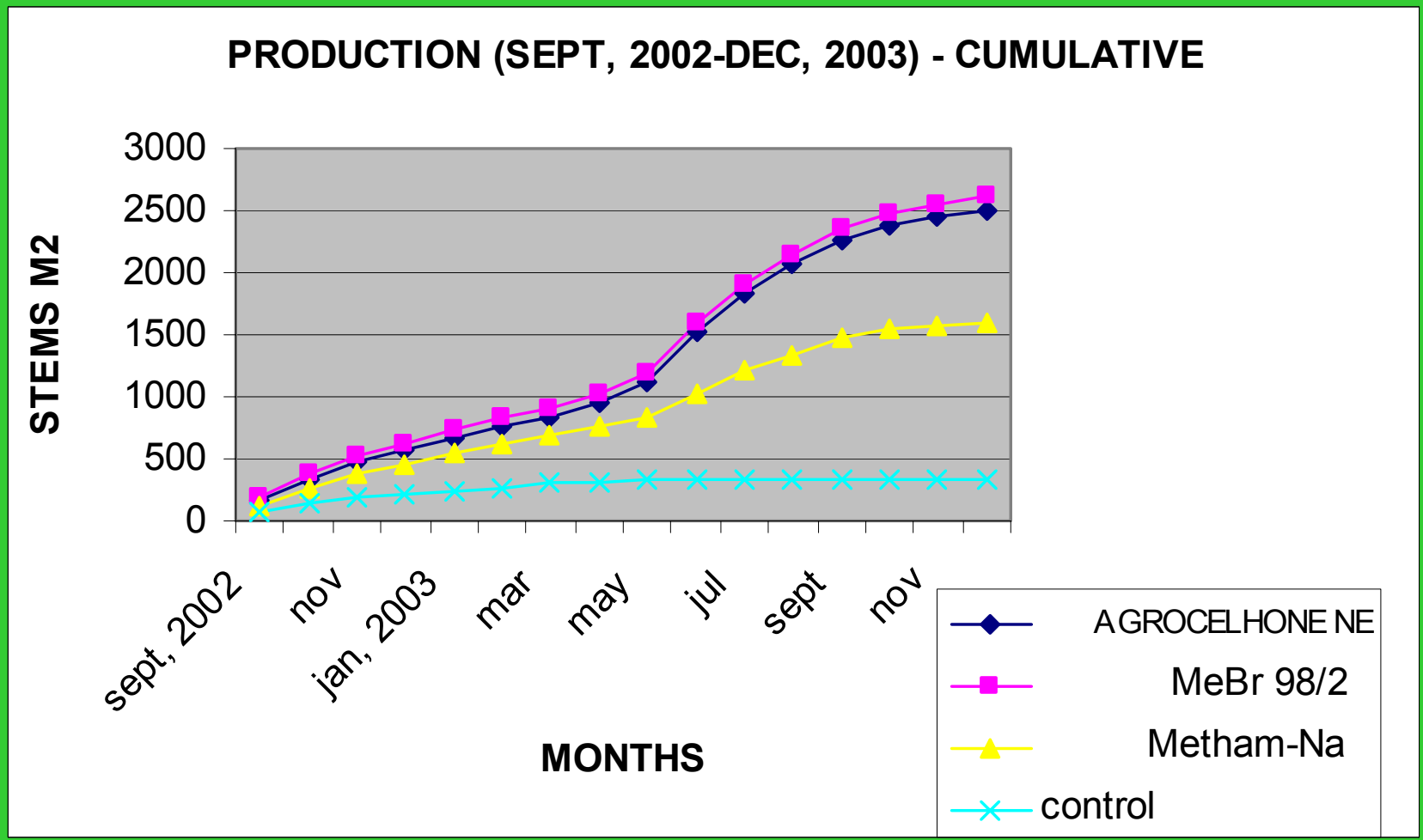
Carnation

- 10 after trasplanting, samples were taken to test for phytotoxicity.

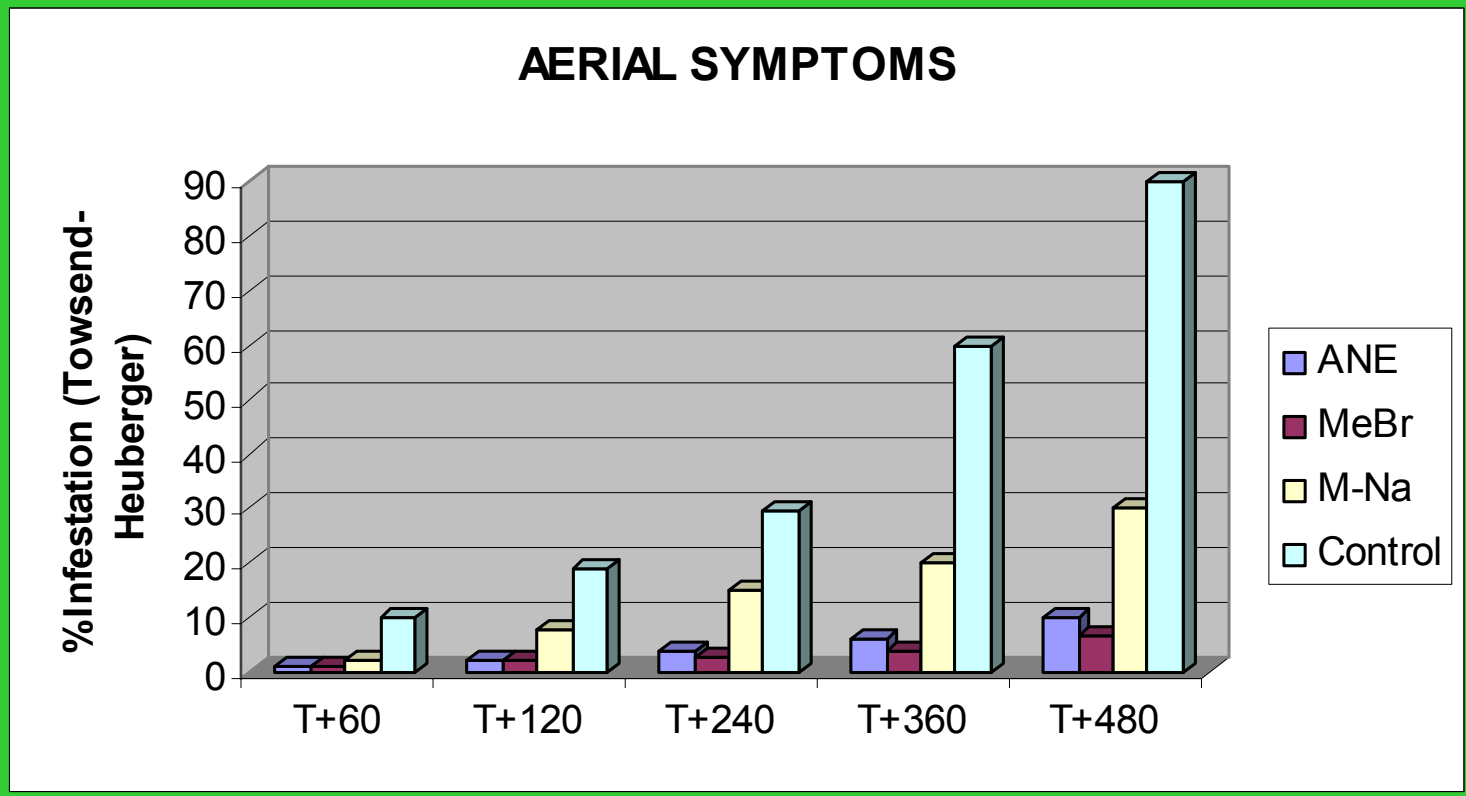
- At 60, 120, 240, 360, 480 days after trasplanting samples were taken relating to aerial symptoms taking note of the number of healthy plants and roots , sick and/or dead plants; comparing plots treated with different products with the control plot. Lab. Analysis found the pathogen was *Fusarium oxysporum*

- Production data was noted: stems/m2 and cumulative.

RESULTS


PRODUCTION (SEPT, 2002-DEC, 2003) - CUMULATIVE
STEMS M2
3000
2500
2000
1500
1000
500
0
sept, 2002
nov
jan, 2003
mar
may
jul
sept
nov
MONTHS
AGROCELHONE NE
MeBr 98/2
Metham-Na
control

RESULTS


AERIAL SYMPTOMS
%Infestation (Towsend-Heuberger)
90
80
70
60
50
40
30
20
10
0
T+60
T+120
T+240
T+360
T+480
ANE
MeBr
M-Na
Control

CONCLUSIONS

- The application of AGROCELHONE NE was made through a pump that injected the product in the irrigation system, and controlled the correct rate and concentration in the water.

- The pump is easy to apply. Contact with the applicator is minimal, and it can be applied in small and large areas.

- Trials found that AGROCELHONE NE applied through the localized irrigation at 400 l/Ha is an effective product against soil fungi in carnation crop in greenhouses.

- The efficacy and production (yield) obtained from the application of AGROCELHONE NE is like MeBr.

CONCLUSIONS

- Samples to examine phytotoxicity (taken at 10 days after transplanting) were rated according to a scale from 0 to 5 compared to plants without treatment, and no symptom of phytotoxicity was observed in any plot.

- The quick degradation of the active materials that compose AGROCELHONE and keeping the safety period, means there is no risk of residues in plants and fruits.

- The localized application in the planting line preserves 50% of the soil with its fauna and saves costs in the treatment.

- The studies observed a certain herbicide effect on weeds in germination.