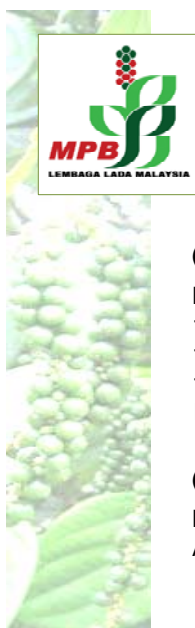


Breeding Strategies for Improvement of Crop Production and Good Agronomical Management of Pepper Plantation in Malaysia



Paper presented by

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Introduction

(I) Breeding strategies:

History of pepper breeding in Malaysia:

1957 - Evaluation and selection of cultivated pepper varieties

1963 - Clonal selection

1964 - Hybridization

Recent year - Implementation of Biotechnology

(II) Good Agronomical Management:

Malaysia has come up with the technology package for Good Agronomical Management of pepper plantation.



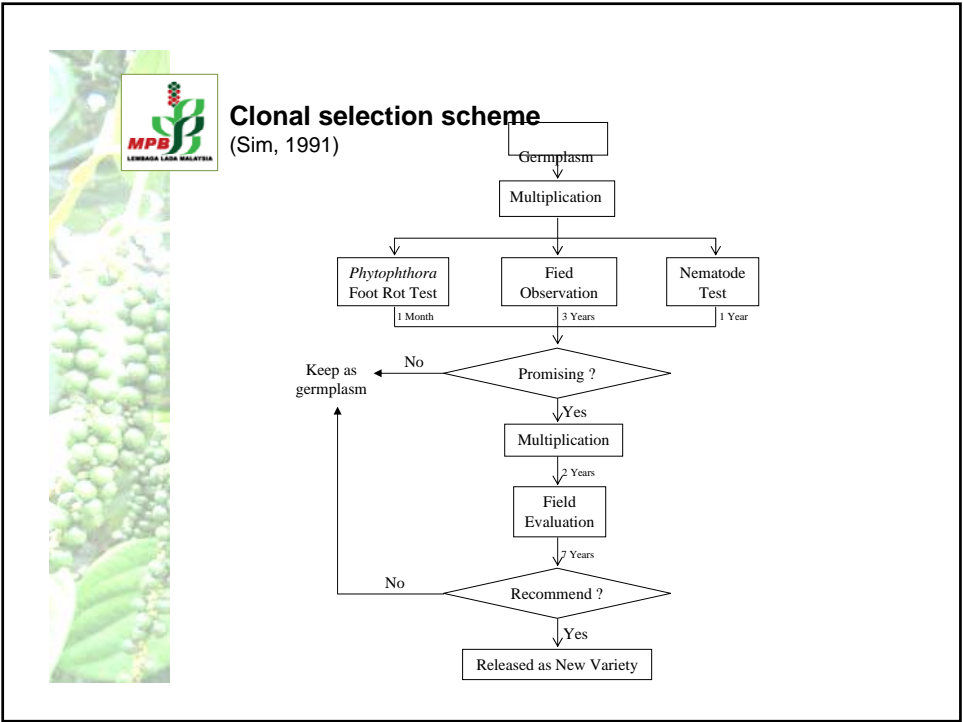
Breeding Strategy 1: Clonal Selection

Sources of selection:

Existing variability, the collection of introduced varieties, open-pollinated progenies, mutagen-treated plant and assisted pollination progenies.

Aims of Selection:

- (i) Selection for *Phytophthora* foot rot resistance
- (ii) Selection for root-knot nematode resistance
- (iii) Selection for blackberry disease resistance
- (iv) Selection for higher yield






Achievement



* Semongok perak released in 1988.



**Breeding Strategy 2:
Hybridization**

(I) Intervarietal Hybridization

cv. Kuching
(male plant)

X

Introduced
cultivars
(female plant)

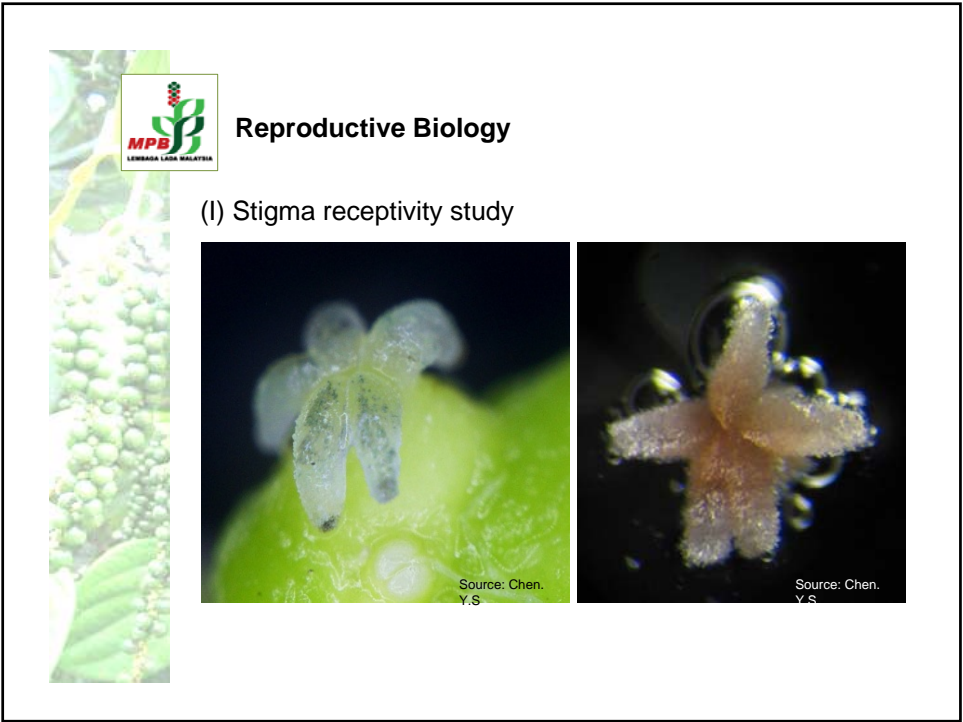
P.F. deWaard in 1964.
H.G. Raj and S.P. Song started the reciprocal cross in 1969.
S.L. Sim in 1971- a more organized breeding work.


(II) Interspecific Hybridization

Piper nigrum
(female
plant)

X



Wild *Piper*
species
(male plant)






Reproductive Biology



(II) Pollen viability study




Source: Chen, Y.S.



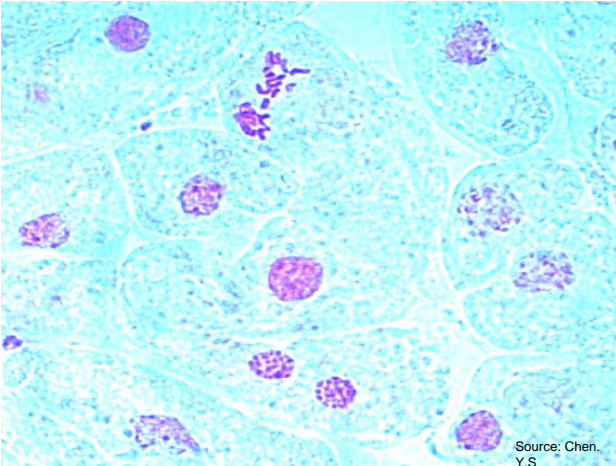
Morphological Study on Hybrid Seedling



* Hybrid seedling of *P. nigrum* at two different stages.



Cytological Study on Hybrid Seedling



Source: Chen, Y.S.

* Chromosome count study through root squash method.



**Breeding Strategy 3:
Biotechnological
Approaches**

(I) *In vitro*
culture




Source: Chen, Y.S.



Source: Anny Iann





Source: Chen, Y.S.



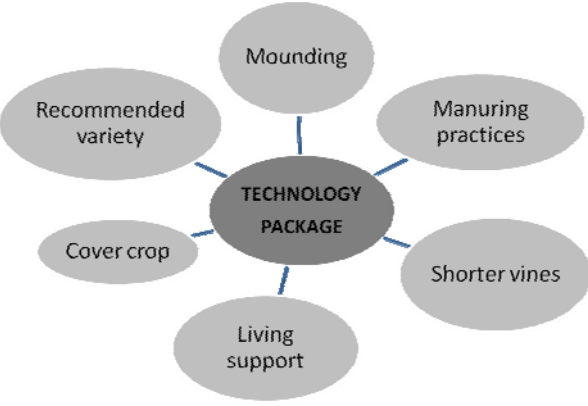
(II) Other projects related to biotechnology

- (a) Agrobacterium-mediated transfer of GUS gene (Sim *et al.*, 1998)
- (b) Development for more uniform ripening in pepper (Sim, 2007)
- (c) Isolation and cloning of coat-protein gene of cucumovirus (Sim *et al.*, 2005)







Good Agronomical Management: The Technology Package




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graph TD; Mounding --- TP((TECHNOLOGY PACKAGE)); Manuring_practices[Manuring practices] --- TP; Shorter_vines[Shorter vines] --- TP; Living_support[Living support] --- TP; Cover_crop[Cover crop] --- TP; Recommended_variety[Recommended variety] --- TP;
```




(I) Recommended varieties




cv. Kuching



cv. Semongok emas

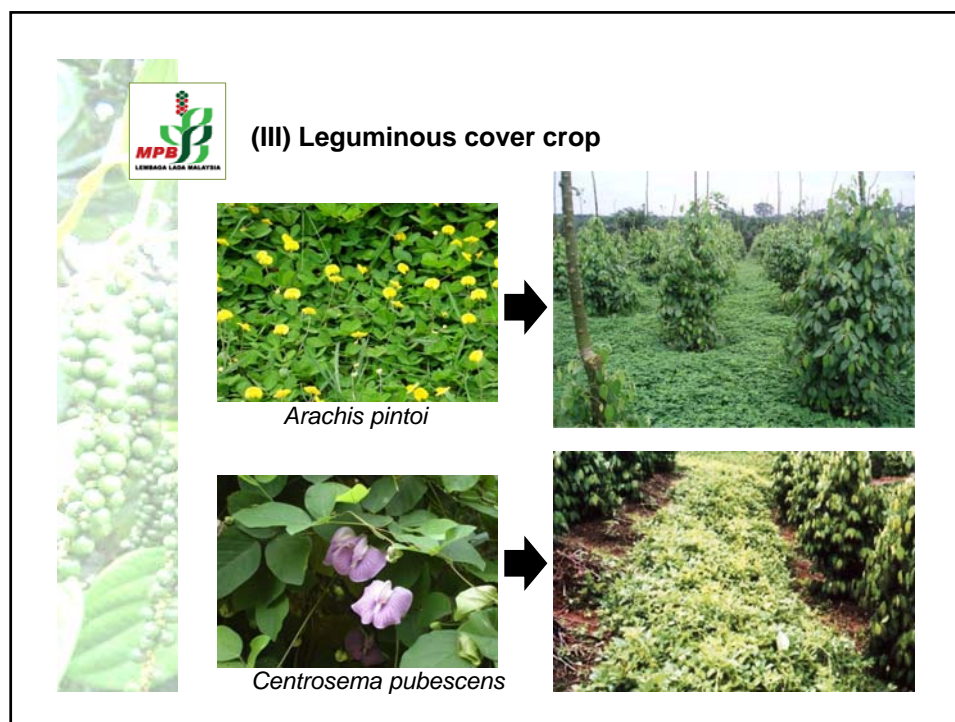




(II) Living support/ Shorter vine



Living support

Shorter vine

(IV) Manuring practices

1. Studies on nutrient uptake and fertilizer requirements have led to more rational manuring practices.
2. An annual fertilizing schedule using NPK fertilizers has been developed. Recommended compound fertilizer, 12:12:17:2+TE or 14:14:21:2+TE
3. Recommended the use of dolomite especially to reduce soil acidity.
4. Poultry manure is often used in conjunction with inorganic fertilizers.




LEMBAGA LADA MALAYSIA

(V) Mounding

This practice promotes new root growth that will compensate for the root damage caused by root-knot nematodes.


Growers are encouraged to carry out re-mounding once a year.







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Pepper plantation with Good Agronomical Management in Malaysia





Conclusions

Aims of pepper breeding programmes and Good Agronomical Management in Malaysia:

Sustainable pepper production that is legally compliant, environmentally sound, socially acceptable and economically viable to ensure quality produce that is safe and suitable for utilization or consumption.



Thanks for your attention!

Source: Chen, Y.S.