APPENDICES
Appendix A

Agricultural Articles: Reports

Guest editorial: 72 (848) 591-592 (1996)

Biocontrol with Bioherbicides

Integrated weed management for sustainable development involves the formulation of strategies which provide maximum downsizing of the weed population with minimal effects on the agro-eco-system. An exciting field of research and development for integrated weed management has emerged on the utilisation of bioherbicides. Bioherbicides are developed from native pathogens which have been isolated, identified and mass-produced and used to limit the growth and development of unwanted plants.

The global success of bioherbicides like COLLEGO (Colletotrichum gloeosporioides f. sp. aeschynomene) to control Northern Joint Vetch in soybean and rice, DEVINE (Phytophthora palmivora) to control Stranglevine in Florida citrus groves, and CASST (Alternaria cassiae) to control Sicklepod has encouraged similar studies to be initiated in Canada, United Kingdom, Europe, Australia, New Zealand, South Africa, China, Japan and Malaysia and elsewhere.

LU-BAO 2 was developed in China and it is based on C. gloeosporioides to control Dodder (parasitic plant) on a wide variety of crops. There are at least 10 bioherbicides projects in progress in Japan, Philippines, Thailand, Malaysia and Ghana. For example, pathogenic fungi have been isolated and identified on Echinochloa spp., Parthenium hysterophorus, Sphenoelea zeylanica, Mimosa invisa, Eleocharis kuroguwei, Cyperus iria, Fimbristylis miliacea, Mikania micrantha, Pennisetum polystachyon, Rottboellia cochinchinensis and Striga spp.

In Malaysia, bioherbicide research is currently performed by Universiti Sains Malaysia, MARDI, and other R & D Agencies. The preliminary studies have isolated several fungal pathogens on Imperata cylindrica, Mikania micrantha and Pennisetum polystachyon.

The R & D work involving a number of steps is laborious and often uneventful. These involve surveys of pathogenic fungi on selected noxious weeds in the field, identification and multiplication of the pathogenic fungi, transfer of fungi to the parent weed (to find out if they are capable of causing re-infection). If the results are positive and rate and severity of infection high the pathogens have to be tested on at least 35 economic crops to ensure that these economic crops are not affected. In Malaysia, for example, the economic crops would include rubber, oil palm, cocoa, rice, coconut, durian, pineapple and vegetable crops.

The next step involves production of fungi for more small scale tests in the field and if successful commercialisation involves production by liquid fermentation in bioreactors. The greatest problem is contamination, and therefore, the need to maintain sterile or pure cultures is non-negotiable. All these developments entail the need for funds.

Successes with bioherbicial approach are few due to natural and artificial constraints to their introduction and success. The pathogenic fungi often require favourable environmental conditions for their establishment and multiplication. The lack of inoculum at the critical time is a natural constraint. There is a need to develop bioherbicides which are stable and are able
to multiply and germinate spores without the need of dew or irrigation.

Nevertheless, the challenge of bioherbicides research is great, and any nation which invests in human resources and finance to fund such work can reap economic benefits. For example, the introduction of the rust fungi (Puccinia chondrillinae) into Australia in the early 1970s to control skeleton weed resulted in an estimated annual savings of 16 million Australian dollars in 1986. The actual research project involved a low budget of 500,000 Australian dollars.

In conclusion, it is hoped that private and public sectors can collaborate and finance R & D on bioherbicides for control of noxious weeds in the tropics. The rewards accruable are not only considerable economic gains but a safer environment as bioherbicides means less dependence on chemicals.

Lee Soo Ann
Food Neglect: Implications on Political and Social Stability of Nations

The Agricultural Institute of Malaysia held a conference on the above subject in Kuala Lumpur from 27-28 May 1996. The conference was opened by YAB Dato' Seri Anwar Ibrahim, Deputy Prime Minister of Malaysia.

YAB Dato' Seri Anwar's address, the summing up by Dr Abdul Aziz S A Kadir and the synopses of the papers delivered certainly give food for thought.

Malaysia, like many other developing nations is experiencing a dramatic shift from a rural to an urban-based population, causing as we all know difficult times for the estate sector. Such a shift is an inevitable part of the industrialisation process. Much the same thing occurred in UK and Europe approximately 100 years ago with the onset of the industrial revolution. As a result agricultural employment ratios have dropped from something similar to Malaysia's current ratios in the estate sector, to those nowadays of one worker to about 400-500 acres.

The challenge in Malaysia is whether the oil palm sector will be able to mechanise sufficiently to reduce its demand for labour to a similar ratio over the next few decades. If we succeed, all well and good if not the industry risks being relegated, as is rapidly happening with rubber, to the status of a smallholder crop.

Experience in the developed world has shown that the economic pressures of food production have led to ever larger agricultural units, and, until recently at least, to a far more intensive use of fertilisers and insecticides. The small-scale farmer has become an increasingly endangered species, whose survival is assured only by massive government injections of aid and subsidy. A corollary of this development is the frightening reduction in the number of seed varieties in use for the production of the major food-crops.

Although considerable attention is now being given to the use of seed banks, these are for the most part so woefully underfunded that we risk, over the next few years, massive reductions in the genetic base of those crops on which the world depends for feeding the ever-growing population.

Moreover the majority of these seed banks are situated in the developed world, rather than the developing world, where their benefits are most likely to be needed. They are also in many cases largely funded by agribusinesses in the west, whose short-term commercial interests depend on maximum control of a small number of seed varieties.

What is to be done? A number of the papers presented at this conference provide useful information which emphasises the extent of the problem, but are notably short on ideas for long-term solutions.

In southeast Asia, we are lucky to have the International Rice Research Institute (IRRI) in the Philippines, which has extensive seed collections of the different rice varieties, the Rubber Research Institute of Malaysia (RRIM) which does comparable work for rubber, and the Palm Oil Research Institute of Malaysia for oil palm.

Genetic manipulation, including gene transfer between species is now a real possibility, if not a fact, amongst certain
Food neglect: Implications on political and social stability of nations

crops. It holds enormous possibilities for transferring desirable characteristics between species. Yet there is a risk that desirable characteristics in cultivated plants may inadvertently be transferred to wild relatives, with potentially disastrous consequences.

For the enormous variety of forest fruit trees, not to mention other plant species of no immediate commercial value we have little to show apart from our state and national parks. It is primarily on these that southeast Asia will need to depend as its future gene pool and seed-banks.
Some Consequences of Labour Shortage in Malaysian Plantations

The main issue faced by planters in Malaysia is the availability of workers. Labour shortage is not a new problem but the situation is not improving, especially when the country embarks on full scale industrialisation. The plantation industry is left in a hopeless situation apart from engaging immigrant workers from several neighbouring countries. The government understands the plight of the industry and has been sympathetic. A longer term solution is necessary to overcome illegal entry and to prevent immigrant workers registered for plantation work moving into other industries.

At plantation level, labour shortage has led to a general decline in the standard of almost all agronomic practices. To begin with very few plantations can continue with the old policy of establishing pure leguminous covers. Purification of leguminous covers during the period of crop immaturity is now a luxury. Mixed leguminous covers with less noxious weeds is now a norm.

Oil palm fields are nowadays brought into harvesting at a much earlier date due to no ablation as a result of labour shortage in most instances. The eight to ten rounds of ablation normally carried out before harvesting is often partly or fully forgone.

Manual weeding during the first year after field planting of oil palm/rubber/cocoa is now history. Planters are compelled to use herbicide for circle and/or strip spraying even at this very early stage. Even then a delay in spraying operations is not uncommon as a result of inadequate labour. Strong encroachment of weeds particularly creepers becomes common place. Circle spraying under such undesirable conditions inevitably leads to crop injury or phytotoxicity depending on the chemical used. The long-term effect of systemic herbicide on crop is little known. The very obvious repeated loss of leaf area due to chemical sprays could affect the vigour and growth of crops, oil palm in particular. Timeliness in implementing the weeding programme as planned is now a fairly difficult task, made worse by apparent changes in the weather pattern.

Manuring work is largely mechanised in oil palm plantations where terrain permits tractor access. Manual application of fertiliser is still a norm in plantations with difficult terrain. It is here and in young mature areas where the standard of fertiliser application can suffer considerably as a result of labour shortage and perhaps inadequate supervision. Aerial application appears to be the eventual solution to this problem albeit at a higher cost.

In the area of Pest & Diseases (P & D) rat control in oil palm plantations suffers a great deal from labour shortage. In some cases plantations can ill afford to deploy workers for rat baiting work. Routine inspection of immature rubber for root disease treatment suffers a similar fate. Work standards in P & D control of cocoa may also be affected by inadequate workers and quick turn over of sprayers. The comparatively lower land: labour ratio partly accounts for the replacement of cccooa with oil palm.

Pruning of oil palm fronds, harvesting of FFB and tapping of rubber trees are major works that can lead to direct crop loss as a
result of inadequate labour. In many plantations general workers are upgraded to harvesters for harvesting at the expense of other field works. Rubber plantations make do with tappers who are either less skilful or inexperienced.

While planters are keenly awaiting the arrival of new innovations/technology from research institutions and universities in the country, there appears to be an urgent need to improve their management acumen in line with the expectation of both local and foreign workers. There is also an increasing need for training at all levels to achieve higher productivity and efficiency. The land : labour ratio must increase appreciably by whatever means for the industry to survive. Leaders of plantation companies will have to shift their paradigm as well. Management of change is crucial as the competitiveness of the plantation industry is very much dependant on its success.
Letter to the Editor

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The Editor
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Dear Sir

Editorial - Mechanisation or foreign labour?

The editorial of the June 1996 issue of The Planter on "Mechanisation or Foreign Labour?" caught my attention and interest. I could not agree more that mechanisation is important, however, ultimately labour apart from commodity prices is still one of the deciding factors on the survival of the oil palm industry in the next century.
It is a cold reality that locals are not interested in employment in the Plantation Sector. No amount of house ownership schemes or other incentives could change this fact. The number of foreign workers working in Felda schemes which were originally meant to help relocate the local landless, bear testimony to this reality.

Mechanisation undoubtedly had to a great extent help reduce the labour requirement on operations like chemical spraying, fertiliser dispensing, roads and drainage maintenance etc but had not really improved the land-labour ratio on the main harvesting operation.

A harvester covering 2 acres a day in the '60s continues to cover the same acreage in the '90s. There is practically no improvement here. No doubt the average yield/harvester might have increased, but the increase really should be attributed to improved or better planting materials.

Up until now, both local and foreign researchers had not been able to come out with a practical and effective machinery to replace or assist harvesters who are increasingly difficult to recruit. Thus, logically they should focus some of their attention on current management practices and see whether through paradigm shift of certain traditional evaluations and innovative/revolutionary practices could help enhance the land-harvester ratio to a significant level. I believe a lot more could be achieved here.

Time and motions studies carried out by a local research station revealed that only 10-15 per cent of a harvester's working time is actually engaged in harvesting.

Imagine, if we can increase the ratio to 30 per cent through some innovative management practices, we theoretically could increase the land/harvester ratio by 100 per cent and this would definitely contribute much to alleviate the labour shortage problem.

There is a pressing need to review current management practices especially pertaining to harvesting and the fresh fruit bunches' (FFB) ripeness standard which we inherited from our predecessor, who developed same during the era of high unemployment and low wages. How long can we go on abusing the valuable human resources doing such back breaking and low rewarding job like loose fruit collection? With the escalating labour cost and increasing difficulties in securing supply, emphasis should rightfully be focused on ways and means to improve the land/harvester ratio, and the efficiency and effectiveness of the mechanisation programme. Plantation performance should be measured on the basis of total oil yield per hectare rather than the arbitrary oil effluent ratio (OER). Likewise, oil mills should emphasise on the efficiency of maximum oil recovery through minimising processing losses. The mills cannot through mechanical process produce more oil than what is in the bunches. Is it prudent to continue with a ripeness standard that would inadvertently result in large volume of loose fruit scattered over the field after harvesting? Is there a need to go on experimenting loose fruit collecting machines and the harvesting machine, which are not only capital intensive, but also relatively ineffective, clumsy and impractical? Research paper presented some 12 years ago revealed that bunches with colour change will give the best comparative yield per unit of land when harvesting intervals exceeded 15 days. Should not this be the new ripeness standard?

Perhaps the industry would like to give it some thoughts.

Yours sincerely

Tay Seng Pang
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Dear Sir

Prang Besar Estate

Recently, as a sequel to the article in the Sunday Star of 26.11.94, I had the opportunity of reading in The Planter of November 1994 an article on Prang Besar, its origin and growth. It is a factual and precise record.

But I think this article would have been more complete if the writer had included the invaluable contribution of Dr R J Chittenden, a product of Harvard University and an eminent geneticist at that time, in making Prang Besar famous for its high-yielding planting material. Dr Chittenden played no less an important role and contributed no less than the pioneers V D Nair mentioned in his article.

While the implementation of the policies and programmes was with the management, research on production of high-yielding planting material, testing them under normal field conditions, proving the commercial value of the newly evolved material and recommending their use was in the purview of R J Chittenden. Perhaps PB 86 became the "Messiah" of the planters through R J Chittenden.

Fearing that Prang Besar and Harrisons & Crossfield may have lost all Prang Besar records during the war and Japanese occupation period, Gough prepared a precis of the origin, history and growth of Prang Besar from its inception to the British evacuation, to serve as a useful, valuable guide to those who took over the management of Prang Besar, after reoccupation. This was in two parts and titled:

Gough’s Bible - Part I
Gough’s Bible - Part II

This should still be available in Prang Besar and will be able to throw more light on the history of Prang Besar and its growth. It may also be worth mentioning here that Sir Eric had an ambitious programme of introducing cocoa on estates controlled by him. To this end he sent R J Chittenden to Trinidad to study about cocoa planting and imported cocoa pods through the then Serdang Agriculture Station, quarantined and germinated there (in Serdang) and released to Prang Besar after screening, for experimental planting. Dr Chittenden selected 15 Harrisons & Crossfield estates in different states of Malaya in consultation and agreement with the Serdang Agriculture Station and planted 5 acre experimental plots in each of the selected estates. Results were not encouraging and the project was discontinued and abandoned. Later it is understood that cocoa plantings were successfully and profitably established in Bagan Datoh Harrisons & Crossfield estates.

Finally, another important person like Osman and Yee Yam was one A B Corray
who, it is my belief, worked hand-in-hand with R J Chittenden.

Yours faithfully

M Nanu

Note:
1) Dr R J Chittenden, PhD, BSc, FLS was the Resident Scientist in Prang Besar from 1928 until his death on 6.12.49. He died in Malaya.
2) The writer is an ex-employee of Prang Besar from 1946 (Research Department) until his retirement in 1970.

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Dear Sir

Rat control by barn owls

I refer to the article in the March Planter on the above subject by employees of the ICI Group (currently CCM Bioscience). They arrive at the conclusion that it is "unproven and at worst unlikely to be effective". Their arguments are divided into two sections: A) Ecological modelling and B) Field evidence.

There is no point in discussing the theoretical section A, based on simulated mathematical models, now that practical results from hundreds of estates are available.

Part B discusses the results of rat baiting on seven estates. Let us examine what is reported from each one:

Although the use of poisoned bait was reduced in Raja Musa Estate, Selangor and Bukit Talang Estate, Selangor, rat damage continued. This was found to be at the same rate in the parts of each estate having nest boxes as in the areas without.

This is not surprising, as the owls cannot be expected to recognise field boundaries nor to confine their activities to the trial areas.

Since introducing barn owls nesting boxes to many estates in Selangor, several years ago, we have found that, only in a small part of one estate, near the linesite, was any further baiting necessary.

Kok Foh Estate. - A recognised showpiece for the barn owl system, and I can confirm that an adjacent estate has also been. To all intents and purposes, cleared of rats with no use of baits. Again, owls know no boundaries.

Tunjuk Laut Estate. - Noted that owls failed to establish themselves when the palms were immature. I make regular visits to an estate of 7,000 acres adjacent to Tunjuk Laut. It has been provided with over 100 nesting boxes, and rat damage is negligible, so nothing is spent on rodenticides.

Estate A - Kota Tinggi, Estate B - Sri Gading, Estate C - Cha'ah. - It is stated that none of these sites carried a density of barn owls at the recommended level. Therefore, there seems to be little point in considering the results reported.

My own experience covers 1,423 visits to more than 200 different estates in six different countries. My observation is that the introduction of barn owls will, almost invariably, enable the use of rodenticides to be completely discontinued on estates in Peninsular Malaysia. In the few cases where boxes are erected but not occupied by owls
Letters to the Editor

the reason is usually that there are very few rats, as they are being controlled by other predators such as eagles.

I have not found such good results in East Malaysia, possibly because the required owl species is not present.

In Sumatra, on an estate surrounded by padi fields, a friend of mine introduced barn owls. Not only did he rid his estate of rats, it was also found that padi production in that district was doubled, he was designated 'Agricultural Hero of the Year' by the President, has starred in several documentaries and has named his sons 'Tyto' and 'Alba'.

He now breeds owls for sale to other estates but, in order to feed them, he has to buy rats caught 10 km away, as there are none to be found near his estate.

In view of all the above, I suggest that the weight of evidence is that barn owls will control rats and will, to all intents and purposes, eliminate rat damage and normally no further action is needed.

Yours faithfully

Richard Jones
Appendix C
Phoric and Non-phoric Items: Reports

Text 1: Biocontrol with Bioherbicides

1. Integrated weed management for sustainable development involves the formulation of strategies.

2. which provide maximum downsizing of the weed population with minimal effects on the agro-eco-system.

3. An exciting field of research and development for integrated weed management has emerged on the utilisation of bioherbicides.

4. Bioherbicides are developed from native pathogens.

5. which have been isolated, identified and mass-produced.

6. and used to limit the growth and development of unwanted plants.

7. The global success of bioherbicides like COLLEGO (Colletotrichum gloeosporioides f. sp. aeschynomene) to control Northern Joint Vetch in soybean and rice.

8. DEVINE (Phytophthora palmivora) to control Stranglevine in Florida citrus groves.

9. and CASST (Alternaria cassiae) to control Sicklepod.

10. has encouraged similar studies to be initiated in Canada, United Kingdom, Europe, Australia, New Zealand, South Africa, China, Japan and Malaysia and elsewhere.
11. LU-BAO 2 was developed in China

12. and it is based on C. gloeosporioides to control Dodder (parasitic plant) on a wide variety of crops.

13. There are at least 10 bioherbicides projects in progress in Japan, Philippines, Thailand, Malaysia and Ghana.

14. For example, pathogenic fungi have been isolated

15. and identified on Echinochloa spp., Parthenium hysterophorus, Sphenoclea zeylanica, Mimosa invisa, Eleocharis kuroguwai, Cyperus iria, Fimbristylis miliacea, Mikania micrantha, Pennisetum polystachyon, Rottboellia cochinchinensis and Striga spp.

16. In Malaysia, bioherbicide research is currently performed by Universiti Sains Malaysia, MARDI, and other R & D Agencies.

17. The preliminary studies have isolated several fungal pathogens on Imperata cylindrica, Mikania micrantha and Pennisetum polystachyon.

18. The R & D work involving a number of steps is laborious and often uneventful.

19. These involve surveys of pathogenic fungi on selected noxious weeds in the field

20. identification and multiplication of the pathogenic fungi.

21. transfer of fungi to the parent weed (to find out if they are capable of causing re-infection).

22. If the results are positive
23. and rate and severity of infection high

24. the pathogens have to be tested on at least 35 economic crops

25. to ensure that these economic crops are not affected.

26. In Malaysia, for example, the economic crops would include rubber, oil palm, cocoa, rice, coconut, durian, pineapple and vegetable crops.

27. The next step involves production of fungi for more small scale tests in the field

28. and if successful, commercialisation involves production by liquid fermentation in bioreactors.

29. The greatest problem is contamination.

30. and therefore, the need to maintain sterile or pure cultures is non-negotiable.

31. All these developments entail the need for funds.

32. Successes with bioherbicidal approach are few

33. due to natural and artificial constraints to their introduction and success.

34. The pathogenic fungi often require favourable environmental conditions for their establishment and multiplication.

35. The lack of inoculum at the critical time is a natural constraint.

36. There is a need to develop bioherbicides

37. which are stable

38. and are able to multiply and germinate spores without the need of dew or irrigation.

39. Nevertheless, the challenge of bioherbicides research is great,
40. and any nation which invests in human resources and finance to fund such work can reap economic benefits.

42. For example, the introduction of the rust fungi (Puccinia chondrillinae) into Australia in the early 1970s to control skeleton weed resulted in an estimated annual savings of 16 million Australian dollars in 1986.

43. The actual research project involved a low budget of 500000 Australian dollars.

44. In conclusion it is hoped that private and public sectors can collaborate and finance R & D on bioherbicides for control of noxious weeds in the tropics.

46. The rewards accruable are not only considerable economic gains but a safer environment as bioherbicides means less dependence on chemicals.

Text 2: Food Neglect: Implications on Political and Social Stability of Nations

1. The Agricultural Institute (AI) of Malaysia held a conference on the above subject in Kuala Lumpur from 27-28 May 1996.

2. The conference was opened by YAB Dato’ Seri Anwar Ibrahim, Deputy Prime Minister of Malaysia.

3. YAB Dato’ Seri Anwar’s address.

4. the summing up by Dr. Abdul Aziz S.A. Kadir

5. and the synopses of the papers delivered certainly give food for thought.

6. Malaysia is experiencing a dramatic shift from a rural to an urban-based population
7. like many other developing nations.
8. causing difficult times for the estate sector.
9. as we all know.
10. Such a shift is an inevitable part of the industrialisation process.
11. Much the same thing occurred in UK and Europe approximately 100 years ago.
12. with the onset of the industrial revolution.
13. As a result, agricultural employment ratios have dropped from something similar to Malaysia's current ratios in the estate sector,
14. to those nowadays of one worker to about 400-500 acres.
15. The challenge in Malaysia is whether the oil palm sector will be able to mechanise sufficiently to reduce its demand for labour
16. to a similar ratio over the next few decades.
17. If we succeed, all well and good,
18. if not, the industry risks being relegated to the status of a smallholder crop,
19. as is rapidly happening with rubber.
20. Experience in the developed world has shown
21. that the economic pressures of food production have led to ever larger agricultural units.
22. and until recently at least, to a far more intensive use of fertilisers and insecticides.
23. The small-scale farmer has become an increasingly endangered species.
24. whose survival is assured by massive government injections of aid and subsidy.

25. A corollary of this development is the frightening reduction in the number of seed varieties in use for the production of the major food-crops.

26. Although considerable attention is now being given to the use of seed banks,

27. these are for the most part so woefully underfunded

28. that we risk, over the next few years, massive reductions in the genetic base of those crops

29. on which the world depends for feeding the ever-growing population.

30. Moreover the majority of these seed banks are situated in the developed world.

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32. where their benefits are most likely to be needed.

33. They are also in many cases largely funded by agribusinesses in the west.

34. whose short-term commercial interests depend on maximum control of a small number of seed varieties.

35. What is to be done?

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37. which emphasizes the extent of the problem,

38. but are notably short on ideas for long-term solutions.

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40. which has extensive seed collections of the different rice varieties.
41. the Rubber Research Institute of Malaysia (RRIM)
42. which does comparable work for rubber.
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Text 3: Some Consequences of Labour Shortage in Malaysian Plantations
1. The main issue faced by planters in Malaysia is the availability of workers.
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4. especially when the country embarks on full scale industrialisation.
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6. apart from engaging immigrant workers from several neighbouring countries.
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8. and has been sympathetic.
9. A longer term solution is necessary to overcome illegal entry.
10. and to prevent immigrant workers registered for plantation work moving into other industries.
11. At plantation level, labour shortage has led to a general decline in the standard of almost all agronomic practices.
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13. Purification of leguminous covers during the period of crop immaturity is now a luxury.
14. Mixed leguminous covers with less noxious weeds is now a norm.
15. Oil palm fields are nowadays brought into harvesting at a much earlier date due to no ablation.
16. as a result of labour shortage in most instances.
17. The eight to ten rounds of ablation normally carried out before harvesting is often partly or fully forgone.
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20. Planters are compelled to use herbicide for circle and/or strip spraying even at this very early stage.

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22. Strong encroachment of weeds particularly creepers becomes common place.

23. Circle spraying under such undesirable conditions inevitably leads to crop injury or phytotoxicity.

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37. Aerial application appears to be the eventual solution to this problem albeit at a higher cost.

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53. Leaders of plantation companies will have to shift their paradigm as well.

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55. as the competitiveness of the plantation industry is very much dependent on its success.
Appendix D

Phoric and Non-phoric Items: Explanations

Text 1: Editorial - Mechanisation or foreign labour?

1. The editorial of the June 1996 issue of The Planter on “Mechanisation or Foreign Labour?” caught my attention and interest.

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3. that mechanisation is important,

4. however, labour apart from commodity prices is still one of the deciding factors on the survival of the oil palm industry in the next century.

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238
13. A harvester covering 2 acres a day in the 60s continues to cover the same acreage in the 90s.

14. There is practically no improvement here.

15. No doubt the average yield/harvester might have increased,

16. but the increase really should be attributed to improved or better planting materials.

17. Up until now, both local and foreign researchers had not been able to come out with a practical and effective machinery to replace or assist harvesters.

18. who are increasingly difficult to recruit.

19. Thus, logically they should focus some of their attention on current management practices.

20. and see whether (through) paradigm shift of certain traditional evaluations and innovative/revolutionary practices could help enhance the land-harvester ratio to a significant level.

21. I believe a lot more could be achieved here.

22. Time and motions studies carried out by a local research station revealed

23. that only 10-15 % of a harvester’s working time is actually engaged in harvesting.

24. Imagine, if we can increase the ratio to 30 %

25. through some innovative management practices,

26. we theoretically could increase the land/harvester ratio by 100 % and
27. this would definitely contribute much to alleviate the labour shortage problem.

28. There is a pressing need to review current management practices

29. especially pertaining to harvesting and the fresh fruit bunches' (FFB) ripeness standard

30. which we inherited from our predecessor,

31. who developed (the) same during the era of high unemployment and low wages.

32. How long can we go on abusing the valuable human resources

33. doing such back breaking and low rewarding job(s)

34. like loose fruit collection?

35. With the escalating labour cost and increasing difficulties in securing supply,

36. emphasis should rightfully be focused on ways and means to improve the land/harvester ratio,

37. and the efficiency and effectiveness of the mechanisation programme.

38. Plantation performance should be measured on the basis of total oil yield per hectare

39. rather than the arbitrary oil effluent ratio (OER).

40. Likewise, oil mills should emphasize on the efficiency of maximum oil recovery through minimising processing losses.

42. The mills cannot through (the) mechanical process produce more oil than what is in the bunches.

43. Is it prudent to continue with a ripeness standard
44. that would inadvertently result in large volume(s) of loose fruit scattered over the field after harvesting?

45. Is there a need to go on experimenting loose fruit collecting machines and the harvesting machine.

46. which are not only capital intensive,

47. but also relatively ineffective, clumsy and impractical?

48. Research paper(s) presented some 12 years ago revealed

49. that bunches with colour change will give the best comparative yield per unit of land

50. when harvesting intervals exceeded 15 days.

51. Should not this be the new ripeness standard?

52. Perhaps the industry would like to give it some thoughts.

53. Yours sincerely, Tay Seng Pang.

Text 2: Prang Besar Estate

1. Recently, as a sequel to the article in the Sunday Star of 26.11.94.

2. I had the opportunity of reading in The Planter of November 1994 an article on Prang Besar, its origin and growth.

3. It is a factual and precise record.

4. But I think this article would have been more complete
5. if the writer had included the invaluable contribution of Dr. R.J. Chittenden,

6. a product of Harvard University and an eminent geneticist at that time.

7. in making Prang Besar famous for its high-yielding planting material.

8. Dr. Chittenden played no less an important role

9. and contributed no less than the pioneers V.D.Nair mentioned in his article.

10. While the implementation of the policies and programmes was with the management,

11. research on production of high-yielding planting material,

12. testing them under normal field conditions,

13. proving the commercial value of the newly evolved material

14. and recommending their use was in the purview of R.J. Chittenden.

15. Perhaps PB 86 became the 'Messiah' of the planters through R.J. Chittenden.

16. Fearing that Prang Besar and Harrisons & Crossfield may have lost all Prang Besar records during the war and Japanese occupation period,

17. Gough prepared a precis of the origin, history and growth of Prang Besar from its inception to the British evacuation,

18. to serve as a useful, valuable guide to those who took over the management of Prang Besar, after reoccupation.

19. This was in two parts and titled: Gough's Bible - Part I, Gough's Bible - Part II.

20. This should still be available in Prang Besar

21. and will be able to throw more light on the history of Prang Besar and its growth.
22. It may also be worth mentioning here

23. that Sir Eric had an ambitious programme of introducing cocoa on estates controlled by him.

24. To this end he sent R. J. Chittenden to Trinidad to study about cocoa planting

25. and imported cocoa pods through the then Serdang Agriculture Station.

26. quarantined and germinated there (in Serdang)

27. and released to Prang Besar after screening, for experimental planting.

28. Dr. Chittenden selected 15 H&C estates in different states of Malaya in consultation and agreement with the Serdang Agriculture Station

29. and planted 5 acre experimental plots in each of the selected estates.

30. Results were not encouraging and the project was discontinued and abandoned.

31. Later, it is understood that cocoa plantings were successfully and profitably established in Bagan Datoh Harrisons & Crossfield estates.

32. Finally, another important person like Osman and Yee Yam was one A.B. Corray

33. who worked hand-in-hand with R. J. Chittenden.

34. It is my belief.

35. Yours faithfully, M. Nanu.
Text 3: Rat Control by Barn Owls

1. I refer to the article in the March Planter on the above subject by employees of the ICI Group (currently CCM Bioscience).

2. They arrive at the conclusion that it is .... 'unproven and at worst unlikely to be effective'.

3. Their arguments are divided into two sections:


5. There is no point in discussing the theoretical section A, based on simulated mathematical models.

6. now that practical results from hundreds of estates are available.

7. Part B discusses the results of rat baiting on seven estates.

8. Let us examine what is reported from each one:

9. Although the use of poisoned bait was reduced in Raja Musa Estate, Selangor and Bukit Talang Estate, Selangor,

10. rat damage continued.

11. This was found to be at the same rate in the parts of each estate having nest boxes as in the areas without.

12. This is not surprising,

13. as the owls cannot be expected to recognise field boundaries

14. nor to confine their activities to the trial areas.

15. Since introducing barn owls nesting boxes to many estates in Selangor, several years ago,
17. we have found that, only in a small part of one estate, near the linesite, was any further baiting necessary.

18. Kok Foh Estate -

19. A recognised showpiece for the barn owl system.

20. and I can confirm that an adjacent estate has also been to all intents and purposes, cleared of rats with no use of baits.

21. Again, owls know no boundaries.

22. Tunjuk Laut Estate -

23. Noted that owls failed to establish themselves when the palms were immature.

24. I make regular visits to an estate of 7000 acres adjacent to Tunjuk Laut.

25. It has been provided with over 100 nesting boxes and rat damage is negligible,

26. so nothing is spent on rodenticides.

27. Estate A - Kota Tinggi, Estate B - Sri Gading, Estate C - Cha’ah -

28. It is stated that none of these sites carried a density of barn owls at the recommended level.

29. Therefore, there seems to be little point in considering the results reported.

30. My own experience covers 1423 visits to more than 200 different estates in six different countries.

31. My observation is that the introduction of barn owls will almost invariably enable the use of rodenticides to be completely discontinued on estates in Peninsular Malaysia.
32. In the few cases where boxes are erected but not occupied by owls
33. the reason is usually that there are very few rats,
34. as they are being controlled by other predators such as eagles.
35. I have not found that such good results in East Malaysia,
36. possibly because the required owl species is not present.
37. In Sumatra, on an estate surrounded by padi fields, a friend of mine introduced
   barn owls.
38. Not only did he rid his estate of rats.
39. it was also found that padi production in that district was doubled,
40. he was designated ‘Agricultural Hero of the Year’ by the President.
41. has starred in several documentaries
42. and has named his sons ‘Tyto’ and ‘Alba’.
43. He now breeds owls for sale to other estates
44. but, in order to feed them,
45. he has to buy rats caught 10 km. away,
46. as there are none to be found near his estate.
47. In view of all the above, I suggest that the weight of evidence is that barn owls
   will control rats
48. and will, to all intents and purposes, eliminate rat damage
49. and normally no further action is needed.
50. Yours faithfully, Richard Jones.