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Multi Peril Crop Insurance Project

Phase 2 Report



MULTI PERIL CROP INSURANCE PROJECT - PHASE 2 REPORT
"Assessing the Feasibility of Establishing Multi Peril Crop Insurance in Australia"

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1 INTRODUCTION

This "Phase 2 Report" follows an "Interim Report" dated November 1999 completing what is referred to as "Phase 1" of the Multi Peril Crop Insurance (MPCI) Project.

The Executive Summary from Phase 1 is attached to assist in an understanding of the situation reached at the end of Phase 1 (Attachment "A").

Phase 2 of the Project was intended to go a step or two further than most previous reports on multi peril crop insurance in Australia. The aim was to outline what issues would need to be overcome if a scheme was to be introduced in Australia and what sort of administrative structure may be achievable.

The objectives set for the Phase 2 report were, inter alia:

- To determine whether multi-peril crop insurance can be introduced on a commercial basis in Australia.
- To identify what form of assistance would be requested of Governments in order that a multi-peril insurance type product is considered a viable option by Australian farmers.
- To gather sufficient information for all participating parties to make a rigorous assessment of multi-peril crop insurance."

These objectives were to be achieved, among other things by undertaking:

- “(a) a comprehensive assessment of the market demand for multi peril crop insurance given the estimated cost of the product. This would include an analysis of how market demand may vary according to changes in the costs of insurance;
- (b) the development of a business proposal for the provision of multi peril crop insurance in Australia;
- (c) the development of a rating model which allows for the incorporation of farm level data in the estimation of risk premiums;
- (d) identification of the most appropriate system for administering multi peril crop insurance; and
- (e) exploratory work on the development of suitable support systems, including information technology.”

From the outset it was envisaged that the level of detail undertaken in relation to activities were contingent upon issues such as the assessment of market demand in (a), the likely cost of the product and the benefits offered by the product. The view was that unless commercial viability could be confirmed then completion of a detailed analysis was not useful.

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It was envisaged at the commencement of Phase 2 that if there was a Phase 3 it would include:

- Implementation of a process for administration of a multi peril product.
- Enhancing rating factors and data collection to allow premiums to be set ultimately at the farm level. It was acknowledged that in Phase 2 only the high level issues to do with rating would be identified.
- Establishing a process of data collection for more crops to assess the possibility of adding crops to the MPCl programme.

Phases 1 and 2 of the Project have been funded by Commonwealth and State Governments, some insurers, reinsurers and various bodies representing farm and rural interests.

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2 EXECUTIVE SUMMARY

The idea of implementing a commercial multi peril crop insurance product has been under consideration for the Australian farming community for some time.

A testimony to the commercial prospects of such a cover is that no such product is offered generally anywhere in the world without some form of Government support.

Various reports have been prepared over many years looking at the commercial viability of multi-peril crop insurance. Each has come to similar conclusions which could be summarised as follows:

There are many factors associated with a multi peril product which may give rise to selection¹ thereby creating the likelihood of severe losses. These factors reduce the incentive for the involvement of private insurance underwriters.

Experience in other parts of the world, especially the USA, confirms this position. Multi peril crop insurance schemes usually commence with some level of government subsidy which continues or is increased as the scheme is extended into additional crops and is selected¹ against.

2.1 UNDERWRITING / RISK

For private insurers to be involved in MPCI, the product and the underwriting process must be designed to limit the risk of selection. The product would need to encourage farmers to be prudent and act as if there were no insurance, ie act as if they are protecting their own capital.

Ignoring the issues of selection, anticipating the profitability of such business is problematic due to the lack of detailed information available for rating purposes.

2.2 MARKET SIZE - PREMIUM INCOME

Based on the premium rates used in the market research and on the product tested, the gross premium income for the total market would be of the order of \$135 million.

In line with the results of the market research, assuming an initial market share of 5% of the number of farms, the total market premium for all 4 crops is approximately \$7 million. Assuming market share of 20% by year 5 the premium volume increases to around \$27 million.

However if we assume that the mix of farmers taking up the insurance varies by size of farms and location the premium volumes could range between \$2 million and \$20 million in year 1 to between \$8 million and \$80 million in year 5. There is significant uncertainty in predicting the size of the market due to a variety of issues as discussed in section 10.

¹ By "selected" or "selection" we mean the impact of taking out insurance in circumstances where the likelihood of a claim occurring is known

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Clearly the greatest factor impacting the scale is whether participation in the market is voluntary or compulsory. If voluntary, estimating profitability is made more difficult because additional variables such as market penetration and where cover is purchased come into play. For example, if a significant section of the market does not purchase the cover the rate setting for the balance of the market becomes problematic. Rates are likely to be increased if the more stable sections of the market do not participate.

If the scheme is voluntary it is unlikely that a privately underwritten scheme could be introduced into Australia at this stage.

2.3 GOVERNMENT INVOLVEMENT

Government involvement will be needed to limit some of the risks associated with the scheme. However Government will also want to limit its exposure and encourage farmers to be prudent and protect their own capital.

Government participation could include the following three areas:

- Making the insurance compulsory
- Subsidising premiums
- Providing reinsurance support against, say, major catastrophes

It is likely that Government will prefer to examine the possibility of assisting with premium subsidies and reinsurance.

For Government to have a reasonable chance of success (ie. a high level of penetration) with the scheme it will be in its interest to discourage the concept of Exceptional Circumstances "EC" payments to those not insured. If it does not cease such practice there may be no perceived need for a MPCCI product.

2.4 INSURER/REINSURER INVOLVEMENT

If a scheme is started with Government support, it will be essential for underwriters, brokers and agents to be involved in the market to assist farmers in understanding the product and assist with the delivery of any proposed product to the market

It will also be essential to carefully manage insurer participation in the market. If the Government subsidises premiums and the scheme is voluntary steps should be taken to ensure that the scheme is the only product available to cover the selected perils.

This will ensure that the scheme does not become that "of last resort".

The best scenario for a viable product with private insurer involvement appears to be the establishment of an underwriting pool with insurers accepting various proportions of the risk.

Another key to the success of the product will be the participation of private reinsurers. Clearly they could assist in accepting risks in respect of catastrophic events.

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The nature of reinsurer participation could be in the form of either:

- i) Per event excess of loss cover, ie coverage above a defined dollar limit for claims in respect of a single event, or
- ii) Stop loss coverage, ie coverage limiting the industry losses to a pre-defined loss ratio, thus covering the risk of one or more large events or the accumulation of worse than expected experience.

2.5 LOOKING AHEAD

The first steps to be taken is to determine the level and type of Government support that will be made available.

It is then proposed that, a Phase 3 project be entered into with the objectives of:

- Establishing an Administration to offer an MPCCI product initially for wheat and barley only. To do this a budget of the order of \$750,000 to \$1,000,000 may be required.
- Including as part of the of the administration a process for collection of data at farm level. A budget for this of the order of \$300,000 to 500,000 could be anticipated.
- Including as part of the operations of the administration a process to collect data to assist in the evaluation of additional crops. Costs for this would be included in the running costs of the administration which are estimated to be of the order of \$1,000,000 to \$2,000,000p.a.

If the scheme is to be operational for the 2001 season Government support would need to be agreed forthwith. It is suggested that Government initially subsidise premium by 25% representing an annual cost of over \$33m for a 100% market share of all four crops plus an additional amount for the unquantified exposure to catastrophes above and beyond those included in the data.

The administration of the scheme would need to be agreed and put in place in mid January 2001. Marketing of the product would also commence at this time with a view to initial deposits being collected from farmers in mid March (ie 30 days prior to planting).

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3 FARMERS' NEEDS

Being "on the land" has many well documented risks from natural perils such as drought, frost, wind, flood, mice and locusts plague. There is also the risk of disease.

The impact of such risks can effect the timing of planting, crop yield and quality.

Not only do they have these exposures but as a group they are very susceptible to crop pricing movements for reasons such as currency fluctuations, production in other parts of the world and general demand for crops.

Australian farmers also operate in extremely competitive markets where a major producer (USA) has an MPCCI scheme which is heavily subsidised by Government as part of the Agricultural segment support.

The values of farms and the incomes produced are exposed. A MPCCI product could have the benefit of removing some of these downside issues thereby making it easier, for example, to deal with financiers. A multi peril product could enhance a farmer's risk management options.

The TQA research, undertaken as part of Phase 2, has indicated that a significant proportion of farmers see a need to buy a multi peril product preferably one that responds closer to time of planting than the product tested in the research (ie wheat and barley first jointing canola and lupins eight leaf stage. The TQA research results are included as Attachment B. For a summary of these results, please refer to Section 5.

Data used to estimate premiums in the research is limited to historical data based on yield variations across time and within regions. There is no data establishing specific cause of yield loss or time of loss in a crop's life cycle.

Whilst it is desirable that cover is available as early as possible it was felt that it was better to initially stay with the proposal that "first jointing" represent the beginning of exposure for wheat and barley. This will reduce the likelihood of selection against the insurers.

The product tested in the TQA Market Research has been subject to limited farmer input. Such input is essential to meld together farmers' preferences and likely claims costs (and hence premiums). This task is severely limited presently by data availability. If a scheme is to be started the product design will need to be constrained until data is generally improved. The process of improvement is likely to be long as it is only after the data is enhanced that proper rates can be determined.

One issue that came through quiet clearly in the TQA Research is farmers' desire to have MPCCI product and existing fire and hail covers joined together. Whilst this is an ideal aim it is unlikely to bring about any significant reduction in the combined premiums. Further if MPCCI is to be "trialled" for a few years then separation of the two types of policies would seem to be an appropriate course for the time being.

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What is to be included (or not included) in any MPCCI coverage and the basis on which claims are to be determined will need to be clarified and communicated clearly to ensure successful delivery of any product to farmers.

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4 PRODUCT TESTED

The Phase 1 report sets out the basis of the cover initially proposed.

4.1 CROPS TO BE COVERED

The aim was to include in the coverage four crops namely wheat, barley, lupins and canola. Since undertaking the Phase 2 report we have become aware that the data available on canola at present is sketchy at best and there was no data on lupins available in the Trowbridge² study on which the current product pricing has been based. The limitations in the Trowbridge analysis due to data limitations are quite significant, as discussed further in Section 6.

Therefore, unless additional data is collected prior to launch of the product, the crops considered for coverage are limited to:

- Wheat and
- Barley

Even though the data for these crops relied upon by Trowbridge is not ideal, it was the best data available for the analysis. If the view is that it is worthwhile trialling something, then these two crops provide the best starting point.

Further analysis will certainly be required before the private insurance sector would be willing to accept risk for the product. At this stage, depending upon the data that can be accessed, a decision may be taken to assess the viability and required premium rates for other crops.

Wheat and barley made up approximately 70%³ of the gross value of grain crops produced in Australia in 1999 - 2000. Lupins and canola would make up approximately 15% of the total value of crops.

There are risks in extending coverage into grains where data availability is weak. The risks include:

- The insurer is forced to establish an artificial premium rate which (if struck incorrectly as is highly likely) could result in a disproportionate amount of cover being taken out - ie if premiums were too high, no cover would be taken out and if too low substantial cover would be taken out. Neither outcome is desirable as either one of which can cause significant fluctuations in underwriting experience and market size.
- It begs the question as to why other crops and rural exposures where data is limited are not included in an insurance scheme. The danger here is that Government could become embroiled in a debate about subsidies if it begins to become involved in areas where data is limited.

² "MPCI Premium Rate Feasibility Study", Trowbridge Consulting, August 1999 (draft)

³ Grain Year Book 2000 (GRDC, 2000)

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If other crops are to be covered then a basis for deriving premiums and its implication for an insurer need to be assessed. It is possible to find a basis for setting premiums but, as stated, the risk to the underwriter is increased. If the other 2 crops are to be included (and indeed more in due course) some forms of proxy based on the likely claims experience of other crops will have to be developed to develop premium rates for such crops. This in itself is a significant task which has inherent dangers because it relies on a base of data which itself needs to be enhanced.

It should be noted that one benefit of covering more crops is that the possibility of substitution leading to market distortions and inefficiencies between covered and non-covered crops is reduced. We are unable to estimate the possible cost of such substitution or the possible cost of introducing artificial rates for crops where there is insufficient data.

We propose a phased implementation approach to the product introduction. As stated, introduce the product with coverage for wheat and barley. Concurrently attempt to obtain data in respect of lupins and canola, and other crops where a need is perceived. Once a sufficient amount of data has been compiled and analysis has been performed such that a reasonable degree of comfort in premium rates has been gained, extend product coverage to include these additional crops.

An alternative approach would involve Government input. Due to insufficient data being currently available for premium rating, private insurers would not be willing to provide coverage for other crops. If the Government were willing to underwrite these other crops whilst data was being compiled, then the product could be launched with the additional crops covered. In considering this, we again reiterate that wheat and barley comprise approximately 70% of the potential market.

4.2 PRODUCT COVERAGE

Cover as proposed in the Phase 1 report was for:

- Yield loss
- to selected percentage of the overall crop value.

Exclusions included, quality downgrades, most diseases, most pests, price fluctuations etc.

A farmer would have to bind insurance for all exposed hectares intended for planting of the crops covered.

The percentage of cover offered (ie level of deductible) impacts on the price. The higher the deductible the lower the premium.

The relationship between deductible and premium is not linear. For example a deductible of 60% for wheat in Region 1⁴ has an average estimated premium of 2.0%

⁴ Region 1 is made up of the following Agro ecological zones: Qld Central, Qld South West, NSW North West (refer attachment B page iv for full listing of regions).

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of crop value, whereas a 40% deductible has a premium of 6.1%. Therefore a 50% increase of coverage from 40% to 60% increases estimated premium by over 200%.

Throughout this report we have generally used a deductible of 60% simply because 40% of crop value was considered to be the minimum coverage required to cover costs and it puts premiums at what was considered to be an affordable level. In areas such as Western Australia where costs represent a higher proportion of income a deductible level as low as 40% was used in the market research.

It is possible to conceive of varying deductibles being used across the market. One reason for this is because input costs relative to yield may be greater in some areas. This is generally the case in Region 5. Cover for wheat in this region could be provided broadly for the same cost with a 45% deductible as compared with a 60% deductible in Region 1. Note that such a deductible of say, 45% may allow a profit on planting costs for the crop. Whilst we have not analysed input costs we understand they are relatively lower in Region 5. If this is the case a lower deductible may well cause more distortion in take up of an MPCCI product

Attachment C includes a summary of typical loss scenarios as outlined in the Phase 1 report. Attachment D is an explanation of the policy coverage used as part of the TQA Research Questionnaire.

The product design as tested by the market research did not, for budgeting reasons, have the benefit of significant farmer input. The feedback from the market research, was that the product was somewhat complicated.

Even with improvements in the product design it will be important for the MPCCI product to have the involvement of insurance brokers and agents in the process of selling the product. Most growers rate the use of brokers and agents the best means of learning more about the product.

In the market testing wheat and barley were to be covered from the "first jointing" stage. The market available could be potentially enhanced if cover was available earlier. However bringing the commencement of the cover forward would increase the risk of selection.

Even though the stated intention of the policy was to refund premiums if there was no planting there are concerns among farmers about the timing of purchase of cover. 60% of growers believe that weather vagaries prevent them from predicting planting time. A recurrent theme throughout this paper is selection. This is a good example. Insurers' results are going to be problematic if a claim occurs, given that a planting has been made with the likelihood of an adverse outcome known at the time of planting. Whilst consideration can be given to the purchase date it is highly likely that it will remain at 30 days before "planting" in an attempt to reduce the possibility of planting even when poor weather conditions are in prospect. Growers would be required to pay a deposit premium based on estimated hectares and crop types, which would be confirmed after planting. If the grower failed to plant premium would be refunded.

Coverage is another area that needs to be clarified. Pricing has been based on all crops being included so that if an insured event occurs a farmer will be paid compensation

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based on the difference between income generated for all crops at the "Indemnity Limit" less the "Adjusted Income".

The "Indemnity Limit" would be the sum of the \$ value per hectare agreed for cash covered crops times hectares planted.

The "Adjusted Income" is the sum of the actual harvested yield for each crop multiplied by the insured value (originally agreed with the insurer) adjusted for the impact of excluded events.

For the purpose of the Phase 2 Report we have not completed an analysis of the policy design rather we have relied upon that presented in the Phase 1 report

Further effort is required in a Phase 3 to complete the wording of the policy to clarify some of the issues referred to herein.

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5 TQA MARKET RESEARCH

TQA Research Pty Ltd were engaged to conduct market research to measure the likely uptake of Multi Peril Crop Insurance among grain growers. The emphasis of the research was on price elasticity and barriers to purchase.

TQA produced a Product Concept document (refer attachment D), which was sent to 690 growers. Full interviews were achieved with 513 growers with the remainder not participating for a variety of reasons.

The final report from TQA Research is attached as Attachment B.

The key findings of the market research are outlined hereunder:

5.1 PRODUCT CONCEPT

Many farmers surveyed found the Multi Peril Crop Insurance product difficult to understand. After adjusting for growers that declined to participate in the research, it is estimated that approximately 25% will find the product difficult to absorb.

However in saying that the research also identified that growers are likely to use Insurance Brokers or Agents to learn more about the product and purchase the cover. Of growers surveyed 75% advised they would likely utilise the services of an Insurance Broker or Agent.

In relation to product coverage 23% of growers surveyed specifically advised that they disliked the fact that the product does not cover fire and hail. The general consensus was that a single product encompassing fire and hail would be more desirable than having two products.

The research identified that the inclusion of quality downgrade cover would make the product more attractive to growers. Of the growers surveyed 28% said they would be much more inclined to purchase the product if the cover was included whilst 43% said they would be a little more inclined to purchase. Only 26% of growers advised that they would not be more inclined to buy the product if the cover was included.

5.2 PURCHASE OF COVER

The product requires that a financial commitment is made by the grower prior to planting. The proposed timeframe is 30 days prior to planting.

The market research identified that having to take out the policy 30 days prior to planting presents a problem or deterrent for 60% of growers. These growers believe they cannot predict their planting time, due to vagaries in the weather. Late changes can be made to cropping plans and the growers feel that the “30 day period is too long”.

If a commitment was required 60 days prior to planting 84% of growers would not be inclined to purchase the product.

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Inception of cover under the policy for wheat and barley is from first jointing. Of the growers surveyed 50% found the proposed inception to be acceptable while 38% would prefer cover to be effective from an earlier stage – either when the crop is sown (18%) or at the crop's first emergence from the ground (22%). Nine percent (9%) would prefer later cover, perceiving the risk to be later in the season (and premiums should be less for a shorter period of cover).

A similar response was received from Canola growers, where cover is effective from the 8 leaf stage. Forty five percent (45%) found the proposed inception to be acceptable while 47% would prefer earlier cover (evenly split between the time at which the crop is sown and first emergence). Five percent (5%) would prefer cover to commence later than the 8th leave stage.

5.4 LIKELY DEMAND

TQA estimates that approximately 18% of growers would purchase the product at viable⁵ premium levels - providing the product was very effectively communicated to growers.

This forecast is based on 'believing' all of the growers saying they are very likely to purchase MPCPI and 25% of those saying they are fairly likely to purchase. This 'formula' makes some allowance for the fact that some growers found the MPCPI concept too confusing and did not participate in the full interview as a consequence.

Figure 1

Response (%)	Region					
	All Regions	1	2	3	4	5
a. Very Likely	9	15	10	7	6	10
b. Fairly likely	34	34	40	31	33	37
c. Not too likely	28	32	23	28	33	24
d. Not likely at all	26	13	24	32	25	25
e. Don't know	3	6	2	2	2	4
Total	100	100	100	100	100	100
Projected uptake (a + .25b)	18	24	20	15	14	19
Sample	n=513	n=111	n=100	n=71	n=101	n=130

It would arguably take 3-4 years to achieve this level of penetration.

⁵ This is the 'middle' rate deemed by actuaries to be viable and includes administration costs.

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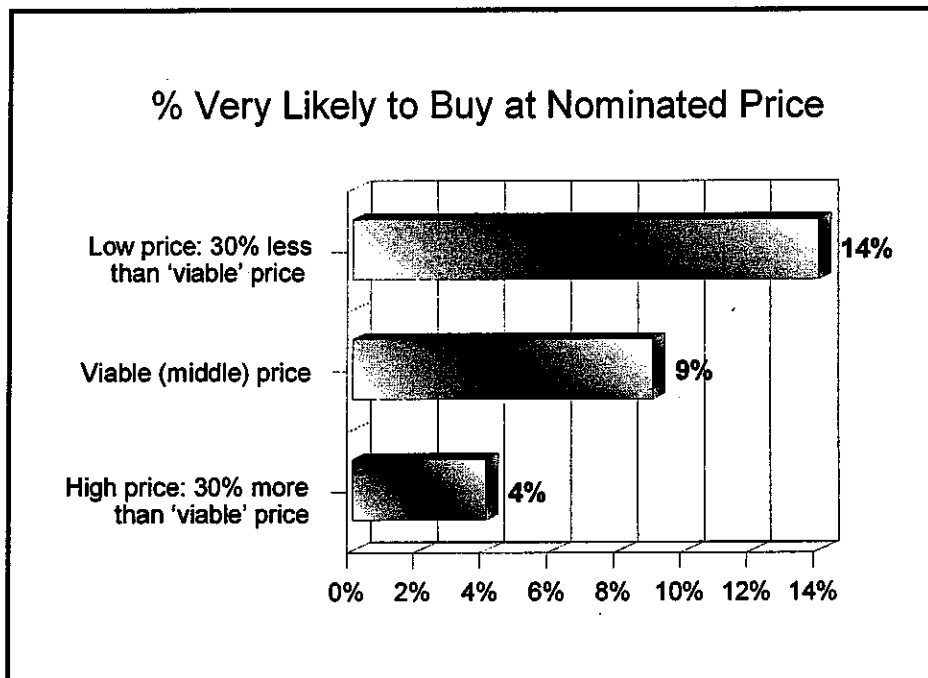
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Demand is likely to be higher among:

- Growers in Region 1 (Central and SW Queensland and NW NSW), although there is substantial latent demand in all Regions .
- Younger growers (under 40 years)

5.5 PRICE ELASTICITY

Multi Peril Crop Insurance is quite price elastic. Modest increases in price will lead to a significant reduction in demand. The following chart summarises the proportion of growers that would be very likely to purchase at three price points. In effect, demand is more than halved (from 9% to 4%) as price increases to 30% above the middle or ‘viable’ rate.



Note – viable premiums for wheat (with a 50% excess) are estimated by the consulting actuaries to be: Region 1 (6.6%); 2 (5.0%); 3 (4.5%); 4 (3.8%); 5 (2.5%)

Grower expectations of price (premium level) are highly variable, but are, on balance, in line with viable premium levels from an actuarial viewpoint. For the key crop, wheat, expected premiums are around 20% higher than the ‘middle’ or viable level. For barley, the average expected price is extremely close to the viable level, while for canola the expected rate is typically around 60% of that which will be viable.

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Latent demand does not vary to any great degree between:

- growers encountering severe yield losses in the last 5 years due to weather and those not encountering such losses
- grain specialists versus mixed grain/livestock enterprises.
- growers who found the concept somewhat difficult to come to grips with, versus those who didn't. (However, some growers declined to participate in the survey because they found the concept far too difficult to grasp – so there is little doubt non-uptake will be influenced by product complexity and the marketing strategy.)

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6 WOULD PRIVATE INSURERS ACCEPT THE RISK?

By "accept" we mean that an insurer is prepared to act as an underwriter as compared with the role of agent for some other party for example, government, in accepting the risk. A significant share of the risk would be taken by the underwriter.

Currently licensed general insurers in Australia are facing increased regulatory pressure to satisfy new capital adequacy requirements. Whilst the need for additional capital as a result of such changes will vary from insurer to insurer there is little doubt that capital is becoming relatively more scarce.

The introduction of an MPCCI product would add modest sums to the capital demands on insurers. Those capital demands become greater because there is uncertainty in almost every area of an MPCCI product for an underwriter.

Uncertainty with this product arises primarily for two reasons:

- i) Limitations on the availability of data for premium rating analysis, and
- ii) Potential for adverse selection and moral hazard.

These issues are discussed in Trowbridge Consulting's initial report dated 27 August 1999. The following describes these issues in further detail:

6.1 DATA LIMITATIONS

- The premium rating analysis performed by Trowbridge Consulting has been limited due to data availability. Analysis has been performed at the statistical local area ("SLA") level based on annual yield data for wheat, barley and for limited SLA's canola.
- Trowbridge was provided with insufficient data to assess premium rates at the individual farm level. Therefore at the lowest (and basic) level of risk assessment there is a need to be cautious about the cost of the risk with the consequence that premiums need to be set conservatively.
- Without a compulsory scheme those farmers who understand the exposure will be more likely to buy insurance if their rate is believed to be too low and not buy if it is too high. When rates are set too high it is most likely that the best risks will opt not to be involved. Hence there is a conflict between the above need for conservatism. The consequence is that the scheme would be likely to have even more volatile results than initially anticipated because of the non-participation of the best risks.
- There is insufficient data to separate out all the costs of the included perils from those not included. The likely distribution of costs for each peril is not known. The yield data on which analysis has been based includes the impact on yields of perils specifically excluded from the product. For fire and hail it is believed that their impact on premium rates would be relatively minor for the levels of deductible that are currently being considered.

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- The lack of data by peril and event also results in difficulties in the assessment of the cost of reinsurance.
- Similarly the occurrence of damage during a crop's life cycle is not known. Hence the impact on premium rates or changing coverage to earlier or later in a crop's life cycle cannot be addressed.
- As the analysis is based on yield data, it could include production resulting from a second planting, following the failure of a crop early in its life cycle. This would have the impact of underestimating the premium rates, although it is impossible to quantify the extent.
- As discussed in Trowbridge Consulting's report "studies by the RMA-USDA have shown a strong inverse relationship between a farmer's average yield relative to the average yield of the country and yield variability." Trowbridge were previously informed reliable production data is available at the individual farm level. We agree with Trowbridge's comments that "it is strongly recommended that before implementing individual farm rates the ICA commission a study of the relationship of expected yield to yield variability of individual farms and develop appropriate rating adjustments."

6.2 ADVERSE SELECTION AND MORAL HAZARD

- To some extent the possible impact of weather and locust plagues can be anticipated. For example, climate forecasting is part of many farm management systems. Whilst use of such scientific advances is to be applauded there is a need for insurers to be aware of its impact on insurance buying patterns. Where poor conditions are expected it is likely that more insurance will be bought vis-à-vis the purchasing decisions when good conditions are likely. Selection can occur as growers will always have a greater knowledge of their farm's particular circumstances than the insurer. Such an ability to select, that is, to buy when things are looking bad, has the danger of putting risks of poor farming conditions disproportionately into the hands of insurers ultimately leading to larger losses and higher premiums. This commences a cycle with the insurer ultimately being left with the worst risks and a need therefore for higher prices.

This effect can be best illustrated by recent USA experience;

"Crop insurers in the Midwest are in a potentially difficult situation as farmers load up on insurance for the winter wheat crop they are planting in drought - parched fields..... They are also insuring higher percentages of their crop in anticipation of poor growing results and with the help of new crop law that provides significantly higher federal subsidies this year for crop insurance".⁶

- A concern for insurers would be any impact a MPCCI product may have on the controls which would otherwise be implemented in relation to perils covered by the policy. In particular locust and mice plagues which are readily anticipated may cause some concerns. Before committing to support an MPCCI product, insurers may wish to make themselves familiar with the control mechanisms for

⁶ Growers AM Best 2000 4/10/2000

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these perils and ensure they are comfortable with the impact an MPCCI product may have on these eradication procedures.

6.3 INCREASE IN MARKET EXPOSURE

- As insurance for input costs becomes available there is the prospect that more marginal land will be put to use. For example if prices for say meat and wool are depressed it may be that paddocks are substituted and planted with insured grains. Such paddocks may be more exposed to, say, waterlogging (a “non excluded” risk if it impacts yield and not quality) again leaving more exposure to insurers. In addition to increasing the relative exposure of the insurers (ie planting in marginal land), the availability of insurance has the potential to increase the total area of crops planted, thus increasing the total size of the insurance market with a decrease in the quality of the average risk. Such exposure is very difficult to quantify when looking at the feasibility of a multi peril product. Suffice to say it is a further reason for premiums to be set on a very conservative basis.

This is supported by Richard Lugar⁷ to the US Senate Agricultural Nutrition and Forestry Commission hearing on risk management and crop insurance when he said;

“Leading economists believe that crop insurance encourages the planting of crops on marginal and environmentally challenged acreage”.

- Grain yields can vary according to farm management practices. There is a question as to whether such practices will continue with the same intensity given the purchase of insurance. This potential for moral hazard may be able to be minimised through loss sharing or coinsurance arrangements, experience-based premiums or strict claims investigation.

All of these issues add to risk as far as private insurers are concerned. Whilst ever there is potential to anticipate or manage the impact of risks the insurance outcome (and therefore insurance premiums) will be influenced by the propensity to buy (given different levels of perceived probability of events occurring) and, by the costs of claims given varying levels of enthusiasm in the management of exposures which may add to claims costs.

⁷ US Senator Richard Lugar, 14/10/99

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7 REINSURANCE AVAILABILITY

At this stage the level of private sector reinsurer involvement is impossible to gauge. There are a number of factors that will ultimately determine the potential level of involvement:

- the ability to predict the cost of claims and sophistication of analysis
- confidence in the product design to limit adverse selection and moral hazard
- direct insurance and reinsurance market capacity
- willingness for reinsurer involvement
- type of reinsurance protection
- level of Government involvement.

There are basically two options for the nature of a reinsurance programme:

- a) Per event excess of loss protection – Coverage applies when a defined event results in a loss greater than a pre-determined excess level. This type of cover effectively provides coverage against large events.
- b) Stop loss protection – Coverage applies when claims experience results in industry losses greater than a pre-determined loss ratio. In addition to providing coverage against large events, coverage is effectively provided against the accumulation of many small losses or the risk of inadequate premium rates.

The level of Government involvement will largely depend upon the willingness of the private sector to provide reinsurance and the Government's desire to provide a product. The ability to limit the potential exposure of the Government will only be possible if the private sector reinsurance market is involved.

The premium rates for wheat and barley used in the market research have been based on yield data for the last 20 years. This data included 3 years for wheat (1981, 1983 and 1995) and one year for barley (1983) where the loss ratio exceeded 100% for the year. It was estimated by Trowbridge that these events cost the premium pool 17% for wheat and 14% for barley on an annualised basis (assuming a 60% deductible, 50% loss ratio and no individual farm loading). Such costs were included in the premium estimates used in the market survey.

The data used for the research only dates back 20 years and whilst it includes losses from the drought in 1983 it does not enable an estimate to be made of the frequency of such events. Such estimates would need to rely upon many years of data, analysis of weather patterns and a synthesis of experience elsewhere.

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8 GOVERNMENT INVOLVEMENT

Given the uncertainty concerning private sector participation as underwriters and given that farmers see a need for a form of MPCl product, some form of intervention is needed to facilitate establishment of a market if it is accepted that such a policy is desirable.

In the market research to date it has been clear that many farmers see benefit in an MPCl product but many see the presently proposed cover as too complicated, and too limited in its coverage.

We have previously indicated that some considerable effort is needed to address these issues. Farmers awareness of the product needs to be enhanced. They need to be well informed about the value of such a product, its cost and what can be done to keep the cost to the farming population down given its availability.

8.1 COMPULSION

An option is to make the product compulsory. However a move now to introduce the current product by means of compulsion could be premature. A process of acceptance is needed for farmers to be part of a compulsory solution even if this becomes a desired course.

The benefits of a compulsory scheme are as follows:

- i) As discussed earlier there is considerable scope for adverse selection with this product. If the product is made compulsory the ability to purchase insurance only when conditions are expected to be poor, or where the risk for an individual farm is worse than expected in the premium rate, is removed. This would have the impact of reducing the scope for selection by growers, thus reducing uncertainty for insurers.
- ii) The second advantage is that distribution costs such as agents and brokers fees are largely reduced as the product is compulsory and does not have to be "sold" to growers.
- iii) Thirdly by covering the whole market, the premium pool is larger and hence the percentage loading in premiums to cover administration costs is lower.

Offsetting these advantages of a compulsory scheme are:

- i) Clearly if there is not widespread support for the product, both in design and price, there will be significant adverse publicity and political problems.
- ii) If the product was compulsory the size of the administration required from commencement would be significant. This would involve significant logistical issues.
- iii) If there is systematic underpricing of the product, the magnitude of any loss to the Government or insurers would be much greater.

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- iv) There is also a further political consideration if the product was made compulsory whilst only covering a small number of crops. Clearly growers of other crop types could see this as discrimination.

8.2 PREMIUM SUBSIDY

As an alternative or in addition to a compulsory scheme Government can support a scheme through providing a premium subsidy or a form of high level catastrophe protection or a combination of both.

However without compulsion participants can come and go as they please. This has inherent dangers for a capital provider.

A subsidy based on a fixed percentage of the real rate will generate bigger dollar savings for those farmers in more risky areas. A consequence of this could be that the subsidy encourages more to purchase as the risks are perceived to increase with weather condition thereby exacerbating the positions where there is no subsidy.

A fixed \$ based subsidy would have the impact of providing a greater percentage subsidy to better risks.

A subsidy whether in fixed \$'s or proportional to premiums does have the impact of extending the market. However premium subsidy could increase the risk of adverse selection if the reduced premiums result in altering growers' decisions in relation to planting when there is high probability of the failure of crops.

8.3 REINSURANCE ASSISTANCE

There is significant scope for Government involvement in the reinsurance protection of the scheme.

This could be on a per risk basis (more or less farm by farm or area by area) and/or per event basis or the experience of the whole scheme could be underwritten.

It is possible to envisage a series of individual farm losses from different perils accumulating to quite a large cost to the farming industry in a season⁸

However as this is not the intended purpose of the introduction of MPCl it seems that Government participation is not warranted on a per risk basis. Nevertheless given the possibility of a series of relatively small losses from a series of different events it will be useful to have some explicit rules as to how they are to be dealt with to reduce the temptation to provide "one off" payments by Government when such losses occur. Private sector insurers, if involved, would almost certainly look to have their loss ratios reduced by the Government in such circumstances.

In section 10 we have developed some of the likely scenarios for a limited scheme.

⁸ Refer section 7 for expanded discussion on reinsurance alternatives.

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9 CROP INSURANCE SCHEMES WORLDWIDE

9.1 UNITED STATES

Multi peril crop insurance (MPCI), in the United States, is underwritten by the private sector and the Federal Government but is serviced mostly by the private sector who take on relatively little balance sheet exposure.

MPCI coverage provides protection against low yields, poor quality, late planting, replanting costs and prevented planting. The cover provided by the policy is for losses due to natural causes such as drought, excessive moisture, hail, wind, frost, insects and disease.

Coverage is available on over 76 crops in the primary production areas throughout the United States.

A farmer purchasing MPCI has a number of cover options.

The first is a CAT (catastrophe) policy, the lowest amount of protection available. This coverage, which pays 55% of the established price of the commodity on losses in excess of 50%, and such provides a basic safety net. The premium on CAT coverage is paid by the Federal Government; however, farmers must pay a \$60 administrative fee for each crop insured in each county.

In addition, to the CAT policy, farmers can buy additional insurance known as "private supplemental" under a "buy up" program which is designed to encourage purchase of higher, more adequate levels of coverage. The Federal Government subsidizes a portion of the premium under the "buy up" program

With this insurance the farmer selects the amount of average yield he or she wishes to insure; from 50% to 75% (in some areas 85 %). The farmer also selects the percent of predicted price he or she wants to insure; between 55% and 100% of the crop price established annually by Risk Management Agency/US Department of Agriculture. If the harvest is less than the yield insured, the farmer is paid an indemnity based on the difference. Indemnities are calculated by multiplying this difference by the insured percentage of the established price selected when the insurance was purchased.

In June 2000 the Agricultural Risk Protection Act was passed by the Federal Government. The new Federal law expands subsidies for MPCI. It is estimated that over the next five years \$8.2 billion will be spent on the Federal Crop Insurance Program, largely in the form of reductions in the premiums farmers pay for various levels of coverage. Under the "buy up" program subsidies have increased from 55% to 67% where a farmer insures 50% of his crop and from 13% to 38% where a farmer insures 85% of his crop.

9.2 CANADA

A Federal Provincial Crop Insurance Program exists in Canada which provides protection to participating agricultural producers against crop yield risks.

Although federal legislation establishes the national framework, a lot of flexibility exists for provinces to modify the program to meet the needs of their producers.

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Provincial plans are developed through consultations with all three parties on a commodity basis. Crop Insurance is available in all provinces for a wide variety of crops but coverage is not universal, nor are participation rates necessarily high in spite of the fact that the cost of the program is subsidized by government. Currently, AAFC allocates approximately \$200 million per year to Crop insurance from its total safety net envelope of \$600 million. The largest component of the program covers grain and oilseed production on the Prairies.

The premiums for the insurance are calculated as follows:

Premium = premium percentage x {coverage level x long term average yield}

Farmers are free to choose different coverage levels, however, most chose a coverage level of 70%. The premium percentage is set by Crop Insurance administrators to ensure the program is actuarially sound. The insurance price is adjusted each year to reflect expected market returns for a representative grade of each crop. Long term average yields are based on either the individual farmer's historical yields or a regional average. The federal government and the provinces each pay 25% of the premium, the rest being paid by the farmer. Indemnities are paid out when the actual yield falls below the long term average yield adjusted for the selected coverage level.

Indemnities are calculated as follows:

Indemnity = max { [(coverage level*long term average yield) - actual yield]

with actual yield determined at the whole farm level.

The administrative costs are shared evenly between the provinces and the federal government. Administrative cost as a percentage of total premiums in the 1995-96 crop year ranged from a low of 11% in Alberta to a high of 342% in Newfoundland (AAFC 1995a).

9.3 FRANCE

There is no true Multi Peril Crop Insurance product available in France. However the hail product includes cover for wind, frost and excess rainfall.

Hail and allied perils insurance is generally not subsidised by the government, instead France has an extensive system of agricultural aid, which is granted in the event of natural catastrophes.

Aid is provided in the event of all non-insurable natural hazards, however the following prerequisites must be satisfied before aid is granted:

- official recognition of a natural catastrophe
- proof that the grower has current fire insurance for buildings and contents including livestock and harvested produce
- crop failure must make up at least 27% of the crop affected and in addition a loss of at least 14% of the entire farm must have been sustained.

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The levels of aid are graded according to the amount lost and are increased by an additional 5 – 10 % if the farmer sustaining the loss or damage has a hail insurance policy. The levels of aid provided in the 1998 year were as follows:

DAMAGE	AID #
27 – 50%	15 – 20%
50 – 70%	25%
70 – 100%	35%

5 – 10% higher if the farmer has hail insurance

The annual aid budget in 1998 was approximately £76.2M, which was borne in equal shares by the government and the agricultural industry.

9.4 GERMANY

There is no Multi Peril Crop Insurance policy available in Germany.

The German government does not subsidize hail insurance nor does it provide aid for crop losses due to natural catastrophes. In exceptional cases, for example with extraordinary and large scale climatic occurrences, special programs are adopted. Special legislation is required to be passed for special programs to be adopted.

Disaster relief funds are also provided by the EU. Such funds are paid by the state governments to those affected by the losses.

Besides the special programs and aid from the EU, the individual Lander are responsible for disaster relief and issue their own specific guidelines.

9.5 ITALY

There is no true Multi Peril Crop Insurance product available in Italy. However the Hail and Allied Perils policy may be extended to cover frost, wind and dryness, sun scorching and disease.

The Italian government subsidize Hail and Allied Perils Insurance and provide disaster aid for farmers via the National Solidarity Fund for Agriculture. Contributions to the fund are made in the budget of the Ministry of Finance, the sum being defined by law every year. In 1997 the fund received £258 million. The amount allocated to the fund largely depends on the resources needed. Approximately 60% of the funds resources are to be used for disaster aid with the remainder for subsidies for Hail and Allied Perils insurance.

Subsidized Hail and Allied Perils Insurance

The Ministry of Agriculture redefines the premium subsidy and list of insurable crops and perils for each area every year.

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Perils generally eligible for premium subsidies are hail and in principle frost, wind and dryness. Sun scorching and disease are generally not granted any premium subsidy and as such hail insurers are reluctant to provide coverage for these perils.

Syndicates are responsible for providing members with hail insurance that is eligible for aid and to manage premium subsidies. They receive the government subsidies and in turn collect farmers' premium shares

The premium subsidy rate in 1999 was 40%.

Disaster Aid

Disaster aid comprises subsidies, investment grant or exemption from taxes/duties or rebates of taxes/duties.

Aid is available for losses following excessive rain, flood, windstorm, frost, rime, hail and drought, however only perils and crops that are not insurable in the community in question are eligible for aid.

Losses resulting from earthquake, plant and animal diseases, insect infestation and a decrease in prices are not eligible for aid.

To qualify for disaster aid, the farm must be located within a disaster area and the loss must exceed 35% of the gross yield (excluding animal products and insurable crop losses).

In 1998, premium volume in agriculture insurance amounted to £323 million. Subsidies averaged 53%, some 40% to 45% of which were funded by the central government and 10% to 15% by the regional governments. Furthermore, comprehensive government reinsurance is provided by the "Consortio de Compensacion".

During the ten year period 1988 1997 premium subsidies amounted to £1024 million and £129 million in government subsidies were paid through reinsurance.

9.6 SPAIN

Spain has a Multi Peril Crop Insurance scheme in operation. It has the most comprehensive statutory crop insurance system in the EU, which provides full coverage against natural disasters and is subsidised by the government.

The government also provide aid in the event of extraordinary loss occurrences not covered by the crop insurance system.

The Multi Peril Crop Insurance scheme covers 28 different crops and provides two forms of primary cover ie guaranteed yield and loss of yield cover.

The perils covered by the insurance depend on the crop and the type of cover in question. The most comprehensive coverage covers hail, fire, windstorm, frost, rain, flood, dryness, diseases and pests and is only available for winter grain, grain legumes, onions and wines in selected areas. The scope of cover for other crops is limited and normally includes hail, windstorm, frost and flood.

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The sum insured under the scheme is composed of the insurable production and the price annually predetermined by the government. Coverage for hail is 100% and for other perils generally 80% of the sum insured. The deductibles depend on the peril and normally amount to 30% of the total sum insured for windstorm and flood and, depending on the zone to 10, 20 or 30% of the total sum insured for frost. A 10% ordinary franchise and 10% loss deductible are applied to hail.

Premium rates and prices are determined by the government. All business is written by a pool, which comprises 61 private insurance companies. Agroseguro, which is owned by the private insurance companies, handles the management of the scheme.

Reinsurance of the scheme is largely provided by the government.

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10 SOME FINANCIAL SCENARIOS

Based on feedback from the market research we have developed a financial model of the potential MPCCI market size under a variety of scenarios.

The modelling incorporates the following:

- analysis performed by Trowbridge Consulting
- data from the Australian Crop Report produced by ABARE dated 6 June 2000
- data from the Year Book Australia 2000 produced by ABS.

The key assumptions adopted in the modelling are:

Number of farms	35,000
Growth in farm numbers	0% pa
Level of Deductible	60%
Inflation	0% pa
Crops	Wheat, Barley, Canola & Lupins

Although the projections are high level and involve numerous approximations, the information on market size is quite important. Assuming a market penetration of 5% in year 1, and a random distribution of farms by size and geographical region, the total market premium for all four crops (based on 15% individual farm loading and a 50% loss ratio in setting premiums) is approximately \$6 million. Assuming market penetration of 20% by year 4, the premium volume increases to around \$27 million.

However if we assume that the majority of farms taking out insurance are small, these premium volumes reduce to \$2 million in year 1 and \$7 million in year 5. Alternatively if the majority of farms taking up the insurance are large, premium volumes could increase to \$15m in year 1 and \$60 million by year 5.

We have also projected the impact of variation by geographical region (ie level of risk) and market penetration. Assuming that there is a greater proportion of farms in high risk areas and a 10% market penetration in year 1, the premium volume could be \$13 million, as compared with \$7 million coverage is mainly in low risk areas.

Despite the assumptions regarding the composition of insured farms, the projections highlight that the total market is unlikely to be large initially, if it is a voluntary scheme. This raises various issues with respect to the options available for administration, and reinsurance.

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The following scenarios have been modelled:

Market Penetration	PA: 5% in year 1, up to 20% in year 4 PB: 5% in year 1, 10% by year 5 PC: 10% in year 1, up to 25% in year 4
Farm Size	SA: Randomly distributed SB: 90% small, 10% other SC: 90% large, 10% other
Penetration by Region	RA: Randomly distributed RB: 100% high cost areas RC: 100% low cost areas

The following table summarises the projected market size for market penetration PA, for each scenario of farm size and penetration by region. Further detail on the projections for the various scenarios is shown in Attachment F.

Projected Market Size (\$m)			
Region	Farm Size	Year	
		1	5
RA (Randomly distributed)	SA (Randomly distributed)	7	27
	SB (90% small, 10% other)	2	9
	SC (90% large, 10% other)	15	61
RB (100% high cost areas)	SA	9	35
	SB	3	12
	SC	20	80
RC (100% low cost areas)	SA	5	19
	SB	2	8
	SC	11	43

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It should be noticed that once coverage even of a limited nature is provided then,

- At the margin there will be an increased propensity to plant the covered crops because the downside on their input cost will be limited.
- At the margin there could be substitution of uncovered crops for covered crops.
- Pressure will build for inclusion of more crops and extension of coverage.

Hence the projection of market size is quite problematic. As seen from the market research, demand for the product is quite sensitive to price. Hence provision of a Government subsidy could also greatly affect the size of the market.

11 GETTING A SCHEME STARTED

In the event that a scheme is to be started in Australia it will be imperative to learn more about other schemes, particularly those run by the Risk Management Agency (RMA)/US Department of Agriculture in the USA and the Canadian Government.

The Northern American schemes appear to have experience with most if not all of the factors and issues, which we can envisage in Australia.

From this experience decisions should be taken to design an MPCCI product which limits complexity and exposure for any capital provider (including Government).

An examination of the North American schemes will, for example, give an indication of the likely size and frequency of losses. Thereby enabling better estimates of staffing numbers and profitability.

Product introduction around mid January 2001 being 8-12 weeks before the planting for season 2001 if the aim is to have something started now.

Prior to this time there will be a need to:

- Take a decision on whether it is to be compulsory or not
- Complete the design of the product. This should include time for market testing, simplification of policy wording, finalisation of coverage periods and terms, preparation of marketing material, establishment of premiums and underwriting processes.
- Establish systems and procedures
- Educate brokers, agents, insurers
- Recruit staff

There will also be a need to factor in time for a legislative framework to be put in place.

Probably the most complex output of the start up phase will be a thorough review of the rate setting requirements.

The following data may ultimately need to be collected to be able to set adequate premiums at farm level:

- area planted
- yield
- production
- causes of any losses
- provided for as many past years as possible

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- area to be planted
- separately by crop type.

This is not an insignificant task. It could ultimately be the key to the level of private sector participation.

Attachment E is an outline of a high level time line involved in getting a MPCl product to market.

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12 ESTABLISHING AN ADMINISTRATION

The likely size of the market, its underwriters (whether private sector, Government or a combination thereof) will, inter alia, significantly influence the type of administration established for an MPCCI programme.

As far as size is concerned there are two broad possibilities considered. The first would occur if a product was made compulsory. The second would occur if the indications and resultant assumptions from the market research turn out to be more or less correct for a voluntary scheme.

A further factor on market size is the impact of a Government subsidy. Clearly the lower the price of the product the greater will be the demand. Hence the market projections based on the market research may prove low if a Government subsidy were introduced.

Irrespective of these two extremes there is one function which will be essential to success and which is not a function of compulsion, that is, the need for building awareness in the overall market. Having built awareness there will be an ongoing function to retain awareness levels and if necessary enhance them. This will be a constraint on the type of administration established.

We have considered seven options for an administration. They are:

(i) "Just Another Product" to be sold by participating insurers.

In this instance the product would be privately underwritten by the insurers and would be subject to competition as with any other insurance product.

Advantages include:

- No need to establish a separate infrastructure other than building a reporting system and accounting system
- Competition may lead to a more efficient market
- Ability to handle a large claim may be enhanced

Disadvantages include:

- No coordination across insurers (or for that matter the market) for the product
- Insufficient pool of data
- No clear dedication to the product
- Need for a separate body to collate results and liaise with Government
- Possibility that the product will be bought rather than sold leading to selection issues
- Willingness of insurers to put capital at risk.

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(ii) Establishment of a New Distribution Agent [say a new independent pool]

In this instance a new underwriting pool, would be established run in the same manner as, say, the Australian Aviation Underwriting Pool Limited.

Advantages include:

- Product focus
- A dedicated reporting system
- Total pool of data for analysis

Disadvantages include:

- Setting up from scratch with establishment cost issues
- Recruiting competent staff
- Lack of history and possibly experience with new staff
- Operating costs may be higher than other alternatives available
- Establishment of new distribution infrastructure for the product
- Establishment of a new process for contact and reporting to underwriters (where there is private sector underwriting involvement)
- Lack of competition.

(iii) Run Parallel with an existing Pool

In this instance the scheme could be handled by an existing pool such as the Australian Aviation Underwriting pool. Pool overheads would be shared between the schemes handled.

Advantages include:

- Ability to benefit from established infrastructure
- Possibly lower costs
- Use of or access to experienced staff

Disadvantages include:

- Need to recruit new staff although this is a factor for all options
- Some potential complexity with current pool arrangements

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(iv) "Piggy Back" on Existing Insurer

This would involve the Administration being handled by an existing insurer, funded by a management fee arrangement.

Advantages include:

- Possibly lower establishment costs
- Possibly lower administrative costs
- Use of or access to experienced staff

Disadvantages include:

- Availability of information to other insurers
- "Security" of insurers' client bases
- Selection of staff would be at the whim of one insurer
- Availability of insurers to volunteer to perform the role
- Degree of agreement over funding / management fee arrangements

(v) Establishment of a Government Agency

Advantages include:

- Possibly lower administrative costs

Disadvantages include:

- Need to recruit experienced staff
- Lack of insurance knowledge
- Location would be an issue

(vi) An Industry Body such as AWB

Advantages include:

- Distinct marketing advantage if appropriate industry body can be identified
- Lower administrative costs.

Disadvantages include:

- Lack of insurance knowledge
- No industry body exists for all crop types

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(vii) A Closed Fund

In this instance a fund would be capitalised from the premiums paid. Claims would be paid from the pool of premiums calculated.

Advantages include:

- Lower overhead costs than other alternatives available
- No profit margin required
- No exposure to Government or Insurers

Disadvantages include:

- Potential unfair payment of claims
- Limited access to capital.

As stated earlier the size of the potential market will be a key determinant of the type of administration.

With any administration there would be a requirement for:

- Assessing risk and underwriting policies
- Receiving and processing policy input
- Debtor control
- Reporting to stakeholders
- Collation of performance data
- Review of results
- Review and revision of rating models
- Control of policy wordings
- Management of reinsurance arrangement
- Claims management and claims assessing

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Estimated costs of establishment of a ‘pool’ running alongside on existing pool are:

▪ Set up computer system	\$160,000 - \$460,000
▪ Recruit staff (including provision of motor vehicles	\$100,000
▪ Office rental and equipment	\$120,000
▪ Set up policy, marketing, research etc	\$300,000
▪ Training	\$20,000

\$700,000 - \$1,000,000

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13 KEEPING A SCHEME GOING

Outlined below is a schedule containing some of the information that would be needed to estimate costs with more precision of keeping a scheme going under compulsory and voluntary assumptions where the market is randomly selected under the voluntary assumption. The projections performed to date do not provide sufficient detail to enable estimates of claim numbers, and hence the likely number of transactions.

	Compulsory	Voluntary	
		Year 1 - 5%	Year 5* - 20%
No. of farms	35,000 Total Population	1,750	7,000
Premium income	\$135 m	\$7 m	\$27 m
Capital Required ⁺ (say 30% of premiums)	\$40m ^o	\$2.1m ^o	\$8.1m
Policy Nos - New Business	35,000	1,750	6,000 - 7,000
- Renewals	35,000	-	1,750
Exposure ^Δ - No deductible	\$6 b	\$300m	\$1,200b
- at 60% deductible	\$2.4 b	\$120m	\$480m
Claim Nos	?	?	?
Claims size	?	?	?
No. of Staff			
▪ Initial Marketing and Selling Effort			
▪ Sales/receiving policies			
▪ Underwriting			
▪ Collection and analysis of data for:			
- Current crops			
- Future crops			
▪ Processing/systems			
▪ Claims Handling			
▪ Assessing			
Total Staff (Approx)	?	?	?

* Assumes no change in market size, inflation [etc] ie a static model.

+ In addition capital would be required for catastrophes that may be outside of that allowed for in the premiums used.

o Plus set up costs.

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△ 1999 - 2000 values

14 KEEPING COSTS WITHIN REASONABLE BOUNDS

The biggest factor influencing the results of the scheme will come from severe fluctuations in claim costs.

In the relative sense administration costs will be modest and should be more easily manageable with major difficulties occurring if market share is much lower than predicted or a decision is taken to withdraw from the market due to adverse experience.

Subject to these comments on administration costs it is claims cost that can be regarded as the big issue, and may be kept within reasonable bounds if:

- The basis on which farms are covered and premiums charged are carefully assessed in advance and rates are “as true as possible” at farm level.
- A significant proportion of the market can be covered over extended periods of time to reduce the effect of events which may be small as far as the market overall is concerned but are large against a small market share.
- Policy wording is careful to eliminate planting or coverage if bad conditions are expected and are reasonably likely.
- Claims are assessed carefully. Technical competence will be important here.

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15 CONCLUSION AND FINANCIAL SUMMARY

This phase of the Project had the prime objectives of determining whether Multi Peril Crop Insurance can be introduced on a commercial basis in Australia and what degree of Government support would be necessary to produce a product that was viable to farmers.

Under the general concepts embraced in the project commercial viability must be defined as obtaining private insurer support. For this reason the scoping of the research undertaken included some basic standards i.e. re policy cover and conditions and types of crop cover in particular.

The market research undertaken was the maximum possible under the budget constraints for the project and whilst the consultants TQA advise that an estimated 18% take up rate is excellent under normal circumstances for any new product, it falls far short of that the various stakeholders would deem viable from their individual perspectives. A collective evaluation would probably arrive at the same conclusion.

These results certainly leave a large gap that would only be filled by extensive Government support.

On the basis of the results obtained from the Phase 2 exercise, the following conclusion can be drawn.

Assuming:

- A product similar to the one tested herein is introduced in a voluntary scheme.
- Premiums are in line with those tested herein.
- All four grains are covered i.e. wheat, barley, canola and lupins
- Government provides support of 25% of premium
- Exposures are 1999 - 2000 values
- The market is not distorted by any selection.
- Market share is 5% initially and 20% after 5 years are.
- A “pool” is formed of interested insurers whose underwriting risk is taken off them by Government.
- Insurers’ usual channels are used for distribution (with no significant additional cost through offering this product).

Then:

- The cost of setting up the infrastructure is estimated to be \$750,000 to \$1,000,000.
- The running cost of the “pool” is estimated to be \$1,000,000 to \$2,000,000p.a.

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- The cost to the Government of the subsidy would be \$1,750,000 initially rising to \$5,000,000p.a. ultimately at a 20% market share.
- Capital for solvency at, say, 30% of premium would be required.
- There is an additional reinsurance cost which is very hard to estimate but which could add significantly to the annual cost.
- In the event a major catastrophe was to occur then subject to the timing of its occurrence, its severity, reinsurance purchased, where insurance is purchased etc there may be significant additional capital needed. We are unable to determine the maximum exposure. We do however note that 5% / 20% randomly selected market shares have total exposure of \$120m / \$480m respectively. A large loss may be less or more than these figures. It is more likely to be less in our view as a major catastrophe is unlikely to occur in all regions.

If this matter was to be pursued further, determining the degree of Government support would probably be a prerequisite to any worthwhile research.

It may be best to adopt a "green fields" approach along the following lines. The starting point could be the Government[s] deciding the level of support it [they] are prepared to guarantee to farmers, or the Farming community specifying the precise level of the protection it is seeking.

After researching the number associated with either alternative, the private insurance sector could be invited to indicate which components of the total package they would be prepared to undertake. Any gap would have to be taken up by the Government[s].

At the same time it could also be determined how any scheme would be administered, ie by a separate Government or Corporatised entity or through the private sector in similar manner to which workers compensation insurance is handled in some of the larger states.

Ray Willing
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November 2000

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ACKNOWLEDGEMENTS / REFERENCES

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ATTACHMENTS

Attachment A - Executive Summary Phase 1

Attachment B - TQA Research

Attachment C - Typical Loss Scenarios from Phase 1

Attachment D - Explanation of policy coverage used for TQA Market Research

Attachment E - High Level Time Line

Attachment F - Financial Modelling Outcomes