AGRECOVERY

Study of the New Zealand Product Stewardship Scheme for Agrichemical Containers

Prepared for the Ministry for the Environment by

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Responsible Resource Recovery Ltd

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Figures and Tables

Disclaimer:

The opinions expressed in this report are those of the author and sector representatives only and do not represent those of the Ministry for the Environment or the Government.

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1. Introduction

The New Zealand Government is developing product stewardship policy. To date, the Government's approach has been to encourage voluntary, industry-led product stewardship schemes.

A discussion document released in 2005 set out options for modifications to this approach. Key to these modifications is the potential for more formal regulation to make schemes more effective and stable.

Key stakeholders in the New Zealand agricultural chemical industry (including growers, retailers, brand owners, local and central government) have been developing a voluntary industry-wide product stewardship scheme for used chemical containers.

This report provides a case study of the proposed Agrecovery container recovery programme. It examines the potential impact that product stewardship legislation might have on this product stewardship scheme from the perspective of brand owners and stakeholders in Agrecovery.

This report provides:

- a description of the agrichemical industry and market in New Zealand;
- an overview of the issues surrounding the disposal of agrichemical containers;
- a brief review of overseas product stewardship experiences within this sector;
- a description of the proposed Agrecovery programme;
- an analysis of Agrecovery against the government's policy objectives;
- a review of how product stewardship legislation might help the Agrecovery programme.

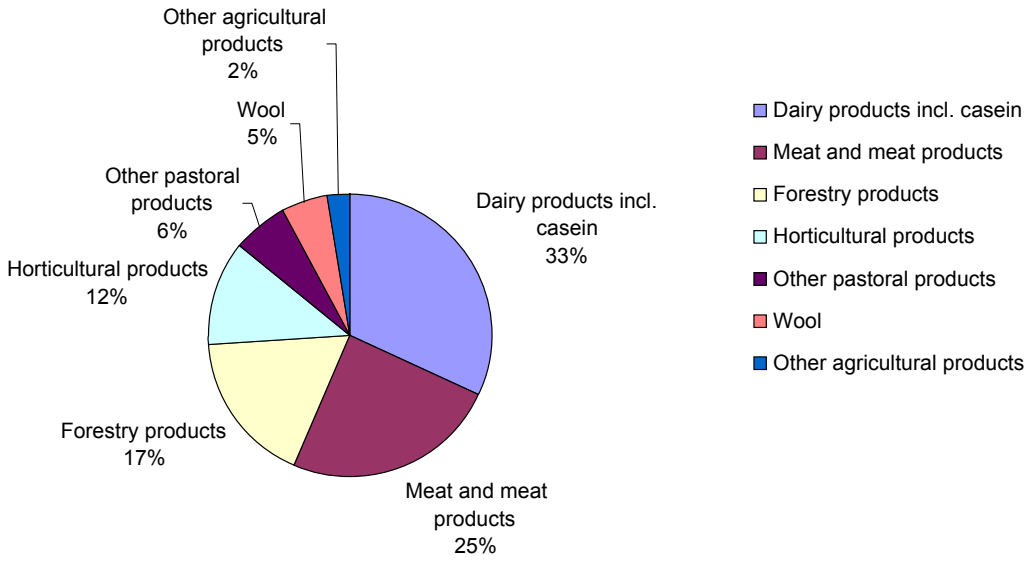
2. Agriculture in New Zealand

The agriculture sector in New Zealand is unique in its significance for the country and economy. This section is intended to provide a snapshot of that significance in order to provide a context for this case study of product stewardship for agrichemical containers.

"New Zealand is unique in the world in its dependence on a biological and natural resource-based economy and society. Sustaining and managing those resources will continue to be important to New Zealand as a society into the foreseeable future." (Ministry of Agriculture and Forestry[1]).

The Ministry of Agriculture and Forestry (MAF) estimates that, at current prices, agriculture contributes to approximately 20% of the country's GDP and accounts for 65% of our export earnings. For the year ending June 2004, our agricultural, horticultural and forestry export earnings were valued at $18.5 billion.

Figure 1: New Zealand's agricultural, forestry, and horticultural exports for the year ending June 2004



[1] www.maf.govt.nz

Agricultural production also comprises a significant land use, using just over 50% of New Zealand's land area.

Hectares (000)	2004	1994
Grazing, arable, fodder and fallow land	11,709	13,536
Land in horticulture	121	104
Plantations in exotic timber	1,835	1,388
Total area of New Zealand	26,870	26,870

The value of New Zealand's "clean and green" image to this industry is hard to measure. One study has estimated that it could be worth more than $500 million to the dairy industry alone[2].

[2] Ministry for the Environment (2001) *Valuing New Zealand's Clean Green Image*

3. Description of the Agrichemical Sector

Chemicals that are used on farms are known as agricultural chemicals, or agrichemicals. These products comprise:

- pesticides;
- herbicides;
- insecticides;
- others eg plant growth regulators, defoliants.

The definition of agrichemicals does not include other chemical-based products used in the farm environment, such as sanitisers and detergents.

Herbicides and insecticides fall under the definition of pesticides. The Food and Agriculture Organisation of the United Nations defines pesticides as:

> *Any substance or mixture of substances intended for preventing, destroying or controlling any pest, including vectors of human or animal disease, unwanted species of plants or animals causing harm during or otherwise interfering with the production, processing, storage, transport or marketing of food, agricultural commodities, wood and wood products or animal feedstuffs, or substances which may be administered to animals for the control of insects, arachnids or other pests in or on their bodies. The term includes substances intended for use as a plant growth regulator, defoliant, desiccant or agent for thinning fruit or preventing the premature fall of fruit, and substances applied to crops either before or after harvest to protect the commodity from deterioration during storage and transport.*

3.1. Key stakeholders

The agricultural chemical sector in New Zealand is complex. The sector is characterised by a large number of brand owners – a core of research-based multi-nationals and a range of "generic" suppliers – with differing approaches to sales and distribution to farmers and growers.

Some brand owners market and deliver direct to farmers and growers. Others utilise retail chains to distribute their products.

There has been significant change in recent years in sales and distribution, especially since a number of core products came "off patent". This has led to a proliferation of players and approaches to sales and distribution.

Brand owners
The core, large-scale internationally recognised chemical companies are all represented in New Zealand, either directly or via secured relationships (such as New Zealand-based parties holding their formulations). They are:

- BASF;
- Bayer CropScience;
- Dow AgroSciences;
- DuPont;
- Nufarm (also sells Monsanto);
- Syngenta.

These companies have a wide product and service range far beyond agriculture or agrichemicals. In most cases, they have agriculture-specific sales teams that interact directly with farmers, growers and who have relationships with the retail sector (primarily specialist farm retail/service suppliers). There is only one significant pesticide "formulator" in New Zealand (Nufarm) who also imports product and formulate for other brand owners.

"Generic" suppliers source (via imports) and formulate products for sale in New Zealand. Generic agrichemicals are products that were developed and patented by research-based companies but have since come off patent and are being produced by so-called generic suppliers. This type of product can either be sold direct or through retail chains.

The generic sector appears to be growing significantly through price competition and direct relationships with end-users. Generic suppliers have advised that they may represent up to 30% of the total agrichemical market. Agrecovery will only know when it signs up brand owners to the programme what the actual volume to market. This is due to there being no measurement of current volume to market.

The main generic companies in this section of the market appear to be:

- Orion Crop Protection Ltd;
- Ravensdown;
- AGPRO;
- Agronica.

These generic suppliers all have a "physical" company presence in New Zealand, and operate nationwide. There have been no instances of parallel importing in agrichemicals that we are aware of.

A significant number of agrichemical brand owners are represented by an industry association, Agcarm. Agcarm has existed since 1948 as the non-profit trade association of companies that manufacture, distribute and sell products

that keep animals healthy and crops thriving. Agcarm is also a member of Crop Life International (a global federation representing the plant science industry) and the International Federation for Animal Health.

There is another industry association, Animal Remedies and Plant Protection Association (ARPPA), to which non-Agcarm member (mostly generic) suppliers belong.

Retailers

The rural service sector has gone through significant change in recent years with a number of amalgamations, concentration of service and rationalisation of outlets. This is ongoing. There are now between 15 and 20 different distributors of product. Key players are considered to be:

- PGG Wrightson (incorporates Fruitfed, W&K);
- RD1 (Fonterra-owned);
- Farmlands;
- Other regional brands (eg Combined Rural Traders, Skelton Ivory, Allied Farmers).

Retailers have moved in recent times to stock their own generic brands in direct competition with research-based patent brands.

Some generic brand owners sell directly to farmers through call centres and/or websites.

Farmers and growers

Farmers and growers rely heavily on agrichemicals in their day to day operations. Farmers will typically hold just one year's stock of agrichemicals on-farm. A Taranaki Regional Council survey of farmers found 82% of farms stated they only held one year's supply, 9% held approximately two years' supply and 9% held approximately three years' supply[3].

Specialist conventionally grown crops require targeted chemical applications. Pressure to reduce chemical application and the advent and proliferation of integrated pest management type programmes has increased farmer and grower reliance on a limited range of specialist chemicals.

At the same time the coming off patent of glyphosates in particular has led to a proliferation of brand options and reduction in price of broad-spectrum applications.

Brand owners have increasingly had to compete on price for farmer/grower business.

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[3] Taranaki Regional Council (2005) *Investigation into Taranaki's Rural Waste Stream*

We have not been able to identify information, collected and verified centrally, on which sectors in agriculture use agrichemicals and in what proportion.

3.2. Size of market

There is no authoritative data on the total quantities of agrichemicals placed on the New Zealand market. It is estimated that agrichemical sales in New Zealand exceed $200 million (not able to be verified).

A 2005 survey of companies[4] in the animal health and plant protection industries in New Zealand revealed the following volumes for agrichemicals:

Annual sales of plastic containers	**1.2 million**
Estimated annual volume	**13.3 million litres***
Total annual empty weight	**749 tonnes**

* Note: the volume sold in containers <30 litres is 10 million litres

The industry association, Agcarm, estimates that the survey participants represented approximately 90% of the market volume. However, discussions with a number of generic players and non-participants in the survey suggest an underestimation of the size of the overall market.

The growth of generic-brand market penetration in New Zealand seems to be significant with some large-volume players emerging. (eg Ravensdown, Agpro, Agronica, Orion). Some industry sources estimate that generic suppliers represent up to 30% of the market.

ScottEconomics (the survey report writers) consider the estimated total agrichemical container weight of 749 tonnes as a conservative estimate of the potentially available plastic. This is due to the incomplete data provided and the inability to contact all companies with a presence in New Zealand. This is speculative as there has been no consistent data gathering of the whole sector to enable accurate assessment to take place.

Whilst research-based market participant volumes may have remained static or shrunk, other brands (generics in the main) seem to have grown significantly as prices for these applications have fallen (ie farmers have been using more of the lower-priced product).

[4] ScottEconomics Ltd (2005) Report of the Container Survey 2005

3.3. Market share breakdown

The industry is cautious about revealing market-share information. Whilst we have been made aware of suggested shares this is not for public dissemination. Within Agcarm, the "big 6" dominate volumes.

The "generic" players are estimated to hold up to 30% of the agrichemical market in New Zealand.

3.4. Product imported vs New Zealand-made

There is only one large-scale producer (formulator) in New Zealand (Nufarm). The balance of product is imported.

3.5. Trends in the market

The agricultural chemical industry in New Zealand is a mature market and sales are therefore relatively stable. No overall sales figures are available but there is a consensus that increasing market share is being taken by generic brands (See 2.1 for definition) over research-based brands.

There are some key trends in the market that are relevant to the development of product stewardship in the sector:

- There is a move towards more concentrated products and therefore smaller container sizes and reduced-litre sales volumes.
- There is a very wide range of agrichemical products and prices. A 20-litre agrichemical product can sell for between $6 and $50 a litre, depending on the product. The trend seems to be towards cheaper products in some applications and higher-priced products in others.
- There is also a move towards granulated products and these can be sold in bags. This type of product and packaging is in its infancy and does not represent a significant proportion of the market so far. The industry itself is unsure how much this product type will grow in the future.
- Light-weighting of existing packaging has probably achieved its maximum potential.
- There is an international trend away from 20-litre to 15-litre containers to satisfy health and safety concerns around lifting.
- Climate and good growing seasons have a clear correlation with sales of agrichemicals. The last two seasons have been particularly good and may have resulted in strong sales.
- New Zealand is at the end of an international research chain so products are largely dictated by off-shore developments.
- Refillable containers – these are in larger sizes 100 litres and above but have relatively poor return rates.

4. Issues with the Disposal of Agrichemical Containers

The inappropriate disposal of farm chemical containers can cause an environmental hazard. Containers used for pesticides, herbicides, and cleaning products are often contaminated with residual product and are frequently buried or burned on farm properties. Plastics that are burnt at low temperatures can also release toxic fumes.

Once farmers have used agrichemical products, they are faced with the problem of how to dispose of the empty containers. To date there has been no sustainable recycling solution available to farmers. The only legitimate option available has been to dispose of containers to engineered landfills.

Research conducted at the development stage of Agrecovery suggested that farmers were prepared to travel some distance to access container collection sites to enable their agrichemical containers to be recycled. This was taken into account when designing the Agrecovery programme.

As a result of the difficulties faced in disposing of containers, the most common practice has been to burn or bury agrichemical containers on-farm. This poses an environmental risk due to the release of toxins from low temperature burning of plastics/chemicals or from chemical leaching if containers are buried.

Dumping or burning agrichemical containers is contrary to increasingly accepted standards looked for under compliance schemes such as EurepGap[5].

4.1. Environmental impacts of disposal options

A life-cycle analysis (LCA) of disposal options for agrichemical containers (and silage wrap) was conducted in 2003[6]. The study examined the environmental impacts of different disposal scenarios: on-farm burial, on-farm burning, drop-off for recycling, drop-off for landfilling and drop-off for incineration with energy recovery.

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[5] EUREPGAP is the fresh produce food standard set in place by Europe's leading food retailers to give their customers more assurance of food safety. Only accredited growers can supply these retailers.

[6] URS & NZIER (2003) *Life Cycle Analysis for the Management of Waste Farm Plastics and Economic Analysis of Waste Farm Plastic Management Options*; prepared for NZAET.

Key findings of the study were:

- the on-farm burial and on-farm burning of plastics result in greater effects in respect of air acidification and airborne human toxicity when compared to other scenarios;
- landfilling of waste farm plastics, using existing transfer stations and landfills, has less effect on the environment than on-farm disposal scenarios for those indices compared;
- the recycling of plastics results in a net avoided burden for the air acidification, human toxicity, greenhouse effect and depletion of non-renewable resources indices.

The study concluded that "*a program whereby farmers drop off waste plastics at transfer stations, for recycling into products as a replacement for virgin plastic, will have the least negative effect on the environment*".

5. Overseas Experiences

The environmental problems associated with the inappropriate disposal of agrichemical containers has long been recognised overseas. Throughout the world (in developed and emerging economies), product stewardship schemes for the recovery of plastic chemical containers are rapidly increasing. Of the 56 country associations affiliated to Crop Life International, 49 of these have implemented container recovery in some form. These schemes have existed for various lengths of time, with some operating from as early as 1989 (the Netherlands and Canada).

There are common themes that run through these existing global schemes. The most common form of funding is via levies paid by supporting brand owners/ registrants that sell chemicals into the market. In almost all schemes, the annual levy is based on the amount of volume placed on the market by each member.

The main driving factor for the industry to establish these schemes has been a desire to meet or avoid regulation or economic instruments imposed or proposed by governments.

The rising cost of legitimate disposal has also been a driving factor. Farmers are increasingly factoring-in waste management costs when making their purchasing decisions. In some countries, industry has responded by providing a cheaper legitimate option to customers in order to gain market advantage.

6. The Agrecovery Solution

For the last 4 years, key stakeholders in the New Zealand agricultural chemical industry (including growers, retailers, brand owners, local and central government) have been working cooperatively on a product stewardship solution for used agrichemical containers. The Agrecovery programme has been designed as a solution for responsible brand owners/manufacturers to provide for the collection of their customers' used containers.

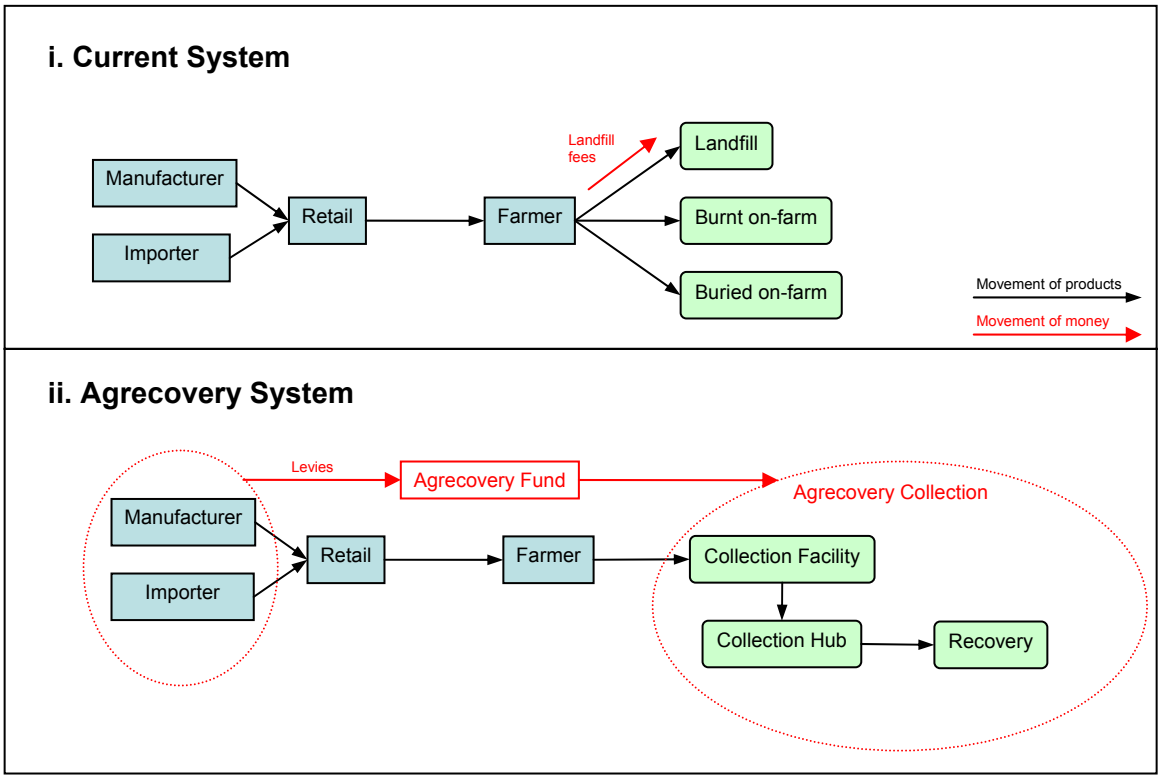

Figure 2. Movement of products and finances now and in the proposed Agrecovery system

The programme is designed to recover used containers that are Agrecovery-branded. This means it will only be used for products from member companies. Membership of Agrecovery is open to all producers in the sector.

It is anticipated that the Agrecovery programme will be operational by March 2007.

6.1. Agrecovery structure

In December 2005, the Agrecovery Foundation was formed as a not-for-profit trust to own and govern the Agrecovery programme. The formation of the Foundation is the result of a number of years of work on an industry product stewardship scheme for used agrichemical containers.

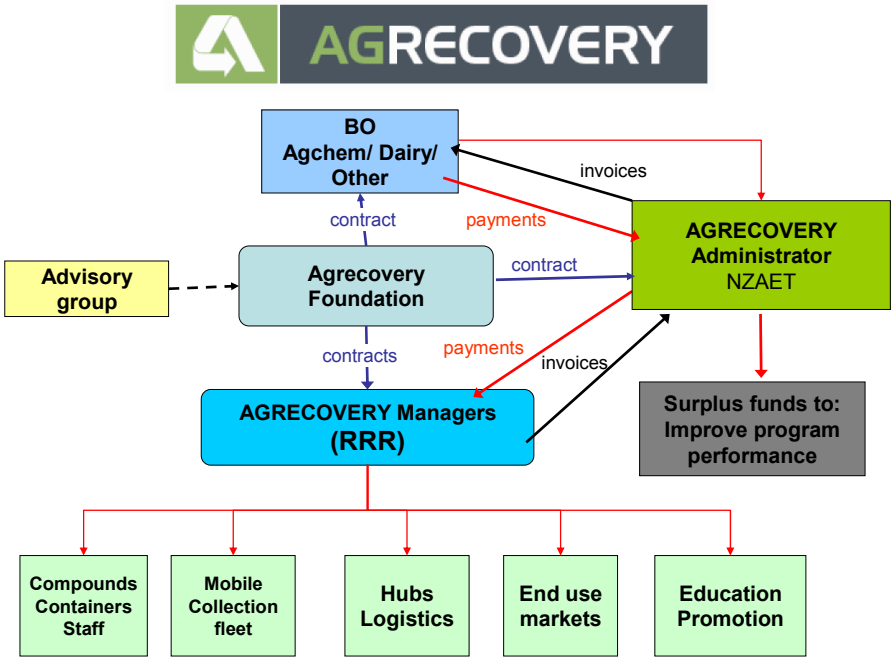

Figure 3. Structure of Agrecovery programme

The legal entity which owns and governs the Agrecovery programme is the Agrecovery Foundation.

Founders and Trustees of the Agrecovery Foundation are:

- Agcarm Inc;
- Federated Farmers of New Zealand Inc;
- Horticulture New Zealand Inc;
- Environment Waikato (for Local Government New Zealand);
- Fonterra Cooperative Co Ltd.

The New Zealand Agrichemical Education Trust (NZAET) will be the administrator for the Agrecovery Foundation.

The Agrecovery Foundation will contract a programme manager to deliver an agreed programme on its behalf. The Agrecovery programme manager will manage infrastructure, logistics, administration and communications.

The programme manager will invoice the Foundation for these tasks. The Foundation will in turn invoice the Agrecovery Fund based on these costs.

6.2. How the programme will work

The Agrecovery programme will provide a nationwide collection network to take triple-rinsed plastic agrichemical containers from farmers in New Zealand.

Records of compliance (for reporting to EurepGap etc) will be available to farmers who participate.

Agrecovery collection sites will be sited at retail merchants (where appropriate) or local authority transfer stations. Collection facilities will be operated by staff who will be specially trained to inspect and accept triple-rinsed containers that belong to the Agrecovery programme. Specialist collection vehicles are proposed that will "process" the material collected via a mobile shredding unit. There will be five collection regions throughout New Zealand, each one serviced by a contracted collector who in turn will service the 75 collection sites proposed.

Collections in each region will be determined by the availability of product. Those in high-producing regions will have access to collection sites that will be open every Saturday throughout the year. Those in smaller growing regions will have access to a collection site on the first Saturday of every month.

It is proposed that large-scale applicators (commercial applicators, large farm units) will be serviced directly. They will be able to log their collection requirements via a managed website. This will direct the contractor to the location when next in the area servicing the collection site for that district. This is likely to attract a user charge which is yet to be determined.

Collected material will be transported to "Approved Processors". An Approved Processor will be required to meet specified minimum standards of processing. These standards will be in line with international standards currently applied to other agrichemical container collection programmes worldwide.

The Agrecovery programme will work towards collection and recovery targets that will be set in consultation with key stakeholders. Performance against these targets and other criteria will be reported in an annual report.

There will be a significant investment in education and promotion for Agrecovery in order to maximise farmer participation. This communication will take place in close association with local and regional government.

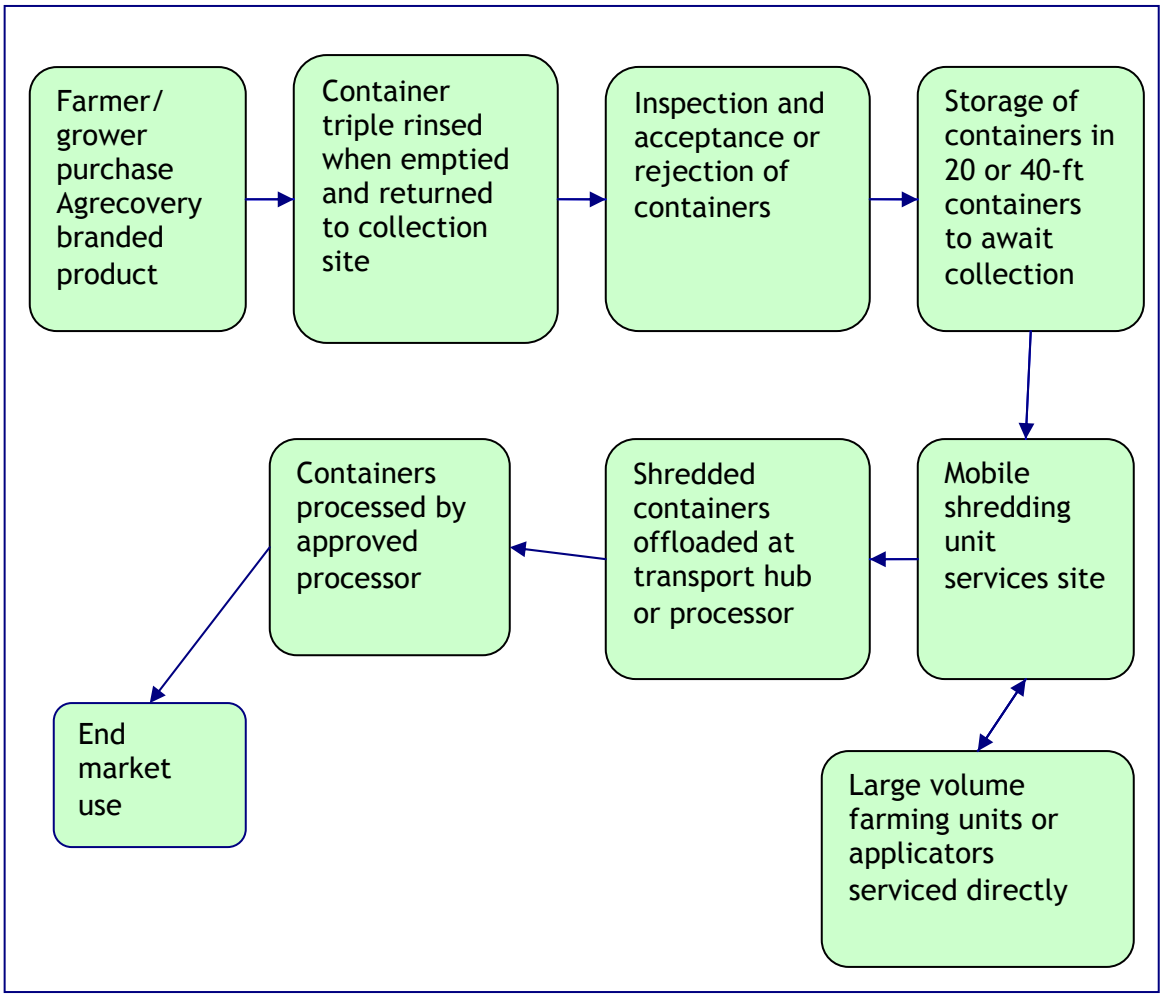

Figure 4. The movement of product through the Agrecovery system

6.3. Alternative models

Agrecovery is the first formalised take-back scheme for an entire industry sector in New Zealand. The Agrecovery model has broken new ground in New Zealand, and has drawn on overseas experience in its development. Alternative models have been considered throughout the scheme development, but these considerations have not been part of a formalised process.

Some agrichemical companies already operate schemes to recover larger containers (over 100 litres) for re-filling. This is because the cost of new containers is higher and justifies bringing back containers, cleaning them and refilling them. The results of their take-back programmes are mixed, with most reporting poor recovery rates (as low as 5%). Agrecovery has identified the recovery of larger containers for reuse as a useful service to offer companies in the future and will progress that issue once the infrastructure is in place and the initial service offering is bedded down. It is believed

participation rates may be higher when there is a readily available infrastructure that farmers will be using already for their smaller containers.

6.4. Financing Agrecovery

Agrecovery is a product stewardship programme underpinned by contributions by brand owners. Once up and running, the programme will be funded on an ongoing basis by way of a levy on product put in the market by participating brand owners.

The Agrecovery programme has initial establishment funding requirements before levies are able to be collected. These are costs associated with setting up systems and structures under which the programme will operate. These initial costs are estimated at $233,000 and will be met by a mix of government and industry/stakeholder funding.

Additional start-up capital investment will also be required. These costs will be met by the programme manager and "amortised" through the programme costs charged to the Agrecovery Foundation.

Following set up of the programme, there will be ongoing costs associated with the collection and processing of product and the management of the scheme. These will be met by a levy. The Agrecovery Business Plan has set out a range of levies of between five and 14 cents per litre/kg of product placed into the market. On a widely used product such as glyphosate, the levy represents approximately 0.8% to 2% of the price of the cheapest product available on the market.

The final levy will be determined by the quantity of product placed into the market by participating brand owners. This levy will fund the ongoing collection and processing of collected product.

Based on estimated volumes of product to market in New Zealand the total cost of the programme will be between $1.4 million and $1.5 million per year.

7. Agrecovery Programme Design Decisions

7.1. Programme governance structure

A separate Agrecovery Foundation has been set up as a not-for-profit trust for a number of reasons:

i. The diverse range of stakeholders involved in the sector needed a neutral mechanism to develop the Agrecovery solution. The Foundation provides representation for each of the key stakeholder groups and an advisory group to capture all stakeholder views.
ii. The trust enables a commercial solution to exist with contractual arrangements to a single representative entity.
iii. The trustees have strong grower/farmer representation and will ensure that every endeavour is made to keep the cost of the programme to a minimum as it is the grower/farmer who will ultimately pay for it in the price of the product they purchase.
iv. The trust provides a mechanism for transparency in developing the Agrecovery solution. The representatives on the trust link/consult with a wider range of stakeholders in order to ensure that the needs of all stakeholders are met through the system.
v. Using a trust structure has made it easier to access public funding for the implementation phase.
vi. A trust is independent from any existing organisation or business within the sector. This means there is no "baggage" or agendas brought into the running of the system.

7.2. Location of collection points

The decision has been made to locate Agrecovery collection points at local authority transfer stations. Whilst some international evidence suggests that higher participation rates are achieved through retail take-back, there are a number of hurdles to achieving that in a New Zealand context.

i. There are multiple retail locations in many parts of NZ. Issues of competitive advantage arise if only one site is chosen over another and there are too many to service them all for a realistic cost.
ii. Retail sites are often in urban locations with limited footprints for collection infrastructure. There can also be consenting issues at these sites that make it difficult to service them readily.

Transfer stations do not have these issues so are the best starting point. Over time the sites may migrate to better locations as a result of local knowledge. The site systems (moveable containers) are designed to enable them to be shifted readily as better siting is identified and consented accordingly.

The siting at transfer stations also gives local government the opportunity to participate practically in solving a longstanding issue for their rural ratepayers. Very strong support has been received and is evident from local government as the programme moves towards implementation.

7.3. Involvement of retailers

All the major agricultural retail chains are members of Agcarm Inc. This means they are engaged in the development of Agrecovery. While retailers are not currently included in the design of the take-back system, they are engaged in the process of designing the Agrecovery solution. The potential therefore exists for future changes to be shaped with retailers included.

7.4. Mobile shredder

In order to keep programme costs as low as possible, a mobile shredder collection system has been designed. The shredder reduces the amount of "air" transported with the collected containers. Shredding will minimise transport costs between collection points and regional hubs. Pre-processing of the plastic waste by shredding at the initial collection stage will also reduce the need for double handling and improve the potential value of the material (plastic) as it adds value by pre-processing the material for the end-user.

7.5. Levy collection

The value of the recycled materials (ie plastic) is not sufficient to sustain a programme for the collection of plastic containers from farms. No agrichemical container recovery system in the world is funded through recycling revenue alone. If material prices were significant enough there would be no need for a product stewardship system – the market would take care of the problem.

The most cost-effective method of gathering a levy is directly from the brand owner. The collection of the levy at the point of retail would introduce another level of administration, and therefore cost, to the system.

Capturing fees at farmer (take-back point) level is even more costly and would be a barrier to participation. The preference for participating brand owners is to have the levy shown visibly at the point of purchase although this cannot be compulsory due to there being no legal framework available to this programme that allows for the industry to set a uniform price.

There is an obligation on the Agrecovery programme manager to maximise the value of recovered material in order to reduce the overall costs of the programme. This performance measure is written into the Agrecovery business plan and, as such, is a condition of the management contract.

7.6. Voluntary approach

There is currently no legislation in place in New Zealand that would allow the regulation of free riders. The Agrecovery programme has therefore been set up on a voluntary basis. Participating brand owners are setting up the programme in "good faith" with the view that future requirements under product stewardship legislation will act to level the playing field in their sector. The expectation is, assuming product stewardship framework legislation comes into being, that the principles of the Agrecovery programme will form a basis for the industry standard and that free riders will be required to join or emulate but not opt out.

7.7. A collective solution

The Agrecovery system is a collective product stewardship scheme. Such schemes are often criticised for the lack of incentives they provide for sustainable changes in product design. The argument is that paying a universal levy into a collective take-back scheme would not reward a company that develops a more recyclable chemical container and therefore makes their product cheaper to recycle.

However, the design of agrichemical containers is, to a large extent, relatively uniform in the material used (high density polyethylene, commonly known as HDPE) and in the design of the containers. This means there are significant cost-saving advantages through the economies of scale a collective system creates. The Agrecovery programme is linked to the Global Container Management Group which is a group of around 50 such programmes worldwide. This group has an expert packaging group which is constantly looking for "design for environment" (DfE) opportunities to improve the recyclability of packaging and lowering the cost of recovery.

Agrecovery only levies HDPE plastic containers, because these are by far the most common container used in the market. This means that companies developing alternative, easier to recycle containers will not have to pay the Agrecovery levy. So a brand owner who moves to sell chemical in a powder form using soluble packaging and a cardboard outer (for example) would not be a participant in the programme.

The levy value is quite low in relation to the total value of the product sold. It should not be sufficient to encourage a brand owner to use non-recoverable packaging in order to avoid participation in the programme. If anything, the use of non-recoverable packaging will be discouraged in the future as farmers and growers will put pressure on brand owners to be part of the programme so they can not only get their containers recycled but can show compliance with approved international practices for export of their products.

8. Agrecovery Performance Against Government Policy Objectives

The Government has laid out its policy objectives for product stewardship in New Zealand. These objectives are contained within the Product Stewardship and Water Efficiency Labelling Discussion Document.

8.1. What are the environmental gains?

More than 1.2 million plastic agrichemical containers are sold every year. This means that an estimated 750 tonnes of plastic, often contaminated with chemical residue, is currently being disposed of or burnt, in New Zealand.

The proposed Agrecovery programme will result in a significant reduction in resources being inappropriately buried or burnt. The programme will maximise recovery of plastics for recycling into other plastic products, closing the loop and preventing potential environmental damage due to landfilling.

The potential environmental gains from the Agrecovery programme are backed up by the findings of the 2003 life-cycle analysis[7] of disposal options for farm plastics. This study found that the collection and recycling of farm plastics has a net environmental gain when compared with other disposal options.

8.2. Is Agrecovery a true product stewardship approach?

The Ministry for the Environment Product Stewardship discussion document describes product stewardship as:

> "*an approach whereby producers, importers, brand owners, retailers, consumers and other parties involved in the life cycle of a product accept a responsibility for the environmental impacts of the products through their life cycle. This can include upstream impacts from the choice of materials and the manufacturing process, through to downstream impacts from the use and disposal of products.*"

Agrecovery is a product stewardship solution being developed by the agrichemical industry. It is a true product stewardship approach because it will shift the responsibility and financial burden of managing waste containers to the producers of the products.

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[7] URS & NZIER (2003) *Op Cit.*

Agrecovery will be funded by a levy on all participating manufacturers, based on market share or product put on the market (to be decided). In this way, the environmental externalities associated with the disposal of containers will be internalised into the price of the product. This will send an economic signal to the producers of containers about the environmental impact of their product.

8.3. Is it efficient?

The Agrecovery system has been designed as a private sector initiative with minimal government involvement. It has been deliberately designed to be simple and effective, with as little bureaucracy as possible.

The development of a coordinated, nationwide scheme for agrichemical containers will bring with it economies of scale and logistics efficiencies unattainable by alternative approaches such as individual local government or industry collection and recycling initiatives.

There will also be an improvement in the viability of recycling through the aggregation of material as opposed to individual councils negotiating with service providers. The potential for end markets for materials will also be improved due to security, quality and quantity of supply.

Comparison with similar schemes internationally suggests the recovery solution costs are comparable and represent the latest available thinking to ensure efficiency.

The key to reducing per litre cost to market levies for brand owners is drawing into the programme as many brand owners as possible so that economies of scale work.

Table of Cost Comparisons

Country	Recovery Rate	Cost per kg (USD)	Comments
CANADA	67%	$1.39	Mature programme
AUSTRALIA	39%	$1.17	Mature programme
THE NETHERLANDS	45%	$2.28	Similar volumes into market as NZ
FRANCE	42%	$2.12	Classified hazardous
GERMANY	60%	$1.25	Private company contract
NEW ZEALAND	50%	$1.87	Higher in early stages as volume builds
NEW ZEALAND (proposed)	65%	$1.44	At expected recovery target

8.4. How transparent is Agrecovery?

The development of the Agrecovery programme has taken place in an open and transparent way. Multiple stakeholders have been involved including farmers, local and national government, producers and recyclers.

A business plan for Agrecovery has been developed that clearly sets out the structure, operation and financial performance of the programme.

The Agrecovery programme will set targets for container collection as part of implementation in consultation with key stakeholders including government, farmers and producers.

The Agrecovery programme will produce an annual report providing details on performance against goals and targets, including:

- programme membership;
- quantities of containers collected;
- materials recovered;
- financial performance.

These reporting criteria will adhere to an international reporting standard that is being developed for agrichemical container collection programmes. This will enable benchmarking of Agrecovery performance against programmes worldwide.

All industry sectors will have the potential to pass on criticism and suggestions for improvement to the programme to representatives on the Agrecovery Foundation and through its advisory committee. Trustees on the Foundation include local government, Federated Farmers, Fonterra, Agcarm and Horticulture New Zealand. There will also be a website where suggestions and feedback can be posted by any users of the service.

8.5. Do the benefits outweigh the costs?

A product stewardship scheme such as Agrecovery is needed in order to comply with internationally accepted best practice and to meet the demands of international trading practices such as EurepGap. The Agrecovery programme is the most efficient way of getting there that the industry can devise.

It is worth considering the disadvantages of **not** having a scheme. Agriculture contributes approximately 20% of the country's GDP and accounts for 65% of our export earnings. In 2004, our agricultural, horticultural and forestry export earnings were $18.5 billion. What might happen if our markets determine that our products are not marketable because our environmental performance is not in keeping with other developed countries? The potential cost of loss of market due to a decline in our "clean and green" image has been estimated at more than $500 million to the dairy industry alone[8].

[8] Ministry for the Environment (2001) *Valuing New Zealand's Clean Green Image*

The benefits of the Agrecovery scheme include:

- reduced pressure on landfill;
- less potential for residual chemicals to leach when disposed of in landfills;
- improved recovery of resources reducing the need for virgin material;
- reduced risk of contamination through on-farm burial;
- reduced atmospheric pollution from container burning;
- improved compliance reporting for New Zealand farmers against international standards such as EurepGap;
- adding to New Zealand's "clean and green" image in export markets;
- introducing the farming community to sustainable farming principles.

Costs will include:

- collection of containers;
- treatment of containers;
- administration of the scheme;
- any enforcement (uncertain of the need as yet);
- education of participants.

Total costs of the Agrecovery system have been estimated at $1.4 million per year.

8.6. Does Agrecovery create competition issues?

Product stewardship schemes can generate some competition issues. These issues fall into two categories[9]: competition reduction in the product market, and competition reduction in the collection/recycling market.

Product market

When producers work cooperatively on a product collection and recycling system, there is a concern that those producers could agree to uniformly pass on the costs to their customers through raised prices.

The Agrecovery programme sets a "fee for service" or "levy" that is paid by producers to the Agrecovery Fund. Producers hold individual contracts with the Agrecovery Foundation to participate in the Agrecovery programme.

These vertical contracts mean that producers do not collaborate on the programme; rather they pay the not-for-profit Agrecovery Foundation to provide them with a desired service.

[9] OECD (2001) Extended Producer Responsibility: A Guidance Manual for Governments

The Agrecovery Foundation is made up of a diverse group of representatives from:

- Horticulture New Zealand;
- Agcarm Inc;
- Fonterra;
- Environment Waikato;
- Federated Farmers;
- Ministry for the Environment (ex officio).

Agrecovery provides no mechanism for the fixing of prices or the unified passing on of costs through price rises.

Similarly, producers coming together to develop a product stewardship scheme may create a barrier to market entry for new competitors because membership of the scheme is restricted, or new entrants pay a levy that is greater than that for existing members.

Agrecovery avoids creating a barrier to entry because it is a true industry-wide scheme which is open to membership from all relevant companies. There is no joining fee. The Agrecovery levy is a set price that is paid per litre/kg of product placed on the market irrespective of how long a company has been a member of the scheme. Because Agrecovery only requires a financial input from members based on a levy proportional to the volume they place on the market, the scheme doesn't discriminate against big or small companies, importers or local producers, generic or research-based companies, or brands that have retailers or not.

Also, participants in Agrecovery do not profit from the levy. The Agrecovery levy will be used solely to cover the costs of the Agrecovery programme. If the programme levy delivers a surplus, these funds will be used to improve programme performance or reduce the levy to be paid by the brand owners for subsequent periods.

Collection/recycling market

There are competition concerns when there is the potential for an industry scheme to agree to use a single service provider without an open tender process. This would have the effect of shutting out competitors and creating a "monopoly" service supplier.

Agrecovery has a contracted programme manager to take the scheme through its establishment and initial operation phase.

Programme management and delivery will, beyond this timeframe, be appointed in a fully contestable process.

Agrecovery will set minimum standards for the recycling/processing of collected containers (see section 8.7, below). "Approved Processors" will be contracted against agreed criteria incorporating verifiable standards and applications testing as well as value-for-money criteria.

8.7. Are there safe standards for collection and handling of material?

Considerable effort and commitment have gone into designing a scheme that is a model for the safe handling and recycling of agrichemical containers.

Agrecovery has a requirement that all containers are triple-rinsed by farmers prior to being accepted at collection points. This is in accordance with current and accepted best practice. All farmers and growers are presently encouraged to rinse containers three times with the rinsate (wash water/diluted chemical) placed into the spray tank.

All collection sites will be staffed and controlled by fully-trained employees who have been provided with criteria for accepting and rejecting containers. These staff will be crucial to ensuring that the material accepted at collection sites is as safe and environmentally acceptable as possible. This information will also be communicated to farmers to ensure their understanding and compliance.

Beyond collection, the Agrecovery programme will have clear, publicly-stated standards for materials processing contracts. Contractors meeting the standards will have Approved Processor status. Approving processors will be required to ensure that minimum standards are adhered to and that materials are recycled or disposed of in an appropriate way.

8.8. Is there communication and education about Agrecovery?

The Agrecovery programme contains a significant education and communication component. Communications will target specific stakeholders and will be designed to encourage the participation of end-users (farmers) in the programme.

9. Agrecovery Stability

The stability of a product stewardship scheme can be affected by three factors:

1. the existence of free riders;
2. the issue of how to deal with historical product; and
3. changes in a product market.

These factors can act as a barrier to establishing a product stewardship scheme due to fears of instability once the scheme is up and running.

9.1. Free riders

Free riders are producers who do not pay into a product stewardship system, but still benefit from its outcomes. Free riders can create instability in a product stewardship scheme because they leave responsible brand owners to pick up the costs of managing all products in a market.

It is difficult to estimate the extent of the free rider issue for Agrecovery because there is limited information about the quantities of product going onto the market and about market share among brand owners.

It is also difficult to estimate the extent of the free rider issue because the Agrecovery scheme is not yet established and there is no exact picture of the level of membership of the scheme. There are indications from preliminary consultation that non-Agcarm brand owners, with significant volumes to market, are interested in participating in the Agrecovery system. With concerted effort, there is the potential for the free rider issue to be minimised.

However, without regulation requiring brand owners to have a product stewardship scheme in place, there is still the potential for companies to withdraw from the Agrecovery system at any time. If a company that represents a significant portion of the market withdraws from the scheme this could threaten the stability of the entire system.

There is a strong incentive for the large brand owners to participate in a product stewardship scheme like Agrecovery. An international code of conduct[10] for the management of pesticides was amended in 2002 and now includes an industry commitment to the stewardship of agrichemical containers. The New Zealand operations of multinational agrichemical companies will be increasingly encouraged to adhere to this code of conduct by participating in a product stewardship scheme such as Agrecovery.

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[10] *FAO International Code of Conduct on the Distribution and use of Pesticides* 2002 revision

The free rider issue becomes more significant for the "generic" sector of the market. This sector is price driven with fine margins and strong competition. It, therefore, becomes critical for these companies that there is a level playing field and their competitors within this sub-sector are participating in the Agrecovery programme.

Looked at from a different perspective, as farmers begin to look for greater compliance reporting against regimes such as EurepGap, and look to "do the right thing", membership of Agrecovery may provide a market advantage. Farmers will look to purchase brands that provide for the easy and safe disposal of their used containers.

The industry suggests that the extent of companies free riding will be determined by the level of levy charged by the Agrecovery system. The challenge will be that the level of levy will be determined by the number of businesses signed up to Agrecovery. This catch-22 situation will be resolved through the contract negotiations between the Agrecovery Foundation and brand owners.

There is the risk that companies may withdraw from the Agrecovery programme at some point in the future, destabilising the programme and driving costs, and therefore, levies upwards. This may be addressed through the establishment of minimum period contracts between brand owners and the programme. A period of perhaps five years would provide a level of stability. International obligations, as described above, also reduce this risk of withdrawal.

9.2. Historical and "orphan" waste

Historical waste is product that was placed on the market before a product stewardship initiative began to operate. A product stewardship scheme is faced with the problem of financing the collection and processing of this "pre-existing" product.

Orphan waste is product that is on the market but the original producer has gone out of business or withdrawn from the market.

Product stewardship schemes are faced with picking up the cost of managing these historical and orphan products. In some instances, the financial burden of dealing with these products is significant enough to prevent a product stewardship scheme being established. This barrier is particularly the case for long-life products (eg televisions) because these products remain in the marketplace for a long time during which period brands can change significantly.

The issue of historical waste is not particularly big for agrichemical containers. Containers do not remain in the market place for significantly long periods of time. Typically, a farmer buys the product, uses the agrichemicals within a year (see section 3.1 for details), and is then ready to discard the empty container.

When the Agrecovery programme starts, there will be containers already on the market and in use by farmers. In order to avoid confusion Agrecovery will provide an "amnesty/overhang" period at the start of the programme. A period of six months has been recommended in the Agrecovery Business Plan. During this period all containers, irrespective of brand, will be collected in order to avoid confusion for farmers at such a critical stage of the programme. This short amnesty period will remove the bulk of historical product from the market.

9.3. Changes in product market

Instability can also be caused by shifts in the market (eg, if there is a major shift to different types of products or if different materials become more prevalent). There is no indication that the agrichemical industry will experience any such significant shift in product types or packaging types (see Section 3.5).

10. What Would Help Establish Agrecovery?

The Government has set out that its preferred approach to product stewardship in New Zealand is clearly for voluntary product stewardship schemes to be encouraged wherever possible, with government intervention only when absolutely necessary.

The agrichemical industry has developed a voluntary scheme that is close to being implemented. There may be opportunities within the existing policy environment for changes to be made that improve the operation of Agrecovery and help to hasten the programme's implementation.

The ultimate driver for the establishment of Agrecovery is regulation. Other tools MIGHT result in a product stewardship scheme. Regulation WILL result in a scheme. The industry does not consider that other tools will achieve the same results. There may be, however, tools that could be used in tandem with regulation to develop the most efficient product stewardship scheme.

- Local government providing collection facilities and container inspection staff in-kind to the programme.
- Government agencies could help through purchasing policies – requiring membership of stewardship programmes when purchasing agrichemical product. The forestry sector, for example, is one of the largest purchasers of agrichemicals in New Zealand. There are significant opportunities to include stewardship requirements in tenders. This may come through the Govt[3] programme.
- Central and local government providing upfront funding to assist in the establishment of Agrecovery.
- Central government administering a border control system that requires importers to show evidence of participation in a take-back programme for the packaging they place onto the market. This function could be integrated into existing Customs processes.
- ERMA could require participation in a scheme as condition of approval on imported substances. This is unlikely to catch all products as not all require such approval.
- The ACVM[11] Act could have the potential to require membership of a scheme as a condition of registration of a product. Again, this is unlikely to catch all products and may therefore be inadequate.

[11] Agricultural Compounds and Veterinary Medicines Act (1997)

11. Would Product Stewardship Legislation Help?

The view from industry is clear. A voluntary approach together with a range of tools such as those given in Section 9 is LIKELY to make the Agrecovery programme happen. Legislation and regulation WILL make the programme happen and will provide it with the necessary stability.

The existence of product stewardship legislation, with the potential for regulation, would provide certainty to brand owners in the agrichemical sector and act as a driver for brand owners to join the scheme or set up an alternative. Legislation would reduce the risk of free riders (current or future) creating instability in the scheme, but regulation would remove this risk completely.

The assistance of the legislation would depend on the form of regulation. If Agrecovery was able to be registered as an industry standard then this may be relatively simple and at modest cost. The question for registrants is who will be the policeman and will they take action against non-conformance. The industry preference would be to police themselves with some form of "backstop" coming from government.

12. How Should Regulation Work?

At this point it is uncertain how regulation might work for the agrichemical sector. The detailed design of the regulation would depend on the outcomes of the negotiations between brand owners and the programme.

Where regulation is necessary, the industry wants it to be light-handed and minimised to the greatest extent possible. Regulation might set in place minimum performance criteria, or provide for the negotiation of performance criteria. These performance criteria could then be reported against in a transparent way by the scheme. Criteria might include:

- collection targets;
- education/promotion targets;
- minimum standards for collection;
- minimum standards for recycling operators;
- public reporting requirements.

Regulation would also need to provide a method for the identification of non-participant companies. This should be as light-handed as possible and reduce the need for bureaucracy as much as possible. Simple integration with existing product requirements through Customs or the ACVM Act requirements may provide the most efficient method.

13. Lessons Learnt from Agrecovery

It has been a long time reaching this point in the development of the Agrecovery programme. The process has revealed some important points of learning that will be valuable in the development of other product stewardship schemes. These lessons are not yet over, as the programme is reaching a critical phase in its development.

Some key lessons from Agrecovery.

- Industry is supportive of a product stewardship approach, provided it does not create competition imbalances. The creation of a level playing field is CRITICAL.

- The absence of a legislative framework, or even a future date for such a framework, has meant that the process of getting the programme to its current status has been long and drawn-out.

- There seems to be money to talk but not to "walk". Walking means significant "one-off" costs to participants and is a barrier to commitment. What is needed is a "hand up" not a "hand out". This is an area where the Government can provide significant assistance. The existence of a dedicated "Product Stewardship Fund" would act as a significant driver for industries to progress the development of schemes. This fund could provide short-term funding to programmes on the verge of existence that would help them over the significant hurdle of implementation. Short-term funding of this nature would be one off and deliver long-term outcomes.

- In a regulatory environment which prefers to be relatively "hands-off" and not prescriptive, private sector initiatives and models should be encouraged. They may not be the whole answer initially but they represent the best opportunity to bringing an industry solution into being.

- It is important a small, committed group which is representative of a sector be set up to drive forward a product stewardship scheme. Such a group should be made up of people that are decision-makers in the industry. Wider consultation feeds from this group.

- Competition issues around industry collaboration and price fixing can be avoided by the creation of a not-for-profit foundation to own the programme. Vertical contracts can then be put in place between companies/brand owners and the foundation. The foundation then

takes responsibility for administering the programme and contracting programme managers.

- Local government offers a valuable resource with existing collection facilities that are well distributed and are not tied to a specific company in a sector. There are significant synergies, even when industry takes the lead, in working closely with local government.