



Assured Produce

Crop Specific Protocol

RHUBARB

(CROP ID: 43)



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Acknowledgements

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Preface

This crop specific protocol has been written to complement and avoid duplicating the generic principles of the scheme and appendices.

It is advisable to read the Assured Produce Generic Crop Protocol Standards and the Assured Produce Generic Protocol Guidance Notes (referred to in this document as the Generic Standards and Generic Guidance Notes) first before reading this crop specific protocol.

This protocol is designed to stimulate thought in the mind of the reader.

This crop specific protocol contains crop specific parameters and guidance, where applicable, for the requirements stated in the Generic Standards.

All statements in this protocol containing the words "**strongly recommended**" (in bold type) will be verified during the Assured Produce assessment and their compliance will form a part of the certification/approval decision. The score required for these "**strongly recommended**" control points can be found on the final page of this document and in the checklists produced by Assured Produce licensed certification bodies.

Disclaimer and trade mark acknowledgement

Although every effort has been made to ensure accuracy, Assured Produce does not accept any responsibility for errors and omissions.

Trade names are only used in this protocol where use of that specific product is essential. All such products are annotated[®] and all trademark rights are hereby acknowledged.

Notes:

Pesticides with 'Essential Use' derogations that expired 31 December 2007 can no longer be used or stored.

There may be other withdrawals or revocations. Products containing substances which have been revoked are shown on the PSD website (<http://www.pesticides.gov.uk>). Growers should check with their advisers, manufacturers, the Assured Produce website 'Newsflashes', the PSD website (www.pesticides.gov.uk)

Growers should comply with the 'Use up by' dates for all pesticide products. Growers should also be aware of and comply with changes on new product labels.

There may be changes for the following reasons:

- the deadline for use of NPE formulations has been extended to 31 August 2008, see <http://www.pesticides.gov.uk/approvals.asp?id=2122>
- Pesticides with NPE formulations must be used up by 31 August 2008. In many cases products will be replaced by new non-NPE formulations.
- At re-registration stage after Annex 1 listing there may be: reductions of dose rates; changes in timings and/or number of applications for some products.

In the following Appendices products and use by dates are only listed for SOLAs, and in some cases new product MAPP numbers may not be available yet.

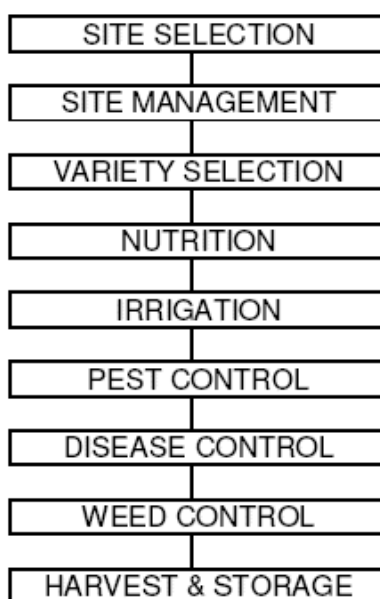
For pesticides on-label, only active substances are shown.

Any new standards have been prefixed in the text with **(NEW)**

1 General introduction

Following a systematic approach will help growers to identify and manage the risks involved in crop production. This protocol is based on a typical crop production process. Using a flowchart approach, food safety, Health & Safety, environmental and quality hazards are identified. Appropriate controls may then be established to minimise risk. Food safety and Health & Safety issues always take precedence over quality and environmental controls.

The flow chart is structured as shown below. Note that the sectional layout of both this protocol and the crop specific protocols follow the same structure.



The contents of each crop specific protocol are reviewed annually by informed farmers and growers, food technologists, scientists, the relevant fresh produce association, processors and agronomic consultants. Updated editions are issued prior to the cropping season.

The review process considers both new developments and all relevant technology which has emerged throughout the course of the previous year and which have been found to be both workable by the grower and beneficial to the environment. As one aim of the Scheme is to transfer such information and technologies to growers, attention is drawn to those features of specific relevance to ICM by using *italic* script. In order that growers may be confident that they are working to a current document, each protocol is dated and numbered.

2 Planning and records

See Generic Standards and/or Generic Guidance Notes.

3 Site selection

Rhubarb remains in the field for many years and sites must be carefully selected prior to planting. Fields which are known to have a serious perennial weed problem must be avoided, as soil cultivations are very limited once the crop is established. Fields which have stem nematodes should also be avoided.

Crowns for forcing must be grown on sites which can allow access to machinery during November, December and January.

Climate

Rhubarb has traditionally been grown in Yorkshire but the crop grows well in all locations. Most counties are suitable for the outdoor crop but for forcing the crowns need to be exposed to cold temperatures during October and November and colder areas are required. Soil temperatures at 10 cm depth need to regularly go below 5° C from October onwards before the crowns can be lifted for forcing.

4 Site management

4.1 Soil mapping

See Generic Standards and/or Generic Guidance Notes.

4.2 Soil management

Rhubarb will grow on almost any type of soil providing it is well drained. Cold, poorly drained fields must be avoided as this will delay maturity, reduce yields and reduce the length of the life of the plantation.

It is **strongly recommended** that when selecting fields for rhubarb production, soil texture, soil structure and access are considered.

5 Variety Selection

5.1 Choice of variety or rootstock

See Generic Standards and/or Generic Guidance Notes.

5.2 Seed quality

See Generic Standards and/or Generic Guidance Notes.

5.3 Seed treatments and dressings

See Generic Standards and/or Generic Guidance Notes.

5.4 Plants and nursery stock

Propagation

Propagation from seed is not recommended due to the lack of uniformity of stock.

Rhubarb is traditionally propagated by dividing crowns in the field in autumn. Vigorous crowns can be divided into three or four pieces after two years, with larger crowns capable of being split into five or six pieces, referred to as sets.

Only vigorous crowns should be retained and any off-types discarded. Older crowns should be avoided since the middle of crowns can be hollow and a source of diseased stock.

Only buy new stock from reputable plant producers to avoid the risk of buying diseased roots. This will also ensure that varieties are true to type.

New varieties can be bulked up by micropropagation but problems can be experienced in cleaning up the plant material prior to multiplication.

Planting

Planting in the autumn or late winter before growth begins is preferable. Soil cultivations must be carefully timed to avoid soil compaction which could affect crop establishment and reduce the cropping potential of the plantation.

Plants must be carefully handled to avoid damaging the buds. Most plants are planted on ridges to avoid the crowns sitting in cold wet soils during the winter months.

Life of plantation

Most Rhubarb fields are capable of producing good yields of high quality Rhubarb for at least four years. Good crop management can extend the life of the plantation particularly by maximising weed control so that the growth of perennial weeds is minimised. Perennial weeds are usually the main reason why fields are grubbed.

It is **strongly recommended** that plantations are replaced at the optimal time to maintain product quality.

Crop advancement

Crop maturity can be advanced by covering the crop with a thick layer of straw in January, and depending on season and location the first outdoor Rhubarb can be available from mid February onwards. Gibberellin can be applied at the first signs of bud growth to advance maturity and early yield.

The forced crop is usually available from early December through until late March. Early yields from Timperley Early can be low compared to late lifted Stockbridge Arrow which requires more cold units before it can be lifted and forced. Work has looked at ways to bring forward the maturity of the forced crop by lifting crowns for cold storage during September and early October. Gibberellin can be used as a replacement for cold units and is applied to crowns after placing in forcing sheds in November.

Crop scheduling

By using a range of varieties outdoor cropping can be achieved from March to November but will depend on weather conditions and location. Early maturing varieties will produce later flushes of good quality Rhubarb but yields are likely to depend on rainfall. There is no consensus of opinion on whether flower stalks should be removed and will usually depend on the availability of labour. Forced yields are higher if flower stalks are removed in the summer before forcing.

6 Nutrition

6.1 Nutrient requirement

Major nutrients

Soil sampling should be undertaken prior to planting to determine nutrient status. Fertiliser application rates must be based on soil reserves and crop requirements.

Example of typical fertiliser recommendations are given in Appendix 1.

Phosphate and potash are applied as a base fertiliser before planting with nitrogen applied in the spring after planting. Subsequent applications of nitrogen and sometimes phosphate and potash are usually made in the spring of each year usually before strawing or shoot regrowth.

Lime and pH

Although Rhubarb is relatively tolerant of acidity, the soil pH should be maintained at 6.5-7.0 on mineral soils (5.8 on peats).

Trace elements

Treatments should only be applied where a deficiency has been identified.

7 Irrigation

Irrigation may be required to help establishment in newly planted plantations.

During early summer irrigation may be required to maintain vigour but should be applied according to soil moisture levels. Some growers are investing in trickle irrigation which allows fertigation so that fertilisers could be applied 'little and often' rather than as top dressings in the spring.

Irrigation will be required in dry summers to ensure that crowns grown for forcing reach the required size to maximise stick quality.

In the forcing sheds crowns will normally be irrigated weekly. The crop does not respond to excess irrigation, which only serves to increase relative humidity and encourage diseases.

8 Crop protection

Rhubarb does not suffer from a vast range of pest and diseases but correctly targeted pesticide applications can reduce the damaging effects on crop quality. Pesticides should only be applied when pests are active and when weather conditions may be conducive to disease development.

8.1 The basic approach to crop protection**Planning**

- a. Careful selection of the site to ensure that the crop is maintained in a healthy condition and to avoid build-up of weed problems.
- b. Use only healthy rootstocks to propagate from and plant at the correct time to avoid soil compaction and poor soil structure.
- c. For forced crops use only vigorous crowns and discard remainder in the field.

Cultural preventative techniques

- a. Good crop and field hygiene.
- b. Promoting strong healthy growth by applying nutrients according to soil analysis and accurate application of fertilisers and trace elements.
- c. Utilising irrigation to promote healthy growth and particularly by using trickle irrigation which could allow fertigation and improve water use efficiency.
- d. Keep forcing sheds in a clean condition to prevent the carry-over of pests and diseases.

Corrective action

Where corrective or protective action is necessary the following approach should be adopted.

- a. The need to take corrective or protective action must be established by regular monitoring and establishing thresholds. The effect of prevailing weather and predicted weather conditions on the need

for treatment must be considered.

b. Where chemical control is considered appropriate:

- The least toxic and persistent product should be selected with due regard to its efficacy and harvest interval.
- The minimum effective dose should be used.
- An appropriate application method with effectively maintained equipment should be chosen.

Selective and spot treatments should be used whenever appropriate to known 'hot spots' based on previous year's experience.

8.2 Plant protection product choice

See Generic Standards and/or Generic Guidance Notes.

Approved uses not included on the product label

In some circumstances product labels do not include all of the approved uses and growers and advisers wishing to check the approval notice of a particular product should note that this information is available from www.pesticides.gov.uk/psd_databases.asp

A search on the database for a product name should yield a results page. A click on the product name should link to a summary of the approval information. At the bottom of the summary are links to available notices which will give the statutory conditions of use.

In the case of products with older approval an electronic approval may not be available. In these cases growers should contact the PSD Information Services Branch for details of the approved conditions of use. Contact details are: p.s.d.information@psd.defra.gsi.gov.uk tel. 01904 455775.

8.3 Advice on the use of pesticides

See Generic Standards and/or Generic Guidance Notes.

8.4 Application of pesticides

See Generic Standards and/or Generic Guidance Notes.

8.5 Records of application

See Generic Standards and/or Generic Guidance Notes.

8.6 Protective clothing/equipment

See Generic Standards and/or Generic Guidance Notes.

8.7 Pesticide storage

See Generic Standards and/or Generic Guidance Notes.

8.8 Empty pesticide containers

See Generic Standards and/or Generic Guidance Notes.

8.9 Pesticide residues in fresh produce

See Generic Standards and/or Generic Guidance Notes.

See **Generic Protocol Guidance Notes 8.9 for further background and generic advice.**

Assured produce is aware that a key area in the production of fresh produce which requires continued attention by growers and their advisers is that of keeping pesticide residues to a minimum. This issue is not just one of meeting the MRL trading standard but ensuring that any individual or multi residues are kept as low as possible below this level.

The key targets are -

- **Optimising late applications of fungicides and insecticides to the edible part of the crop.**
- **Optimising the use of post harvest treatments.**
- **Ensuring minimum harvest intervals are followed.**
- **Ensuring that application equipment is applying products correctly.**

See **Appendix 7 for the pesticide targets and guidelines on this crop.**

8.10 Pest, disease and weed control

8.10.1 Pest control

8.10.1.1 Rosy Rustic Moth (*Hydraecia micacea*)

Caterpillars are sometimes found tunnelled into the base of sticks. Due to the minimal trimming of the sticks the damage can render the stick unmarketable and lead to rejection.

Chemical control

Insecticides should be applied to control the caterpillars at the start of bud growth. Applications directed to the leaf stalk bases in late March and early April are the best method of control.

Cultural control

The moth lays her eggs on weeds so maintaining good control of weeds can minimise places where eggs can be laid. Careful monitoring can allow sprays to be targeted at the crops most at risk.

8.10.1.2 Slugs and Snails (*Derocerus*, *Milax*, *Helix* and others)

A potentially serious pest of Rhubarb due to the damp soil conditions around the crowns. They damage the crowns and can eat into the petioles causing unmarketability. Probably more serious in forced crops due to the dark, damp conditions and the difficulty in observing early damage in the dark forcing sheds.

Chemical control

Where the pest is known to be a problem, field applications of a molluscicide should prevent damage. In forcing sheds an application after planting and following the first watering may be required. At present there are no insecticides approved for the control of this pest on forced rhubarb.

Cultural control

Avoid using heavy soils and fields known to have poor drainage. Inspect crowns carefully before placing into the forcing sheds. Removal of all trash before planting may further reduce potential damage.

8.10.1.3 Stem nematode (*Ditylenchus dipsaci*)

Stem nematodes can be found in high numbers in crowns and have been linked with a condition called crown rot caused by the bacterium *Erwinia rhapontici*. Nematodes are also found in buds and leaf stalks, which become swollen at the base, then split and soon start to rot. The nematode can infect and seriously damage crowns and leaves of young plants. The race attacking Rhubarb is the same one that attacks Oats and Onion.

Chemical control

No nematicides are approved for use on Rhubarb.

Cultural control

High standard of cultivation and hygiene, good drainage and soil structure can reduce crop losses. Adequate crop rotations and the use of healthy planting material are essential. The nematodes can live in many common weeds so crops should be kept as weed-free as possible. Damaged crowns should be carefully removed and burnt. Only clean rootstocks should be used for propagation.

Currently approved insecticides are listed in Appendix 2.

8.10.2 Disease control

8.10.2.1 *Botrytis* (*Botrytis cinerea*)

The most widespread and important disease of Rhubarb. Moist conditions encourage the disease but vigorously growing petioles are resistant to infection. Symptoms can develop after harvesting as a result of wounding and moisture loss. Forced Rhubarb can be seriously affected with reduced yield and quality as it affects the upper part of the petiole and leaf, encouraged by the moist conditions in the forcing shed.

Chemical control

No fungicides are approved for this disease on the outdoor crop but there is one SOLA for use on the forced crop. Fungicides should only be used when there is disease in the crop. Tissue damaged by pests could allow secondary infection by *Botrytis*.

Cultural control

*The disease is favoured by high temperatures and high humidities. Good ventilation in forcing sheds should help minimise disease development. Crowns should be carefully handled during lifting and planting in forcing sheds to avoid damage to roots and buds which could allow entry by secondary pathogens. Removal of weak and damaged shoots during forcing, known as trashing, can reduce the incidence of *Botrytis* and the condition known as 'blacktop'. Careful handling of the harvested produce can reduce the incidence of this disease.*

8.10.2.2 Minor diseases

Fortunately, Crown rot (*Erwinia rhapontici*), Violet root rot (*Helicobasidium purpureum*) and Honey fungus (*Armillaria mellea*) rarely affect Rhubarb plantations, as there are no fungicides approved for their control.

Downy Mildew (*Peronospora jaapiana*) can cause serious leaf damage and affect petiole quality. This has been observed in Norfolk in May/June in the past few seasons.

Cultural control

Avoid sites known to be infected and avoid using land that has recently grown susceptible crops. For most soil borne diseases the only option is to remove and burn infected crowns.

Currently approved fungicides are listed in Appendix 3. A SOLA for Downy Mildew control issued in August 2002 expired in August 2006, was re-issued but expired in December 2007.

8.10.3 Weed Control

Weed infestations cause yield depression in Rhubarb plantations, and when severe usually result in the grubbing of the field. Spot applications of contact herbicides may also be used to control perennial weeds.

Weeds are usually controlled using residual herbicides but some growers also rely on mechanical cultivation techniques. Growers of crowns for forcing prefer generally not to use herbicides in the first year after planting. Several products can only be used as spot applications avoiding contact with the crop. Currently approved herbicides are listed in Appendix 4.

9 Harvesting and storage

Rhubarb should be carefully pulled to avoid damage to the sticks and developing buds. Unduly heavy pulling weakens the crowns. Mechanised harvesting rigs are used to minimise lifting and carrying large quantities of Rhubarb. Sticks with insect damage, disease, honeycombing or any discoloration must be discarded.

It is **strongly recommended** that harvesting staff are trained to harvest and pack rhubarb so that shelf life is maximised.

Fresh Market :

Forced Rhubarb must be picked very carefully due to the tender nature of the sticks. This allows later developing buds to produce good quality sticks and minimises unmarketable yield.

The sticks will normally be trimmed in the field or at the packhouse to remove most of the leaf and the stem base. Some leaf material is retained to reduce stick splitting.

Processing:

Rhubarb for processing is normally derived from main crop production during late May and June. The Rhubarb is hand-picked and fully trimmed at both ends by completely removing the white heel at the base of the stick and all the leaf portion at the top. Produce is carefully packed into plastic boxes or tied firmly in bundles for delivery to the factory.

9.1 Hygiene

See Generic Standards and/or Generic Guidance Notes.

9.2 Post-harvest treatments

See Generic Standards and/or Generic Guidance Notes.

9.3 Post-harvest washing

See Generic Standards and/or Generic Guidance Notes.

9.4 Post-harvest handling

After trimming into boxes or plastic crates Rhubarb will be placed in cold stores. This reduces field heat and extends shelf life.

Poor handling increases the risks of damage to the sticks and the development of bacterial soft rots and *Botrytis* .

10 Pollution control and waste management

See Generic Standards and/or Generic Guidance Notes.

11 Energy efficiency

See Generic Standards and/or Generic Guidance Notes.

12 Health and safety

See Generic Standards and/or Generic Guidance Notes.

13 Conservation

See Generic Standards and/or Generic Guidance Notes.

Appendix 1 Typical application rates for major nutrients for Rhubarb (kg/ha).

Nutrient (kg/ha)	Soil Index					
	0	1	2	3	4	4 +
Nitrogen (N)	175	125	75	Nil	Nil	Nil
Phosphate (P ₂ O ₅)	175	150	120	100	50	Nil
Potassium (K ₂ O)	250	225	200	150	125	Nil
Magnesium						
light soils	90	60	Nil	Nil	Nil	Nil
other soils	60	30	Nil	Nil	Nil	Nil

Notes:

Additional applications of nitrogen will be required in each year but should be targeted to previous crop growth and vigour of the plantation.

In the spring prior to forcing up to 400 kg/ha N may be required, split as two or more top dressings.

Appendix 2 Insecticides currently approved for use on Rhubarb.

Active Ingredient	Product Features	Approval Type	Harvest Interval (1)	Hazard Rating	LERAP Category	MRL (mg/kg)
metaldehyde	Molluscicide bait, pellet. Best results achieved by application during mild, damp weather when slugs and snails most active. Harmful to fish and other aquatic life.	Full	none stated	none stated	none stated	none set
deltamethrin	A pyrethroid insecticide with contact and residual activity.	SOLA ⁽²⁾	Protected 7 days - outdoor none set	Harmful irritant	A	0.05 ⁽⁴⁾
pirimicarb	A carbamate insecticide for aphid control. Best results achieved under warm, calm conditions when spray does not dry too rapidly. Dangerous to fish and aquatic life.	SOLA ⁽²⁾	3 days	Harmful	None stated	None set
Bacillus thuringiensis var Kurstaki	A bacterial insecticide for caterpillar control.	SOLA ⁽²⁾	28 days	none stated	none stated	none set

(1) or latest time of application

Notes:

1. The 'blanket' recommendation for use of methiocarb on all edible crops is no longer permitted. Edible crops which may be treated with methiocarb are listed individually. The new list does not include rhubarb.
2. SOLA for specified product and expiry date see Appendix 6.
3. Not all products containing this active ingredient may be currently approved for use on Rhubarb. As label recommendations are revised regularly, read a current label before use.
4. Limit of determination (LOD).

Appendix 3 Fungicides currently approved for use on Rhubarb

Active Ingredient	Product Features	Approval Type	Harvest Interval ⁽¹⁾	Hazard Rating	LERAP Category	MRL (mg/kg)
Copper oxychloride	A protectant copper fungicide and bactericide.	SOLA ⁽²⁾	none set	Dangerous to environment. Toxic to aquatic organisms.	none stated	none stated
iprodione	Protectant/irradicant dicarboximide fungicide	SOLA ⁽²⁾	14 days	Irritant	none stated	0.2
thiram	A protectant dithiocarbamate fungicide.	SOLA ⁽²⁾	Use pre drilling–seed treatment	Dangerous to environment. Toxic to aquatic organisms.	none stated	none stated

Notes:

The SOLA for Fubol Gold® (metalaxyl - M and mancozeb) expired on 31/12/07.

An application for further extension of use requiring an MRL amendment is under evaluation.

⁽¹⁾ or latest time of application.

⁽²⁾ SOLA. For specified product and expiry date see Appendix 6.

Not all products containing these active ingredients may be currently approved for use on Rhubarb. As label recommendations are revised regularly, read a current label before use.

Appendix 4 Herbicides currently approved for use on Rhubarb

Active Ingredient	Product Features	Approval Type	Harvest Interval (1)	Hazard Rating	LERAP Category	MRL (mg/kg)
chlorpropham	Residual carbamate herbicide.	SOLA ⁽²⁾	Apply within 7 days of planting	dangerous. Toxic to aquatic life.	none stated	0.05 ⁽³⁾
dichlobenil	Residual benzoic nitrite herbicide.	SOLA ⁽²⁾	Apply when dormant (late autumn)	Harmful irritant	none stated	none set
glufosinate-ammonium	Non selective, non residual phosphonic acid contact herbicide.	Full	Non-cropped area only	Harmful	B	none set
glyphosate	Translocated non-residual phosphonic acid herbicide, soluble concentrate. Spot application only to non-cropped areas.	Full	Non-cropped area only	Harmful irritant	B	0.1 ⁽³⁾
glyphosate	Translocated non-residual phosphonic acid herbicide, soluble concentrate. Overall field application post harvest but prior to bud break in the following year.	SOLA ⁽²⁾	4 weeks Post harvest but prior to bud break. Spot application	Harmful irritant	B	0.1 ⁽³⁾
metamitron	Contact and residual triazinone herbicide	SOLA ⁽²⁾	28 days	Dangerous to environment. Very toxic to aquatic life.	none stated	1.0 ⁽⁵⁾
paraquat ⁽⁴⁾	Non-selective, non-residual contact herbicide. Use as a pre-emergence herbicide to control weeds emerging in the dormant phase of the crop. Maximum 1 application per year.	SOLA ⁽²⁾	Pre-emergence of the crop	Toxic harmful irritant	none stated	0.02 ⁽³⁾
pendimethalin	Residual dinitroaniline herbicide.	SOLA ⁽²⁾	Pre-emergence of the crop or after final harvest	dangerous. Toxic to aquatic life.	none stated	0.1 ⁽⁵⁾
propachlor	Pre-emergence chloroacetanilide herbicide.	SOLA ⁽²⁾	7 days after stem emergence	Harmful irritant	none stated	none set
propaquizafop	A phenoxy alkanolic acid foliar acting herbicide.	SOLA ⁽²⁾	28 days	dangerous to environment. Toxic to aquatic life.	none stated	none set
propyzamide	Residual amide, wettable powder or suspension concentrate. Active via root uptake. Weeds controlled from germination to young seedling stage. Best results achieved by application to fine, firm, moist soil. Do not use on soils with more than 10% organic matter. Maximum 1 application per year.	Full	Apply between 1 st October and 31 st December only (check label). At least 6 weeks	none stated	none stated	0.02 ⁽³⁾

Notes:

- (1) or latest time of application.
- (2) SOLA. For specified product and expiry date see Appendix 6.
- (3) Limit of determination (LOD).
- (4) There is a use up date of 31/7/08 for products containing paraquat.
- (5) UK temporary MRL

Not all products containing these active ingredients may be currently approved for use on Rhubarb. As label recommendations are revised regularly, read a current label before use.

Appendix 5 Growth regulants approved for Rhubarb.

Active Ingredient	Product Features	Harvest Interval /Latest Application	Hazard Rating
gibberellin ⁽¹⁾	Plant growth regulator to help overcome dormancy and increase early yield. Apply as a drench to washed crowns on transfer to forcing shed.	On transfer to forcing shed or at first signs of growth in field.	none stated

Notes:

⁽¹⁾ Consult processors before using this chemical.

Appendix 6 Specific off-label approvals for use on Rhubarb.

Number	Product Name	Active Ingredient	Approval type
Outdoor Crop			
0913/2001	Casoran G [®]	dichlobenil	31/12/08
0413/2002	Roundup [®]	glyphosate	unstipulated
1502/2002	Falcon [®]	propaquizafop	31/12/13
1629/2002	Shogun [®]	propaquizafop	31/12/13
1632/2002	Raptor [®]	propaquizafop	31/12/13
1634/2002	Cleancrop GYR [®]	propaquizafop	31/12/13
1140/2003 ⁽¹⁾	Decis Protech [®]	deltamethrin	31/12/08
0504/2004	Pearl Micro [®]	deltamethrin	31/12/08
0529/2004 ⁽¹⁾	Decis [®]	deltamethrin	31/12/08
0680/2004	Aphox [®]	pirimicarb	31/12/13
0739/2004 ⁽¹⁾	Dipel DF [®]	Bacillus thuringiensis	31/12/13
1404/2004	Casoran G [®]	dichlobenil	31/12/08
2123/2004	Roundup Biactive [®]	glyphosate	31/12/08
1070/2005	Ramrod Flowable [®]	propachlor	31/12/08
1699/2005	Propachlor 50SC [®]	propachlor	31/12/09
1744/2005	Phantom [®]	pirimicarb	31/12/08
2396/2005	Agrichem Flowable Thiram [®]	thiram	31/12/08
1271/2006	Stomp 400SC [®]	pendimethalin	31/12/08
1529/2006 ⁽¹⁾	Cleancrop Decathlon [®]	deltamethrin	31/12/13
2029/2006	Roundup Biactive [®]	glyphosate	30/06/12
3135/2006 ⁽¹⁾	Cuprokyt FL [®]	Copper oxychloride	31/12/13
3138/2006 ⁽¹⁾	Cuprokyt FL [®]	Copper oxychloride	31/12/13

(1) The SOLA is approved for both outdoor and protected crops.

(2) There is a use up date of 31/7/08 for products containing paraquat.

Notes:

- A. SOLAs provide for the use of the product named in respect of crops, situation or pests other than those included on the product label. Such use is undertaken at the user's choosing and the risk is entirely theirs and for their advisers.
- B. Specific off label use may only take place if all the conditions given in the 'Notice of Approval' document, the product label and/or leaflet and any additional guidance on Off-Label approvals have first been read and understood. The conditions of approval given when 'Notice of Approval' are statutory and supersede any on the label which would otherwise apply.
- C. All SOLAs are conditional on the continued approval of the specific product.

Appendix 6 Specific off-label approvals for use on Rhubarb (Cont'd).

Number	Product Name	Active Ingredient	Approval type
0844/2007	Skater [®]	metamitron	31/12/13
1158/2007	Decis Protech [®]	deltamethrin	01/11/08
1430/2007	Stomp 400SC [®]	pendimethalin	31/12/13
1478/2007	Asteroid [®]	glyphosate	30/06/12
1579/2007	Bandu [®]	deltamethrin	01/11/08
1641/2007	Cleancrop Decathlon [®]	deltamethrin	01/11/08
1662/2007	Pearl Micro [®]	deltamethrin	01/11/08
1652/2007 ⁽¹⁾	Decis Protech [®]	deltamethrin	01/11/08
1663/2007	Pearl Micro [®]	deltamethrin	01/11/08
1951/2007	Comrade	chlorpropham	31/08/08
1957/2007	Gramoxone 100 [®]	paraquat	31/08/08 ⁽²⁾
Protected/Forced Crop			
0535/2004	Pearl Micro [®]	deltamethrin	31/12/08
1795/2007	Rovral WP [®]	iprodione	31/08/08
1927/2007	Rovral WP [®]	iprodione	31/08/08

(1) The SOLA is approved for both outdoor and protected crops.

(2) There is a use up date of 31/7/08 for products containing paraquat.

Notes:

- A. SOLAs provide for the use of the product named in respect of crops, situation or pests other than those included on the product label. Such use is undertaken at the user's choosing and the risk is entirely theirs and for their advisers.
- B. Specific off label use may only take place if all the conditions given in the 'Notice of Approval' document, the product label and/or leaflet and any additional guidance on Off-Label approvals have first been read and understood. The conditions of approval given when 'Notice of Approval' are statutory and supersede any on the label which would otherwise apply.
- C. All SOLAs are conditional on the continued approval of the specific product.

Appendix 7 Guidelines on minimising pesticide residues

These guidelines have been produced after consultation between crop stakeholders and the Assured Produce crop author. They will be developed over the coming seasons as knowledge on minimising residues develops. Growers should consult with their crop protection adviser to ensure other best practices are not compromised before considering these guidelines. The table below lists the active ingredients that may give rise to crop residues and details potential alternative strategies.

Active ingredient	Target: pest, weed, disease	Current position	Suggested guidelines
dichlobenil, glufosinate-ammonium, glyphosate, paraquat, propyzamide, simazine.	weeds	residues not found	Follow label instructions or SOLA
metaldehyde	pests	residues not found	Follow label instructions
iprodione	diseases	residues not found	Follow SOLA
metalaxyl-M + mancozeb	downy mildew	residues not found in survey, but there is a risk of residues due to the MRL	

The results of a survey undertaken in 2004 of all residue data showed that residues are not commonly found in rhubarb. Vigilance by growers will be required to maintain this situation.

Note:

The SOLA for metalaxyl-M + mancozeb expired on 31/12/07. An application for further extension of use requiring an MRL amendment is under evaluation.

Appendix 8 Control Points: Rhubarb

CS.43 RHUBARB

- CS.43.1 When selecting fields for rhubarb growers should consider soil texture, soil structure and access
- Protocol reference: Section 4.2
- CS.43.2 Growers should be able to provide evidence that they replace plantations at the optimal time to maintain produce quality
- Protocol reference: Section 5.4
- CS.43.3 Growers should be able to demonstrate that staff know how to harvest and pack rhubarb to maximise shelf life
- Protocol reference: Section 9