Agri intelligence

VINEYARD TOOLKIT 2023

Agrii

Welcome
to the Agrii Vineyard Toolkit

Our products and services help fruit growers and nursery workers to meet the exacting standards demanded by the marketplace.

Agrii fruit agronomists don't just advise on the best crop protection treatments; they can also help with the supply of a wide range of ancillary products as well as agronomy, regulatory, environmental and budgeting support services that today's growers demand.

The Agrii fruit team is comprised of 13 dedicated top and soft fruit agronomists together with ancillary product specialists. Within the vineyard sector, we have two leading agronomists, Julian Searle and Ben Brown, with other members of the team also working in vines.

Our staff provide a professional advice based service supporting you throughout all stages of your vineyard business:

- Pre-planting advice.
- Rootstock and variety choice.
- Cover crop selection.
- Disease risk modelling.
- Nutrient management programmes.
- IPM planning.
- Trellising and ancillary product supply.
- RHIZA digital agronomy and precision service.

E: info@agrii.co.uk | T: 0845 607 3322 | www.agrii.co.uk

Contents

AgriiPlus is Agrii's customer intranet

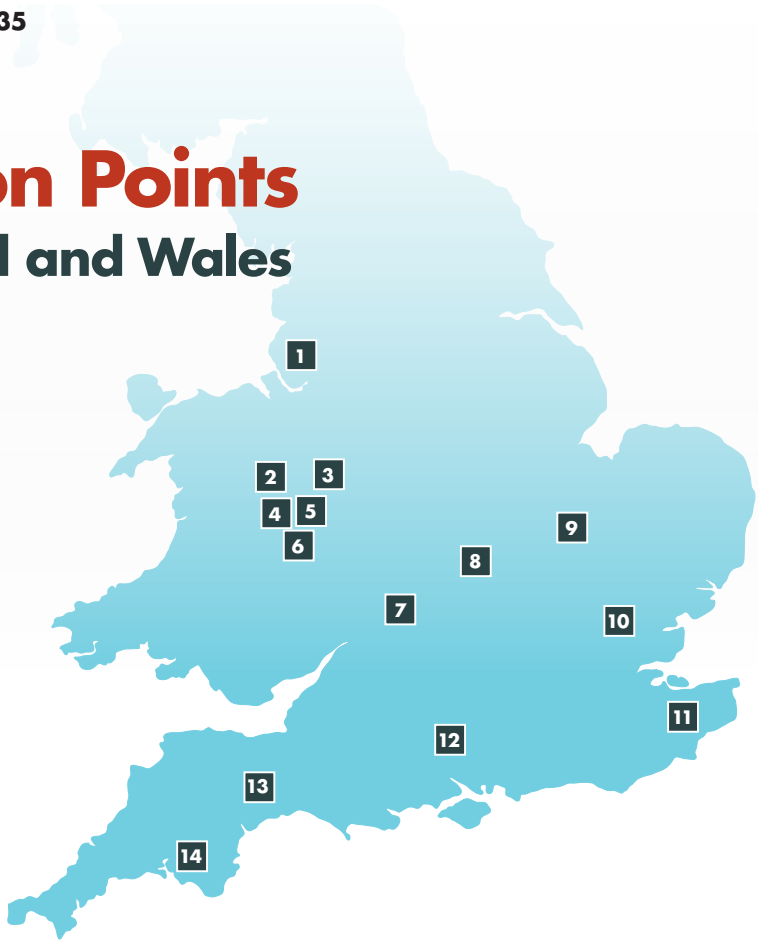
It provides a comprehensive package of information to help manage crop production safely, legally and with due regard for food standards and the environment.

Available to customers only, speak to your Agrii agronomist if you would like to sign up.

Agrii Distribution Points

in the south of England and Wales

1	Wigan	8	Finmere
2	Welshpool	9	Alconbury
3	Hixon	10	Moreton
4	Knighton	11	Dunkirk
5	Ludlow	12	Larkwhistle
6	Presteigne	13	Willand
7	Fosse Cross	14	Plymouth



Organic fungicides and biostimulants – the future of disease management

By Ben Brown
Agronomist & Viticulture Specialist

Over the years, the use of plant protection products has become more and more tailored, as manufacturers have sought to target specific diseases with individual active ingredients.

Whilst this has meant less impact on non-target species, it has resulted in fungicides that target single aspects of disease lifecycle.

These fungicides can even be so niche as to only target proteins of specific shapes in fungi. This immense selection pressure results in a shift in population towards fungi that are tolerant or resistant to pesticides.

Fungi develop resistance in a variety of ways:
(see figure 1 & 2)

1. We can see changes in the site that a fungicide binds to, preventing a fungicides activity.
2. Increase expression of a target site meaning fungal pathways that are intended to be inhibited can still occur as normal.
3. The development or increased expression of efflux pumps meaning fungicides are expelled from cells before they can reach or sufficiently affect their target site.
4. Detoxification or breakdown of fungicides into non-efficacious by-products.

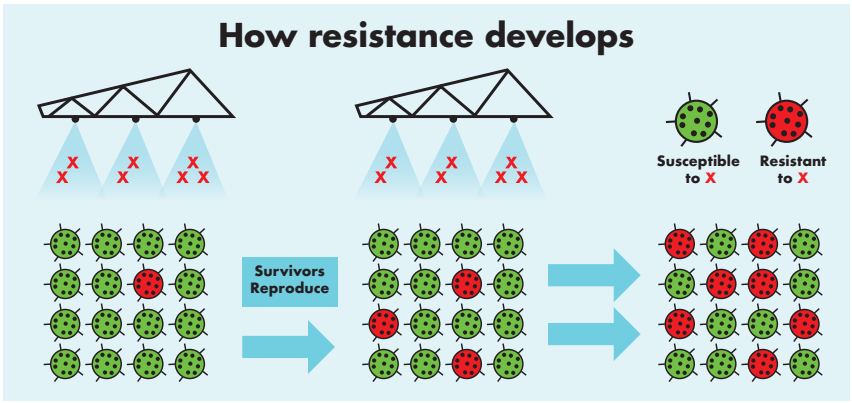


Figure 1 (Diagram credit: Syngenta)

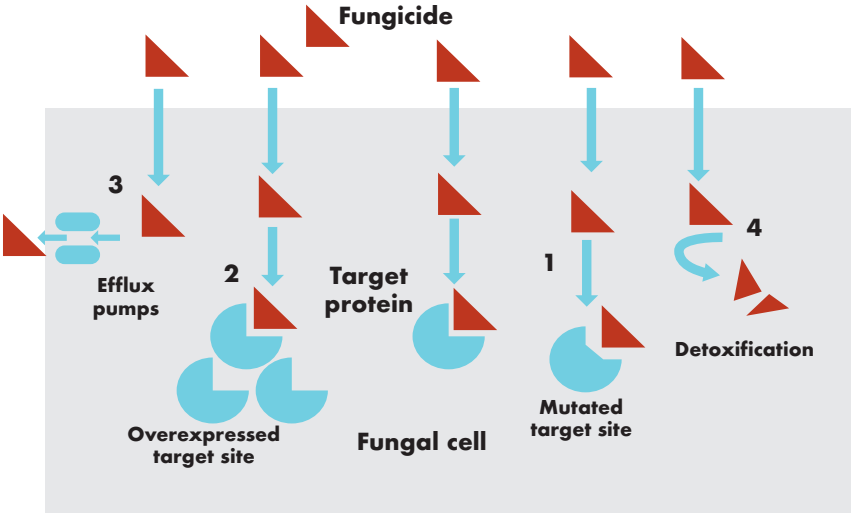


Figure 2

It is important to recognise these different methods of resistance as they can result in various levels or speeds of resistance development and varying levels of fitness penalty to pesticide tolerant fungi. Fitness penalty or cost associated with an adaptation to cope with fungicides means where no fungicidal pesticide pressure is applied, fungal populations will eventually revert to their 'original state' or a new ecological balance. This concept is important when it comes to how we manage pesticides in our vineyards.

As a vineyard manager, resistance management is something you have to be aware of and can manage in a variety of ways. Balancing and integrating all of the below are important.

Initial resistance can be avoided in multiple ways including:

1. Product rotation.
2. Overlapping products with different modes of action.
3. Using appropriate rates (not too high or too low).
4. Applying fungicides at appropriate times (when fungi is susceptible).
5. Using fungicides in appropriate conditions (not immediately before rainfall).
6. Use cultural controls (good canopy management, clean nursery stock).
7. Integrating multisite active ingredients (such as Mancozeb – Karamate DF).

Organic fungicides, biostimulants and their place in resistance management

Broadly speaking, organic fungicides can be split into three groups:

1. **Biological organism (toxin producing or out-competing)**
2. **Multi-site or physically acting fungicidal products**
3. **Plant defence response elicitors (this is also where most biostimulants site)**

Biological organisms are a key tool in disease management in grapes, especially as modern products are vast improvements on older formulations. Biological organisms are particularly relevant to resistance management in populations of Botrytis in crops. There are a range of products including Botector and Amylo-X which outcompete or release novel toxins to repress disease populations (this is known as antibiosis). Botector, which acts to colonise wounds before fungi, is particularly useful as it doesn't have any single target to which a fungi could become resistant. It can therefore help redress balances in fungal populations.

Figure 3 (Image credit: Certis Belchim)

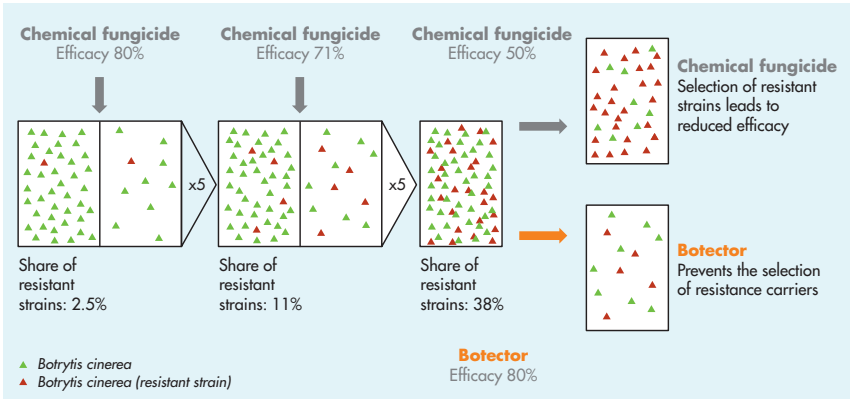


Figure 4 (Diagram credit: San Agrow)

Similarly, products such as Cuprokylt (multi-site activity) or Karma (physical activity), which either affect multiple pathways within the fungi or break down the physical structure of a fungus, help redress population pressures away from selection of single site resistance genes. This is why we look to integrate products like Thiopron and Cuprokylt alongside our ongoing more specific products like Justice and SL 567a.

The final group of organic fungicides are elicitors such as Romeo and the biostimulants that can have similar incidental affects as a result of their use, such as Innocul8 (formerly PREtec).

Plants have a variety of different defense response systems that can be triggered by certain products. Romeo creates a vaccine-like response in the plant. The yeast fungus used to make Romeo lands on the leaf, triggering receptors in the plant to stimulate defence responses. This helps develop a tolerance to pesticides, reducing overall reliance on specific active ingredients. Elicitor-type products generally require ongoing or repeated booster applications to help keep the plant primed ahead of any infection risk.

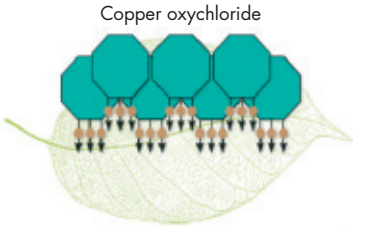
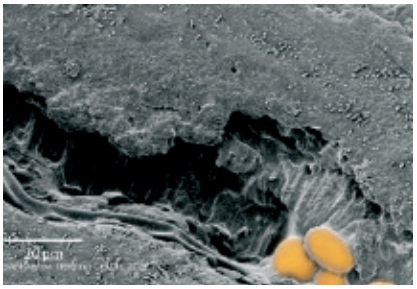


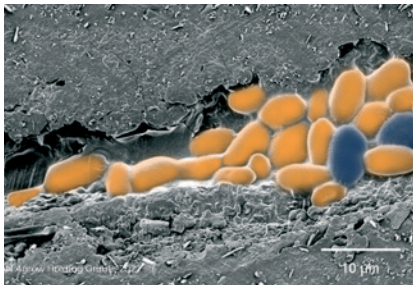
Figure 5 (Image credit: Certis Belchim)

Whilst the number of plant protection products in UK viticulture is shrinking annually, with less modes of action available to rotate chemistry than there were historically, there is increasing demand on growers to maintain the efficacy and quality of the products that are available. Integrating a variety of organic, physical acting and elicitor-based products not only allows you to improve pesticide efficacy, with shorter harvest intervals and novel modes of action, but also helps preserve the efficacy of the other more site-specific products we use every day, to help produce a healthy, high quality crop of grapes.

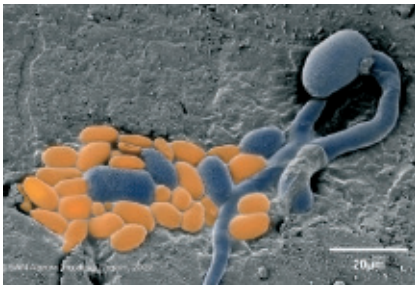
Aureobasidium pullulans *Botrytis cinerea*



1. Microscratches on the plant's surface provide a natural entry point for grey mould (*Botrytis cinerea*). These scratches are colonised immediately after applying the highly effective microorganisms (*Aureobasidum pullulans*).



2. The rapid proliferation of *Aureobasidium pullulans* consumes available nutrients and inhibits the development of *Botrytis*.



3. The microscratch is sealed by *Aureobasidium pullulans*, which acts as a natural shield and prevents *Botrytis cinerea* from infecting the plant.

For more information, please contact benjamin.brown@agrii.co.uk

Soil health and fertility is the life blood of the vineyard...

By Julian Searle
Agronomist &
Viticulture
Specialist

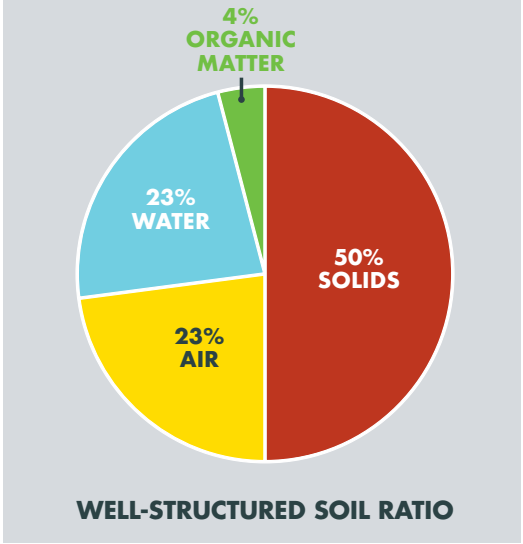
You only ever get to plant a vineyard once and so optimising the conditions of your selected site and soil pre-planting and thereafter, will be fundamental to the subsequent health and performance of the vineyard.

A full survey from analysis of the combination of physical, biological and chemical characteristics that define a soil is possible, using techniques such as electrical conductivity (EC) scanning and laboratory analysis offered by for example, RHIZA, from which the important decisions of correcting any deficiency and improvement can be made.

A further benefit of a detailed soil survey is that it can be used to interrogate very local soil variance, providing a site map to guide precision management practice. Historic knowledge from previous cropping can also inform future performance and by interpreting the indicators of soil health from field examination, e.g. soil pits, current species, vegetation and worm activity.

Nutrient availability which is influenced by both Cation Exchange Capacity (CEC) and pH is certainly important. Active calcium will influence rootstock choice, to avoid iron chlorosis planted on chalk soils. By any measure, the importance of soil structure for performance may trump all other soil factors; influencing how vine roots can grow through the soil profile and forage to exploit nutrient reserves.

IDEAL SOIL STRUCTURE



WELL-STRUCTURED SOIL RATIO

THE KEY PARAMETERS TO TEST ARE:

- Macro and micro nutrients.
- CEC, pH and active calcium.
- Particle size and soil classification.
- Organic matter content and biological status.

Soil porosity to enable ready diffusion of water, oxygen, nutrients and unhindered root development are critical to all plants, and deep rooting vines are particularly intolerant to cold, wet and poorly aerated soils. Well-structured soils are characterised by a mix of particles that freely aggregate and remain porous against water saturation, erosion and compaction. The ratio of sand, silt and clay, the different cations in the clay and thirdly the organic matter content that contributes carbon and nitrogen by mineralisation; influencing soil biology and physical structure are the main determinants.

To some extent, all these features can be altered and improved. Acidic soils can be neutralised by the addition of lime. The pH of alkaline soils can be reduced and addition of unavailable iron with Ferrous sulphate or chelated iron. Gypsum has the effect of displacing acid cations with base cations that improve soil particle aggregation. Organic matter can be added to alter physical structure, add humic content and benefit soil fauna – humic acids have three times greater influence on soil CEC than clays and are the lunch box for soil fauna and good soil biology. Altering physical structure to alleviate compaction by mechanical means or planting deep rooting cover crops is a part of good agricultural practice, particularly in perennial row crop production. Land drainage or mole ploughing to alleviate areas of high water retention and thus result in poor soil structure is sometimes necessary.

For more information, please contact julian.searle@agrii.co.uk

"Nutrient movement and partitioning within the vine and between different tissues changes through the year."

Fertilising grapes to ensure full availability of the required nutrients so that they are not a limiting factor to quality and yield, can be expressed and approached in different ways. Annual nutrient uptake per hectare is what a vine assimilates into roots, shoots and fruit in a year. This is not the same as offtake which is what is removed in the harvested crop expressed per tonne, or an average crop per hectare, and is less than uptake. The difference is what is returned to the soil by roots and shoots, what is stored in the vine and the variation in this from season to season. Different management practises e.g. burning or mulching prunings, will have an influence.

Nitrogen	Phosphorus	Potassium	Calcium	Magnesium	Sulphur
Annual nutrient uptake kg/ha					
20-70	3-10	25-70	40-80	6-15	4-8
Annual nutrient offtake kg/tonne					
1.3-1.6	0.3-0.4	2.3-3.1	0.1-0.15	0.2-0.35	-

The Fruit Grower 2015

Nutrient movement and partitioning within the vine and between different tissues changes throughout the year. Pre-flowering the roots take up less from the soil and instead, the vine moves nutrients out of its reserves to meet demand as required. Appreciable uptake from soil takes place from flowering, particularly potassium, calcium and magnesium. At the end of the season, pre-dormancy vines remove relatively high levels of particularly phosphate, calcium and nitrogen and also return nutrients indirectly and directly to the soil. The system of nutrient supply in a perennial fruit crop is a buffered process, influenced by both the 'massive' properties of a healthy soil and significantly by movement between tissues and from stored reserves.

Re-supplying the crop annually with applied fertilisers to take account of offtake is a reasonable method. Alternatively, keeping soils at recognised levels of fertility to ensure availability over a period, testing every three years to maintain this. In vines, it is important to maintain soils over a three-year period (depending on CEC) between 2+ and 3+. Above this, the crop is unlikely to show a response and below 2, deficiency may occur (visible or symptomless – so called 'hidden hunger'). Within this range balanced availability is presumed, assuming that P, K and Mg are in balance as excess of one can limit uptake of another and other micro nutrients.

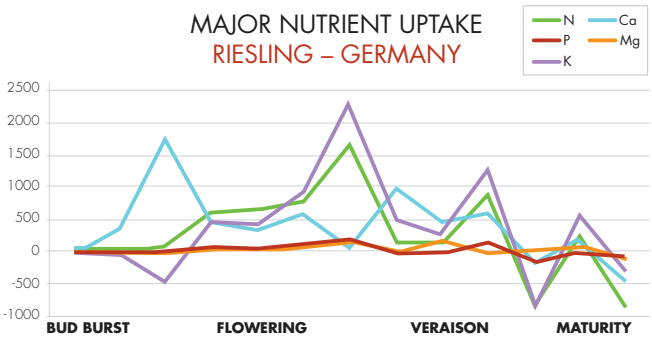
Typical analysis PAS100 compost kg/tonne				
Nitrogen	Phosphate	Potassium	Magnesium	Sulphur
11.76	4.46	8.01	2.74	4.56
pH 6.7, OM 49%, C:N 13:1				

FGS Agrii

The addition of organic matter is a unique technique to improve all aspects of soil health; physically, chemically and biologically, and to confer resilience to the system of balanced soil nutrient and water supply. The cost of applying an available source e.g. PAS100 compost, can be offset against the release of actual and improved available nutrient (and water) over more than one season and instead of inorganic applications. Certainly, long term trials confirm yield gain attributed to improved soil status to depth through the profile. Where I have returned to sample treated soils, visual and chemical analysis confirm a strong response in raised CEC, levels of P, K and Mg and worm incorporation to depth. The release of nitrogen present in compost is slow and mulching a deep 10-15cm layer to the row appropriate.
The best timing maybe shortly after planting.
Apart from useful nutrient release, this will instantly prevent water stress, and the combined effect potentially reduce the establishment period.
There is a synergy from raising organic soil content; greater than equivalent nutrient addition. Similar is seen from manufactured organic products such as granular Ovinalp MV100 or liquid humates e.g. Biohumate. Higher levels of nutrient addition can be achieved from combined organic/inorganic products such as Ovinalp SKOR.

Product and analysis per 100kg/ha					
	N	P	K	Mg	Rate/ha
Ovinalp MV100	2kg	1kg	2kg	0.5kg	1 tonne
Ovinalp SKOR	5kg	2kg	8kg	5 SO4	400/800kg

During extended dry conditions in spring or summer, deficiency can occur and vines benefit from foliar applied nutrient to assist in the shortfall from the soil. Similarly, when nutrients are identified potentially limiting by other factors such as pH, rootstock influence (SO4), known occurrence of a particular physiological disorder (EBSN) and disease prevalence (botrytis). History of symptoms, analysis results over a number of seasons including petiole analysis (taken at flowering and veraison) and an understanding of specific crop stage demand are useful in the timely application of foliar applied nutrients to supplement soil supply and ensure non-limiting availability.
In particular, pre-flowering nitrogen, calcium, boron, zinc and possibly potassium and magnesium. For post-flowering, potassium, boron and zinc as confirmed by petiole analysis. Closer to veraison, potassium, calcium and magnesium and after harvest, nitrogen and phosphate.



Specialist Cover Crops Mixtures

Cover crops used correctly as part of your soil management strategy can have the following benefits:

- **Improve soil structure through root penetration at different depths** – subject to the species used. Channels created by the roots open up the soil allowing free movement of air and water through the soil profile, even breaking up compacted layers at depth.
- **Encourage farmland wildlife and beneficial insects** by creating cover and a food source over an extended period.
- **Increase the quantity of the biota (bacteria, earthworms, fungi, insects) in the soil** over time by having a growing crop and increased organic matter available for more of the year to feed them consistently. The increase in soil biota will then speed up the breakdown of organic matter, bring the carbon:nitrogen ratio into balance and make nutrients readily available to the crop.
- **Improve overall soil health**, which is the foundation for helping to promote good crop health, enhancing crop yields and farm sustainability.

GRASS ALLEY MIXTURES

The grass alleyways between the vine rows are often overlooked and seen simply as a place to travel with machinery, pickers, pruning staff and so on. At the establishment phase of a vineyard, the grass mixture is rarely considered, and a "tumble-down" ley of broad leaved weeds and any other vegetation that arrives on the wind is so often seen as acceptable.

However, selecting the right grass mixture for your alleyways can afford other benefits:

- **Soil structure improvement.**
- **Increase in soil microorganisms.**
- **Improved water infiltration and drainage.**
- **Less compaction and tractor wheel ruts.**
- **Less weed pressure beneath vines.**
- **Nitrogen fixing and carbon capture.**

SLOW GROWING GRASS

An established slow-growing grass mix:

AGRII'S GRASS 12 BLEND	%
Ponderosa	40
Wilma	15
Dumas	10
Maxima	35

AGRII VITI MASTER

The Agrii Viti Master mix was developed with the help of our customers at Poulton Hill Estate in Cirencester. It is designed to be both practical and agronomically suited to UK vineyards. The blend has a high percentage of dense grasses that will give excellent ground cover and outcompete most pernicious weeds, whilst offering great traction for travelling. The broad leaved plants provide an array of flowers all season long – producing pollen and nectar for visiting pollinating insects and beneficial predators.

The inclusion of nitrogen fixing plants (red clover, white clover, bird's-foot trefoil), which are all companion species to each other, will help other species establish and provide adequate nitrogen to the ley over the establishing years.

SEED RATE PER ACRE	
Boyne perennial rye grass	10.5 kilos
Creeping red fescue	2.25 kilos
Rivendel white clover	0.75 kilos
Bird's-foot trefoil	0.45 kilos
Chicory	0.45 kilos
Red clover	0.60 kilos
Kilos per acre	**15.0**

E: info@agrii.co.uk | T: 0845 607 3322 | www.agrii.co.uk

Vineyard Special Standards

VINEYARD STRUCTURATOR

- **Strong pivotal rooting from oil radish and linseed in combination with the fibrous roots of black oats and buckwheat.**
- **Nematode reduction from black oats and multi nematode resistant oil radish.**
- **Buckwheat and linseed are attractive to beneficial insects.**
- **Buckwheat root exudates which helps mobilise soil phosphate.**
- **Medium above ground biomass.**

	%	Kgs/ha	Seeds/m²
Black oats	60	15	75
Oil radish – Nematode reducing variety	20	5	42
Buckwheat	12	3	12
Linseed	8	2	25
	100	25	154
Seed rate 25kg/ha			**154**
Cover crop C:N ratio 30			

VINEYARD REGENERATIVE MIX

- **Multi species mix, diverse canopy and root structures providing increased soil health and environmental benefits.**
- **Nematode reduction from black oats and multi nematode resistant oil radish.**
- **Excellent nutrient capture and fixation potential.**
- **Buckwheat root exudates which helps mobilise soil phosphate.**
- **Medium/high above ground biomass.**

	%	Kgs/ha	Seeds/m²
Common vetch	30	7.5	13
Black oats	20	5	25
Oil radish – Nematode reducing variety	12	3	25
Crimson clover	10	2.5	50
Buckwheat	10	2.5	10
Sunflower	10	2.5	5
Linseed	8	2	25
	100	25	153
Seed rate 25kg/ha			**153**
Cover crop C:N ratio 25			

*In the event that a variety becomes unavailable, we reserve the right to substitute with a variety of equal merit.

FLOWER RICH MARGIN

- **Contains a blend of 80% grasses and 20% wildflowers.**
- **Will produce a habitat for bees and butterflies in the second year.**

MIXTURE FORMULATION:

Grasses:

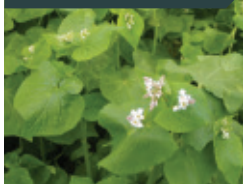
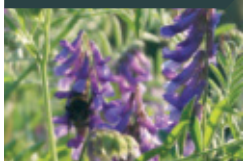
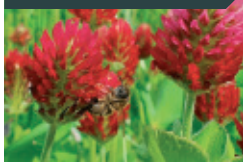
Browntop bent
Chewings fescue
Crested dogstail
Sheeps fescue
Slender creeping red fescue
Smooth stalked meadow grass
Strong creeping red fescue

Wildflowers:

Agrimony
Birdsfoot trefoil
Knapweed
Black medick
Kidney vetch
Oxeye daisy
Lady's bedstraw
Salad burnet
Wild carrot
Yarrow
Red clover
Ribwort plantain
Sainfoin
St John's-wort
White campion

Cover Crops Varieties in Detail

KEY: Soil Structure | Nematode Reduction | Weed Control | NCAP Nutrient Capture | N PROD Nutrient Production | Frost Susceptible | EB Environmental Benefits

	USE	DRILLING	HOW TO DESTROY	OTHER INFORMATION
FORAGE RYE 	Soil Structure, Weed Control, NCAP	Best sown from mid August until early October. Full seed rate 160kg/ha.	Spray off in the spring or graze or silage.	+ C:N ratio 35. + Reliable, quick ground cover. + Extensive root system, good scavenger of nutrients, will continue to grow even in cold conditions.
BUCKWHEAT 	Soil Structure, NCAP, Frost Susceptible, EB	Drill from mid April to the end of August. Full seed rate 50kg/ha.	Will be destroyed with the first few frosts in October/November.	+ C:N ratio 28. + Fast establishment and moderate ground cover. + Early and prolific flowering habit. + Fibrous shallow root system capable of mobilising phosphate in the soil. + Attractive to beneficial insects.
TOSCANE/LUXURIAL BLACK OATS 	Soil Structure, Nematode Reduction, Weed Control, NCAP, Frost Susceptible	Best sown from April to August. Full seed rate 30kg/ha.	Black oats are frost sensitive and can die back naturally during prolonged cold periods.	+ C:N ratio 25. + Good establishment. + Large fibrous root system creates good soil structure. + Resistant to diseases, take-all and good tolerance to BYDV. + Reduction of root knot and root lesion nematodes.
BINGO/TITANE – PURPLE SPRING VETCH 	Soil Structure, Weed Control, NCAP, N PROD, Frost Susceptible, EB	Best sown from April to August. Full seed rate 30kg/ha.	Late summer sown, a strong frost should destroy the crop.	+ C:N ratio 12. + Purple vetch are the fastest growing of the vetch species, which enables them to catch and fix the maximum amount of nitrogen in the limited time available.
CEGALO – CRIMSON CLOVER 	Soil Structure, NCAP, N PROD, Frost Susceptible, EB	Drill before the end of August. Full seed rate 15kg/ha.	Spray off, if not killed by frost.	+ C:N ratio 16. + Faster establishment and good biomass. + Strong tap root and lateral roots.
ASIAN/DAIKON RADISH 	Soil Structure, Weed Control, NCAP, Frost Susceptible	Best sown before the end of August. Full seed rate 12kg/ha.	Will be destroyed by a hard frost.	+ C:N ratio 35. + Very large, strong tap root, good for soil structure improvement. + Large root scavenges and holds more nutrients.

E: info@agrii.co.uk | T: 0845 607 3322 | www.agrii.co.uk

Soil Management & Nutrition

Agrii understands that balanced nutrition is a cornerstone of high performing vineyards.

As a major distributor for Origin fertilisers, a full range of straight or blended products are available to correct soil nutrient deficiency and supply, according to soil analysis and vine specific recommendation.

LIME

We supply **Calcifert**, a granular lime, which has six times the neutralising value of standard screened lime. This means it can be used at a sixth of the rate. Also available is **Calcifert S**, $CaSO_4$ (Gypsum), typical application rate 300-800 kg/ha. It is applied to improve the structure of clay soils and has no neutralising value.

SOIL-APPLIED IRON PRODUCTS

(for correction of lime-induced iron chlorosis)

The IPC index, developed by INRA, is a measure of grape rootstock sensitivity to lime-induced iron chlorosis in relation to the levels of 'free' $CaCO_3$ and the availability of Fe in the soil. Where this is high (IPC>60), tolerant rootstocks such as 41B and Fercal are required.

In addition, ferrous sulphate and/or iron chelates can be soil-incorporated for correction. Typical rates applied are 3-8 t/ha depending on severity.

- **Ferromel 20 (Ferrous sulphate heptahydrate 19%).**

Alternatively, iron chelates (EDDHA) can also be soil applied and are available from Agrii:

- **Iron 6-7% EDDHA (ortho-ortho Q15-Q40).**
- **Bio-Chel Fe, a soluble lignin chelate of Iron 5% optimised to ensure full stability, providing high availability over a pH range of 2-9.**

TYPICAL GROUND APPLIED FERTILISERS

PRODUCT	ABBREVIATION	ANALYSIS	COMMENT
Urea	-	46% N	Highest N fertiliser
Ammonium Nitrate	AN	34.5% AN	Highest available form AN
Calcium Ammonium Nitrate	CAN	27% AN	$CaCO_3$ partially negates AN acidification
Calcium Nitrate	CN	15.5%N 19%Ca	Readily available Ca, N
Potassium Nitrate	KN	13%N 45%K_2O	Readily available K, N
Triple Super Phosphate	TSP	40-46% P_2O_5	-
Muriate of Potash	MOP	60% K_2O	Chloride content
Sulphate of Potash	SOP	50% K_2O	-
Kieserite	-	25%MgO 50%SO_3	Mg availability unaffected by pH
Calcifert	-	$CaCO_3$	Liming agent
Calcifert-S	-	$CaSO_4$	Gypsum
Sulphur 90 / Onset	-	90% S	-
Solubor DF	-	17.5% B	-
Ferrous Sulphate Heptahydrate	-	19% Fe	Pre planting to correct pH and Fe
Iron EDDHA	-	6%Q40 -7%Q15 Fe	Also Biochel-Fe
PAS100 Compost	-	OM	Typical analysis kg/T 9N 3P 7K 3Mg 2.5SO
Ovinalp MV100	-	2N 1P 2K 0.5Mg	Organic humate
Ovinalp SKOR	-	5N 2P 8K 5SO_3	MV100 base + added inorganic NPK

ORGANIC SOIL IMPROVERS

OvinAlp Haute fertilisation

MV100

Naturally rich in organic matter, restructures the soil thanks to a high humic potential, improves water retention and the cation exchange capacity, thus allowing better nutrition for demanding crops.

MV100 COMPOSITION IN % MASS OF RAW PRODUCT	
Dry Matter	80
Organic Matter	60
Total Nitrogen (N)	2
Total Phosphoric Anhydride (P_2O_5)	1
Total Potassium Oxide (K_2O)	2
Total Magnesium Oxide (MgO)	0.5
C/N	15

Usable in biodynamics in accordance with the demeter specifications.

SKOR

SKOR is made of sheep manure selected in the Alps (IGP Sisteron), composted for 12 months thanks to a process and a platform ISO 14001 certified, enriched by: fruits pulps, transformed animals proteins and potassium sulphate usable in organic agriculture. Thanks to its rich biodiversity created by the Ov active ingredient, Skor plays a key role in the mineralisation of organic matter. Distributed in spring time, SKOR promotes the start and vegetative growth of the most demanding crops.

SKOR enriched with the active ingredient Ov, is an effective aid that improves productivity and crop quality while ensuring progressive and balanced plant nutrition over time.

(SKOR) % COMPOSITION OF GROSS MASS PRODUCT	
Total Organic Nitrogen (N) Organic Nitrogen (N) of composted sheep manure, fruits pulps, feathers meal and hydrolized bones powder	5
Total Phosphorous Pentoxide (P_2O_5)	2
Total Potassium Oxide (K_2O) of which water soluble	8 7.4
Total Magnesium Oxide (MgO)	4
Sulphure Trioxide (SO_3)	5

Fertilisers

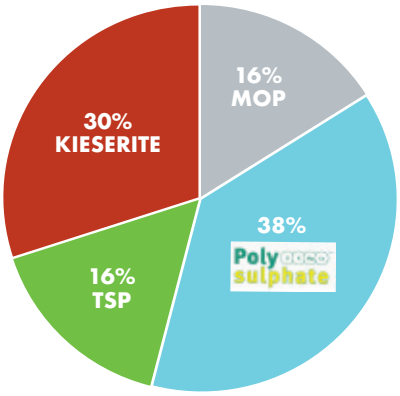
AGRII FRUIT 50

This fertiliser provides a sole application solution for vines, providing all the key macro and micronutrients needed to maintain optimal soil index throughout a growing season.

FRUIT FERTILISER ANALYSIS

NUTRIENT ANALYSIS ON THE BAG						Application rate N P K SO kg/ha
N	P	K	SO_3	CaO	MgO	
0	7.5	15.5	32	6	9.5	522
NUTRIENT APPLIED KG/HA						**Additional nutrients**
N	P	K	SO_3	CaO	MgO	
0	40	80	170	33	50	P-Reserve + Boron + Zinc

Agrii Fruit 50 provides a high quantity of magnesium due to the inclusion of Kieserite in the fertiliser. This will provide readily available magnesium and sulphur to the soil solution for crop uptake.



WHY USE AGRII P-RESERVE?

P-Reserve is a powerful chelating agent that stops the cations in the immediate vicinity of the phosphate, such as calcium and magnesium (high pH) and iron (low pH) which would otherwise react with the water-soluble phosphate precipitating it out of soil solution and making it unavailable to the plant ("Locked Up").

Provides 40 Kg/Ha P2O5, maintaining Index. All phosphate is protected with Agrii's exclusive P-Reserve. This works by coating the TSP in Agrii Fruit 50. By using P-Reserve, water-soluble phosphate is fully available to the plants.

WHY POLYSULPHATE?

- Polysulphate is 100% soluble organic fertiliser, sourced solely from Cleveland in the UK.
- Polysulphate provides $9K_2O$, $32SO_3$, 11CaO and 4MgO in their readily available form.
- It has no effect on soil pH.
- The potassium in polysulphate is potassium sulphate meaning Polysulphate has no chloride in its granule.
- This brings large amounts of sulphur to the blend, with UK soils having seen a 82% reduction in sulphur deposition over the last 25 years.
- **Very hard granule means slow breakdown, providing phased release of all four nutrients throughout growing season.**

WHY WOLF TRAX MICRO-NUTRITION?

Wolf Trax is a range of secondary and micronutrients which can be incorporated using a unique Dry Dispersal Powder (DDP) technology.

- Every granule of Agrii Fruit 50 is coated with boron and zinc, to provide readily available micro-nutrition.
- Each DDP (Dry Dispersible Powder) product features at least two mineral sources – Dual-Action™ formulation for quick and extended feeding throughout the year.
- 4-6 additional ingredients (formulants) have important roles: helping nutrients resist soil tie-up, adhere to fertiliser and improve plant uptake.
- Boron is essential for apical meristem development, and flowering (cell division).
- Zinc influences plant growth hormones and enzyme systems.

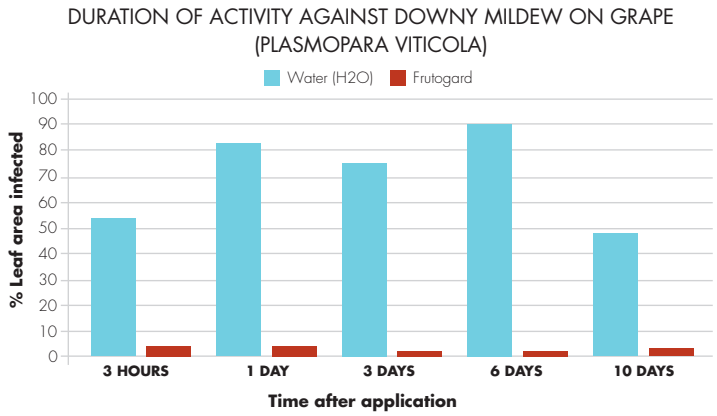
wolftrax INNOVATIVE NUTRIENTS

E: info@agrii.co.uk | T: 0845 607 3322 | www.agrii.co.uk

Biofungicides

FRUTOGARD®

Preventative fungicide for use on table and wine grapes for downy mildew control.



HOW IT WORKS – TRIPLE ACTION FORMULATION FOR YOUR VINES

ALGAE EXTRACT	POTASSIUM PHOSPHONATE	AMINO ACIDS
Activation of the phytoalexins, these have **antimicrobial effects.**	Indirect and direct **fully systemic effects.**	Activation of the plant defence proteins with **anti-fungal effect.**

- **Activation of multiple plant defence mechanisms before fungal pathogen attacks.**
- **Reduces the spread, growth and incidence of infection.**
- **Helps relieve abiotic and biotic stress.**
- **The formation of hydrogen peroxide (H202) provides additional growth promoting effects.**
- **Only the triple action formulation triggers these complex plant defence mechanisms.**

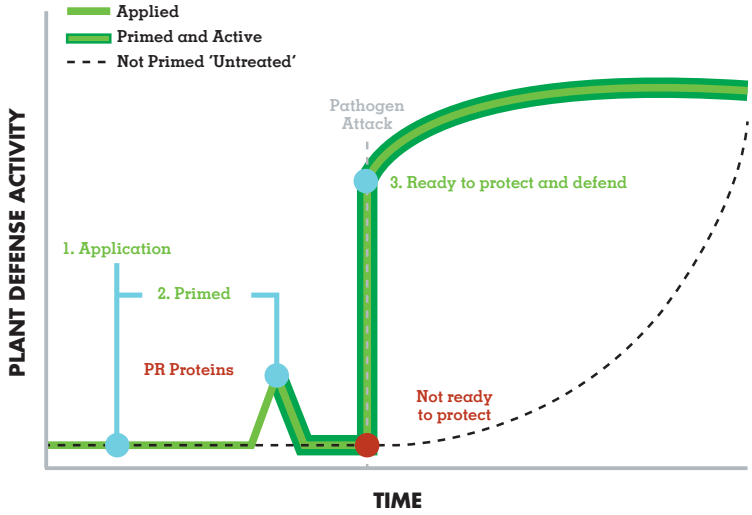
ACTIVATING YOUR PLANTS' NATURAL DEFENCE SYSTEM TO GUARD AGAINST DISEASES

From the Certis Biologicals Field Development Team

Plants have the ability to activate biochemical defences in response to attacks from pathogens.

These induced defences are expressed systematically throughout the plant, not only in the infected tissues.

Plant activators trigger immune responses in the plant even in the absence of a pathogen. This has been demonstrated using molecular and psychological techniques to monitor the signalling cascade and production of pathogenesis related (PR) proteins following application. Priming of plants by products such as Frutogard prepares them to fend off disease when pathogens attack, as illustrated right.



Biostimulants

PLANT HEALTH™ CARE

PREtec™: Health and growth enhancement for grape vines.

Introducing PREtec™ peptides: plant health stimulating technology designed to elevate natural resiliance.

PREtec™ peptides are the next generation of Plant Health Care's crop-stimulating technology.

Specifically designed to strongly induce plant stress resistance and defence mechanisms, **PREtec™** peptides enhance plant health and improve the effectiveness of nutritional and disease management programmes.

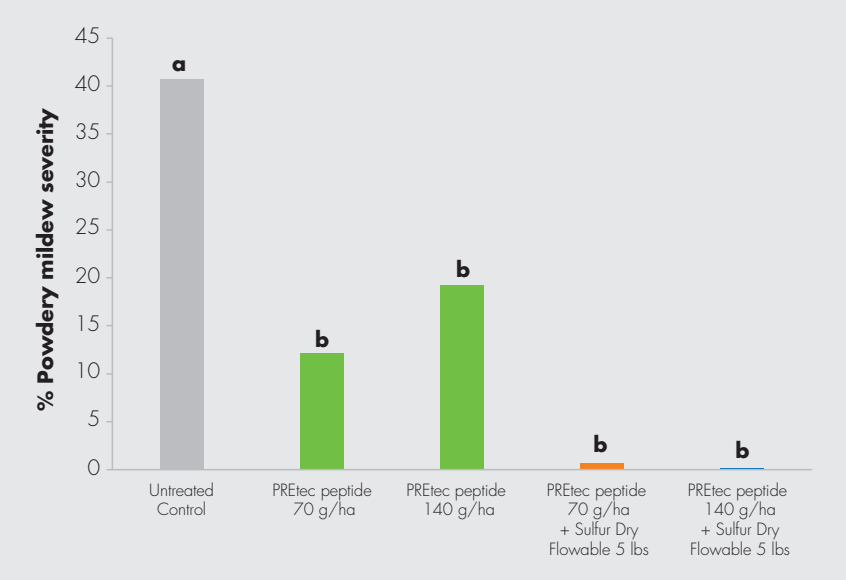
Apply to grapevines early to activate stress resistance and build resilient plants ahead of biotic and abiotic stress events.

Inocul8 contains zinc and manganese formulated with innovative **PREtec™** peptide technology. Zinc and manganese are essential elements for optimal crop development.

Both nutrients are involved in the activity of enzymes related to photosynthesis, the conversion of carbohydrates and the transport and biosynthesis of hormones.

INDEPENDENT TRIALS – REDUCED SEVERITY OF POWDERY MILDEW, UNITED STATES

In a trial carried out at University of California Davis in 2022, **PREtec™** peptides were applied alone and in combination with dry flowable sulphur to 11-year old Chenin blanc, a variety known for its suceptability to powdery mildew. The experiment was carried out in a complete randomised block of 5 replicates consisting of 2 adjacent vines. Treatment began at bud break and 7 applications were made at 14 day intervals.



At 70 g/ha and 140 g/ha **PREtec™** peptides enabled vines to stay healthy and reduce the severity of powdery mildew by 29% and 22% respectively.

When combined with the dry flowable sulphur treatments, both rates of **PREtec™** peptides helped vines to almost completely contain the powdery mildew infection. All treatments resulted in significantly reduced powdery mildew severity compared to the untreated control ($P<0.05$).

INOCUL8 APPLICATION ADVICE

Integrate Inocul8 as part of a balanced nutritional and disease mitigation strategy:

RATE	APPLICATION TIMING
500 g/ha	Begin at bud break and apply every 14-21 days according to nutritional need and disease risk index

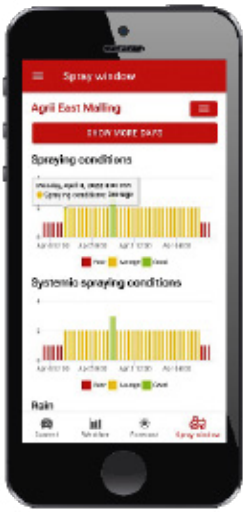
COMPATIBILITY

- **Do not use water with a pH of less than 5 or greater than 10.**
- **Apply the spray mixture within 8 hours of preparation.**
- **In tank mixes apply Inocul8 to the tank first and mix well.**

E: info@agrii.co.uk | T: 0845 607 3322 | www.agrii.co.uk

Weather Stations and Disease Forecasting

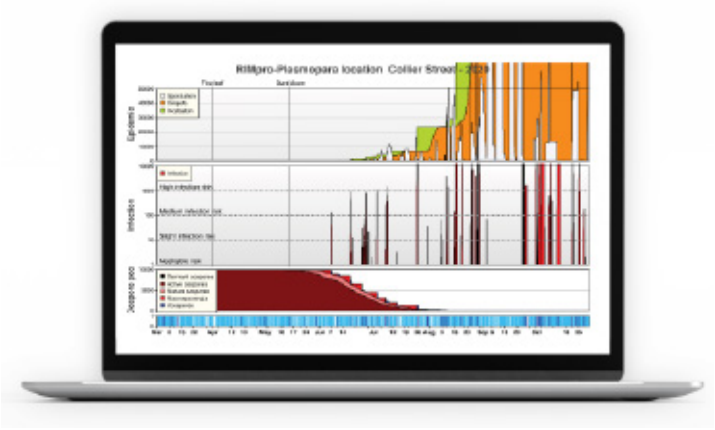
RHIZA



The Agrii RHIZA Connect App and Dashboard provide a highly localised weather service, available to both Agrii agronomists and customers.

Using Agrii's network of Adcon weather stations, the **RHIZA Connect App** and **Dashboard** collect and model the extensive weather data, allowing Agrii agronomist and customers to accurately monitor and manage disease pressure – helping to support decision making on farm.

For example, the current and forecast weather data are used within the **'Spray Window'** function (see opposite). This shows, using a traffic light system and at hourly intervals, whether the environmental conditions are suitable for applying a plant protection product (PPP). This process helps to plan the optimum timing of application.



The data collected by the weather station and outlined below, is also used to run disease models.

Agrii's agronomists and customers have access to models from RIMpro, which provide actual and forecast risk for downy and powdery mildew of grapevines.

TYPES OF DATA THAT IS COLLECTED:

- Average daily temperatures
- Max and min temperatures
- Rainfall
- Solar radiation
- Relative humidity
- Wind direction & wind speed
- Leaf wetness
- Evapotranspiration

The Agrii Research & Development and RHIZA teams are in the process of reviewing and evaluating additional disease models, as well as other digital and precision farming solutions for the management of vineyards.

The concept is to test the ability of such tools to provide insights, which can support agronomists and farmers in targeting crop monitoring and optimising crop inputs.

For example, in the image opposite, satellite imagery can be used to identify areas of variability within the crop and guide inspection as well as any remedial actions.

Contact RHIZA

E: rhizaweather@agrii.co.uk
T: 03300 949150
W: www.rhizadigital.co.uk

RHIZA

Data Driven Vine Management

Precision soil analysis and satellite imagery are shortening the time needed to assess a site while improving management for the long-term.

At roughly £30,000 per hectare, planting a vineyard is not for the faint hearted but proper preparation and clever use of data can at least ensure it is money spent wisely.

Data of the sort provided by precision farming service RHIZA has been used by farmers for the efficient production of crops such as wheat and potatoes for many years. The value it provides is increasingly being utilised by vine growers because it brings management into the modern age.

Data generation and analysis of the sort used in viticulture falls into two categories, explains Ben Foster, RHIZA account manager.

"There are those that inform the direction of thinking beginning with site assessment through to planting and those that enable the efficient use of inputs for the maintenance of healthy and productive vines," says Mr Foster.

Initial assessments such as electro conductivity testing allows for subsequent soil testing and provide a detailed assessment of the variation within a parcel of land.

Electro conductivity testing enables the soil to be zoned based on soil texture and nutrient status

Once a site is identified and entered on to the RHIZA platform, historical weather data specific to that location dating back to 2017 is immediately available. This information is considered alongside altitude, aspect and wind exposure to determine frost risk.

"Frost is the single biggest threat to vines. Having accurate data going back several years is invaluable when assessing site potential," Mr Foster says.

Having completed the initial scoping exercise, more detailed assessments are undertaken.

"Fields are then 'zoned' into blocks on average of half-hectare management zones based on the soil scanning results. These areas are subjected to intensive soil sampling to establish the levels of phosphate, potash, magnesium and pH of the soil. A laser texture analysis provides a definitive assessment of the sand, silt, and clay ratios for the soil in a given zone," Mr Foster says.

"Other measurements, such as soil organic matter and calcium status are also of value as this influences moisture holding capacity and nutrient availability," he adds.

Different colours are used to highlight contrasts in soil texture and nutrient status at varying depths

"If you want a vineyard to last 20 years, you need to understand the soil you're working with. It determines the rootstock to be used and influences variety of grape. Making good on bad decisions later is highly costly, so time and effort invested at the early stages is highly worthwhile," Mr Foster says.

For Ben Brown, viticulture specialist with crop advisers and trials specialists, Agrii, a sound understanding of the soil properties of any given site is the basis for informed management.

"The biggest influence on any crop is always climate and soil. We use the information from RHIZA to identify the vines best suited to the terroir. Traditionally, sparkling wines have thrived on the chalk soils of the Champagne region where the soils support a balanced aromatic profile enjoyed by consumers. Conversely, water-limited soils tend to produce grapes with more desirable phenolic characteristics and higher quality tannins which is why red wines do better on soils where moisture can be in deficit," Mr Brown says.

Soil sampling at rooting depth enables accurate nutrient analysis

Soil pit digs provide a visual indication of the underlying soil type and its structure

E: info@agrii.co.uk | T: 0845 607 3322 | www.agrii.co.uk

Having assessed the site based on its topography, altitude, aspect and wind exposure, all of which are derived from RHIZA, the planting direction and row spacing is considered. But there is a dichotomy to consider, warns Ben Brown.

"The advantage of higher sites is reduced frost risk, but the grapes will also ripen more slowly as temperatures are generally lower, and growth and development are slower than at lower altitudes. Up to 125 metres above sea level is generally safe, but the risk at lower altitudes, especially on sheltered sites such as valleys, is the increased chance of frost. Everything feasible should be done to avoid planting vines on sites with high frost risk," he says.

An important feature of any site is drainage. Mr Brown believes this is too often over-looked. On poorly draining sites, there is a risk that roots will spend much of the winter in water-logged soils which will cause them to die. This can lead to problems in future years and result in reduced nutrient uptake.

Cover crops that occupy the space between rows is another consideration. Where these are chosen with care, they can bring positive benefits.

"Vines take up only a fraction of the surface area so thought should be given to what to sow in the area between rows. It needs to be slow growing so as not to create much work for the manager or owner, hardy so machinery can travel over it, not hungry for nutrients or thirsty for moisture and not fiercely competitive," says Mr Brown.

"We also want to show preference for those that improve soil structure and promote soil fertility. This is a demanding set of characteristics and often contrary to what most plants are bred to exhibit, but there are a few species well-suited to the role," he adds.

Some mustard species, such as bronze mustards, work well between rows. "These preserve soil moisture and raise the pH. This means they are well-suited to chalky soils, but less suitable to acidic soils," he says.

Crop protection and growth promoting products are another aspect of management where good site data can support product selection and application best practice.

Several forms of biostimulants such as the elicitor, ProAct have been shown to improve disease tolerance and reduce severity through greater calcium absorption. Other biological products, such as OvinAlp support soil microbe activity and improve nitrogen use efficiency.

"Like all plants, there are disease and pest threats that will need managing, but where possible we seek to use biological forms of crop protection. Making the most of what these products have to contribute often means applying them proactively, rather than reactively," Mr Brown says.

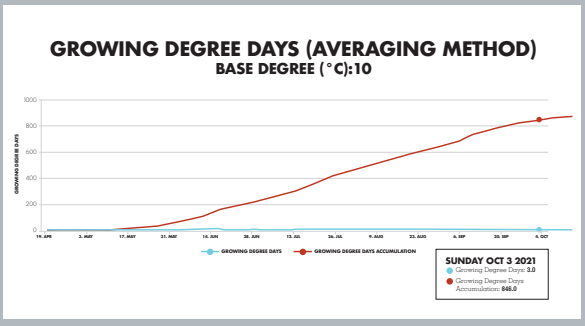
"To support timing, we rely on accurate forecast and modelling systems. These are often reliant on data such as the weather and other atmospheric conditions which is another example of where RHIZA helps growers to optimise the timing of crop inputs," he adds.

Satellite Imagery

NDVI images display the level of vegetation across a crop viewed from above. These images are used across all crop production systems to identify areas in need of management such as tailored nutrition or the use of crop protection products, such as herbicides for the control of weeds.

In vines, NDVI imagery can be used to assess vigour within the vineyard and guide pruning. These initial assessments can be verified by visual inspection in a process known as 'ground-truthing'. From here you can decide which pruning method would best suit the vines for a given area and where it may be better to put more buds down the following season, to manage vigour.

"There will be relationships between what is above ground with what is below. By overlaying NDVI imagery with the soil maps, we can establish why some areas are stronger or weaker than others. Where its weaker, we may put less buds down or prune it differently but having the data to draw on is essential to making informed decisions. Another example would be using the number of degree days year-on-year to forecast flowering and harvest dates," Mr Brown says.



Accumulated degree days can be used to forecast flowering and harvest

At its most basic level, using data in this way is about aiding management decisions, but also about achieving a balance between yield and quality. The UK climate does not favour big yields of the sort seen in more warmer regions of the world, but it does favour quality. Striking a balance between yield and quality optimises the financial return to the grower.

"In practice, this can come down to something as simple as having the right leaf area to support ripening for the local climate. Good data means we can achieve it more accurately and with greater confidence," Mr Brown says.

Wine Grape Spray Programmes

PERIOD OR GROWTH STAGE	PEST DISEASE DEFICIENCY	PRODUCT RECOMMENDATION	MAX RATE PER HECTARE	COMMENTS (Spray interval 10 days (7-14 as conditions dictate). Adjust spray rates according to canopy height).
BUD DEVELOPMENT – APRIL				
Woolly Bud	Bud mite Frost protection	Thiopron ProAct	5 L 200 gm	From Rosy bud – Timing eriophyid mite x2/3 applications (Anti-frost products: ProAct, Actiff, Spraygard)
Bud break		Thiopron Cuprokylt	5 L 2 kg	Green point visible Nutrient Opte-Cu 2.5 L/ha
SHOOT DEVELOPMENT – MAY				
2-3 Leaves unfolded	Phomopsis	**Karamate DF**	2 kg	Repeat +10-14 days
+10-14 days	Phomopsis/D.mildew Biostimulant	**Karamate DF** Actiff	2 kg 1-2 L	**Deploy Tortrix pheromone traps** LBAM, GBM Cool temperature tolerance, repeat as necessary
Inflorescence clearly visible	Downy mildew	**Frutogard** Maxicrop	4.5 L 2-3 L	1.5, 3.0 to 4.5 L/ha; pro rata for canopy height Consider impact of Capsid bug **See Grapevine Nutrition Programme**
INFLORESCENCE DEVELOPMENT – JUNE				
Inflorescence expanded	Downy mildew Nutrient LBAM / GBM	**Shinkon** **Option** Microthiol Special Steward	0.375 L 0.15 kg 2.5-4 kg 125 gm	Apply at RIMPRO forecast primary infection or Tine 188ml/ha or Kumulus DF or Tracer. Trap threshold dependant.
Flower buds separated	Downy mildew Powdery mildew Nutrient EBSN	**Frutogard** **Thiopron**	4.5 L 2.5-5 L	Apply hectare rate pro rata for canopy height or Nativo 75WG 0.18 kg/ha Microthiol Special or Kumulus DF
Flowering (25%-80% Caps Off)	Downy mildew Botrytis P. mildew/Botrytis PGR Thrip	**Percos** **Pirim** **Talius** Regalis Plus or Florgib Tablet	0.8 L 2 L 0.25 L 1.8 kg 16 tablets	} Taylor cover for botrytis over flowering to suit risk; Filan } when lower risk or in sequence to extend cover. Consider use where strong fruit set determined Rate variety specific – only following written advice **Growth Stage for 1st Petiole analysis**
FRUIT FORMATION – JULY				
.Fruit Set	Botrytis Downy mildew Powdery mildew	**Teldor** **Shinkon** **Option** **Sercadis** Thiopron	1.5 kg 0.375 L 0.15 kg 0.15 L 2.5-5 L	 or Tine 188ml/ha **Foliar Nutrition:** petiole analysis, known deficiency historic and observed, crop load. See Agrii nutrition programme.
Early Bunch	Downy mildew P. Mildew/Botrytis	**Frutogard** **Filan** **Thiopron**	4.5 L 0.5 kg 2.5-5 L	Sequence with **Nativo 75WG** to extend cover; **x1 app./year**
Pre bunch closure	Downy mildew: Botrytis/P. mildew Water conditioner Powdery mildew Bunch stem necrosis	**Percos** **Gear/Shift** Thiopron **Kantor** **Cosine**	0.8 L 0.8 kg 2.5-5 L 1.5 L/1000 L 0.5 L	 Key growth stage to optimise value if PM present consider separate application of PHC (1-2%) + Kantor 1.5 lt/1000 lt
FRUIT MATURATION – AUGUST				
Maturation	Downy mildew Powdery mildew	**Shinkon** **Vivando** PHC	0.375 L 0.32 L 1-2%	BBCH 83 = 28 day pre-harvest int Max 3/yr. 28 day phi If disease present, not a good tank mix partner
M 2	Downy mildew Powdery mildew	**Frutogard** **Sercadis** **Thiopron**	4.5 L 0.15 L 2.5-5 L	24 day phi
M 3	Downy mildew Powdery mildew	**Percos** **Talius**	0.8 L 0.25 L	BBCH 83 = 28 day phi 28 day phi
RIPENING – SEPTEMBER				
Veraison	Botrytis Nutrient	**Pirim** **Sulphur** **Phyte P Plus**	2.0 L 2.5-4 kg 3-5 L	21 day phi Routine final advised Incidental downy mildew
V 2	Downy mildew Botrytis Bio-stimulant	**Cuprokylt** Karma Brix-builder	2 kg 5 kg 2.5 L	**21 day phi** If necessary, no phi 28 and 14 days pre-harvest
V 3	Botrytis	**Botector**	1 kg	3 day interval from Karma
PRE RIPE – OCTOBER				
Pre Ripe	Botrytis Wasps/SWD	Amylo X WG or Botector Tracer	2.5 kg 1 kg 100 ml	BBCH 89 = no phi 1 day phi 14 day phi or Hallmark Zeon 7 day phi
	Botrytis/fruit diseases SWD	Botector	1 kg	1 day phi
Post-Harvest	Wood Ripening Nutrient	Copper Budbuilder Urea	5 L/1000 L 5 L 5%	Promptly post harvest before leaf fall At this rate also fungicidal and to reduce disease carry over
Pruning	Wood diseases	BlocCade-wound paint or Vintec	 200 gm	Apply to restructuring and crown/spur cuts

Phylloxera: nodules on UNDERSIDE of leaves } Notifiable. Batavia recommended.
Erinose: nodules on TOPSIDE of leaves } Eriophyid mite. Sulphur recommended.

IMPORTANT NOTICE: These recommendations are only advised subject to the manufacturer's written instructions being carried out in exact detail. IT IS ESSENTIAL THAT LABELS ARE READ FULLY BEFORE USE.

E: info@agrii.co.uk | T: 0845 607 3322 | www.agrii.co.uk

Grapevine Fungicides

2023 – DISEASE SPECTRUM AND EFFICACY

PRODUCT NAME	BOTRYTIS	D. MILDEW	P. MILDEW	PHOMOPSIS	ACTIVITY	FRAC	MAX / YR
Amylo X WG	++(+)	+	++	-	P	M bio	6
Botector	++++	+(+)	-	+(+)	P	M bio	4
Copper	+	++(+)	+	++	P	M1	-
Cosine	-	-	++++	-	P C	U6	2
Filan	++(+)	+	+++	+	P	7	2
Frutogard	+	++++	-	+	P	P07 (33)	6
FytoSave	-	-	++(+sulphur)	-	P	-	8
Justice / Talius	-	-	+++	-	P C	U7	2
Karma	++(+)	+	+++(+)	-	P C E	-	8
Mancozeb	-	+++	-	+++	P	M3	4
Nativo 75WG	++	+	++++	++	P C	11 + 3	1
Option	-	++(+)	-	-	P C	27	5
Percos	-	++++	-	-	P C	C8 + 40	3
PHC	+	-	++(++)	-	E	-	-
Prestop	++	-	-	-	P	BI 1	3
Romeo	++	++	++	-	P	M bio	10
Scala / Pirim	++++	-	-	+	P C	9	2
Sercadis	+	-	++++	-	P C	7	2
Serenade ASO	++(+)	+	++	-	P	M bio	-
Shinkon	-	++++	-	-	P	21	3
SL567A / Tine	-	++(++)	-	+	P C E	4	4
Stroby	++	++	+++	+++	P	11	3
Sulphur	-	-	+++(+)	+(+)	P C (E)	M2	-
Switch / Gear / Shift	+++(+)	-	++(+)	+	P C	9 + 12	2
Systhane 20EW	-	-	++(+)	+	P C	3	3
Teldor	++++	-	-	-	P	17	2
Topas	-	-	++	-	P C	3	3
Vintec	+++	-	-	-	P	M bio	2
Vivando	-	-	++++	-	P C	50	3
Taegro	++	-	++(+)	-	P	M bio	10

++++ Excellent
+++ Good
++ Moderate
+ Poor

P Protectant – *pre infection*
C Curative – *post symptomless infection*
E Eradicant – *post expression*
( ) Use rate and situation dependant

FRAC (Fungicide Resistance Action Committee) code: Mode of Action of the active ingredient.

Similar products are colour coded. It is good practise to alternate those with the same MoA with another from a different group and to use the same product consecutively twice only. Multi-site(M) products and those co-formulated with two ai have a lower risk of developing resistance.

Grapevine Approved Pesticides

FUNGICIDES

PRODUCT NAME	ACTIVE INGREDIENT	BUFFER ZONE*	MAX NO	MIN INTERVAL	HARVEST INTERVAL	MAX RATE PER HECTARE	OTHER
Amylo X WG	Bacillus amyloliquefaciens	-	6	-	BBCH 89	2.5 kg	EAMU 0469/18. Strain D747
Botector	Aureobasidium pullulans	-	4	2 days	1 day	1 kg	-
Cosine	Cyflufenamid	5 m	2	10 days	21 days	0.5 L	EAMU 0846/17
Cuprokylt	Copper oxychloride	50 m	4	7 days	21 days	2 kg	-
Filan	Boscalid 50%	-	2	14 days	28 days	0.5 kg	EAMU 1947/13
Frutogard	Potassium phosphonate	15 m	6	7 days	24 days	4.5 L	*Other Specific Restrictions apply*
FytoSave	12.5 g / l COS-OGA	-	8	7 days	-	2.0 L	EAMU 1911/19
Gear (Clayton)	Cyprodinil / Fludioxonil	10 m	2	21 days	21 days	0.8 kg	Switch parallel import
Justice / Talius	Proquinazid	18 m	2	20 days	28 days	0.25 L	EAMU 1763/11 / EAMU 2806/22
Karma	Potassium bicarbonate	-	8	7 days	0	5 kg	EAMU 1327/16
Karamate DF Neotec	Mancozeb 75% w/w	40 m	4	10 days	56 days	2 kg	Max concentration 0.2 kg/100L
Kumulus DF	Sulphur 80 w/w	-	-	10 days	-	-	Max concentration 250 g/100L
Microthiol Special	Sulphur 80 w/w	-	8	10 days	BBCH 81	-	Max concentration applies, max. nutritional rate 10 kg/ha
Nativo 75WG	Tebuconazole / Trifloxystrobin	30 m	1	-	21 days	0.18 kg	EAMU 2972/18
Option	Cymoxanil	5 m	5	10 days	28 days	158 gm	EAMU 0542/16
Percos	Ametoctradin / Dimethomorph	10 m	3	-	BBCH 83	0.8 L	EAMU 0254/15, min 600 lt/ha
PHC	Potassium Bicarbonate	-	3	-	-	20 kg	Use expiry 31/8/25
Prestop	Gliocladium catenulatum	10 m	3	-	GS80	6 kg	EAMU 2773/15 see OSR
Romeo	Cerevisane	-	10	-	BBCH 89	0.25 kg	-
Scala / Pirim	Pyrimethanil	10 m	2	21 days	21 days	2 L	EAMU 0283/11, EAMU 0319/23
Sercadis	Fluxapyroxad	15 m	2	-	BBCH 83	0.15 L	EAMU 0205/18
Serenade ASO	Bacillus subtilis	-	6	7 days	-	10 L	EAMU 2342/18 MAPP 16139
Shinkon	Amisulbrom	15 m	3	10 days	BBCH 83	0.375 L	EAMU 3119/19. BBCH 83 = 28 days
SL567	Metalaxyl-m	-	4	10 days	30 days	188 ml	EAMU 1504/05
Stroby	Kresoxim methyl	-	2	7 days	35 days	200 gm	EAMU 0960/16
Switch / Shift	Cyprodinil / Fludioxonil	10 m	2	21 days	21 days	0.8 kg	EAMU 2098/11, 0865/22 min 500 L
Systhane 20EW	Myclobutanil	5 m	3	-	14 days	0.24 L	Do not handle crop for 12 days
Taegro	Bacillus amyloliquefaciens	-	10	-	1 day	0.37 kg	Strain FZB24
Teldor	Fenhexamid	-	2	21 days	21 days	1.5 kg	Max concentration 0.24 kg/100L
Thiopron	80% w/v sulphur	5 m	8	-	BBCH 81	5 L	-
Tine (Clayton)	Metalaxyl-m	-	4	10 days	30 days	188 ml	SL567A Parallel import
Topas	Penconazole	-	3	-	28 days	0.3 L	Max conc. 0.5 L/250 L. also Topenco
Unicorn DF	Sulphur 70% / Tebuconazole 4%	10 m	3	7 days	PreBBCH 81	2.2 kg	Do not handle crops for min 7 days
Vintec	Trichoderma atroviride SC1	-	2	-	1 day	0.2 kg	-
Vivando	Metrafenone	-	3	10 days	28 days	0.32 L	EAMU 2990/19

E: info@agrii.co.uk | T: 0845 607 3322 | www.agrii.co.uk

Grapevine Approved Pesticides

HERBICIDES

PRODUCT NAME	ACTIVE INGREDIENT	BUFFER ZONE*	MAX NO	MIN INTERVAL	HARVEST INTERVAL	MAX RATE PER HECTARE	OTHER
Finalsan	Pelargonic acid 186 g/l	5m	4	-	1st Sept	17 ml/m^2	Use approved 1st May to 1st Sept
Fusilade Max	Fluazifop-P-butyl	-	1	-	28 days	1 L	-
Kerb Flo	Propyzamide	-	-	-	31st Jan	4.25 L	EAMU 2417/08, apply 1/10 – 31/1
Roundup Powermax	Glyphosate 720 g/kg	-	-	-	28 days	2.5 kg	= MON 79991
Shark	Carfentrazone ethyl	-	2	-	90 days	0.9 L	EAMU 0624/19 in 300 L water

INSECTICIDES / ACARICIDES

PRODUCT NAME	ACTIVE INGREDIENT	BUFFER ZONE*	MAX NO	MIN INTERVAL	HARVEST INTERVAL	MAX RATE PER HECTARE	OTHER
Batavia	Spirotetramat	10 m	2	14 days	BBCH 81	0.7 L	EAMU 1057/19 do not handle for 3 days
DiPel DF	Bacillus thuriengensis-BT	-	-	7 days	-	0.75 kg	EAMU 2632/16
Flipper	Fatty acids C7-C20	20 m	8	7 days	-	10 L	28 day interval between blocks of 3
Hallmark Zeon	Lambda-cyhalothrin	25 m	2	-	7 days	100 ml	EAMU 0266/06, max. 2 of same a.i.
Lepinox Plus	BT Kurstaki E2348	-	3	-	-	1 kg	Also Delfin WG
Majestik	Maltodextrin	-	-	-	-	25 ml/L	-
Purser	Indoxacarb	15 m	3	-	10 days	125 gm	Steward parallel import
Steward	Indoxacarb	15 m	3	-	10 days	125 gm	EAMU 0586/19 also Explicit
Tracer	Spinosad	38 m	3	10 days	14 days	100 ml	EAMU 2222/12

PLANT GROWTH REGULATORS (PGRs)

PRODUCT NAME	ACTIVE INGREDIENT	BUFFER ZONE*	MAX NO	MIN INTERVAL	HARVEST INTERVAL	MAX RATE PER HECTARE	OTHER
Florgib Tablet	Gibberellins GA3	-	1	-	BBCH 65	16 tablets	Apply at full flower
Regalis Plus	Prohexadione calcium	-	-	21 days	90 days	1.8 kg	EAMU 0180/15

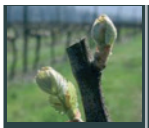
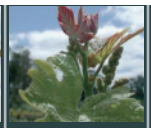
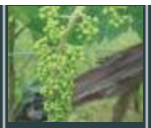
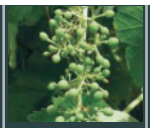
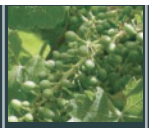
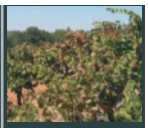
MOLLUSCICIDES

PRODUCT NAME	ACTIVE INGREDIENT	BUFFER ZONE*	MAX NO	MIN INTERVAL	HARVEST INTERVAL	MAX RATE PER HECTARE	OTHER
Sluxx HP	Ferric phosphate	-	4	-	-	7 kg	also Felyn, Ironmax

*BUFFER ZONES and LERAPs: Certain plant protection products have an aquatic buffer zone requirement when applied by horizontal boom or broadcast air-assisted sprayers. If you want to reduce this aquatic buffer zone, there is a legal obligation to carry out and record a Local Environment Risk Assessment for Pesticides (LERAP). For horizontal boom sprayers this has changed so that under interim arrangements it is only possible to reduce crop buffer zones of 5 metres (& current category B products); crop buffer zones of greater than 5 metres up to 20m cannot be reduced (& current category A products). The arrangements for broadcast air assisted sprayers remain unchanged. Neither arrangement above cover sprayers such as tunnel sprayers, which are neither, broadcast air-assisted nor ground crop sprayers. Where sprayers such as tunnel sprayers are used to apply a pesticide for which a buffer zone is set, this buffer zone has a default of 5 metres which cannot be reduced following a LERAP assessment.

If you just want to apply the buffer zone specified on the label you don't have to carry out a LERAP. But you are still legally obliged to record this decision as normal in your spray records, as advised in section 6 of the updated Code of Practice for Using Plant Protection Products (keeping spray records). ALWAYS READ THE LABEL BEFORE USE

Grapevine Nutrition Programme

 Bud burst	 First leaves unfurled	 Flower truss visible	 Flower buds separated	 Flowering	 Fruit set	 Pea size berries	 Veraison	 Post harvest
Solubor DF 12 kg/ha	**Zinic** 1 lt/ha				**Opte-B** 1 lt/ha			**Opte-B** 1-2 lt/ha
	Bud Builder 5-10 lt/ha				**FoliQ Potash** 5 lt/ha			**Bud builder** 5-10 lt/ha
		Opte-B 1-2 lt/ha						**Zinic** 1-2 lt/ha
Agrii Fruit 50 250-500 kg/ha		**Complex (NPK)** 5 kg/ha			**Solinure 12-5-36+2+TE** 5-8 kg/ha			
		Nortrace Pitstop (CaN) 5 lt/ha					**Notrace Pitstop** 5 lt/ha	
OvinAlp MV100 1 T/ha		**Magflo 300** 4 lt/ha			**Magflo 300** 4 lt/ha			**Urea** 25 kg/1000 lt
Humber Palmer No6 7-5-12+3.5+TE		**Bio-Chel Fe** 2-3 lt/ha			**Bio-Chel Fe** 2-3 lt/ha			
Fe EDDHA 20-40 kg/ha		**Nortrace Mensa (Mn)** 2-4 lt			**Nortrace Mensa (Mn)** 2-4 lt			
		MoBo 1-2 lt/ha	**Molytrac 250** 0.25 lt/ha			**Safe-N 300** 5-10 lt/ha		
ProAct 200 gm/ha	**Maxicrop Concentrate / Actiff** 1-2 lt/ha				**ProAct** 150 gm/ha		**ProAct** 150 gm/ha	
		Physiocrop/ Zonda 1.25 lt/ha	**Tytanit** 0.4 lt/ha			**Mono Potassium Phosphate** 10-15 kg/1000 lt		**MAP**
Soil applied	Micro nutrient	Macro nutrient	Multi mix		Biostimulant			

E: info@agrii.co.uk | T: 0845 607 3322 | www.agrii.co.uk

Foliar Applied Fertiliser Products

NUTRIENT	PRODUCT	ANALYSIS % w/w or w/v	LABEL RATE / HECTARE
NITROGEN	Calcium nitrate (CN)	19 Ca – 15 N	
	Urea	46 N	
	YaraVita Safe N, Azolon Fluid	31 N w/v	5-10 litres
PHOSPHORUS	Nortrace Uptake Plus / Magphos K	44 P – 7 K – 6 Mg w/v	3-5 litres
	Mono ammonium phosphate (MAP)	26 P – 12 N	
	YaraVita Seniphos	31 P – 4 Ca – 4 N w/v	10 litres
	Opte-phos	20 P – 5 N w/v	10 litres
POTASSIUM	Krista SOP	50 K	
	Potassium nitrate	46 K 13N	
	YaraVita Foliar Potash, FoliQ Potash	50 K – 8 P w/v	3-5 litres
	Mono potassium phosphate (MKP)	28 K 22 P	
	Nortrace Phyte P Plus	26 K phosphonate w/v	3-5 litres
MAGNESIUM	Magnesium nitrate	16 Mg 11N	
	YaraVita Magflo	30 Mg w/v	4 litres
	Bittesalz / Epso-Top	10 Mg	
	Opte-Mag	9 Mg – 8 N w/v	3-5 litres
NPK	YaraVita Croplift / UPL Complex	20 N – 8 P – 14 K – 2 Mg + trace	2.5-5 kg
	Polyfeed SF	12 N 6 P 36 K + trace	
	Poliverdol	8 N – 8 – 6 K + trace w/w	4 litres
BORON	YaraVita Bortrac, Opte-B	15 B w/v	1-2 litres
	Mycrobor, Solubor	17.5 B	6-12 kg (soil)
CALCIUM	Calcium nitrate (CN)	19 Ca 15 N	
	NT Pitstop	24 Ca – 16 N – 3 Mg + trace	4-6 litres
	Bio-Chel Ca	10 Ca w/v lignin chelate	2-5 litres
	YaraVita Stopit	22 Ca w/v	7-10 litres
COPPER	Headland copper	25 Cu w/v	0.5-1.0 litres
	Fortify-Cu	Phosphonate + 1.5 Cu	
IRON	Iron EDTA	13 Fe	
	Bio-Chel Fe	5 Fe w/v lignin chelate	2-3 litres
	Maxicrop plus iron	2 Fe w/w sequestered	3 litres
MANGANESE	YaraVita Mantrac Pro	50 Mn w/v	1 litre
	Opte Man	15 Mn w/v	2.5-5 litres
	Notrace Mensa	15 Mn + complexing agent	2-4 litres
MOLYBDENUM	YaraVita Molytrac, Molybdenum 250	25 Mo w/v	0.25 litres
SILICON	Sion	19 Si w/w	0.25-0.5 litres
SULPHUR	Headland sulphur	80 S w/v	5-10 litres
	Microthiol Special	80 S	
ZINC	Zintrac	70 Zn w/v	1 litre, 0.5 litres advised
	Zinic	14 w/v + lignin chelate w/v	
NUTRIENT COMPLEX	YaraVita Bud Builder	24 Mg – 10 Zn – 7 N – 5 P – 3 B w/v	5 litres
	YaraVita Frutrel	24 P – 20 Ca – 7 N – 6 Mg – 4 Zn – 2 B w/v	2.5-5 litres
BIOSTIMULANTS	Actiff	Seaweed based	1-4 litres root-dip 1:20
	Maxicrop: Triple, Concentrate, Natural NPK	Seaweed based	
	Kendal TE	Cu Mn Zn anti-stress	
	Sentinel	10% Silicon + Salicylic acid	0.5-1.0 litres
	Tytanit	12% Silicon 8% Titanium	
	Zonda Physiocrop	Amino acid polypeptides	

Adjuvants

PRODUCT	CLASSIFICATION	ATTRIBUTES	EXAMPLE USAGE	RATE OF USE
ABATE	Silicon based anti-foaming agent.	Tank foaming reduction.	Where high levels of foam are produced in the tank solution.	50-250 ml / 1000 lt. Use low rate to start with and increase as required.
ACTIVATOR 90	Non ionic wetter.	Drift reduction. Spreads up to 7 times more than water. Use where surface wetting is desirable.	Contact insecticides. Broadleaved herbicides. Contact herbicides such as Diquat.	1 lt / 1000 lt Add to tank last.
ALL CLEAR EXTRA	Balanced formulation of sequestrants and surfactants.	Tank cleaner.	After tank use. Good at removing difficult residues like the SU herbicides.	5 lt / 1000 lt Avoid contact with the concentrate on metal.
CROPSPRAY 11E	Mineral oil adjuvant.	Weed control improvement. Reduces drift.	Difficult to control weeds. Difficult spraying conditions.	Max rate 25 lt / 1000 lt Normal rate 7.5 lt / 1000 lt Can have insecticidal use.
ENVIROWET	Silicon based non-ionic wetter and spreading agent.	Drift reduction 'super wetter'.	Improve uptake of foliar nutrients. Improve coverage on difficult targets such as waxy or hairy leaves.	1-2.5 lt / 1000 lt
GATEWAY	Silicone and latex-based sticker, extender and wetter.	Improves wetting, coverage and rainfastness. Increases uptake of systemic products and nutrients. Drift reduction. Frost protection.	Use in difficult weather conditions. On waxy or hairy leaved weeds. Anti transpirant. Difficult target coverage.	1.25 lt / 10 00 lt Add to tank last.
KANTOR	Penetrant wetter and spreading agent.	Improved coverage. Aids systemic product uptake. Mix compatibility.	Reduces the risk of tank mixing issues. Aids difficult canopy management.	1.5-10 lt / 1000 lt
KATALYST	Penetrant wetter. Water conditioner.	Improves the retention and increases the uptake of the spray solution. Reduces the pH and water hardness.	Improves water quality. Use under adverse conditions.	1.5 lt / 1000 lt
LEVEL	Synthetic latex solution. Sticker and extender.	Improves rainfastness, coverage and retention.	Use under stressful weather conditions.	1 lt / 1000 lt
MIXMATE	Water conditioner. Acidifier, wetter and sticker.	Use to reduce cationic contaminants. Blend of products to soften water, reduce the pH and minimise alkaline hydrolysis.	Essential where alkalinity reduces product efficacy. Captan. Glyphosate etc. Improves coverage.	1-2 lt / 1000 lt High rate in hard water areas.
SPEEDUP 3000	Water conditioner. Anti foaming agent.	Maintains product half life in solution.	Use with Glyphosate.	0.5 lt / 1000 lt
SP058/SLIPPA	Silicone based wetter.	Spreader and rainfastness improvement. Soil penetrant and drift retardant. Improves uptake of nutrients, especially calcium and magnesium. Reduces drying time.	Use on difficult target pests like pear sucker, Blackcurrant Gall Mites and Vine weevil larvae. Reduces variability of product performance.	0.5-2 lt / 1000 lt Do not exceed 400 ml of SP058 per hectare.
SPRAYGARD	Extender, sticker and wetter.	Reduces transpiration. Offers frost protection. Reduces phytotoxicity risk. Increases drying time. Improves rainfastness. Increases product uptake.	Use in difficult conditions, especially if cold with drying winds. Where rainfastness is required.	Max rate 20 lt / 1000 lt Normally 1-2 lt / 1000 lt
TRANSACT	Acidifying penetrant wetter.	Acidifies water reducing phytotoxic risks. Improves systemic product penetration. Improves coverage.	General purpose adjuvant and acidification product.	Max 5 lt / 1000 lt Normal rate 1.5 lt / 1000 lt Acidification rate 1 lt / 1000 lt Add to tank last.

E: info@agrii.co.uk | T: 0845 607 3322 | www.agrii.co.uk

Vineyard Products

COILED WIRE

Coiled wire is a useful and cost-effective product which suits a variety of applications.

Coiled wire is available in a choice of convenient specifications, both in high tensile and mild steel.

Diameter	Length	Weight	Code
2.5 mm high tensile	650 m	25 kg	WIR2.5H/T
2.5 mm mild steel	650 m	25 kg	WIR2.5S/S
3.15 mm high tensile	410 m	25 kg	WIR3.15H/T
3.15 mm mild steel	410 m	25 kg	WIR3.15S/S

GRIPPLE WIRE JOINERS, TENSIONERS AND ANCHORING SYSTEMS

The system of choice for joining and tensioning steel wire trellis work.

Size	Specification	Code
Standard	For 2-3.15 mm	GRIPPLES
Jumbo	Up to 5 mm	GRIPPLEJ
Gripple Tensioner Tool	For tensioning	GRIPPLER
G-Pack 3	Anchoring kit	GRIPPLESL
G-Pack 4	Anchoring kit	GRIPPLEANCH
Diager Tool	For anchoring	VIC1

VINEYARD POSTS – METAL AND WOOD

Vineyard intermediate posts metal	Length 2.5 m	VINEINTERPOST2.5M
Vineyard end post metal	Length 2.75 m 48 x 58 x 2.0 mm	VINEENDPOST2.75M
Creosote wood intermediate and end posts	All lengths and dimensions available on request	

TUTOR RODS

Code: **VINE1.2M**

TREEFIX

6cm Code: **TREEFIX30**

ANCHOR RODS

850mm x 12mm

Code: **ANCHORROD**

VINEGUARDS

For protection from damage by vermin

Size	Quantity	Code
Vineguard	60 cm	RA123
Plastic mesh	60 cm	TREEMASH
Vine Sleeve	60 cm	VIC1

BAMBOO CANES

Size	Quantity	Code
900 mm (3ft)	500/bale	CAN3/9
1200 mm (4ft)	250/bale	CAN4/18

MAX TAPENER HTR TYING MACHINE

The tried and tested method for tying in vines.

Product	Quantity	Code
HTR tying machine	Single	MAX2
Tape (Red) 16 m	Box of 10	MAXT7
Tape (Green) 16 m	Box of 10	MAXT13
Tape (Green) 26 m	Box of 10	MAXT8
Tape (Green) 40 m	Box of 10	MAXT9
Maxtape Biodegradable (Green) 40 m	40 m	MAXTBIO
Staples (604)	Box of 2400	MAXTSTAPL

VINE TIE

Size	Colour	Code
3mm x 100mm	Black	TIE3
5mm x 300mm	Green/Yellow	TIE4
8mm x 150mm	Green/Yellow	TIE5

VINE CLIPS

Various clips for securing vines to support wires and tutor.

Product	Quantity	Code
Elbow clip NR40	Per 1000	VICL02
Rebstar 'big' clip	Per 1000	VICL06
Netting clip	Per 1000	NETCL1
Stabfix metal clip (for bamboo)	Per 1000	STABFIX1
Stapfix metal clip (for metal rods)	Per 1000	STABFIXZERO
Green twist ties (4, 6 and 8 inch)	Per 5000	RAI28

NAILS & CHAIN

Type	Size / Quantity	Code
Hook nail	5 mm/2.5 kg	HOOKNAILS
Chains	200 mm/7 links/per 100	WINA20
Nails	1 kg/c.145	WINA02

Secure Chemical Storage Units

E-EPS5 – 1840/CS5 STORAGE FOR CHEMICALS

Hinged and lockable

- Size 1410 mm x 810 mm x 1580 mm (L x D x H).
- Manufactured from 2 mm Mild Steel Sheet over 50 mm x 50 mm x 3 mm RHS tube.
- Sump capacity 250 litres.

Code: **CHEM3**

E-EPS4 – 1840/CS4 STORAGE FOR CHEMICALS

Sliding doors – 3 shelves for 25 ltr and 5 ltr containers

- Size 2500 mm x 800 mm x 2400 mm (L x D x H).
- Manufactured from 2 mm Mild Steel Sheet over 50 mm x 50 mm x 3 mm RHS tube.
- Sump capacity 380 litres.

Code: **CHEM2**

E-EPS3 – 1840/CS3 STORAGE FOR CHEMICALS

Sliding doors – 4 shelves for 25 ltr and 5 ltr containers

- Size 3000 mm x 1650 mm x 2400 mm (L x D x H).
- Manufactured from 2 mm Mild Steel Sheet over 50 mm x 50 mm x 3 mm RHS tube.
- Sump capacity 880 litres.

Code: **CHEM4**

NOTE: The above units will be delivered by an articulated vehicle, therefore please ensure that a vehicle of the size can access your premises before ordering and advise us accordingly. All weights, dimensions, and other figures quoted are approximate.

Pruning Equipment

THE ORIGINAL (MODEL 2)

Original model with riveted anvil blade.

Length: 21.5 cm Weight: 240 gm

Code: **FELCO2**

COMPACT (MODEL 6)

For the smaller hand, light and compact with tapered cutting head.

Length: 19.5 cm Weight: 210 gm

Code: **FELCO6**

ECONOMY (MODEL 5)

Economy model with steel handles.

Length: 22.5 cm Weight: 310 gm

Code: **FELCO5**

PROFESSIONAL (MODEL 7)

High performance model for intensive pruning with rotating handle which reduces the effort by a third when pruning.

Length: 21 cm Weight: 290 gm

Code: **FELCO7**

ALTUNA SECATEUR

A general purpose secateur for the professional.

Code: **ALTSEC**

ARS VINE SNIPS

Code: **ARSV1**

ALUMINIUM LOPPERS (MODEL 210A)

Interchangeable aluminium handled loppers are extremely durable. Ergonomic and comfortable, with a soft non-slip coating on the handles. Fine blade adjustment mechanism to ensure a clean, precise cut.

Maximum cutting diameter: 3.5 cm
Length: 60 cm Weight: 785 g

Code: **FEL21**

ALTUNA FOLDING SAW

A compact folding pull saw, 180 mm long and weighs 280 g.

Code: **ALTFS**

Netting

BLUE LIGHTWEIGHT NETTING

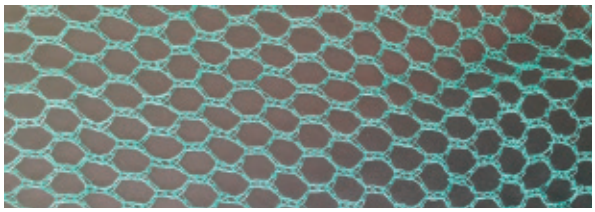
+ **Protects the grapes against birds and wasps.**
+ **Limited use, usually 1-2 years.**

Material: High Density Polyethylene
Weight: 30 g m² (included all the reinforcements)
Widths: 0.9 m x 250 m, 1.2 m x 250 m
Colour: Clear (Crystal)

1.2 m x 250 m Code: **GNVN0120250**
0.9 m x 250 m Code: **GNVN009250**

GRO-NET BIRD NET GREEN

Sizes: 12 m x 100 m, 20 m x 100 m
Code: **NTAB1520100**



GRO-NET ANTI-HAIL/BIRD NET

Size: 20 m x 100 m
Code: **NTABD2000100**

GRO-NET SWD/1

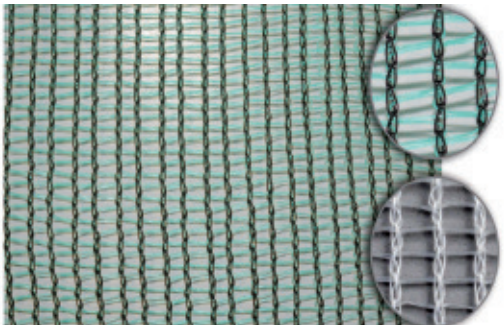
Material: HDPE U.V. Monofilament
Weight: 75g m² (including reinforcements)
Approx Shade: 15%
Style: 0.8 mm x 0.8 mm
Colour: White

1.8 m x 100 m Code: **GNSWD118100**
6.5 m x 100 m Code: **GNSWD165100**

GRO-NET WINDBREAK NET GREEN/BLACK

Material: 100% Virgin HDPE (High Density Polyethylene)
Construction: Monofilament construction
Weight: 106 g m²
Colour: Green / Black
Additions: UV treated
Style: 2 mm x 4 mm 50% windbreak, 30% Shade

Sizes: 1.5 m x 100 m, 2.0 m x 100 m, 3.0 x 100 m, 4.0 m x 100 m, 6.0 m x 100 m; 1.5 m x 500 m, 2.0 m x 500 m, 3.0 m x 500 m, 3.5 m x 500 m, 4.0 m x 500 m, 5.0 m x 500 m, 6.0 m x 250 m



PARAFENCE PARAWEB

Strength: 30kN/m
Material: High density polyethylene
Roll size: 2 m x 34 m
UV Stabilisation: 20 years
Colour: Black

E: info@agrii.co.uk | T: 0845 607 3322 | www.agrii.co.uk

Safety Equipment

FORCE 8 MASK & FILTERS

Press-to-check filters with hinge design to facilitate instant and accurate checking of the face fit, without effecting the seal of the mask to the face.

Easily attaches to the Force 8 Respirator (Code 1863F) with a secure fit when applied.

Mask Code: **FORCE8**
Filters Code: **FORCE58FP**

FACE SHIELD PERFO NOVA 82044

Code: **NORTH1**

BETAFIT DISPOSABLE MASK FFP2V (BOX OF 10)

Code: **BETAFIT2**

HOODED COVERALL – LIQUID AND PARTICLE PROTECTION

- Durable SMS breathable fabric with additional treatment for increased protection against water based chemical splash.
- Low lint fabric and internal seams to reduce the risk of fibre contamination.
- Two way zip for quick and easy access to work clothes.
- Strong triple stitched seams CE type 5 and 6.

Colour: White. **Size:** M, L, XL, XXL, XXXL

M Code: **COVERA**
L Code: **COVERA002**
XL Code: **COVERA001**
XXL Code: **COVERA003**
XXXL Code: **COVERA004**

CHEMICAL RESISTANT APRON

Green Code: **APRON**

NITRILE GLOVES

M Code: **GLOV22**
L Code: **GLOV23**
XL Code: **GLOV24**

GLOVES LATEX POWDER FREE (100 PACK)

M Code: **GLOV14**
L Code: **GLOV15**
XL Code: **GLOV16**

PARAFFIN CANDLES

- **Perfect frost protection for orchards and vineyards in cold spring times.**
- **Quick and easy lighting.**
- **Additives ensure burning and warm smoke for up to 10 to 12 hours.**

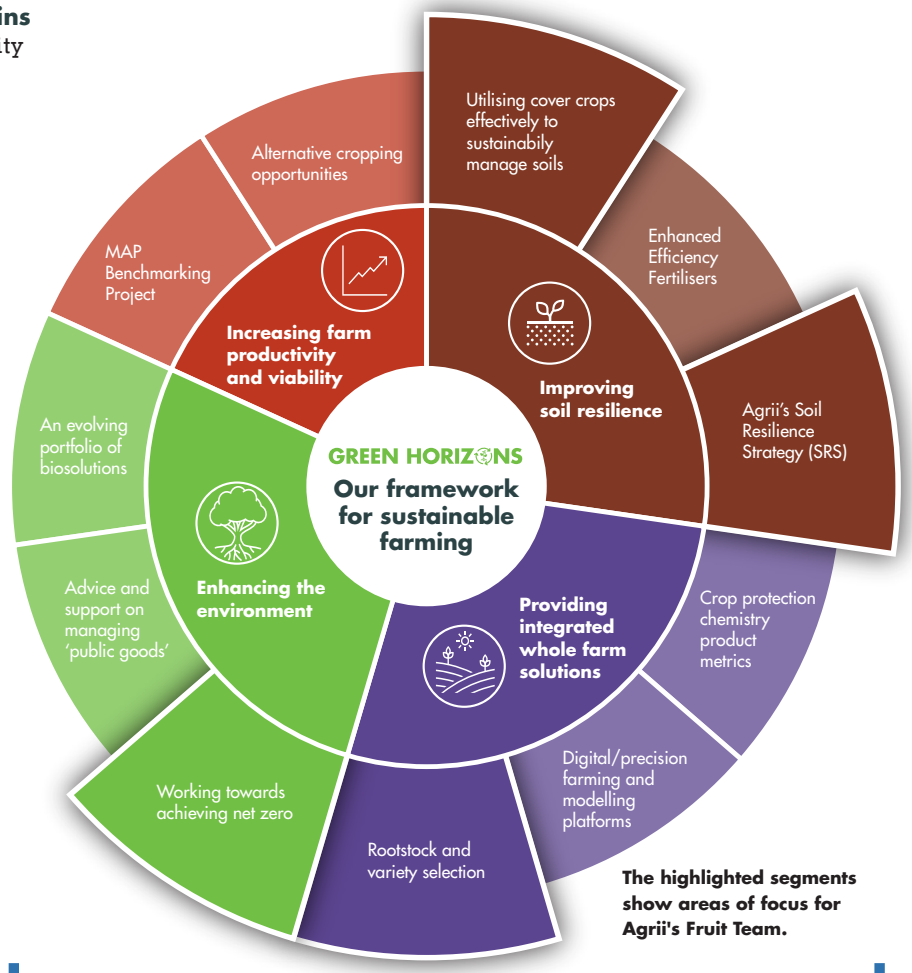
Vineyard Candle Plastoflex 71R Refill Code: **VINECANRF**

Vineyard Candle Plastoflex 71 Code: **VINECAN**

GREEN HORIZONS

Amy Watkins
Sustainability Manager

"Growing food is our mission, and doing that productively and sympathetically is what we mean by sustainable farming. We are uniquely placed as an industry, offering a solution to many of the global challenges we face. From producing healthy, nutritious food to mitigating climate change, we have the potential to shape a sustainable future for all. The future is exciting, offering new opportunities to UK growers during probably the biggest change we have seen, and will see, for generations. Through our Green Horizons initiative, we strive to provide trusted agronomic advice to put our growers ahead in the fast changing climate we live in."



The highlighted segments show areas of focus for Agrii's Fruit Team.

Through offering advice and services that help to improve soil health, maximise biodiversity and reduce the carbon footprint of vine growing, we strive to be the trusted partner of choice in providing sustainable agronomic solutions. To find out more about how you can become more sustainable, speak to Amy Watkins (amy.watkins@agrii.co.uk) or one of our Agrii fruit agronomists.

Agrii's fruit team is always looking to make the most from new technology as well as from the trials that we run at the Fruit iFarm in East Malling, Kent. We aim to give our customers the tools they need to set themselves apart from low-priced imported foods by focusing on sustainability and reductions in emissions on farm. Traffic-mapping machinery and movement around the farm can help us to understand where fewer trips can be made and including "no-mow" zones to promote the presence of beneficial insects can reduce the need for insecticides at key times of the year.

Read more about sustainable farming approaches in our Insight Reports...

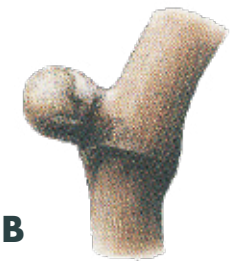
Download your copies by using the QR code.

E: info@agrii.co.uk | T: 0845 607 3322 | www.agrii.co.uk

Grapevine Growth Stage

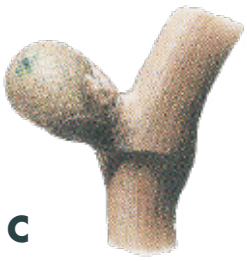
A

WINTER BUD
BBCH 00



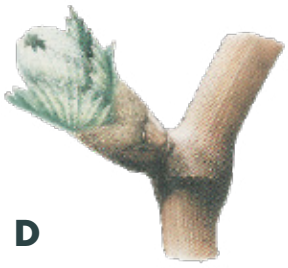
B

WOOLLY BUD
05



C

GREEN TIP
07



D

LEAVES EMERGED
09

E

LEAVES UNFURLED
13

F

INFLORESCENCE VISIBLE
53

G

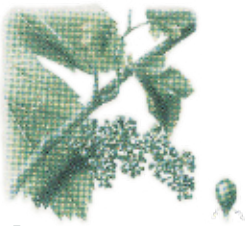
INFLORESCENCE SEPARATED
55

H

FLOWER BUDS SEPARATE
57

I

FLOWERING
65



J

FRUIT SET
71

K

BUNCH CLOSURE
79

L

VERAISON
81

RIPE GRAPES
89

Plant Protection Products 2023 – grams active ingredient

Audits for Sustainable Wines of Great Britain and alike may require an assessment of grams active content for rating Plant Protection Products (PPPs) and inclusion in a suitable spray programme.

This is one criterion by which to judge environmental fate. Such assessments are complex. Stringent regulation is implicit within authorisation of any pesticide in the UK made by the Chemicals Registration Directorate (CRD).

Following statutory use conditions specified on the product label, also DEFRA 'Pesticides' (Code of practice for using PPPs) are paramount for safe use and minimising environmental impact. Guidance given in the DEFRA Code of Good Agricultural Practice (COGAP) in paragraphs 162-171 require implementation of a Crop Protection Management Plan (CPMP) which includes adherence to Integrated Pest Management (IPM) – a risk-based assessment for the control of pests and diseases.

Sustainable use of pesticides is best achieved by effective choice, timing and application. Programme fungicides to prevent disease rather than cure according to 'risk' (e.g. the RIMpro disease forecast model, see more on page 15). Control pests when a damaging 'threshold' is reached e.g. moth species when monitoring traps indicate. These basic principles will help minimise and optimise pesticide inputs.

PRODUCT	ACTIVE INGREDIENT(S)	GRAMS ACTIVE
Amylo-x	Bacillus amyloliquefaciens	250 g/kg
Batavia	Spirotetramat	100 g/l
Botector	Aureobasidium pullulans	500 g/kg
Cosine	Cyflufenamid	50 g/l
Cuprokylt	Copper oxychloride	50% w/w
Dipel DF	Bacillus thuringiensis	54% w/w
Filan	Boscalid	50% w/w
Frutogard	Potassium phosphonate	342 g/l
Hallmark Zeon	Lambda-cyhalothrin	100 g/l
Karamate DF	Mancozeb	75% w/w
Karma	Potassium bicarbonate	850 g/l
Kerb Flo 400	Propyzamide	400 g/l 35.3% w/w
Kumulus DF	Sulphur	80% w/w
Nativo 75WG	Tebuconazole + Trifloxystrobin	500 g/kg + 250 g/kg
Option	Cymoxanil	600 g/kg
Percos	Ametoctradin + Dimethomorph	300 g/l + 225 g/l
Romeo	Cerevisane	941 g/l
Roundup Powermax	Glyphosate	720 g/kg
Scala	Pyrimethanil	400 g/l
Sercadis	Fluxapyroxad	300 g/l
Serenade ASO	Bacillus subtilis	1000 g/l
Shark	Carfentrazone ethyl	60 g/l
Shinkon	Amisulbrom	200 g/l
SL567/Tine	Metalaxyl-m	44.7% w/w
Steward/Purser	Indoxacarb	300 g/kg
Stroby	Kresoxim methyl	50% w/w
Switch/Gear	Cyprodinil + Fludioxinil	37.5% w/w + 25% w/w
Systhane 20EW	Myclobutanil	200 g/l
Teldor	Fenhexamid	50% w/w
Topas	Penconazole	100 g/l
Tracer	Spinosad	480 g/l
Vivando	Metrafenone	500 g/l

Codes of Practice

Three Codes issued by DEFRA and HSE outline the requirements for land based businesses with regard to good and regulated agricultural practice and as such are essential to possess, read and follow:

- ✔ **Pesticides:** Code of Practice for using plant protection products.
- ✔ **Protecting our Water, Soil and Air.** A Code of Good Agricultural Practice for farmers, growers and land managers.
- ✔ **Farmwise:** Your essential guide to health and safety in agriculture.

Further advice and report forms to fulfil these requirements (also for Cross Compliance and BPS) can usefully be found on AgriiPlus (Agrii database for customers to access current crop, product and due diligence information) or the Voluntary Initiative (VI) website at **www.voluntaryinitiative.org.uk**.

- ✚ **Integrated pest management plan (IPMP)** **https://voluntaryinitiative.org.uk/schemes/integrated-pest-management/**
- ✚ **Pesticide handling areas.** It is still permissible to fill up and wash down in the field/vineyard where product is applied. Dedicated areas for this purpose are regulated; consider installation of a bio bed or bio filter. **https://voluntaryinitiative.org.uk/water/biobeds/**
- ✚ **Nitrogen use is regulated on approximately 60% of land in the UK.** You may be growing in a Nitrogen Vulnerable Zone (NVZ). Check the status of your land as below. Conditions for crop production are less onerous than for livestock but you must control and record use **https://www.gov.uk/guidance/nutrient-management-nitrate-vulnerable-zones**
- ✚ **Basic Payment Scheme** changes and aquatic buffer zones. Please search on AgriiPlus.

Buffer Zones and LERAPS

Certain plant protection products have an aquatic buffer zone requirement when applied by horizontal boom or broadcast air-assisted sprayers.

If you want to reduce this aquatic buffer zone, there is a legal obligation to carry out and record a Local Environment Risk Assessment for Pesticides (LERAP). For horizontal boom sprayers this has changed so that under interim arrangements it is only possible to reduce crop buffer zones of 5 metres (and current category B products). Crop buffer zones of greater than 5 metres up to 20 metres cannot be reduced (and current category A products). The arrangements for broadcast air assisted sprayers remain unchanged, as tabulated below. Neither of these arrangements above cover sprayers such as tunnel sprayers, which are neither broadcast air-assisted nor ground crop sprayers. Where sprayers such as tunnel sprayers are used to apply a pesticide for which a buffer zone is set, this buffer zone has a default of 5 metres which cannot be reduced following a LERAP assessment.

If you just want to apply the buffer zone specified on the label you don't have to carry out a LERAP. But you are still legally obliged to record this decision as 'normal' in your spray records, as advised in section 6 of the updated Code of Practice for Using Plant Protection Products (keeping spray records).

Permitted Buffer Zone (BZ) reduction after LERAP for broadcast air-assisted sprayers				
	Full dose	**¾ dose**	**½ dose**	**¼ dose**
No windbreak	No reduction of BZ	Reduce by 3 m	Reduce by 6 m	Reduce by 12 m
With windbreak	Reduce by 6 m	Reduce by 9 m	Reduce by 12 m	Reduce by 18 m
No windbreak	A minimum 7 m buffer zone is allowed after a LERAP adjustment.			
With windbreak or Low drift sprayers	A minimum 5 m buffer zone is allowed after a LERAP adjustment, where tunnel sprayers are used buffer zones have a default of 5 m which cannot be reduced.			

Protection of Water

Defra has announced 8 new farming rules for water. "They will standardise the good practice that most farmers undertake and better protect the water environment, while improving resource efficiency."

From April 2018 those that apply to fruit growers are as follows:

+ Rule 1: Planning use of organic manures and manufactured fertilisers

Planning must take into account where there is a significant risk of pollution and the results of testing for Phosphorus, Potassium, Magnesium, pH and Nitrogen levels in the soil, which must be done at least every 5 years.

+ Rule 6: Reasonable precautions to prevent soil erosion and run off

In assessing whether there is "significant risk of pollution" a person must take into account the following factors: the slope of the agricultural land, especially if the slope is greater than 12 degrees; any ground cover; the proximity to inland fresh waters and coastal waters; the proximity to wetlands; the weather conditions and weather forecasts; the soil type and condition; and the presence and condition of agricultural land drains.

Requirements of the Sustainable Use Directive (SUD)

From 26th November 2015 operators who have been spraying under grandfather rights must now hold the appropriate training certificate; the PA1 foundation, and for fruit spraying the PA3 application modules.

PA1 covers key aspects of legislation which apply to the use and storage of pesticides, disposal of empty pesticide containers and washings, personal protective equipment, record-keeping and the risks to people or the environment. PA3 covers how to prepare the sprayer for work, maintain and use it safely, check the equipment for mechanical defects, select spray volume and quality, calibrate application; and how to calculate, measure and mix the pesticide and fill the tank.

At the same time, anyone who buys products authorised for professional use must ensure that whoever is going to apply the product holds the appropriate certification. Existing distributor account holders are unlikely to be asked for proof but under duty of care those without an account or opening one for the first time will be.

From 26th November 2016 the SUD required that all professional pesticide application equipment had to have been tested under the recognised National Sprayer Testing Scheme (NSTS) before this date. Subsequent testing is now required every 5 years after this date and every 3 years from November 2020. Find an approved NSTS examiner at **www.nsts.org.uk**

Since 2014 under the SUD it is required to demonstrate that Integrated Pest Management (IPM) practices are being followed. This can be done by completing an IPM plan and shows you are considering different ways of controlling weeds, pests and diseases. The plan is also needed for farm assurance and cross compliance inspection.

Continuing Professional Development

Member states are required to demonstrate availability of Continuing Professional Development (CPD) and ongoing spray operator training.

The National Register of Spray Operators (NRoSO) run by City and Guilds is the recognised UK service provider. Whilst it has become obligatory for farm businesses operating within Produce Assurance schemes to participate, this is not yet a mandatory requirement.

E: info@agrii.co.uk | T: 0845 607 3322 | www.agrii.co.uk

Meet the Fruit Team

Julian Searle
Agronomist &
Viticulture Specialist

Ben Brown
Agronomist &
Viticulture Specialist

Kevin Workman
Fruit Team
Manager

Gary Saunders
Agronomist,
Kent

Matt Greep
Agronomist,
South West

Ben Foster
RHIZA Fruit
Account Manager

Neil Obbard
Agronomist,
South & South East

Emily Dimond
Agronomist &
Technical Lead

Richard Killian
Agronomist,
South East

Rob Graham
Agronomist,
South East

Colin Bird
Agronomist,
South East

David Skittrall
Agronomist,
South, East &
West Midlands

Brendan Rhodes
Agronomist,
South East &
West Midlands

Steve Masters
Product Manager –
Ancillary Products

Matt Curry
Commercial Support –
Ancillary Products

Amy Watkins
Sustainability
Manager

Becca Cook
Fruit Team
Marketing Lead

FOR FURTHER INFORMATION:

General vineyard enquiries

Customer services team
0845 6073322 | info@agrii.co.uk

Ancillary products

Matt Curry
07545 926844 | horticultureorders@agrii.co.uk

Alternatively speak to your local Agrii contact/agronomist.

Agri intelligence

Connect with Agrii

The Agrii fruit team is comprised of 13 top and soft fruit agronomists together with ancillary product specialists and decision support services

Online at agrii.co.uk

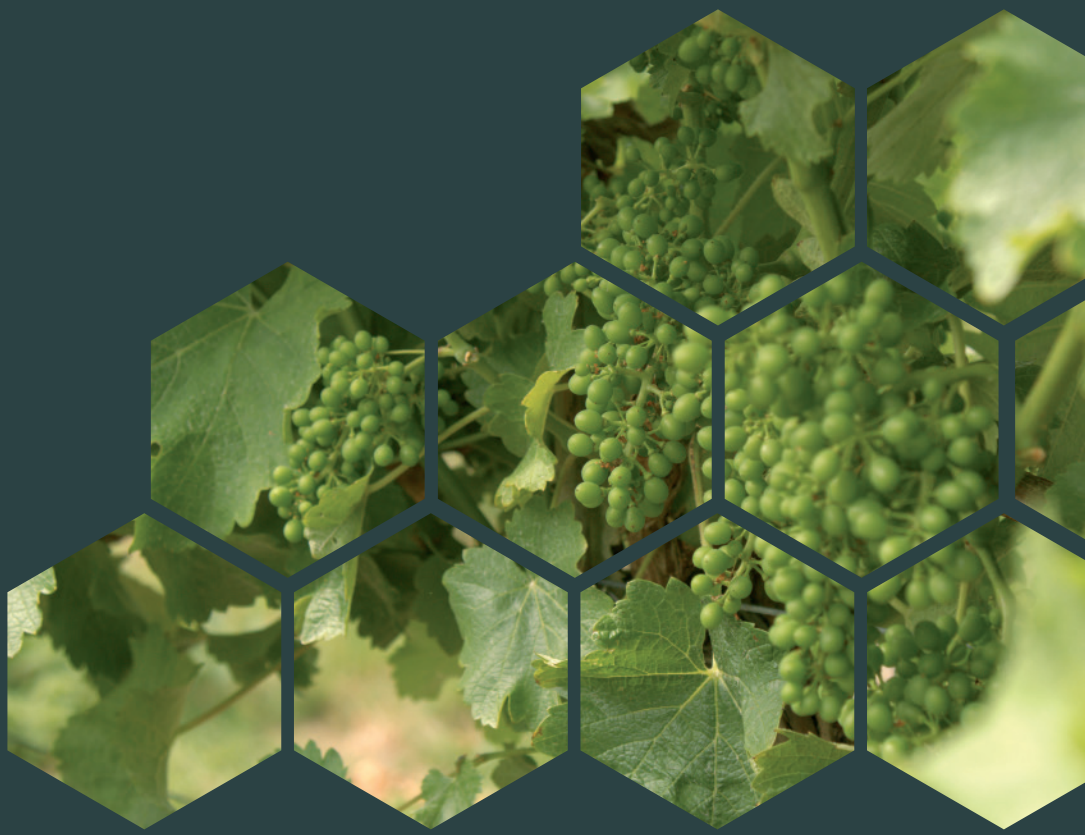
For the latest news, event information or to ask us a question

Follow us on social media

AgriiUK
AgriiUK
AgriiUK
AgriiUK
Agrii_UK

Speak to our Customer Services Team

With any queries on 0845 607 3322 or email info@agrii.co.uk



Printed using vegetable inks on paper made from FSC® certified and traceable pulp sources. Manufactured in accordance with ISO certified standards for environmental, quality and energy management. A Carbon Balanced product with World Land Trust certificates.

Agrii™

www.agrii.co.uk