Neudorf Vineyards, Nelson

PILLARS OF SUSTAINABILITY

NEW ZEALAND WINE
PURE DISCOVERY

SUSTAINABLE NEW ZEALAND WINEGROWING

CHEMICALS

Successfully handling risks is a large part of profitable vineyard management. The profitability and sustainability of a vineyard relies on the health of its vines and the quality of canopies, therefore limiting or eliminating the impacts of pests and disease is essential.

The New Zealand wine industry has an integrated approach that focuses on the life cycles of pests and diseases and how they interact with the environment. This system is more cost-effective and lessens the impact on people, property and the environment.

Integrated management should be practiced across all aspects of vineyard management and should favour biological methods, for example an increased tolerance of weeds due to the benefits they offer in terms of biodiversity and reduction of vine vigour.

Vineyards should only use agrichemicals to enhance the other pest and disease control methods — and select and apply chemicals in the least harmful way possible. This practice has seen a significant decline in industry chemical use in New Zealand over the past ten years.

Industry research continues to progress and discover new control methods for all significant vineyard pests and diseases. Future control strategies are being developed within the sector's integrated management framework to ensure that chemical use continues to decline.

For wineries there is also a strong focus on minimisation of chemicals and safe use. Food safety regulations control the use of wine protectants or preservatives and wineries are audited on this annually. Disinfectants and cleaning chemicals, regarded as an essential to maintaining health standards, are also in decline with more environmentally friendly alternatives preferred.

REGULATORY FRAMEWORK

REGULATORY BODIES

Local and central government regulate the use of chemicals in vineyards and wineries. The following agencies regulate the use of hazardous substances, agrichemical use and safety of people and the environment.

- The Environmental Protection Authority (EPA) helps safeguard people and the environment by regulating new organisms and hazardous substances.
- The Ministry for Primary Industries (MPI) was formed from the merger of the Ministry of Agriculture and Forestry, the Ministry of Fisheries and the New Zealand Food Safety Authority. The MPI aims to protect New Zealand from biological risk and oversees national food standards.
- Food Standards Australia New Zealand (FSANZ) provides a food safety standards code.
- The Ministry of Business, Innovation and Employment has incorporated four former agencies: Department of Building and Housing, Ministry of Economic Development, Department of Labour, Ministry of Science and Innovation. This Ministry governs staff training, safe working environments and property management plans.
- The New Zealand Plant Protection Society provides a platform for people to pool and exchange information on the biology and management of weeds, pests and pathogens of plants and beneficial organisms. The Society provides guidelines for agrichemical use.

REGULATORY REQUIREMENTS

Members must comply with the regulatory requirements. These include:

- The Hazardous Substances and New Organisms Act 1996 (HSNO)
- The Resource Management Act 1991 (RMA)
- Health and Safety at Work Act 2015
- The Agricultural Compounds and Veterinary Medicines Act
- The New Zealand Standard 8409:2004— Management of Agrichemicals code of practice, which covers training for safe use, handling, and storage of products (includes Growsafe).
- Various regional council and unitary authorities' requirements — such as air plans for drift management, safe use and storage of products, disposal of winery water waste.

New Zealand Winegrowers provides additional and specific guidelines for members to ensure they meet national and international regulatory and market requirements, for example an annual the New Zealand Winegrowers Vineyard Spray Schedule.

Sustainable Winegrowing New Zealand provides templates based on current research to guide monitoring procedures. The templates include information on the life cycles of pests and diseases, population thresholds (where available) and weather data. Control is undertaken based on targeting specific stages and life cycles, or on thresholds, for key problems areas.

To achieve and retain accreditation, Sustainable Winegrowing New Zealand (Sustainable Winegrowers NZ) members must demonstrate that they meet all regulatory and Sustainable Winegrowing NZ-specific requirements by providing documented evidence and successfully passing external audits.

STANDARDS FOR VINEYARDS AND WINERIES

The Sustainable Winegrowing NZ programme incorporates standards for members that promote best practice procedures in the vineyard and winery, and address consumer concerns regarding care of the environment.

Members must:

- Engage in viticultural practices that focus on natural processes, particularly biological ones, and which minimise the use of agrichemicals (pesticides, insecticides, herbicides).
- Develop and maintain management plans for the vineyard or winery.
- Monitor disease, pests and weeds to determine the need for action.
- Only use agrichemicals when justified, based on their monitoring programme or recognised standard practice. Any agrichemical products used must be specific to the target problem being addressed, thus ensuring minimal impact on beneficial species.
- Ensure that agrichemicals being used are as safe as possible to humans, livestock and the environment.
- Ensure management strategies are designed to avoid pests developing resistance to agrichemicals used.
- Make sure that vineyards using agrichemicals have a drift management strategy, which includes using properly calibrated spray equipment.

To achieve Sustainable Winegrowing NZ accreditation, member vineyards must:

- Monitor for pests and diseases.
- Limit chemical use.
- Justify all sprays.
- Calibrate and monitor chemical application equipment.
- Store and use chemical products safely.
- Ensure that staff using chemicals have the correct training and certification.
- Record and report all chemical use.

MONITORING AND COMPLIANCE

Sustainable Winegrowing New Zealand works to audit and monitor member compliance, and identify trends in chemical use. Feedback is provided to ensure members are well informed on the use of agrichemicals and their alternatives.

Sustainable Winegrowing NZ records, analyses and reports on member spray practices, and uses this information to provide members with personalised reporting and industry benchmarking reports. To receive reporting feedback members must:

- Have procedures in place to identify, monitor and assess the incidence of pests and diseases.
- Monitor the life cycle of pests and ensure that treatments are timed for application when most effective, taking into account the prevalent weather conditions.
- Ensure that monitoring procedures are relevant to the region and property, and take place at appropriate stages during the season.

SPRAY DIARIES

Members must provide their spray diaries to Sustainable Winegrowing NZ annually (and any wine company purchasing their fruit) as evidence of compliance. A spray diary records all products applied to the vineyard throughout the season, including natural, biological and non-organic controls. All of this information is analysed to and reporting feedback is provided to members.

PEST AND DISEASE CONTROL

VITICULTURAL PRACTICES

New Zealand Winegrowers have invested in comprehensive research programmes to provide insight into viticulture practices for better pest and disease management. Such practices should be incorporated within control programmes, and include:

- **Planting high-health material:** High-health vineyards begin with high-health planting material. New planting material should be certified as high-health and disease-free under the New Zealand Grafted Grapevine Standard (GGS). The standard ensures new plants are: free from Leafroll 3 virus, robust and true to type.
- **Maintaining vine health without relying on agrichemical use:** Achieved by open canopies (leaf removal, shoot thinning), managed pruning (ensuring the number of buds retained meet the capability of a vine to produce quality fruit), managing fruit quality and vigour through limited irrigation.
- **Maintaining a healthy vineyard environment:** Achieved through mulching prunings, removing virus infected vines, sward and nutrient management, |mulching for moisture retention, planting of mixed sward to encourage habitats for beneficial fauna.

Sustainable Winegrowing New Zealand external onsite audits verify that spray diaries are accurate records of products used by members. Management practices for safe use, storage and disposal of agrichemicals are also audited.

BIOLOGICAL CONTROLS

Biological controls may be used for some pests and diseases, and where possible should be incorporated into the control programme. Examples of biological controls include:

- Leaf roller caterpillars can be managed by parasitoids. These are encouraged by planting nectar sources in vineyards, and can be augmented with integrated use of softer chemicals where required.
- Ongoing research is focusing on natural alternatives for control of botrytis and fungal diseases.

AGRICHEMICAL CONTROLS

Agrichemicals come under the control of several government regulations, including the Hazardous Substances and New Organism

New Zealand Winegrowers distributes the Vineyard Spray Schedule to all members at the start of each season.

The document is compiled annually in conjunction with chemical companies and relevant regulatory bodies to assist members in their strategic use and spray planning. It contains information and advice on registered products, changes in product availability, application timing and use patterns.

The Spray Schedule also provides advice on practices that will result in wines having no detectable residue, and practices that ensure wines do not exceed residue limits set by markets.

This information is augmented by regular updates throughout the year.

Act (HSNO). When the Environmental Protection Authority (EPA) approves a hazardous substance for use, it will usually impose controls on its use, which will apply throughout the life cycle of the substance.

All products (including natural and organic and non-organic products) are classified and rated under the HSNO Act. This ensures that products with similar modes of action can be compared on their potential human and environmental impact.

The Ministry of Primary Industries, through separate legislation, approves agrichemical use. The approval provides guidelines for application and use in vineyards.

If an agrichemical is used it must be:

- In compliance with New Zealand legal and regulatory requirements and follow New Zealand Winegrowers guidelines.
- Specific to the key pest or disease or weed to be controlled.
- Selected and used with the least possible harm to the environment and people.
- Applied at the appropriate time and rates to have the least possible harm to people and the environment and the most effective impact on the target.
- Stored and managed appropriately.

Chemical manufacturers must provide comprehensive labeling and Safely Data Sheets for their products, outlining safe use, handling and storage data and recommendations.

VINEYARD AND WINERY PRACTICES

Members are required to hold a copy of the New Zealand Winegrower Vineyard Spray Schedule.

If agrichemicals are used, members must:

- Demonstrate that the control programme meets New Zealand Winegrowers and Sustainable Winegrowing New Zealand guidelines.
- Only use agrichemicals that are specifically registered for use on grapes and for the pest they are trying to control.
- Where possible be specific as to the particular pest, disease or weed that needs to be controlled.
- Ensure they are applied at the appropriate time and rate, and effectively target the crop or pest.

These requirements are designed to increase the efficiency of agrichemical use and minimize the amount of product applied and the number of applications made. This is sustainable on three levels:

- **Economic** – by minimising expenditure on agrichemicals
- **Quality** – as control is achieved without compromising the purity of the wine with chemical residues.
- **Environmental** – preventing the build-up of resistance to the products used, while minimising the impact on the environment.

RESISTANCE MANAGEMENT

The New Zealand Plant Protection Society in conjunction with New Zealand Winegrowers have developed strategies to help minimise the risk of resistance that pests have to pesticides for the New Zealand wine industry.

These strategies are based on international guidelines from organisations such as the Fungicide Resistance Action Committee in Europe, and have been incorporated into the Sustainable Winegrowing NZ programme. The aim is to avoid or delay the development of pesticide resistance.

The strategies offer recommendations on factors such as: rate, timing, alternating between chemical groups, and the maximum number of applications per season.

EQUIPMENT CALIBRATION AND DRIFT MANAGEMENT

Equipment must be calibrated annually and during the season, to ensure that chemicals are being accurately applied to the target, and at the correct rates.

Drift management includes:

- Choosing the best combination of spray nozzles, spray pressures and volumes to manage droplet size and spray direction.
- Only spraying in appropriate weather conditions.
- Employing tools to measure and monitor sprayer performance.
- A management plan to identify and manage sensitive areas, including neighbours and waterways.

VINEYARD AND WINERY SPILLS PROCEDURES

- Management systems must be in place to prevent spills of by-products, chemicals and petrochemicals.
- Emergency procedures must be in place to manage both dry and liquid chemical spills, and flammable materials.

Sustainable Winegrowing New Zealand and the Environmental Protection Agency provide an emergency flip chart for members to maintain onsite. The chart provides emergency contacts and general first aid guidelines.

STAFF TRAINING

The New Zealand Standard 8409:2004 — Management of Agrichemicals code of practice, which covers training for safe use, handling, and storage of products (includes Growsafe) is the basis of industry training for safe and responsible agrichemical transport, application and storage. All Sustainable Winegrowing NZ members who use agrichemicals must hold current certificates for training.

All staff involved in the application of sprays must have a current Growsafe Certificate that demonstrates they have been trained

according to the Standard. They must have been trained on the practical principles of transport, sale, handling, application and storing of products. Members are also required to have trained first aid staff onsite.

Sustainable Winegrowing NZ actively encourages the adoption of continuous improvement and training in agrichemical use through progressive certification |through Growsafe.

GROWSAFE CERTIFICATION

The Growsafe programme aims to improve user and supplier understanding of:

- The role of agrichemicals in the management of pests and diseases.
- Properties and mode of action of commonly used agrichemicals.
- Principles of safe, responsible and effective agrichemical application, with minimal adverse impact on human, environmental and animal health.
- Potential impacts of agrichemicals.
- Obligations and responsibilities of agrichemical users and suppliers.

A Growsafe certificate provides credible evidence that the holder has the skills and knowledge to use agrichemicals correctly. Growsafe training covers the knowledge and practices required for safe responsible and effective handling, application and storage of agrichemicals. The New Zealand Agrichemical Education Trust (NZAET) governs and provides Growsafe certification, which is needed in many regions to comply with requirements such as council air plans.

Sustainable Winegrowing New Zealand encourages all members who apply chemicals to have current Growsafe certification.

INITIATIVES TO CONTROL PESTS AND DISEASES

New Zealand Winegrowers conducts and facilitates research into industry management of pests and diseases.

Research projects typically focus on better monitoring and prediction of pest and disease pressure, preventative viticultural practices (particularly those that are biological in nature) and innovations to maximise application control and reduce amount of spray required.

Some current initiatives include:

- Investigations into vine diseases, wood rotting fungi and viruses that impact long-term viability of vineyards. Improved control will reduce the need for replanting, ensure efficient use of resources, and result in vineyards retaining excellent old vine characteristics.
- Vineyard floor management projects, which focus on soil and sward management in vineyards to improve biodiversity and encourage beneficial insects. Water management and soil heath are also key focus areas, including the use of mulches to reduce disease pressure and assist with disease management.
- The Virus Elimination Programme - a long-term research and development project (begun in 2008) aimed at maintaining virus-free vineyards. The Programme focuses on the removal of virus infected plants, and replacement with high-health, virus-free material, and long-term control of virus vectors, such as mealy bug.

MINIMISING AGRICHEMICAL USE

Monitoring and measuring agrichemical use:

- Provides members with information that helps them to reduce agrichemical use and apply agrichemicals according to industry best practice. Members can compare their own use and methods of application with industry practices at national and regional levels.
- Assists researchers with information on how the industry is using various products. This assists in the development of pest and disease management practices, resulting in improved crop quality.
- Provides advisories and information to governing bodies on current industry practices to assist in decision-making and guideline development.

FUNGICIDE USE

Sustainable Winegrowing New Zealand encourages the use of risk-based disease management where fungicides are applied according to measured levels of measured disease risk. Grapevine disease management often requires preventative strategies to keep diseases from doing serious damage to the crop.

Successful disease management incorporates factors such as fungicide choice, timing, rates and spray coverage.

> In Sustainable Winegrowing New Zealand and New Zealand Winegrowers run an annual series of meetings to provide updates to members on changes to the programme, and share results from the previous season.

INSECTICIDE USE

Members are encouraged to use selective insecticides (those that are only harmful to the targeted insect). These include biological insecticides and insect growth regulators (IGRs).

LEAFROLLER

Leafroller virus is primarily controlled through natural methods, including a range of parasitoids. Where agrichemicals are deployed, leafroller virus is controlled by insect growth regulators and other natural products.

WEED MANAGEMENT AND HERBICIDE USE

In the Sustainable Winegrowing New Zealand programme, contact herbicides are preferred as they have the least impact on the soil in the long-term.

FROST CONTROL AND SWARD MANAGEMENT

Use of herbicides to reduce ground cover for a short period over spring for frost control is a sustainable practice under the Sustainable Winegrowing New Zealand programme.

Central to our sustainability policy is a commitment to keep improving, as new research is undertaken and new technologies are developed. The New Zealand wine industry is actively involved in both of these areas, with an ongoing leadership role in research and development projects. Looking to the future, we will continue to protect the places that make our exceptional wines.

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