

## Rivendell Vineyard Integrated Pest Management (IPM) Plan Overview

Wine grapes are, by nature a delicate fruit, requiring specific care be given to the management of pests, mildews and disease. There are many certified pesticides and fungicides that are tolerated well by other Hudson Valley fruit crops, but cannot be tolerated by grapes. That having been said, it should be noted that grape growing (viticulture) is one of the lowest impact fruit crops, typically utilizing the lowest toxicity chemicals to control problems. By contrast, apples and strawberries are among the highest environmental impact fruit crops in their pest and disease management requirements.

Pesticides fall into two main categories; Restricted and Reduced-Risk Pesticides (including Minimum Risk Pesticides and Biopesticides). In accordance with New York State legislation, pesticides that are highly toxic or that are persistent and accumulative are placed on a restricted-use list and may be sold to and used only by certified applicators. They have long term record keeping requirements at both the state and federal levels, verification procedures and neighbor notification requirements.

Since 1993 EPA has expedited the registration of conventional pesticides with characteristics such as very low toxicity to humans and nontarget organisms including fish and birds, low risk of groundwater contamination or runoff, low potential for pesticide resistance, demonstrated efficacy, and compatibility with IPM. Materials meeting these criteria are referred to by EPA as “reduced-risk.” Minimum-risk pesticides are certain products that are exempted from EPA registration (and therefore have no EPA registration number). They contain only active ingredients outlined in FRFRA 40 CFR 152.25(g) (“the 25b list”) and inert ingredients currently identified on Federal Register Notice 59 FR 49400 (“the 4a list”). The lists can be accessed from the following link: <http://www.epa.gov/pesticides/biopesticides/>. Biopesticides, or biological pesticides as defined by EPA, are certain types of pesticides derived from such natural materials as animals, plants, bacteria, and certain minerals. These include microbial pesticides, which contain bacteria, fungi, virus, etc., as the active ingredient; plant-pesticides, i.e., pesticidal substances that plants produce from added genetic material (such as corn genetically modified to produce *Bacillus thuringiensis* toxins); and biochemical pesticides comprised of naturally occurring substances that control pests by nontoxic mechanisms (such as pheromones or some insect growth regulators).

Rivendell intends to follow a regimen that as closely follows an organic methodology as possible. That does not mean that there will be no spraying of chemicals in the vineyard, it means that there will be no spraying of chemicals in the vineyard that do not have either an elemental origin or are certified for use in organic farming. All of the sprays contemplated will be classified “Reduced Risk”, “Minimum Risk” or “Biopesticides”. We will not use any Restricted Use pesticides, fungicides or herbicides. None of the chemicals applied will require an Applicator Certification and no such certification is intended to be applied for. The IPM program will pose no harm to the environment, or fauna, except in the context of good viticulture practice for disease and pest control. In short, it will naturally control the nuisance Grape Berry Moth, but do no harm to honey bees or other beneficial insects, or any other living creature including the neighbors.

The Rivendell Vineyard site on Albany Post Road will ultimately consist of a total of 7 acres of vines. It is currently anticipated to plant the site to the following varieties:

- Seyval blanc – interspecific hybrid
- Frontenac – interspecific hybrid
- GR7 – interspecific hybrid
- Niagara – labrusca
- Traminette- interspecific hybrid
- Vignoles – interspecific hybrid
- Several other experimental and minor table grapes varieties as yet un-decided upon

All of these varieties are being chosen based on their high tolerance for disease and pests, as well as ripening characteristics suited for the site, which will allow for a minimal occurrence Integrated Pest Management program.

The main threats affecting grape vines in our region are; Downey Mildew, Powdery Mildew, Black Rot and Botrytis and insect pest are mainly the Grape Berry Moth and to a lesser extent, Japanese Beetles (on younger plants).

The methodology for fighting these afflictions is to spray a “cocktail” of different chemicals throughout the season. Most agents have multiple affliction targets. Different ones are applied in order to avoid a buildup a resistance to one agent and in recognition of the fact that different diseases occur at different times in the growing cycle. Sprays are usually applied more frequently in the spring (pre and just post-flowering) and then with waning frequency throughout the rest of the season – really only when needed based on the weather (humidity or rain) or disease development. An aggressive spray schedule would be every 10-14 days making the maximum number of sprays in the Hudson Valley region, in the wettest of years, 10-12 times. It is anticipated that given the combination of varieties and site characteristics (airflow and exposure) that an aggressive spray schedule in the Rivendell Vineyard will be about half of that and in a favorable year just 3 or 4 times.

Examples of the spray agents that will be used, along with their chemical origins or family are:

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| • Sulphur                            | elemental                             |
| • Copper and Lime (Bordeaux Mixture) | elemental                             |
| • Abound                             | strobilurin                           |
| • Nova                               | sterol inhibitor [DMI subgroup]       |
| • Nutrol                             | potassium salt                        |
| • Phostrol                           | phosphorous acid (phosphonate)        |
| • Armicarb (potassium bicarbonate)   | potassium salt                        |
| • Stylet Oil                         | Organic crop oil spray from petroleum |