

Virginia Wine Board Grant Report Template

1.0 INSTRUCTIONS

Use this grant report template to communicate progress on your project objectives to the Virginia Wine Board and its administrative agents.

This simplified form focuses attention on the intended and achieved results of the project, including how project results are separately shared with their intended beneficiaries. This report is not the place for a detailed technical discussion of research methodology or results.

- During the proposal stage, applicants complete the first (WHITE) sections to summarize the project's objectives, deliverables, and intended impact plus planned communication to stakeholders.
- At the midpoint of the project (December 1, due December 15), Research and Education grantees complete the center (GRAY) sections to note progress as well as expenditures to date.
- Finally, upon project conclusion (May 31, due June 30), all grantees complete the final (BLUE) sections to describe the project's results and communication, as well as final expenditures.

2.0 GRANTEE INFORMATION

Project Title	Improve the efficacy of grape downy mildew management in Virginia				
Organization	Virginia Tech				
VWB Proposal #	26-40	Proposal # (if needed)		Award # (if needed)	
Project Lead		Mailing Address		Research	X
Name	Mizuho Nita	595 Laurel Grove Rd		Education	◊
Title	Associate Professor	Winchester, VA 22602		Marketing	◊
Email	Nita24@vt.edu			Recurring?	◊
Phone	540-232-6047			Continuing?	X
				Year	2 of 3

3.0 PROJECT OBJECTIVE, PROGRESS, AND IMPACT

3.1 PROPOSAL (February)

Identify the specific deliverable or result that the project will produce. (1-2 sentences or bullets; Narrative section I.b.)

- Efficacy data of biopesticides against grape downy mildew will be presented at the VVA meetings, VCE Viticulture Extension Meeting(s), grape pathology blog, X, and Facebook.
- The model-based risk information delivered through Monthly Viticulture Meetings, my blog, X, and Facebook.

Summarize the project objective the result serves, including expected impact. (1-3 sentences or bullets; Narrative section I.a and II.a.)

- Growers make downy mildew management decisions based on the knowledge gained from
 - New recommendations for grape downy mildew management based on the field and greenhouse trials
 - Weekly grape downy mildew risk based on past and forecasted weather delivered to growers.
- Specific objectives:
 - Evaluation of biopesticides

- Deploy a new downy mildew risk assessment system
- Validate the model
- Improve the model

Summarize the project's workplan. (1-5 sentences or bullets; Narrative section III.b.)

1. Spring: preparation for greenhouse trials, environmental chamber trials, Blackbird imaging, the model adjustment, and various Extension meetings.
2. Summer: Conduct field fungicide spray trials and sentinel vine trials, weekly delivery of downy mildew risk information, and various Extension meetings.
3. Fall: Data analysis and various Extension meetings.
4. Winter: Greenhouse trials, preparation for the next year (adjusting model, planting cuttings, etc.), and various Extension meetings.

List the indicators that will show the project has a) made progress on its workplan, b) achieved its objective, and c) reached its audience. (1-5 sentences or bullets; Narrative section III.c.)

- Obtain results from field and greenhouse studies in a timely manner.
- Delivery of information through various extension channels.
- Successful academic progress made by Mr. Jonathan Ames.
- Reaching more than 200 direct and 5,000 indirect contacts through activities listed above.

3.2 Mid-Year Report (December)—Research and Education Grants only

Provide project indicator status information. Describe project/workplan progress. Include any obstacles the project has encountered and the plan to overcome them.

1. Evaluate Biopesticides: We conducted both field and greenhouse assays to evaluate nine commercially available biopesticides against grape downy mildew. Four materials showed moderate protection. We will test combinations of these materials with other conventional materials to see if they can achieve protection comparable to current grower standards (mancozeb or captan).

- We completed single-product trials this year in both greenhouse and field.
- We started a new multi-product trial this year, and continue with the effort in 2026.

2. Develop a Risk Assessment System: In 2025, we deployed a model to beta testers at approximately 15 locations. We generated daily email notifications showing downy mildew risk information based on the past 7-day historical weather data and 48-hour forecasts. We will evaluate forecast accuracy (objective 3) and conduct a field trial (objective 1) based on the model outputs.

3. Validate the System: We exposed greenhouse-grown, disease-free grapevines for 24 hours. We compared grape downy mildew levels on these vines with the model predictions. The model demonstrated over 70% accuracy in predicting disease incidence. Additionally, we developed regression-based models.

- The item 2 and 3 are used as a part of Extension effort, where we provided daily downy mildew risk information to ~ 20 beta testers. In addition, I updated my blog every week during the season.

We will explore a machine learning approach (random forest model) to see if it can improve the current model or help identify factors to enhance its accuracy.

In addition, Mr. Jonathan Ames successfully defended his MS thesis on November 2025. He will continue his academic progress working on this project to obtain his PhD.

3.3 Final Report (June)

Compare the project to the objective, workplan, and project indicators. Provide (as a link or attachment) the project deliverable or result. Describe the realized or expected impact of the project.

1. We initiated 2026 Field trial

2. The risk information has been delivered to growers every day via email and every week since April via blog.

3. Sentinel vine data has been analyzed to modify the model used in #2. Specifically:

- We changed the way the model predicts. We tested model to predict different outcomes (e.g., 10% disease, % infection, etc.), and found out that the model performs the best when we ask it to predict if there is any chance of infection (10% or higher in real data), which is realistic knowing how quickly downy mildew can spread.
 - We also tweak the way it uses dew point so that we won't ignore wet morning without precipitation.
- For machine learning model, we added another year of data since it requires a large dataset. The current model shows ~75% accuracy of predicting % of infection.

Takeaways:

- We identified several biopesticides that can suppress downy mildew in reasonable level.
- We will continue testing the combinations with a conventional or another biopesticide in the field.
- The improved downy mildew risk assessment model showed higher than 80% accuracy in predicting downy mildew infection event. We have implemented the new model to daily email delivery system.
 - We will test model-based fungicide application in the field.
- We are still exploring the use of machine learning model, which has increased its accuracy (~75% now) after adding 2025 data.

We have been delivering up-to-date biopesticide information and downy mildew risk assessments to growers through various Extension outlets. Please see the section below for more details.

4.0 COMMUNICATION WITH STAKEHOLDERS

4.1 PROPOSAL (February)

Identify the specific audience/s for this project. (1-2 sentences or bullets; Narrative section II.b.)

Grape growers in Virginia and other temperate growing regions where downy mildew is common.

Summarize how you will share project information or results with this audience. For example, will you submit for publication in a peer reviewed journal? Present at a technical conference? Conduct a training? Post on a site?. (1-3 sentences or bullets; Narrative section II.b.)

The results will be published through:

- Commodity conferences: e.g., the VVA meetings, Eastern Winery Expo

- Extension meetings: e.g., VCE Viticulture Workshops (we typically have three in winter), Monthly Viticulture Meetings, and other opportunities.
- Blog: <https://ext.grapepathology.org>, which is linked to X (@grapepath) and Facebook (GrapePathVATech)
- Extension publication (Pest Management Guide)
- A peer reviewed journal

4.2 Mid-Year Report (December)—Research and Education Grants Only

Describe communication with stakeholders to date. Note dates and locations of events or publications, as available/relevant, and cite or estimate the number reached.

Direct contacts = ~ 1,310 people, (705) through the presentations listed below and (605) via presentations during the first year of the grant

- Ames, J., McLellan, I., and Nita, M. (2025). 2024-2025 Winchester Biopesticide Trials and Disease Modeling Efforts, Oral, Virginia Vineyards Association Summer Technical Meeting, July 31, 2025, 85 people.
- Ames, J., McLellan, I., and Nita, M. (2025). Preliminary field trial results on biopesticides against grape downy mildew in Virginia, 2024, Plant Health 2025, Honolulu, HI, August 4, 2025, 300 people.
- Nita, M., N. Ohishi, Ohno, S., and Hayashi, K. (2025). An assessment of environmental factors influencing grape downy mildew incidence with a random forest approach, Plant Health 2025, Honolulu, HI, August 4, 2025, 300 people.
- Ames, J., McLellan, I., and Nita, M. (2025). Student Research Notes, Oral, AHS AREC Field Day, 595 Laurel Grove Road, Winchester, VA 22602, September 12, 2025, 20 people.

Indirect contacts = ~ 15,427 as of Dec 2025

- Ext.grapepathology.org attracted more than 11,000 pageviews this year.
- Virginia Tech Grape Pathology Facebook attracted 4,427 pageviews

4.3 Final Report (June)

Describe how the technical or material content of the project was or is planned to be shared with stakeholders or beneficiaries, and cite or estimate the number reached. List title, date, type (article, brochure, presentation, or other), purpose, and estimated audience reached. Provide a copy or link if (when) available for inclusion on the virginiawine.org site.

Nita, M., and Ames, J. (2026). *Tools for Grape Disease Risk Assessment*, Oral, North Carolina Winegrowers Association, Winston-Salem, NC, February 20, 2026 (~60 people)

Nita, M., and Ames, J. (2026). *Preliminary results from downy mildew biopesticide trials 2024-25*, Oral, North Carolina Winegrowers Association, Winston-Salem, NC, February 20, 2026 (~60 people)

Ames, J., McLellan, I., and Nita, M. (2026). *Alson H. Smith AREC Downy Mildew Research Notes: 2024-2025*, Oral, Virginia Vineyards Association Winter Technical Meeting, 710 S Main St Ste 149, Harrisonburg, VA 22801, February 24, 2026. (~50 people)

Nita, M. (2026). *Vineyard 201*: Oral, Virginia Vineyards Association Winter Technical Meeting, 710 S Main St Ste 149, Harrisonburg, VA 22801, February 24, 2026. (~50 people)

Ames, J., McLellan, I., and Nita, M. (2026). *Development and Validation of a Grape Downy Mildew Disease Forecasting System*, Oral, APS Potomac Division Meeting, 1 Baltimore Ave, Rehoboth Beach, DE 19971, 26 March, 2026. (~65 people)

Nita, M., and Ames, J. (2026). *Research Results on Biopesticide Use for Downy Mildew*, Oral, Eastern Winery Expo, Richmond, VA, 25 March 2026 (~ 80 people)

Ames, J., McLellan, I., and Nita, M. (2026). *Alson H. Smith AREC Downy Mildew Research Notes: 2024-2025*, Oral, Hampton Roads Agricultural Research and Extension Center Berry Field Day, 1444 Diamond Springs Rd, Virginia Beach, VA 23455, 2 June, 2026. (~40 people)

Nita, M. (2026) Virginia Grape Disease Updates, online blog, <https://ext.grapepathology.org>: weekly updates since April, the downy mildew model results were posted every week, then redistributed through Facebook and Twitter. From January 1st 2026, the blog attracted 10,409 pageviews, Facebook page had 3,648 views, Twitter reached 330 users.

Nita, M., Ames, J., and McLellan, I. (2026) Grape Disease Management and Research Updates, Oral, Virginia Vineyard Association, July 1st, 2026 (*to be presented*)

We are also preparing an article to be published on a scientific journal.

5.0 BUDGET

Budget Summary			Mid-Year Research/Education only		Final	
Expense Category	5.1 Request	5.2 Awarded	5.3 Spent	5.4 Remaining	5.5 Spent	5.6 Remaining
Personnel	\$34,887		17,940	16,947	33,754	1132
Fringe Benefits	\$3,645		1,390	2,255	3,036	608
Contractual						
Travel	\$188		0	188	0	188
Supplies						
Equipment (Rental)						
Other	\$17,280		8,549	8,731	17,098	182
Total	\$56,000		27,879	28,121	53,889	2,110