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Impact of cluster leaf removal on grape disease pressure for cold-hardy hybrid cultivars under climatic conditions of eastern Canada.

Caroline Provost[1](cprovost@cram-mirabel.com), Annie Lefebvre[2] and Odile Carisse[2]

[1]Centre de recherche agroalimentaire de Mirabel, 9850 Belle-Rivière, Mirabel, Québec, Canada, J7N 2X8.
[2]Agriculture and Agri-Food Canada, Research Centre, 430 Gouin Blvd., Saint-Jean-sur-Richelieu, QC, Canada, J3B 3E6

Introduction

Fruit zone management (FZM) involves leafing around grape clusters and thinning clusters. One of the main objectives of the FZM is to improve the aroma, flavor and pigment profiles of the grape, promote earlier maturity, and reduce disease. Despite the apparent advantages of FZM on grape quality, the precise impact on disease development is not well documented. FZM is expected to limit the development of grape diseases such as bunch rot by Botrytis (Botrytis cinerea), downy mildew (Plasmopara viticola) and powdery mildew (Erisyphe necator) (Zoecklein et al. 1992 ; Percival et al. 1994). The impact of these practices involves the promotion of a microclimate less favorable to the development of the disease and better penetration of fungicides into the canopy (Huglin and Schneider 1998). However, the timing of the application of the practices is crucial to have the targeted effect.

Aim

Study the influence of fruit zone management practice on microclimate, fungicide penetration (cover efficiency), fungal disease development, pathogen populations and yield losses (damage).

Methods

In 2020, FZM were evaluated for their effect on downy mildew in plots planted with Vidal blanc, and on powdery mildew and Botrytis bunch rot in plots planted with Seyval blanc (3 repetitions, 5 vines). At both sites and for both grape varieties, the following five practices of leafing around the cluster zone were:

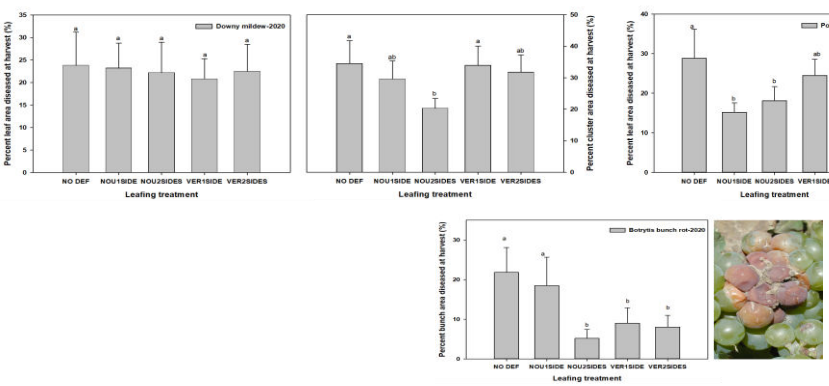
1) one side of the row at nouaison
2) two sides of the row at nouaison
3) one side of the row at veraison
4) two sides of the row at veraison
5) no leafing (control)

Parameters:

- Microclimate (temperature, relative humidity, leaf wetness, solar radiation)
- Fungicide penetration (hydrosensitive paper)
- Downy mildew and powdery mildew, on leaves and at harvest on clusters
- Botrytis bunch rot was assessed at harvest on clusters
- Disease pressure (pathogen's airborne inoculum)

Results and discussion

Regardless of the treatment, the effect of FZM practices was small but significant. For both timing of leaf removal, nouaison and veraison, lower disease severity was observed when leaves were removed on both sides of rows, and this mainly on clusters. Overall, lower disease severity was observed when leaves were removed at nouaison as compare with veraison. The difference in disease severity may be explained by lower humidity and better fungicide penetration in the canopy where leaves around the clusters were removed on both sides of rows. The removal of leaves from the fruiting area promoted the penetration of fungicides during a localized treatment but also of general coverage. Results will be included in a comprehensive strategy developed to reduce disease and fungicide resistance development under northeastern conditions.



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