IHI379 - Vineyard variability: traditional and precision approaches

Dr. Matteo Gatti

COURSE CONTENTS

1 - Factors affecting vine growth, yield and fruit quality. Origin of vineyard variability and the concept of “terroir”. Different approaches to variability: regional, within-field, within-plant.

2 - Traditional approaches to vineyard variability: site selection and zoning. Description of specific wine-growing districts in Old and New World viticulture countries..

3 - Precision farming as a new approach to vineyard variability. Definition of precision viticulture. Drivers of vineyard variation. Spatial variation in vine vigor, grape yield and fruit composition.

4 - Monitoring variability. Remote sensing platforms and different resolutions. Proximal sensing tools for monitoring of soil, canopy, yield and fruit composition. Vegetation indices. Vigor maps and their ground-truthing.

5 - Prescription maps and target management within vineyards. Variable-rate applications in the vineyard: fertilization, leaf-removal, selective harvesting. How robotics can assist vineyard management?

6 - Invited seminars on specific topics. Working groups. Wine sensory analysis. Visits at representative vineyards and wineries.

SCHEDULE

Fall Semester

PREREQUISITES

None.

METHOD OF TEACHING

35 teaching hours (indoor) + 12 hours (practices including field trips, seminars and wine sensory analysis)

COURSE REQUIREMENTS

It is strongly recommended to attend classes.

CREDITS

6 ECTS

GRADING

Final oral examination.

COURSE READINGS AND MATERIALS

All the readings will be available in a course pack and the lecturer’s slides will be available on Blackboard.

INSTRUCTOR BIO

Prof. Matteo Gatti

Matteo Gatti, graduated in agricultural sciences (5 years, MSc) in 2004 at the Università Cattolica del Sacro Cuore of Piacenza where he is currently a research fellow at the Departememnt of Sustainable Crop Production (Section of Fruit Culture and Viticulture). He participated in the “Module Terroir” of the International Master of Science Vintage at the Ecole Supérieure d’Agriculture of Angers (France). In 2006 he obtained his degree in Viticulture and Oenology (BSc) at UCSC of Piacenza. In 2012 obtained his PhD at the University of Angers working on “Evaluation of the Terroir Effect on Wine Stilbenes Concentration”. From November 2013 to Mai 2014 he has been invited research fellow at the School of Chemistry of the University of Auckland for a 6 moths stay establishing the research “New Viticultural Trials on Central Otago Pinot Noir”. He received the “International Brunello di Montalcino Case Basse Soldera” award 2010, and the Italian

Society of Viticulture and Enology (SIVE) award “G. Versini” in 2011. Dr. Gatti has authored or co-authored of 30 papers published in international, refereed journals and 15 edited in international refereed proceedings. His main research field are grape physiology, breeding, vineyard management, precision viticulture and viticultural zoning.

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