

VINEYARD IRRIGATION

NOT TOO LITTLE, OR TOO MUCH!



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WHY GET YOUR WATER RIGHT?

- **TOO MUCH IRRIGATION:**
 - CAUSES EXCESS VEGETATIVE GROWTH AND CAN LEAD TO GREEN FLAVORS IN GRAPES
 - EXCESS GROWTH CAN PROMOTE MILDEW
 - TANINS AND PHENOLS CAN ALSO BE ADVERSELY IMPACTED
- **TOO LITTLE IRRIGATION:**
 - POOR FRUIT SET!
 - DELAYED OR INCOMPLETE RIPENING
 - STRESS TO VINES WHICH WILL IMPACT HARVESTS IN FUTURE YEARS

FIRST MOST IMPORTANT THING

- FLOWERING TO FRUIT SET IS A CRITICAL TIME WHEN YOUR VINES SHOULDN'T BE WATER DEPRIVED.
- IF THEY ARE, YOU WILL GET POOR FRUIT SET AND A SMALLER HARVEST
- IF IN DOUBT ABOUT SOIL MOISTURE, GIVE EM WATER DURING THIS TIME!
- IF IT GETS HOT ANYTIME DURING FLOWERING TO FRUIT SET, GIVE EM EXTRA WATER!



SECOND MOST IMPORTANT THING - YOU

- IF YOU HAVE A VINEYARD MANAGER, YOU STILL NEED TO REGULARLY WALK THRU YOUR VINEYARD AND OBSERVE - AND MANAGE YOUR VINEYARD MANAGER!!
- ITS EASY TO SEE SIGNS OF OVER OR UNDER WATERING
- ... AND ITS ONE OF THE MOST IMPORTANT THINGS FOR QUALITY AND QUANTITY AT HARVEST
- AND, ONCE YOU START DOING IT, AND LEARNING WHAT TO LOOK FOR, ITS FUN!

VISUAL SIGNS OF WATERING

- LOOK AT TENDRILS NEAR THE GROWING TIP
 - ARE THEY DRY OR GREEN AND DANCING UPWARDS
 - ARE ANGLED THEY SIDEWAYS OR HORIZONTAL
 - ARE THEY DRIED OUT, OR NOT PRESENT (TOO LITTLE WATER)
- LOOK AT OVERALL RATE OF GROW AND DISTANCE BETWEEN LEAVES
- LOOK AT THE GROWTH OF LATERALS
- LOOK AT LOWER LEAVES: ARE THEY DRY OR TURNING YELLOW PREMATURELY?



CVC Stress Index





3 – Moderate Stress



4 – High Stress



5 – Excessive Stress



Stress Index 0: Tendrils past the tips, vigorous growth.

Stress Index 1: Growth begins to slow; tendrils are not very far past tips.

Stress Index 2: Slower growth, growth has slowed to the point where expanding leaves are nearing or even with tips; canopy is green and both sun and shade leaves are cool to the touch.

Stress Index 3: Tip Growth has stopped, tips have fallen back behind expanding leaves, canopy is green, sun leaves feel warm at midday and shade leaves are still relatively cool.

Stress Index 4: Tips are further behind expanding leaves, some basal leaves are yellowing, sun leaves feel warmer in the heat of the day and some shade leaves may feel warm. A few tips are dried up or missing.

Stress Index 5: A significant number of the growing tips are dried or missing. There is substantial yellowing in the canopy, leaf scorch and dried leaves. Sun leaves feel hot and shade leaves are very warm. Fruit damage is visible (dehydration, raisining).

HOW TO CALCULATE HOW MUCH WATER PER VINE/WEEK

- NUMBER OF EMITTERS PER VINE * FLOW RATE PER EMITTER * HOURS OF IRRIGATION * NUMBER OF IRRIGATIONS PER WEEK
- EXAMPLE:
 - 2 EMITTERS PER VINE
 - ½ GALLON PER HOUR WATER PER EMITTER
 - 3 HOUR IRRIGATION RUN
 - 1 TIME IRRIGATION PER WEEK
 - EQUALS ($2*0.5*3*1 = 3$ GALLONS PER VINE PER WEEK)

VINE AREA AND IRRIGATION NEEDS

- A VINEYARD WITH 3 BY 5 SPACING HAS A 3 FEET LONG VINE CANOPY GROWING AREA PER VINE AND 15 SQUARE FEET OF LAND AREA PER VINE
- A VINEYARD WITH 6 BY 6 SPACING HAS A 6 FOOT LONG CANOPY GROWING AREA AND 36 SQ FEET LAND AREA PER VINE
- THE VINEYARD WITH 6 FOOT LONG CANOPY/VINE NEEDS GENERALLY TWICE AS MUCH WATER AS A VINE WITH 3 FOOT LONG CANOPY/VINE BECAUSE IT IS TWICE AS BIG
- SO GALLONS OF WATER PER VINE PER WEEK DOESN'T ACCOUNT FOR SPACING, BUT GALLONS OF WATER PER FOOT OF VINE CANOPY LENGTH IS A GOOD WAY TO COMPARE

VINE IRRIGATION TYPICAL RATES

- A GENERAL GUIDE: IN LAMORINDA MANY VINES NEED AROUND 1 GALLON OF WATER PER FOOT OF CANOPY LENGTH/WEEK
- A 3 FOOT LONG CANOPY = 3 GALLONS OF WATER PER VINE PER WEEK
- A 6 FOOT LONG CANOPY = 6 GALLONS OF WATER PER VINE PER WEEK
- **MORE WATER MAY BE NEEDED IN JULY AND AUGUST AS THE TEMPS WARM.. WATCH YOUR VINES FOR WATER STRESS!**
- **NOTE: OBSERVE AND KNOW YOUR VINES.. AND ADJUST THESE SUGGESTIONS BASED ON HOW MUCH RELATIVE WATER YOUR VINES NEED**

WHAT TO DO ON HOT DAYS???

- WHEN IT'S GOING TO GET HOT, GIVE YOUR VINES MORE WATER RIGHT BEFORE IT'S HOT, EVEN BEFORE EVERY HOT DAY
- DAVE REY'S SUGGESTIONS:
 - IF TEMPS WILL REACH 95 DEGREES, GIVE $1/3$ GALLON OF EXTRA WATER PER FOOT OF CANOPY LENGTH PER DAY
 - IF TEMPS WILL EXCEED 100 DEGREES, GIVE $2/3$ GALLON OF EXTRA WATER PER FOOT OF CANOPY LENGTH PER DAY
 - (EXAMPLE: FOR 6 FOOT CANOPY PER VINE, GIVE 2 GALLONS/VINE BEFORE 95 DEGREE DAY, 4 GALLONS BEFORE 100 DEGREE DAY)

VINE IRRIGATION SUGGESTIONS

- GENERALLY, IRRIGATION SHOULD BE STARTED BEFORE FLOWERING, UNLESS YOU HAVE DEEP ROOTS OR WET SOILS!
- DON'T UNDER WATER BETWEEN FLOWERING AND FRUIT SET, OR YOU WILL END UP WITH POOR FRUIT SET
- DON'T TURN THE WATER ON DURING THE HOT PART OF THE DAY.. IRRIGATING OVERNIGHT OR VERY EARLY MORNING IS BEST
- **FINE TUNING?: THE LATEST RESEARCH SAYS CUTTING BACK ON WATER AFTER VERASION DOES NOT CREATE SMALLER BERRIES OR BETTER WINE... SLIGHT DEFICIT JUST BEFORE VERASION MAY HELP THOUGH**

HAVE QUESTIONS, NEED ADVICE

- IF YOU HAVE QUESTIONS OR WANT TO GET HELP WITH ANALYZING YOUR VINEYARD OR IRRIGATION RATES
- EMAIL BOARD MEMBER GERARD VAN STEYN AT GERARDVS1@GMAIL.COM
- GERARD IS HAPPY TO HELP YOU DETERMINE HOW YOUR IRRIGATION COMPARES TO OTHER SIMILAR VINEYARDS AND CAN HELP WITH REVIEWING VISUAL SIGNS AS WELL