

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

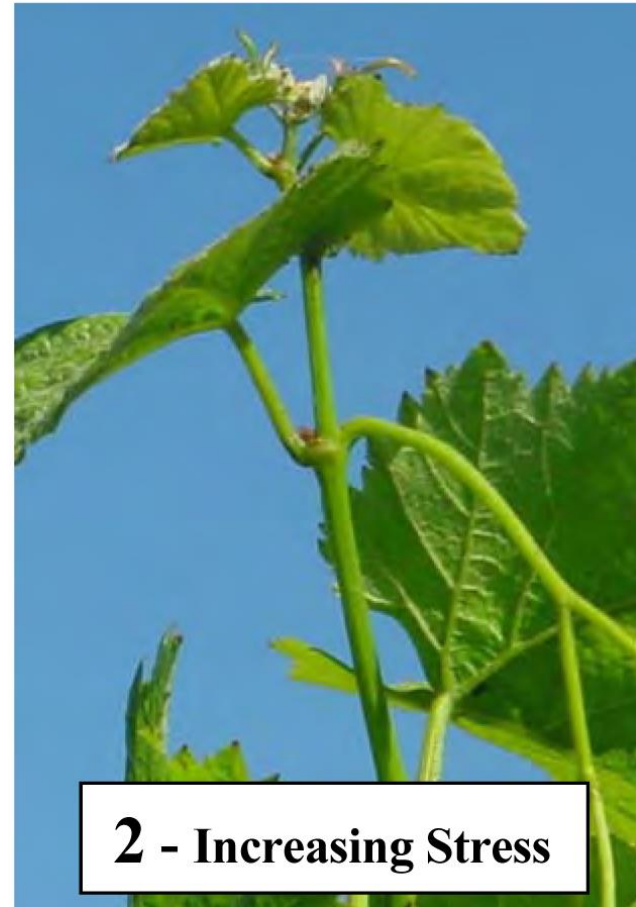
- IF YOU HAVE A VINEYARD MANAGER, YOU STILL NEED TO REGULARLY WALK THRU YOUR VINEYARD AND OBSERVE - AND MANAGE YOUR VINEYARD MANAGER!!
- ITS EASY TO SEE SIGNS OF OVER OR UNDER WATERING
- ... AND ITS ONE OF THE MOST IMPORTANT THINGS FOR QUALITY AND QUANTITY AT HARVEST
- AND, ONCE YOU START DOING IT, AND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





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).

VINE AREA AND IRRIGATION NEEDS

- A VINEYARD WITH 3 BY 5 SPACING HAS 15 SQ FT PER VINE
- A VINEYARD WITH 6 BY 6 SPACING HAS 36 SQ FEET PER VINE
- THE VINEYARD WITH 6 BY 6 SPACING HAS VINES THAT ARE OVER TWICE AS LARGE AND NEEDS OVER TWICE AS MUCH WATER
- SO GALLONS OF WATER PER VINE PER WEEK DOESN'T ACCOUNT FOR SPACING

VINE IRRIGATION TYPICAL RATES

- A VINEYARD WITH 3 BY 3 SPACING MAY NEED BETWEEN 3 TO 8 GALLONS PER VINE PER WEEK
 - 4 GALLONS PER WEEK = .43 INCHES/SQ FT; 8 GALLONS/WK = .86 INCHES/SF/WK
- A VINEYARD WITH 6 BY 6 SPACING MAY NEED BETWEEN 6 TO 20 GALLONS PER VINE PER WEEK
 - 10 GALLONS/VINE/WEEK = .45 INCHES/SQ FT ; 20 GALLONS/WK = .90 INCHES/SF/WK
- **GENERALLY, MORE WATER IS NEEDED IN JULY AND AUGUST AS THE TEMPS WARM**
- **MOST VINEYARDS IN LWGA WILL NEED WATERING BETWEEN THE LOW AND MID RANGES LISTED, SINCE ITS NOT OVERLY HOT IN OUR AREA**

VINE IRRIGATION SUGGESTIONS

- GENERALLY, IRRIGATION SHOULD BE STARTED BEFORE FLOWERING, UNLESS YOU HAVE DEEP ROOTS!
- GIVE YOUR VINES AN EXTRA SHOT OF WATERING BEFORE BIG HEAT WAVES AND DON'T TURN THE WATER ON DURING THE HOT PART OF THE DAY
- 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
- HE CAN HELP YOU DETERMINE HOW YOUR IRRIGATION COMPARES TO OTHER SIMILAR VINEYARDS AND CAN HELP WITH REVIEWING VISUAL SIGNS AS WELL



IF YOU WANT TO GET MORE TECHNICAL?

GALLONS PER VINE PER WEEK

- THIS IS THE STARTING POINT FOR FIGURING OUT HOW MUCH WATER YOUR VINES ARE GETTING
- LOOK AT HOW MANY DRIPPER/EMITERS YOU HAVE PER VINE (MOST VINEYARDS HAVE 1 /VINE, SOME 2/VINE)
- THE FACE OR SIDE OF THE EMITTER SHOULD LIST FLOW RATE
 - $2\text{L}/\text{HR} = .5 \text{ GALLONS}/\text{HR}$
- MULTIPLY TOTAL EMITTER WATER/ HR/VINE BY HOURS OF IRRIGATION/ WK

NERD OUT: VINE WATER PER SF CALCULATION

- ONE INCH OF WATER OVER 1 SQUARE FOOT OF AREA EQUALS .62 GALLONS
- TO CALCULATE YOUR WATERING IN INCHES PER SQUARE FOOT PER WEEK:
 - IF VINEYARD IS 3 BY 5 SPACING = 15 SQ FT PER VINE
 - IF 1 EMITTER/VINE AT $\frac{1}{2}$ GALLON PER HOUR AND 8 HOURS PER WEEK
 - EQUALS $8 * .5 = 4$ GALLONS PER VINE PER WEEK
 - INCHES PER SQ FT = $((4 \text{ GALLONS} / 15 \text{ SF-VINE}) / .62 \text{ G PER SF})$
 - EQUALS .43 INCHES OF WATER PER SQUARE FOOT