***Newsletter FruitLook March 2019: Evaluate your efficiency of water use***


## FruitLook March 2019: Evaluate your efficiency of water use

*Dear Mr. Doe,*

FruitLook was initiated in 2011 to support farmers improve their water use efficiency and produce "more crop per drop". Fresh water is vital for long-term sustainable farming. Especially so in the Western Cape; the drought simply underlined the dependency on water within the irrigated farming sector. By using water more effectively, the agricultural sector becomes more resilient and sustainable. As responsible farming, which includes efficiency of water use, is increasingly relevant to overseas consumers improving water use efficiency is equally important to the competitiveness and profitability of the sector in the long run. In this newsletter we discuss three questions relating to water use efficiency (WUE): 1) What is it?, 2) How can you measure it? and 3) How can you use it?

We present 3 basic concepts of defining and calculating WUE via FruitLook. Each approach presented uses evapotranspiration as indicator for water consumption. The water consumed via evapotranspiration during the crop production process is "lost" to the local water supply system and cannot be recaptured, and becomes part again of the bigger water cycle . Hence, it is a perfect measure of actual water use.

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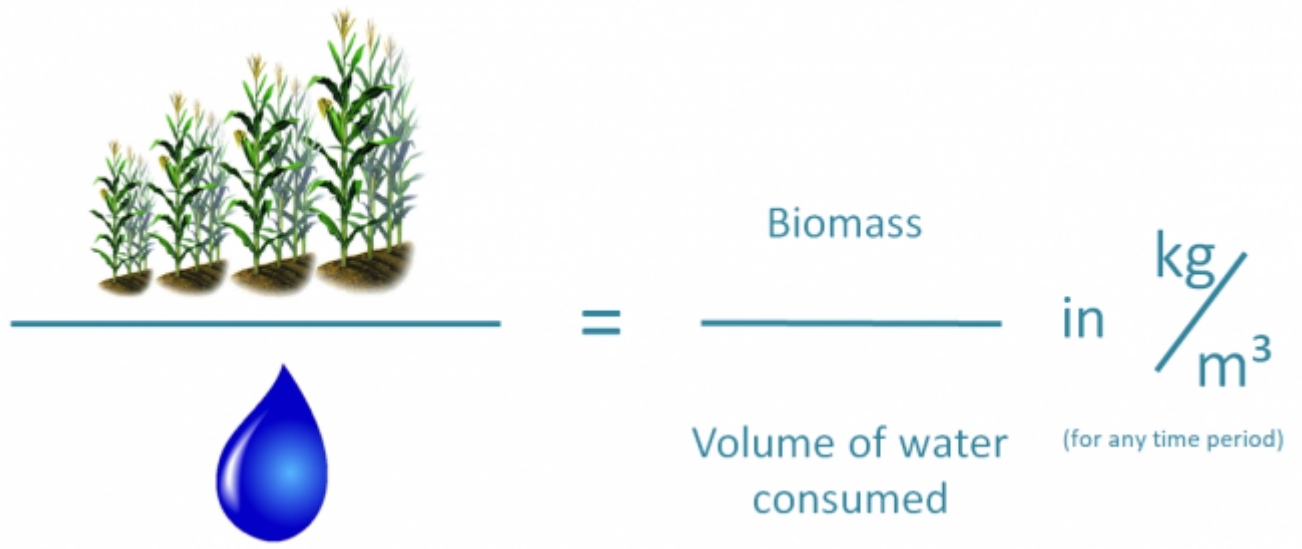
**1a. What is your Biomass Water Use Efficiency?** The Biomass Water Use Efficiency describes the amount of biomass (in kg) produced per unit of water consumed via evapotranspiration (in $m^3$) - all as part of the crop production process.




**1b. How can you calculate it via FruitLook?** The information to assess your Biomass WUE is simply available via FruitLook. In MyFields Overview you can sort your blocks according to their Biomass WUE on a weekly basis. The blocks with the highest Biomass WUE show most growth (crop and other vegetation) with the least amount of water consumed via evapotranspiration in that specific week. If you want to do it on a seasonal basis, use the Smart Export functionality to export the Biomass WUE data to Excel and subsequently calculate the average of your production season, or specific parts of the season, per production block. Focus on the active crop growth season.

**1c. Why is the Biomass WUE useful?** The Biomass WUE is an excellent first measure of water productivity, showing in-season differences between production blocks. It is directly accessible via FruitLook on a week-by-week basis, free for you to use. It might motivate you to make in-season adjustments to irrigation to increase the WUE of a specific block. Over a season, it can show you during which parts of the season your crop was water efficient and when less so, allowing you to evaluate the impact of your irrigation schedule over time.

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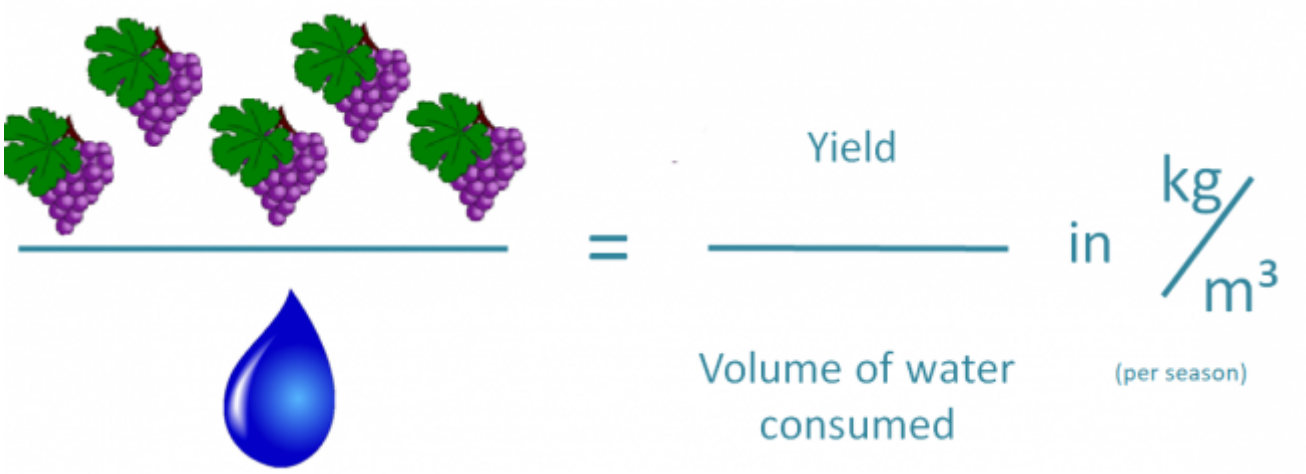
**2a. What is your Yield WUE?** The Yield WUE describes the amount of harvestable crop (in kg) produced per unit of water consumed via evapotranspiration (in $m^3$) in the crop production process.




**2b. How can you calculate it via FruitLook?** Via FruitLook, export Actual Evapotranspiration of all your production blocks via the Smart Export functionality accessible in MyFields Overview. Subsequently sum these to a seasonal sum of Actual Evapotranspiration in Excel per block. This gives you your total evapotranspiration in mm per block. To get to $m^3$/ha, multiply this number by 10. As producer you likely have yield information available per production block; bring the yield back to kg/ha by dividing the block tonnage through the block hectares. Subsequently compare your yield in kg /ha (or tons/ha) to the seasonal Actual Evapotranspiration in $m^3$ to create your Yield WUE per production block per season.

**2c. Why is the Yield WUE useful?** The Yield WUE is an excellent method to quantify how much water you consume to produce your tonnage of fruit. By determining Yield WUE per production block, you can start analyzing what causes these differences in WUE. Is it linked to the manner of irrigating, to certain cultivar types, to block age, mulching, etc? Many things can influence the water consumption of your crop during the fruit production process. The first step to improve your water use efficiency is to establish a baseline to work from: the Yield WUE can be a measure to do so. As FruitLook has been running since 2011, this analysis can be done over multiple years giving you a good estimate of your standing and development as a water efficient farmer. Interesting fact: the inverse of the Yield WUE is a crop water footprint. This expresses how much water use (in $m^3$) was consumed in producing a unit (kg) of fruit.

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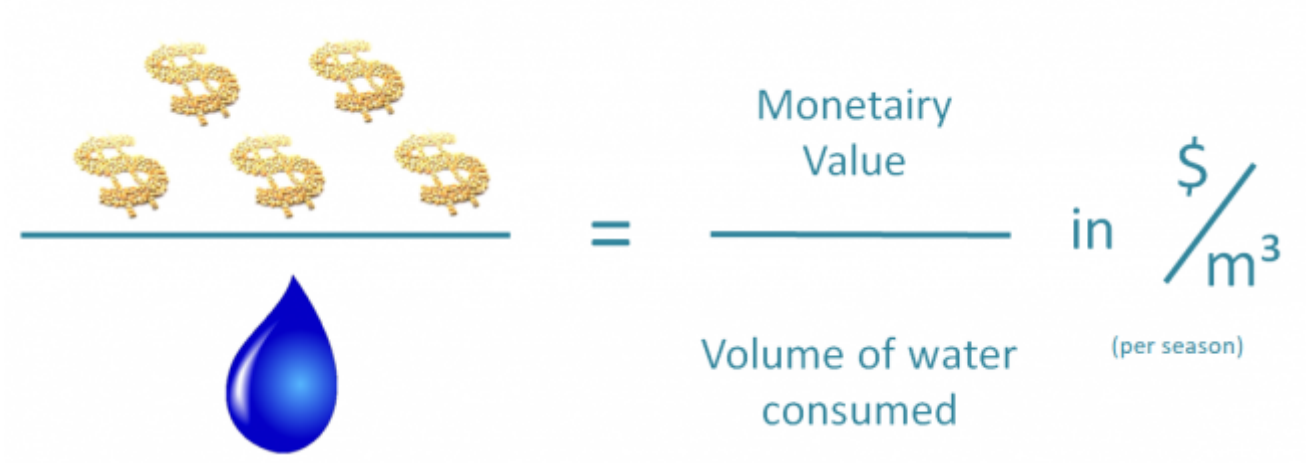
**3a. What is your Economic WUE?** The Economic WUE describes the amount of income (in ZAR, Dollar, etc.) derived from a unit of water consumed via evapotranspiration in the crop production process (in $m^3$)



**3b. How can you calculate it via FruitLook?** This measure can be a bit more challenging to generate, depending on the data you have available as a farmer. Via FruitLook, export Actual Evapotranspiration of all your production blocks via the Smart Export functionality accessible in MyFields Overview. Subsequently, sum these to a seasonal sum (based on your crop production period per block) of Actual Evapotranspiration in Excel. This gives you your total Actual Evapotranspiration in mm per block. To get to $m^3$/ha, multiply this number by 10. As a producer, you might have written records of income in ZAR per production block. Re-calculate this to income per hectare, and subsequently compare this number to the seasonal Actual Evapotranspiration per block. This gives you your Economic WUE per production block per season.

**3c. Why is the Economic WUE useful?** In the end farming is your livelihood and all effort put in needs to result in a profit. The Economic WUE can help you in strategic decision making. For example, if you have limited water resources but still would like to expand your crop area, which cultivar type will bring in the best return per unit of water needed to actually grow your crop in your region. The Economic WUE is an excellent measure to express how efficiently you turn water into Rands.

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Apart from using the FruitLook Evapotranspiration data, you might make similar assessments as presented above using information on irrigation applications and precipitation. If you want to further discuss about WUE and ways to measure this, or want to learn more about using FruitLook data in general, feel free to contact us *via* (+27) 74 322 6574 / info@fruitlook.co.za or attending one of our Elsenburg training sessions. See you soon on FruitLook!

Best regards,

The FruitLook Team



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