

Traits Related to Photosynthesis

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Bottleneck to raising genetic yield potential



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Substantial improvements in yield are possible:

- *CO₂ enrichment experiments*

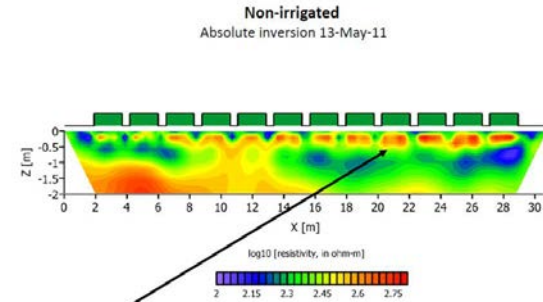




**Existing variation in
photosynthetic capacity can be
exploited to increase total
biomass production by
modern wheat cultivars**

- Soil
- Agronomy
- Weather

- Yield



Appears to show significantly reduced water content down to 0.5m, especially in the plots towards the end of the line.





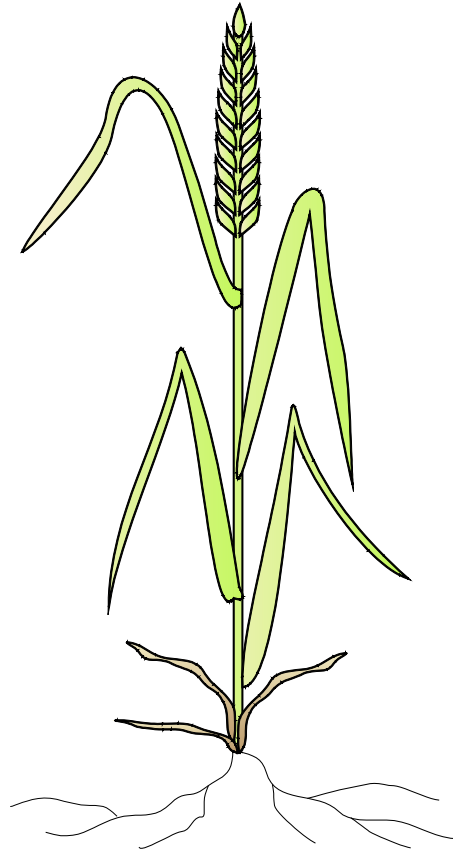
- **Interception of Radiation**
- **Duration of Photosynthesis**
- **Rate of photosynthesis**

Interception of Radiation



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- Amount
- Composition
- Area
- Angle
- Tracking



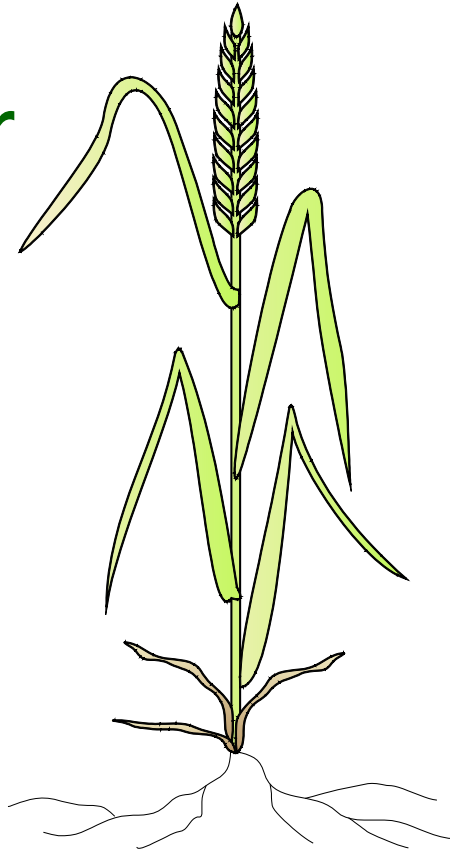
- Leaf number
- Leaf size
- LAI
- Light interception

Duration



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- Early ground cover
- Extended grain filling
- Stay green phenotype



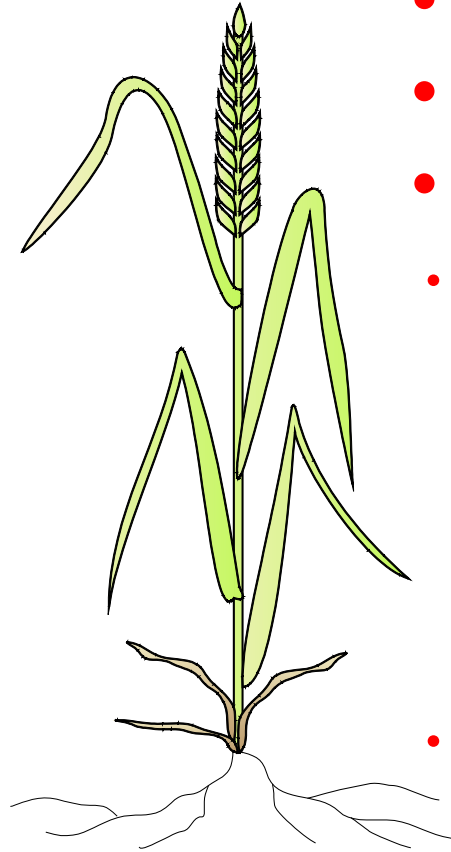
- Growth stage
- LAI
- Senescence

Capacity - physiological



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- Chlorophyll
- Rubisco content
- Rubisco activity

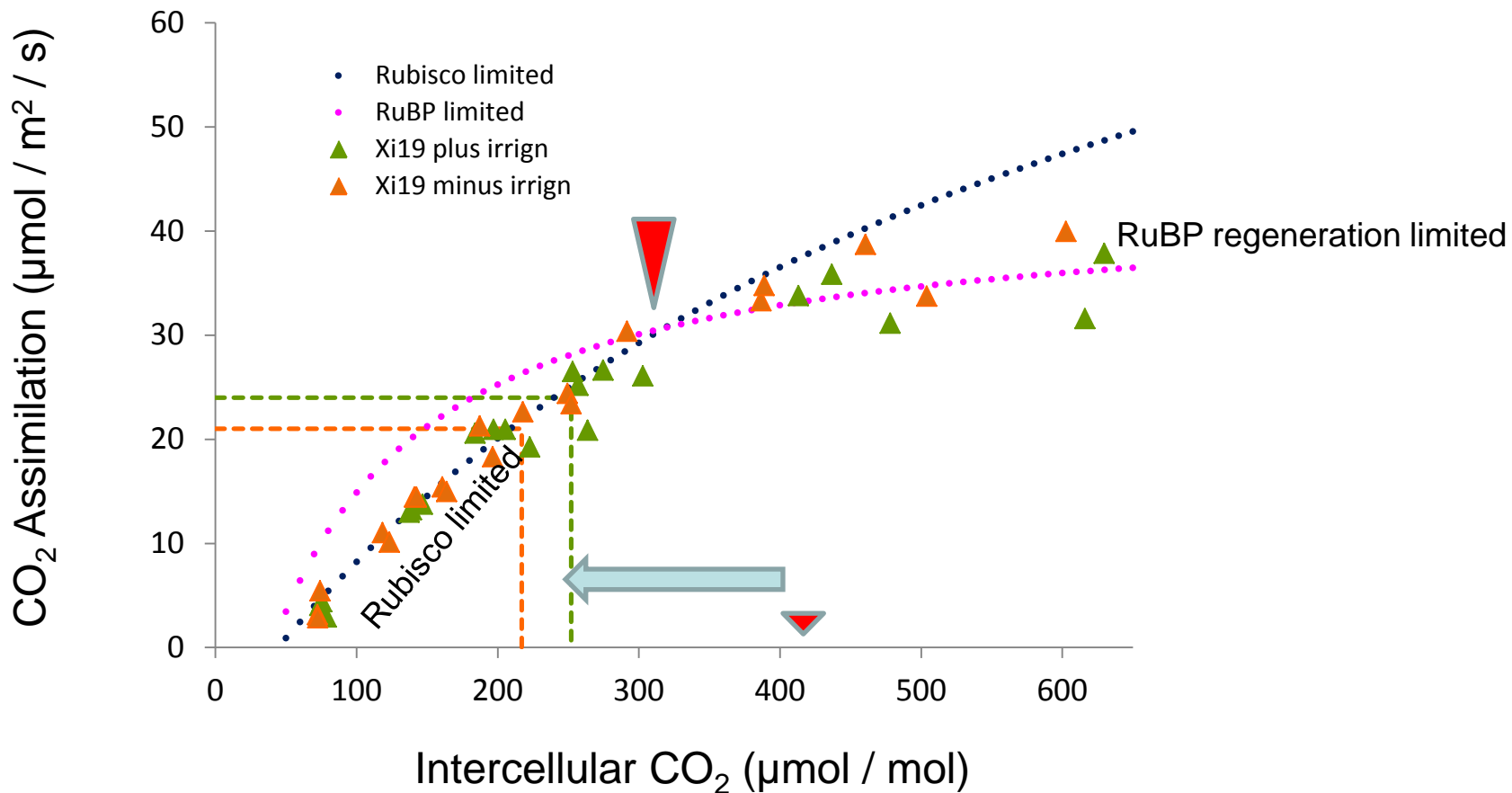


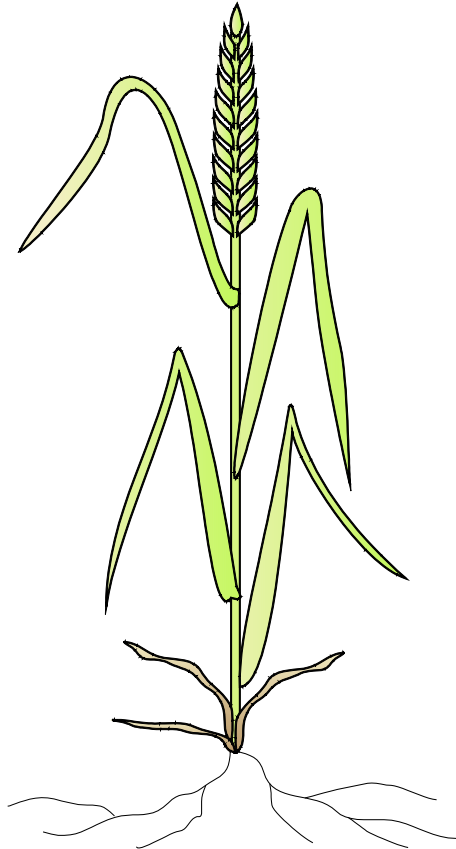
- SPAD
- Stomatal conductance
- Canopy temperature
- Fluorescence
 - Quantum yield
 - Max F yield
 - Fv/Fm
 - NPQ etc etc
- IRGA
 - Amax
 - Compensation point
 - Ci etc. etc.



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ACi for Field Grown Xi19 ± Irrigation





- Chlorophyll content
- Rubisco amount
- Rubisco initial activity
- Rubisco total activity
- Rubisco maximal activity
- Rubisco Activation state
- RuBP
- C isotope



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THANK YOU