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Plant growth and flavonoid content in a red pigmented Lactuca sativa variety as affected by different light conditions

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Test stand for the influence of different light quality on growth of horticultural plants

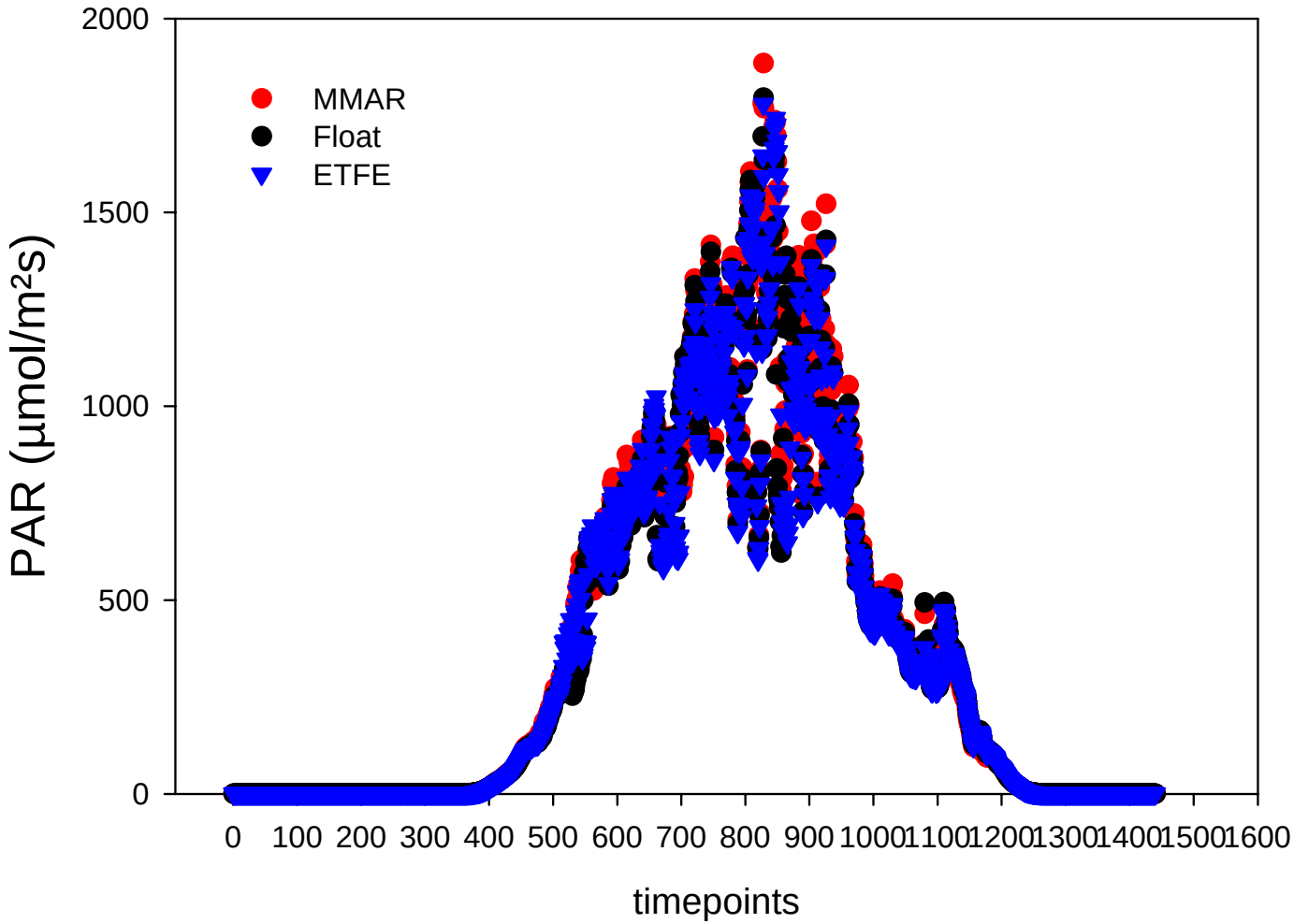
transmission of UV-B radiation of 3 different materials

ETFE- foil	MMAR- glas	Float- glas
80%	50%	6% direct sun 17% diffuse radiation

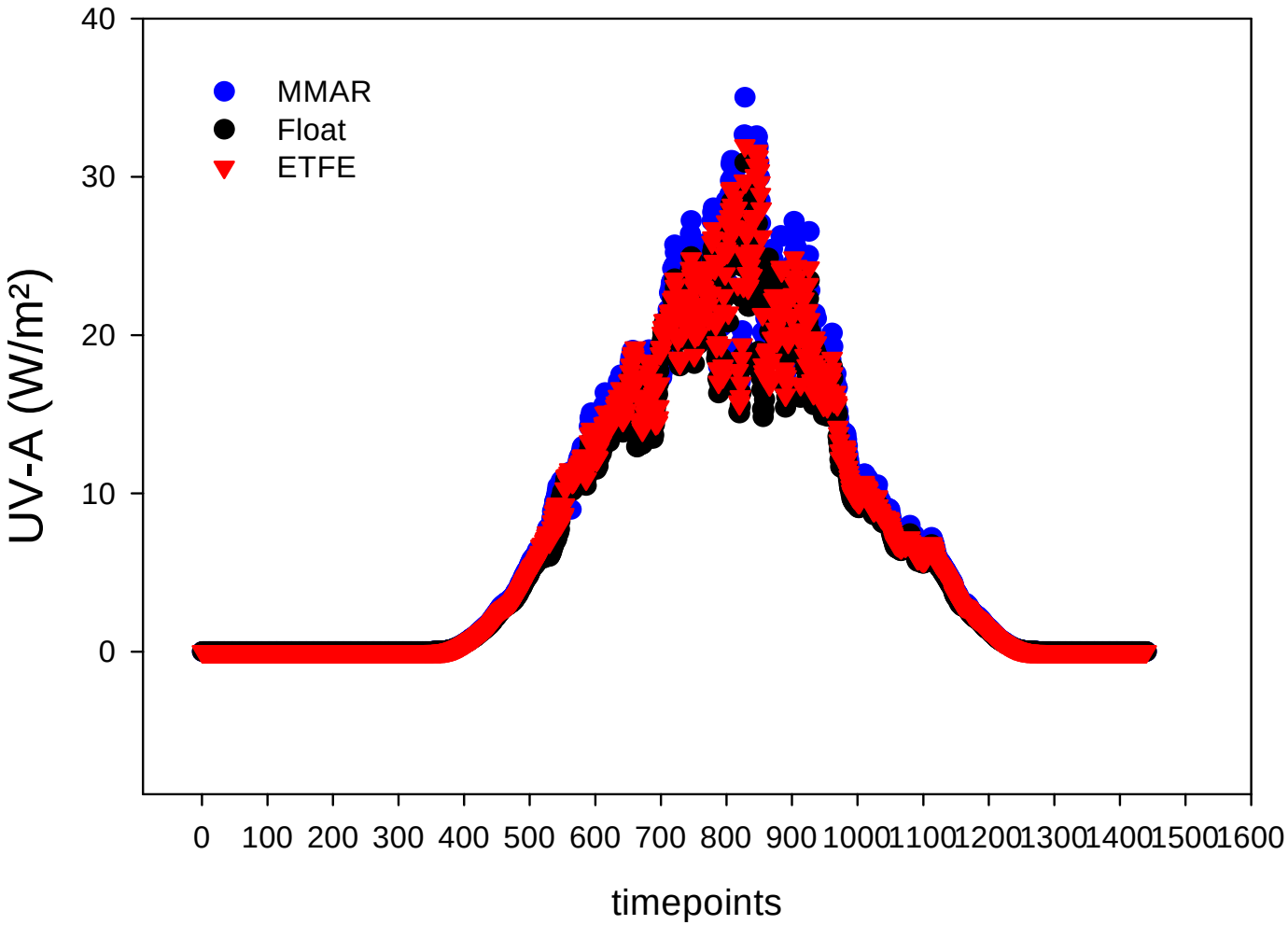
Commonly used material

No differences in transmission of UV-A and PAR radiation

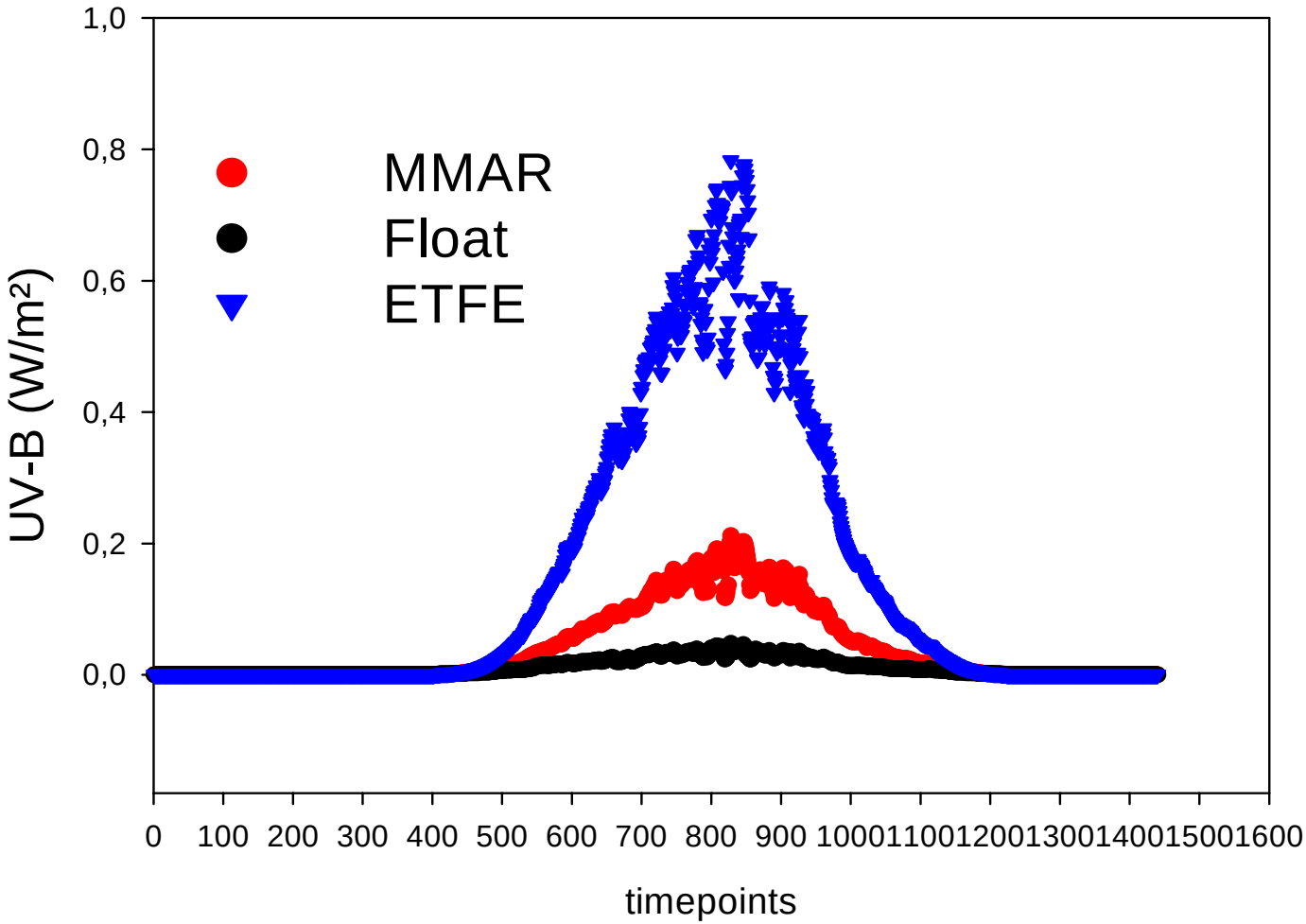
Transmittance for PAR



Transmittance for UV-A



Transmittance for UV-B

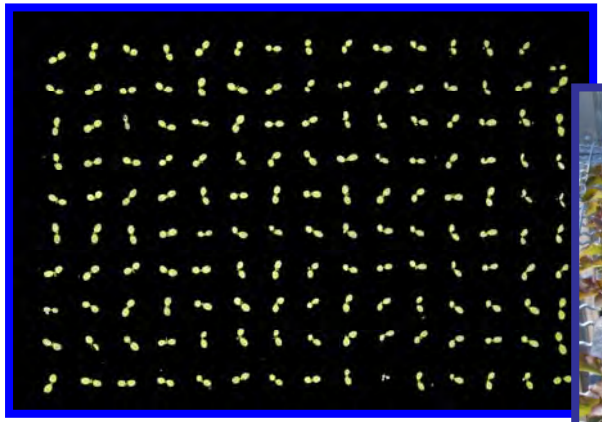


Aims of the study

to investigate the influence of UV-B radiation (280 – 315 nm) by different roofing materials on growth, photosynthesis, fluorescence, biomass and flavonoid content.

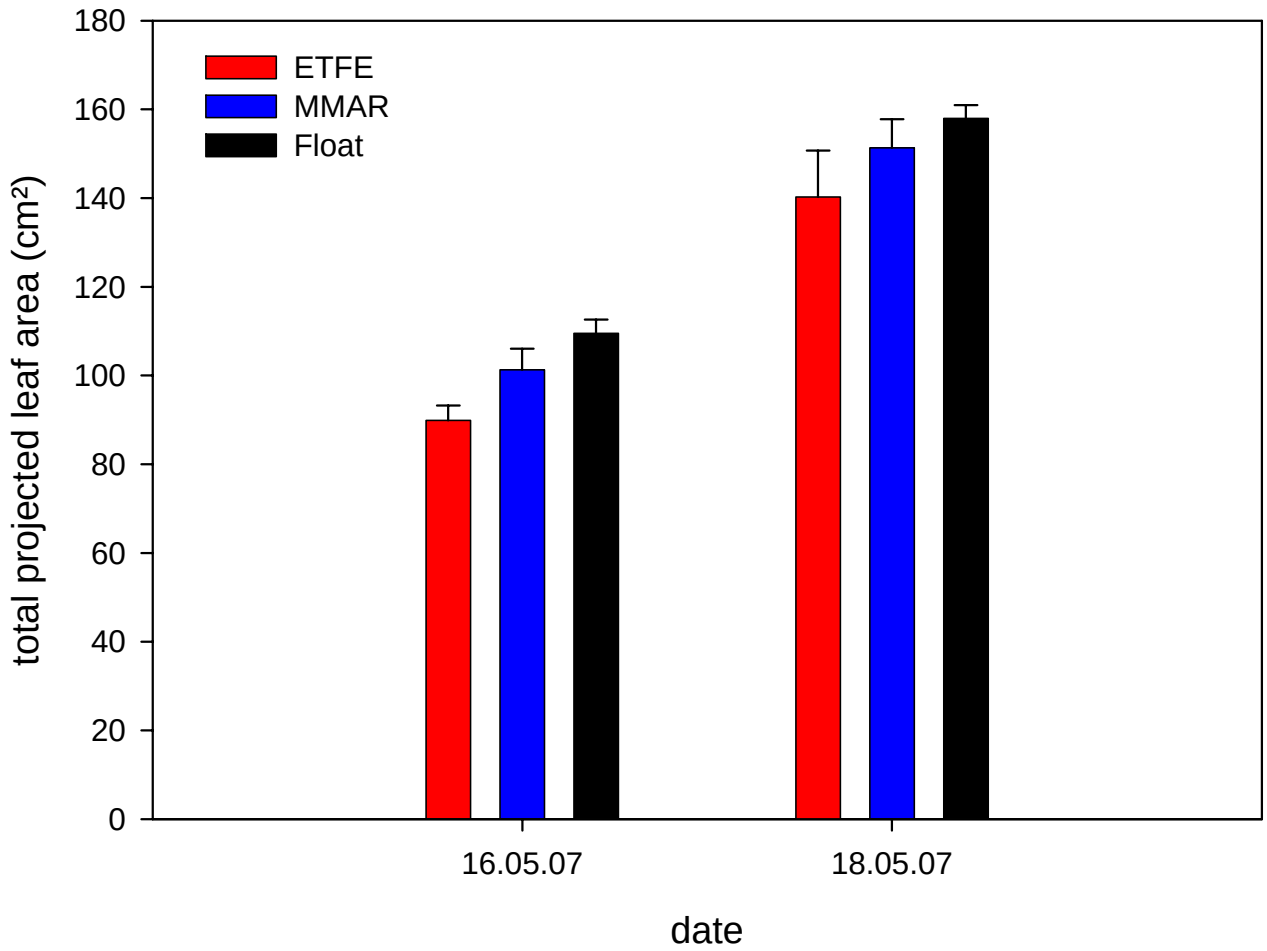
Study objects: *Lactuca sativa*, *Arabidopsis thaliana*, *Nicotiana tabacum*

Lactuca sativa plants

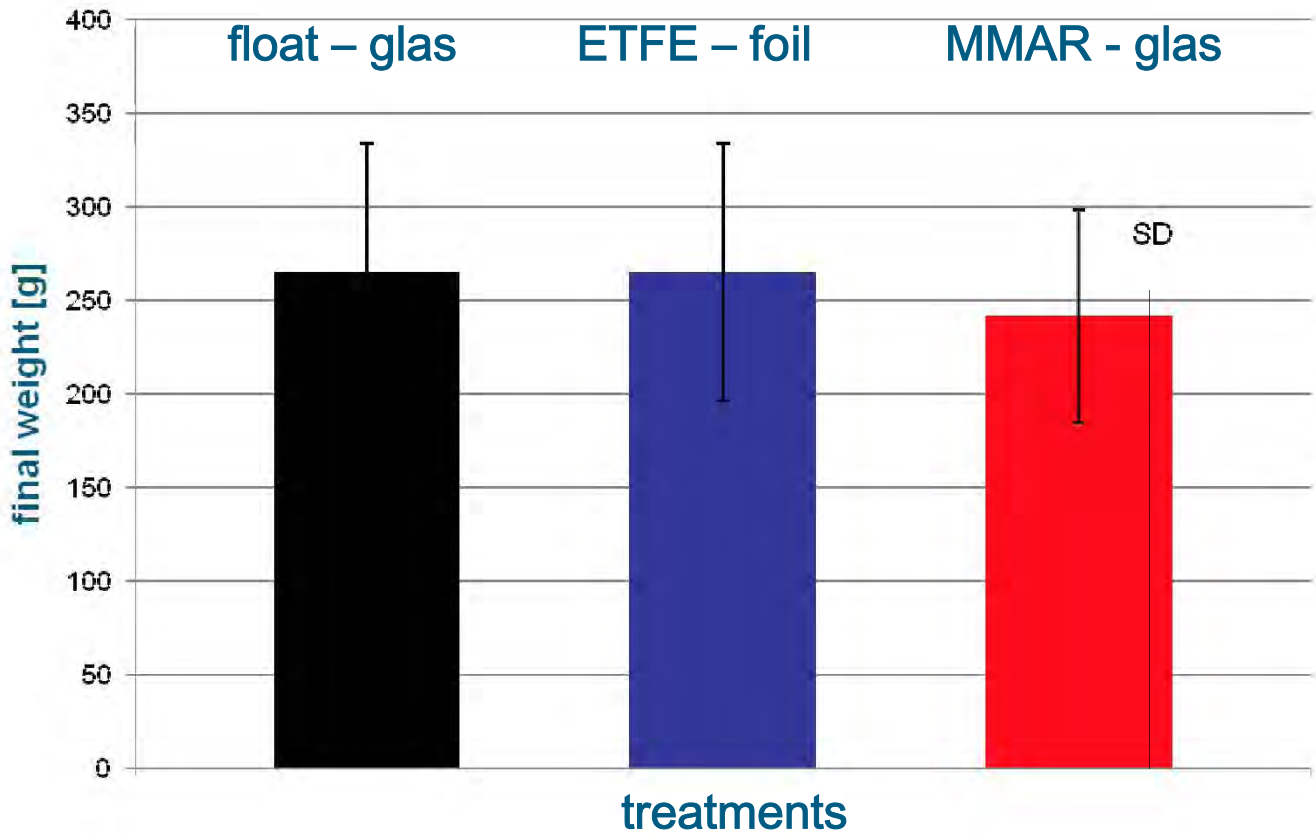


different experimental stages

Lactuca sativa plants - growth

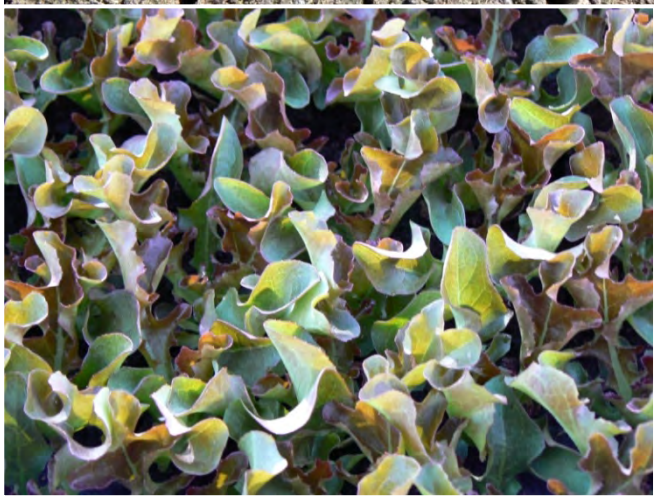


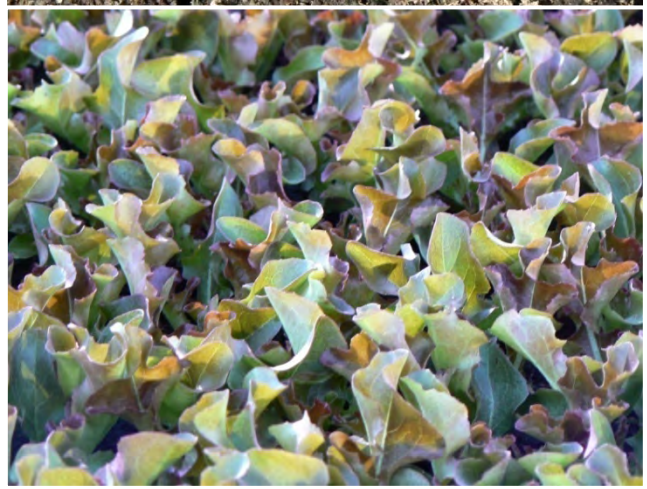
Lactuca sativa plants - yield



Lactuca sativa propagation plants

day 13

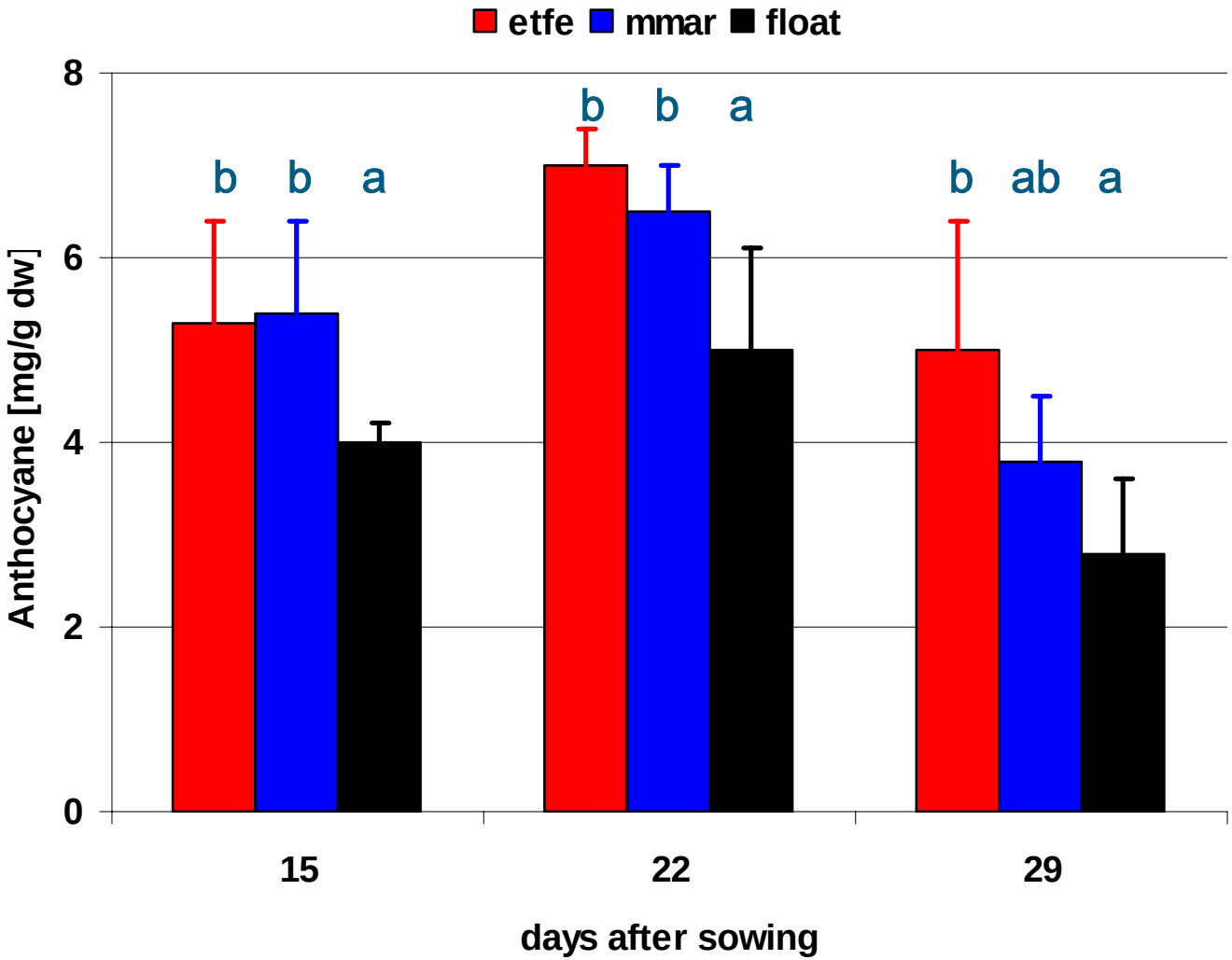




day 20

ETFE - foil → + UV-B | float - glas → - UV-B

Lactuca sativa propagation plants - flavonoids



impact of UV-B radiation to Lactuca sativa

trend to lower fresh weight

trend to lower dry weight

significantly reduced leaf area

significantly reduced relative growth rate

increased anthocyane and quercitine concentration

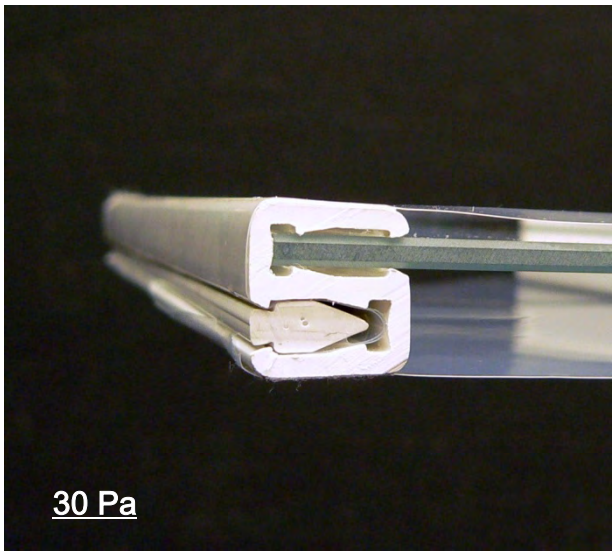
no influence in photosynthetic quantum yield

Impact of UV-B on Arabidopsis and tobacco

significantly increased leaf area

significantly increased relative growth rate

agro-industrial test stands for a new foil glas combination



Impact of UV-B on seedling hardening and ornamental quality