

In September-October 2013 similar scientific research has been conducted by the KOB Kompetenzzentrum Obstbau – Bodensee, located in Ravensburg. We recommend to read this additional KOB report.

Light reflection by Lumilys™ with apple variety Nicoter / Kanzi® under hail nets

Abstract of the testing report
Scientific research conducted by ir. Jef Vercammen, Proefcentrum Fruitteelt vzw

Aim

More and more hail nets are placed in Belgium. This often gives a poorer colouring of the fruits. Kanzi® is one of the varieties with a difficult colouring under hail nets. In this trial the aim is to determine whether it is possible to use Lumilys to reflect the light and so to minimize the light loss. In this way we hope to reduce the negative impact of hail nets on the colouring.

Experimental design

For this experiment we used trees with a planting distance of 3.50 x 1.05 m (2571 trees/ha). The trees are planted under a grey hail net. We placed the groundcover Lumilys™ on the grass strip on September 3rd, 6 weeks prior to the first picking.



Photo 1: Lumilys™ on the grass strip

Results

Photosynthesis – light measurements

We did light measurements during a long period of time on the groundcover and on the grass strip. Therefore we used a device that only detects PAR-light (photosynthesis light).

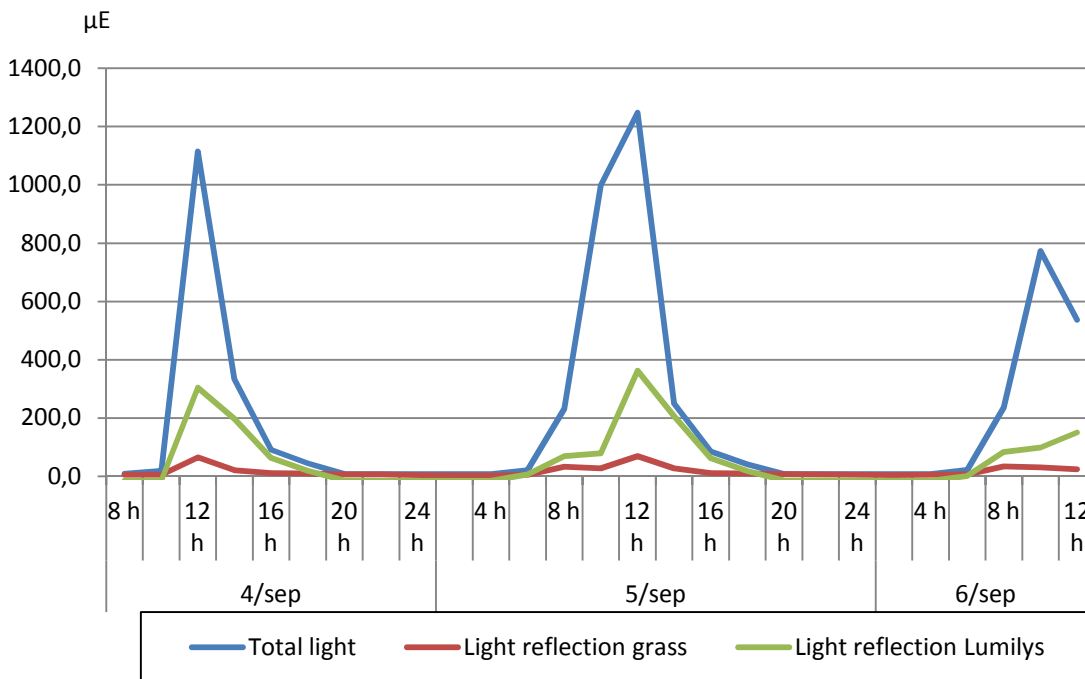


Figure 1: Light measurement on Lumilys™ from 4 until 6 September 2013 (good weather)

Important remark: On September 4th and 5th there was a supply of tropical air, whereas on September 6th a depression was upcoming. The amount of incoming sunlight was normal at the time of testing: 71,5 h sunlight | September 1-10, 2013 versus 50,8 h sunlight | normal weather conditions. Source: Royal Belgian Meteorologic Institute (KMI)

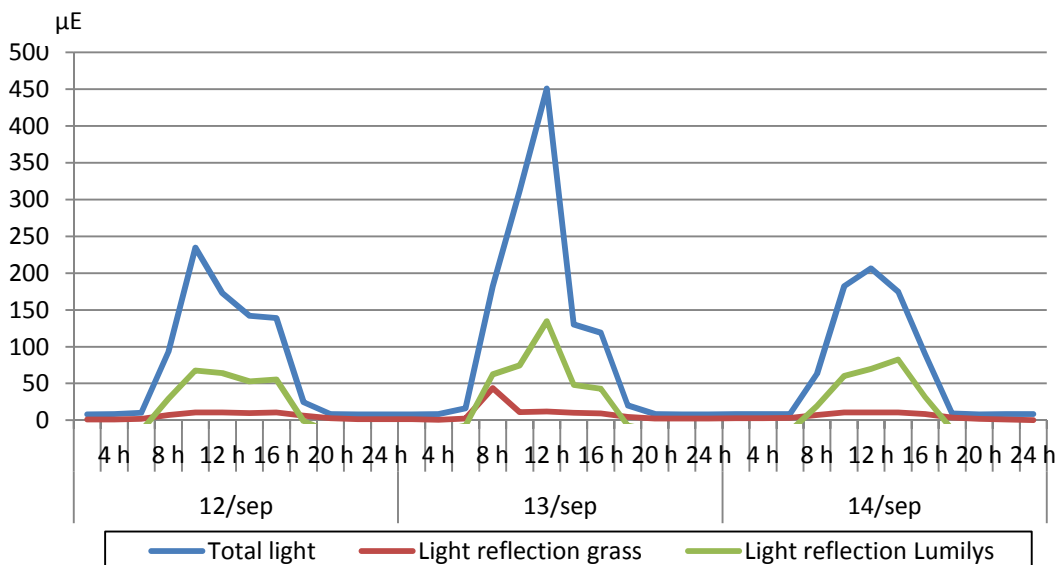


Figure 2: Light measurement on Lumilys™ from 12 until 14 September 2013 (bad weather)

Important remark: Due to the negative influence of low pressure zones between Greenland and Great Britain, the amount of incoming sunlight was extremely low at the time of testing: 22,9h sunlight | September 11-20, 2013 versus 46,3h sunlight | normal weather conditions. Source: Royal Belgian Meteorologic Institute (KMI)

In foreign countries groundcovers on the grass strip are regularly used to reflect the light to improve the colouring of the fruits. Therefore the groundcover is placed 5 to 6 weeks before picking time.

On a sunny day there is a strong reflection of the sunlight by using Lumilys™. On dark days there is also a difference in reflection between the grass strip and the ground cover, but in absolute figures less than on a sunny day.

Yield 2013

We picked Nicoter / Kanzi® in two times, namely on October 15th and October 29th.

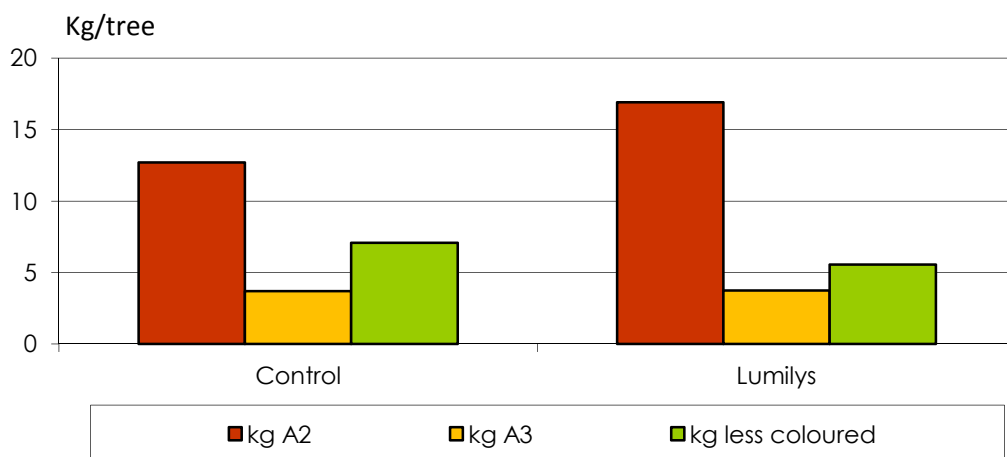


Figure 3: Colouring 2013

The amount of good coloured apples with Lumilys™ was increased with 4 kg/tree, which is an increase of 33%.

Table 1: Yield 2013

Object	Kg/tree	Kg 1 st picking	Kg 2 nd picking
Control	23.5	13.7	9.8
Lumilys™	26.2	16.9	9.4

With Lumilys™ groundcover we picked 3 kg/tree more or 23% more at the first picking time.

Fruit quality was not influenced. Light reflection could have an influence on the photosynthesis, but the amount of sugar did not increase.

By means of leaf and fruit analyses, it was examined whether Lumilys™ had an influence on the mineral composition. In general there was no influence.

Conclusion

When we convert the increase in colouring of the apples in proportion of good coloured apples in the first picking, we have an increase of 7.7 ton/ha. This is an important difference, because the apples of the first picking have a better storability and normally get a better price.