AGRICROP

SCREEN™

Heat & Light Stress Management in Citrus

Screen is a formulated wettable powder that suspends readily in water and is easily applied through most conventional spraying equipment. Once dry, Screen forms a "particle film" that reflects infrared and ultraviolet light, reducing the incidence of sunburn on plants and fruits. Under high temperatures, Screen treated plants are cooler than those that are untreated, reducing heat stress.

The Screen particle film also allows Photosynthetically Active Radiation (PAR) to pass through it and into the leaf, allowing the plant to photosynthesise normally.

Studies have shown that under hot conditions, when untreated plants shut down photosynthesis, plants treated with Screen continue to photosynthesise at high levels because the plants remain cooler and their stomata remain open. This can lead to higher levels of carbon fixation that in turn may result in benefits such as generally increased plant vigour, soluble solids (Brix), fruit number, size and colour.

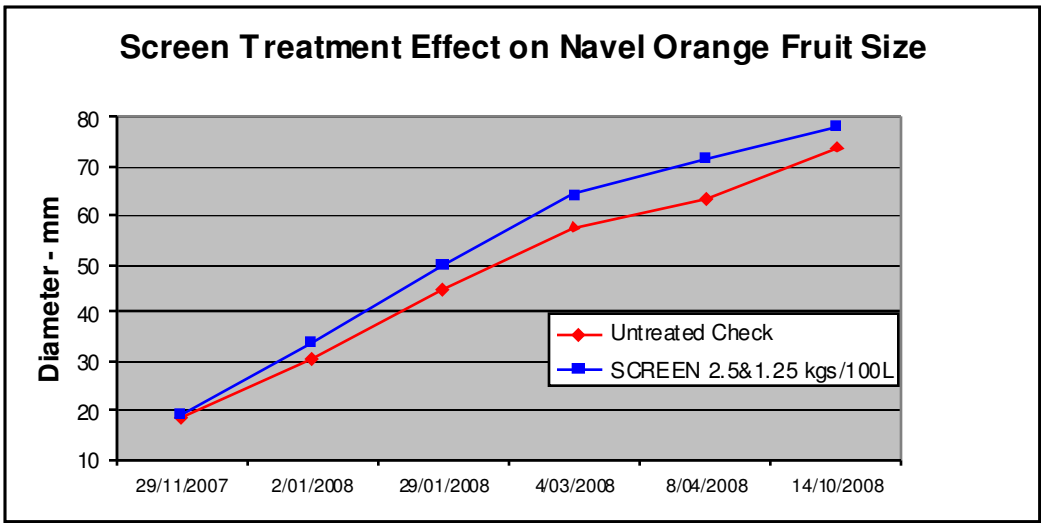
Heat Effect on Citrus

Citrus needs light and adequate temperatures for growth and to achieve a good harvest. Too much heat and light, however, can result in reduced yields and poorer crop growth. This is due to negative impacts of stress upon photosynthesis and crop water status. Heat and light stress are intimately associated; both represent high energy levels in the crop. There are a number of points in the citrus life and cropping cycle that are particularly susceptible to stress effects. They are:

Bearing Trees – Bearing trees have several stages in the cropping cycle that are sensitive to heat and light stress. Different citrus varieties have varied responses to these stresses. These can include:

Flowering/Fruit Set – Citrus can show such negative responses to heat/light as flower abortion, reduced fruit set, and fruit abortion. Up to 90 percent of fruit of varieties such as mandarins can be lost if heat occurs early in development.

Fruit Sizing – Heat events during periods of cell division early in development can reduce overall fruit size. Fewer cells can result in smaller fruit, once cell division has stopped, it cannot be restarted, so size reductions are permanent for that crop. A 2007/08 Screen trial conducted on Navel oranges in Cobram, Victoria resulted in a **4mm increase in fruit size at harvest.** This resulted in a yield increase of 7 kgs/tree or 4,670 kgs/ha.



Screen trial – Cobram, Victoria 2007/08

Fruit Quality – Low rates of photosynthesis can delay citrus development, particularly attaining required sugar content. A well applied application of Screen can result in increased sugar and juice content. Fruit coloring can also be improved with Screen; mandarin color development has been shown to be accelerated in treated varieties.

Sunburn - is the latest manifestation of heat/light stress. Varieties such as mandarins can be particularly sensitive, resulting in ruined fruit finish. Damage is worst with fruit on the terminal ends of branches, but can occur with other fruit as the canopy architecture changes.

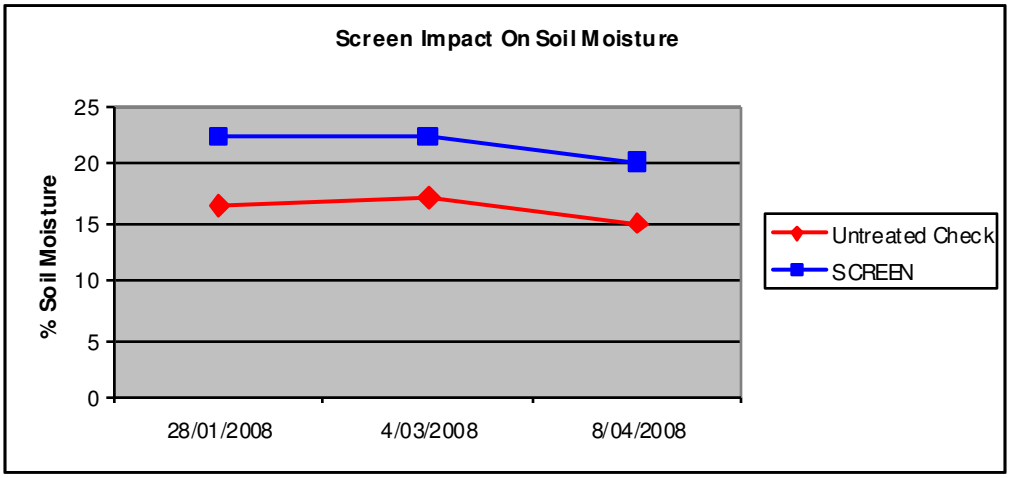
Young citrus – suffer from exposure to direct, high intensity sunlight and high temperatures. Growth can be reduced due to lowered rates of photosynthesis and water stress. The leaf morphology of young citrus is different from mature, with stomates at the leaf surface, versus protected immature citrus leaves.

Studies show that reducing light intensity improves photosynthesis, resulting in increased crop growth. A partide film such as Screen, when applied to young trees, can result in better shoot and root growth, with between four to five-fold increases compared to untreated. PFT can also result in trees coming into bearing a year earlier due to advanced development.

A well-applied and maintained Screen film can reduce these heat and light stress damages. A season-long program beginning just prior to or at flowering will reduce the impact of stress noted above.

Cooler crops use less water.

A well-applied Screen film can reduce canopy temperatures by 5°C to 10°C and reduce net radiation 20 to 30%, resulting in 30 - 40% reductions in potential water use.



Navel Oranges Trial – Cobram 2007/08

No Impact on Scale. Screen is safe to predators and can be used in Integrated Pest Management programs as it will **NOT** flare scale when used in citrus.

Compatibilities: Screen may be tank mixed with a wide range of agricultural chemicals and foliar nutrients to provide a single pass spray application. Please refer to the Screen brochure for a full list of compatible products.

Screen is easy to handle and mix. Following the initial application Screen may be applied at lower rates as it has excellent tenacity to stick to citrus fruit and foliage.

For further information please refer to the Agricrop web site:
www.agricrop.com.au/screen or please contact

David Bell **0417 501503 (Vic, Sthn NSW, Tas, SA),**

Stewart Frankling **0447-558219 (QLD, NT, WA).**

Jim Lyons **0418 831910 (Nthn NSW, QLD, SA)**

REMEMBER : Screen is easy to mix and is the most economical particle film on the market.

AGRICROP