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ALREye IMAGERY

Remote Sensing Solutions

assist in

rapid

fire damage assessment

Innovative new digital imagery technology is being put to use to formulate speedy and effective responses to timber plantations affected by the recent extensive fires across South Africa.

A very dry season leading into winter, coupled with exceptionally strong winds that gusted at times at over 100km/hour, resulted in extensive and destructive fires in parts of KwaZulu-Natal, Limpopo and Mpumalanga during June and July this year, causing some of the biggest losses ever experienced in certain agricultural sectors. The timber industry did not escape unscathed, with fires scouring through large areas of plantations at unusually high temperatures.

"Winds at over 100km/hour"

"South Africa has never experienced the kind of devastation that we've had this year," says Pierre Bekker of Safire Insurance Company, insurers of standing trees against fire. "After a fire, in an attempt to reduce the time taken to settle claims and minimize financial losses, insurers need to assess the extent and degree of damage as soon as possible to decide whether burnt timber can be salvaged or not. Salvage operations need to be planned carefully to minimize losses."

"The order in which burnt compartments are felled during a salvage operation depends on a number of factors, one of which is the degree of damage to a particular stand of trees. The longer we take to assess the area," says Bekker, "the less time the farmer has to salvage damaged trees. Due to the size of the areas affected by recent fires, any attempt to assess the damage from the ground alone would have been a nightmare."

"The longer we take to assess, the less time the farmer has to salvage"

In such cases where swift responses are needed, particularly for areas in excess of 300 hectares, Safire uses **LREye Imagery**. A series of ortho-rectified aerial digital images are taken to correctly map timber compartments and then to assess the extent of fire damage in each compartment. **LREye Imagery** is multispectral, simultaneously providing four bands of data (red, green, blue and near-infrared). The images can be used to provide a traditional colour image, or manipulated to supply a range of different information. The near-infrared images are particularly valuable for revealing the stress levels in trees still standing in the fire-affected areas, which helps with assessing whether there is likely to be recovery or whether those trees should be targeted for salvage harvesting.

The aerial imagery provides a good indication of the path of the fire, which also enables the Safire team to investigate the possible source. Says Bekker, "Mapping on the ground would take us forever. There are issues with GPS signal loss and someone has to go through terrain that is often difficult with a GPS in hand. It's very time-consuming, and also difficult to see if a timber compartment is burned in the middle. With **LREye Imagery** we can cover very large areas in a short space of time."

For Mark Norris-Rogers of Mondi Business Paper (MBP), **LREye Imagery** has strong general management value as well, "You don't always see things on the ground, such as heavy weed infestation in the middle of the compartment, so we use **LREye Imagery** as a management tool to help us focus our energy on problematic areas." The data is supplied to foresters who can investigate further on the ground.

MBP uses **LREye Imagery** every year to monitor different sections of their properties. Explains Norris-Rogers, "We've used satellite technology in the past but **LREye Imagery** has a faster turn-around time and the georeferencing is better. It's cost-competitive compared to other systems we could use, and with the range of analysis we can do, we can get a better sense for what's going on across our properties. It gives us what we need very quickly, and the data is supplied in a way that we can use already."

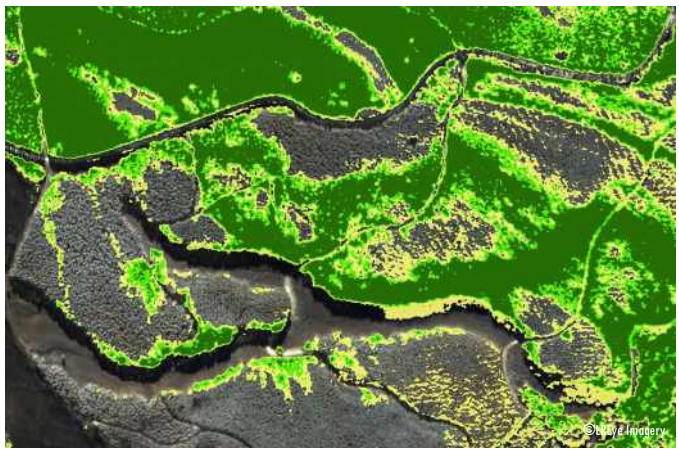
"**LREye Imagery** is delivered using our patented four-band sensors. We have five sensors deployed throughout the SADC region and can respond to our clients' remote sensing needs such as forest fire damage assessment at very short notice," says Richard Shacklock, **LREye Imagery** Marketing Manager.

"LREye Imagery has a faster turn-around time, and the georeferencing is better"

With the versatile remote sensing data produced, **LREye Imagery** offers holistic solutions for rapid, accurate land management decisions for clients in the urban, timber, agricultural and environmental sectors.

rgb

nir



ndvi

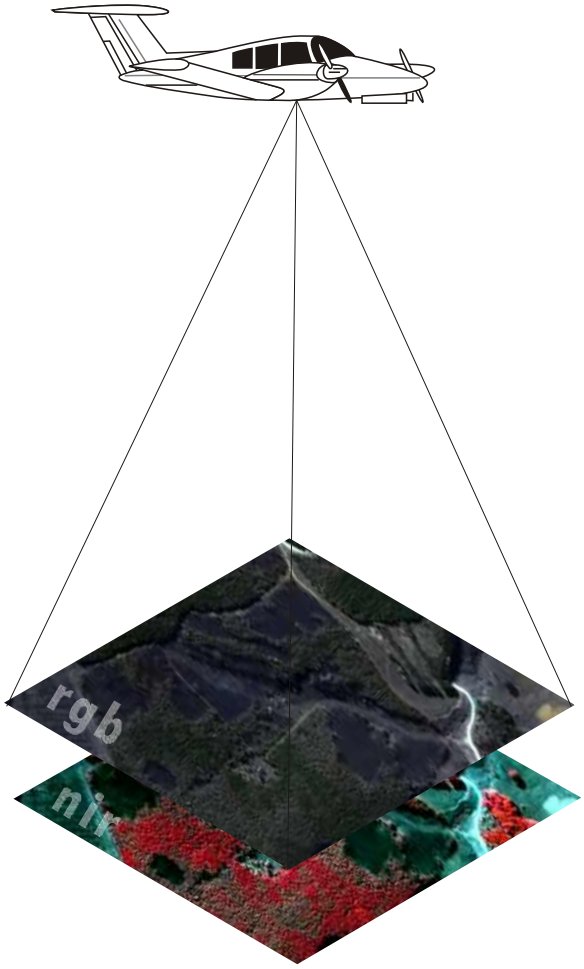
How **LREye Imagery** near-infrared technology works:

How LREye Imagery™ near-infrared technology works:

The part of the light spectrum visible to the human eye is the normal rainbow of colours we see every day. Other parts of the spectrum (such as near-infrared wavelengths) are invisible to the human eye but may be recorded by electronic sensors sensitive to these wavelengths.

Living plant material contains a unique spectral identity which can be qualitatively analysed with near infrared technology. In the case of forestry compartments, chlorophyll in the leaves of green, healthy, growing trees reflects a high level of near-infrared wavelengths and appears red on processed imagery. Conversely, stressed or diseased trees reflect little near-infrared light, and dead trees reflect none. In this way, near-infrared imagery is an extremely useful tool for identifying and delineating healthy and damaged or stressed trees.

By combining near-infrared and red imagery, users are able to derive an NDVI, or crop index, which represents geographically in exaggerated colour indices the health of forest compartment data.



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