



South Canterbury dairy farmer Nick Hoogeveen is an early adopter of aerial drone technology to manage his farms.

# The age of the

Two South Canterbury dairy farmers are not waiting for the technology to be proven: they believe the age of the farming drone is here now and are already using off-the-shelf drones in their weekly farm management decisions. **Nigel Malthus** reports.

"THERE IS a misconception that to use a drone effectively you must be a

whizz-kid with flash cameras," Alastair Tremewan tells *Rural News*. How-

ever, he believes having an eye in the sky in itself - without any technical wizardry - can provide an enormous benefit to farm management decisions.

Tremewan, who runs the family farm near Geraldine, and near neighbour Nick Hoogeveen, general manager and part-owner of the Kintore Farms group, are both enthusiastic users of standard Phantom drones.

applications to be developed.

"I'm a farmer, so I don't have time for that."

For Hoogeveen and Tremewan, the primary use is visible-spectrum aerial mapping of pastures to GPS-level precision.

Using software from the American company DroneDeploy, a drone can be set to autonomously run a grid over a given area, taking a series

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The Phantom is an off-the-shelf model made by Chinese company DJI. The company is regarded as a market leader in small drone technology.

Tremewan says he got into drone use because he "loves technology". Before returning to the family farm, he'd spent time in various technology-related ventures, including online retail.

When he saw how Hoogeveen was already using a drone on his properties he bought his own. Tremewan has since started a public Facebook page, called Drones on farm NZ, to promote and discuss drone usage.

Research is continuing into aerial measurement of pasture nutrient levels. This study is a partnership between fertiliser co-operative Ravensdown, Massey University's precision agriculture group and AgResearch, funded by the Primary Growth Partnership and led by Massey's professor in precision agriculture, Ian Yule.

The use of sophisticated hyper-spectrum cameras is central to that research.

However, Hoogeveen said he didn't want to wait for more sophisticated

of vertical photographs that are then automatically stitched together to a single map.

"To survey one of my farms, which is about 238ha, takes me roughly 40 minutes with three battery changes," Hoogeveen says. "So that gives me a snapshot in time of what my farm is like at that point."

The result is "like a fully up-to-date version of Google Earth". He's now using it to confirm his spring rotation planning, checking that stock are grazing to target amounts.

"Over the winter we were using it to survey the run-off block then we could draw on it with GPS precision where the crops had been grazed so we can see what area of crop we have left and how much we had used in the previous week," Hoogeveen says.

Tremewan says it has allowed him to bring his farm maps up-to-date, after decades of unmapped small changes. He's used this updated information to plan and implement changes to paddock fencing layout.

"I mapped over that area and was able to re-

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Answers: Q1: c. Q2: All three. Q3: b.

\*Based on retail pricing at 15/06/2016

# farming drone is here

plot the size of the paddocks before we ever did anything and make sure it was all in line and that our paddock sizes would be the same.

"Once you've made the photo you can draw out the border and it will tell you accurately the square metreage."

While standard drone cameras are great for mapping, assessing crop density in terms of kilograms of dry matter; they theoretically require expensive aftermarket infrared cameras.

However, Tremewan says stock cameras had enough residual sensitivity at the red end of the spectrum to carry out what he calls "mock NIR (near infra-red) imagery" by fitting the lens with a filter to block out the rest of the visible spectrum.

"It's not the most accurate thing in the world; if I was a crop farmer I wouldn't rely 100% on it. But it uses the little bit of the NIR spectrum that's on the camera as standard.

"I've used that over-

lay to show us where the cows have had too much pressure on the ground - areas where we might be looking at re-seeding, something like that. It'll come up a different colour to the rest, where the grass isn't growing, basically."

He was also using his drone to monitor fodder beet crops over winter.

"As the cows slowly graze away the fodder beet you can run a scan over the top of the paddocks then go to your computer and drag the

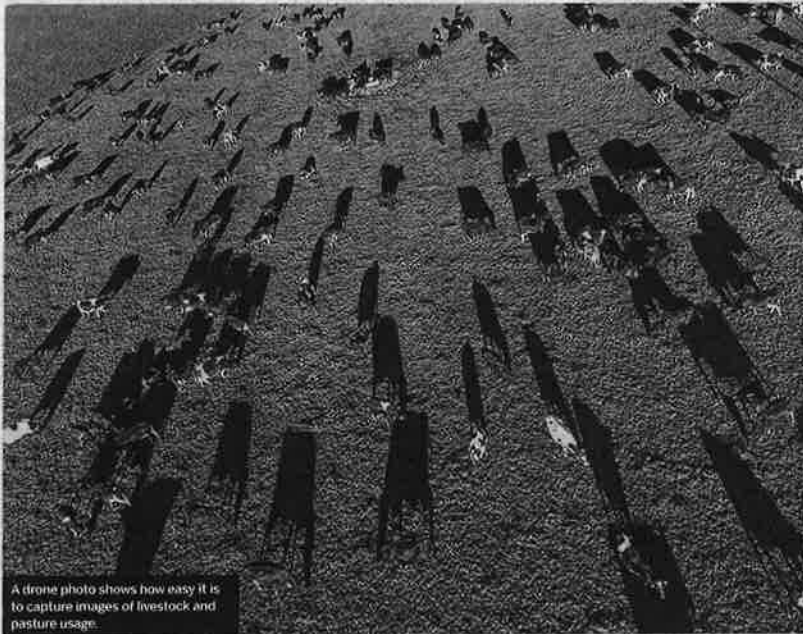
measurements out and work out exactly how much is left."

Simple aerial photos taken weekly also allow him to keep track of silage and baleage stocks.

"It's a good tool overall, even without a fancy camera, just to take photos of the paddock conditions," Tremewan says. "So when we make re-grassing decisions or generally discuss the highs and lows of different paddocks, we've got something there to look at."



A DJI Phantom 1 drone



A drone photo shows how easy it is to capture images of livestock and pasture usage.

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