

New Leaf

Farmers talking about the way they farm



Bio-fumigation with Caliente

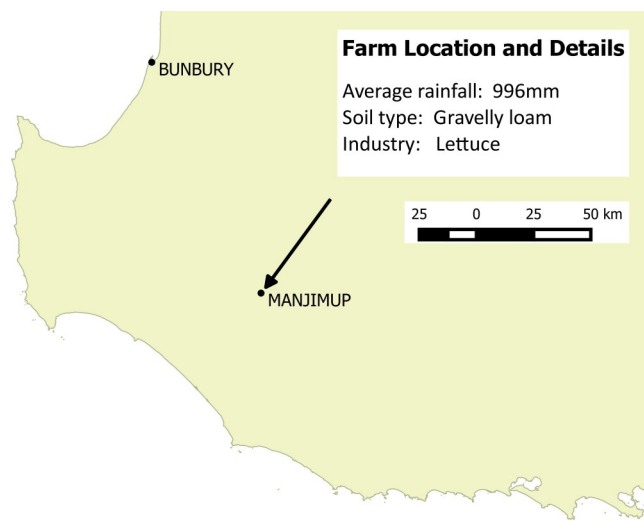
David East is a lettuce grower with Bewray Pty Ltd east of Manjimup. Since 2011, David has been growing the biofumigant mustard Caliente during winter between his summer lettuce crops.

[Biofumigants](#) are primarily used to suppress disease and reduce the need for chemical pesticides. However, they can also act as a cover crop to provide benefits like increased soil organic matter, weed suppression and nutrient cycling. Caliente is gaining interest from non-brassica vegetable growers.

In September 2015, [Soil Wealth](#) facilitated a field day at David's property where he spoke about the benefits he has observed using caliente and gave some tips on implementing the practice:



David East holding the mulched caliente



In one paddock I grew lettuce three summers in a row, and each winter I grew caliente. I never used a fungicide and never had a disease issue.

It's not a silver bullet, it won't take care of everything. I still use herbicides and fungicides at certain times of year, but it reduces the pressure on the paddock.

We've done soil tests before and after a lettuce and mustard rotation, and phosphorus and trace mineral levels have stayed the same (Note. This may not occur for all rotations). So it seems to recycle the nutrients. We're now toying with cutting our fertiliser rates back.

The cost is about \$500/ha after you prepare the ground, seed, and incorporate it which is probably the most expensive part. We don't use fertiliser with the mustard.

It breaks down fairly quickly. After being buried for two weeks there will be hardly any green matter in the ground so the stalks don't get caught up in planting machinery.

We had three or four heavy showers in September and the soil hasn't moved. The organic matter holds it all together. One hill has been notorious for washing but there is no wash there now. And it helps to retain moisture as well.

This is how David is currently managing caliente on his property:

- *We plant early to get good growth in warmer temperatures. In 2015 we planted on April 28. If it isn't sown by late May I wouldn't sow it.*
- *I seed at 10kg/ha. If it's sown too dense it won't produce leaf material.*
- *We don't use fertiliser with it.*
- *We didn't spray weeds prior to sowing because the caliente clouds them out.*
- *After lettuce harvest we cultivate the lettuce in, rip it then seed it. If you don't rip, the mustard will be smaller. Seed into the rip marks and roll it. It has a very fine seed so we don't cultivate too much because you don't want it too soft in case it goes in too deep and doesn't germinate. It doesn't work if you direct drill and don't rip. I don't overwork the paddocks. The more times you chew it up the worst it gets.*
- *We currently incorporate into the soil at about 20% flowering based on advice, which might change in the future. We don't let it go to seed and we spray any volunteer plants and our drains for escapees. In 2015 we incorporated it by 17 September (normally occurs around 120-130 days).*
- *If you don't incorporate it properly you're wasting your time. You won't get the biofumigant benefits.*
- *We mulch, cultivate up and down and roll, all within 20 minutes. The timing is critical, so instead of mulching the whole paddock, then cultivating, we work in small blocks and do the entire process, then move to the next block. Then we leave it for two weeks and don't touch it.*
- *You've got to get the leaf matter as deep as you can. If it's only on top then there might be disease beneath.*
- *You've got to test it on your ground, because every farm is different.*



The process of mulching (top), incorporating (middle) and rolling (bottom) is all done within 20 minutes on each patch of ground.

Thanks to David and Lee East (Bewray Pty Ltd) and Danny Fyfe (The Soil Wealth Project) for hosting the event, which was funded by Horticulture Australia.

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