



Vegetables

Cost Benefit Trial of Using Compost in Vegetable Growing

The NSW Department of Environment and Climate Change (DECC) funded the NSW Department of Primary Industries (DPI) to research and report on the costs and benefits of using compost instead of conventional fertilisers and/or poultry manure in vegetable growing in the Sydney basin.

Each year in the Sydney basin, landscape supply businesses produce hundreds of thousands of tonnes of composted products. These products are professionally processed (most to Australian Standards AS4454), using garden vegetation feedstock such as grass clippings, prunings and leaves. Because of compost's positive contributions to environmental outcomes, the NSW Department of Environment and Climate Change (DECC) has been funding measures like this vegetable trial to increase the use of compost products.

This trial took place over three years covering five cropping cycles. As well as analyzing the costs and the benefits, measurements were taken of parameters such as yield, vegetable quality, soil quality and nutrient run-off. The trial was fully replicated comparing seven treatments in a randomized block design. Composted soil conditioner was incorporated once only at the beginning of the trial in the 'compost treatment' blocks at the agronomic rate of 125 dry tonnes/hectare (t/ha). The "farmers practice" treatment involved the application of poultry manure and urea, each providing half the rate of required nitrogen.



Results

Overall, the cost benefit results from this trial showed a dollar benefit in using compost purchased at a standard compost price. The cost benefit calculations, however, only calculated 'benefits' from the crop sales. No account was taken of improved soil carbon levels, improved soil structure or improved

water holding capacity. Similarly, no account was taken of the reduction in accumulation of soil P (phosphorus), the reduced risk of off-site water pollution or the reduction of greenhouse gas emissions.

Phosphorus levels were adjusted with triple superphosphate at the start of the trial to mimic Sydney vegetable soils; these were characterised as the "high phosphorus treatments". Soils which had not been amended by poultry manure or fertiliser over the years made up the "low phosphorus treatment" blocks, mimicking 'natural' soils.

Yield

The 'compost treatments' and the 'farmers practice' treatments resulted in similar yields at the harvest of the first three crops, broccoli, eggplant and cabbage, and of the last crop, the leeks. However, for the 4th crop, capsicum, the 'compost treatment' yielded significantly higher than the 'farmers practice', a 21.9% higher yield, equivalent to 7.2 t/ha.

Fertiliser savings

The use of composted soil conditioner in the 'compost treatment' also resulted in considerable saving of chemical fertilisers. Over five crops, there was a 36% saving in urea (N), a 100% saving in phosphorus (P) and a 100% saving in potassium (K) fertiliser.

Phosphorus: Excess Run-off

One of the greatest concerns of the authorities involved in monitoring and improving the health of the Hawkesbury Nepean Catchment has been the contribution of excess phosphorus to river nutrient overload. This phosphorus is primarily sourced from the poultry manure applied in intensive horticulture. A soil survey of 42 vegetable farms by the Department of Primary Industry revealed

References

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