

# Best Practice Soil Sampling to Depth is the Key to Enable Growers to Manage Soil Acidity

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Soil acidity affects approximately 50 million hectares of agricultural land in Australia, predominantly in Western Australia (WA) and New South Wales (State of the Environment 2011 committee). Subsurface acidity below 0.1 m, in particular, is a major land degradation issue throughout the WA wheatbelt. Soil acidification is an inevitable consequence of productive agriculture, largely through the addition of acidifying fertilizers, leaching of nitrates and removal of alkaline plant products. Precision SoilTech (PST) conducts contract soil sampling for growers to receive both fertiliser and lime recommendations. Over the past 15 years in excess of 250,000 geo-located sites have been sampled for growers across the WA wheatbelt. Approximately 55% of these sites have been sampled to 30 cm in 10 cm increments. This deeper sampling regime differs considerably from soil sampling primarily to inform fertiliser recommendations, which is usually restricted to the top 10 cm. To effectively manage soil acidity, knowledge of the extent, depth and severity of soil acidity is essential, as is a targeted and ongoing liming program. We show evidence that sampling to depth is critical to the long-term success of growers in better managing soil acidity and maximizing yield potential of WA wheatbelt soil. Growers achieving target pH down the soil profile is something on which DPIRD has placed considerable extension effort. Why? Because there is good evidence that this approach both protects soils and optimises the economic return from farming. The proportion of soil sampling sites that PST has sampled that meet or exceed DPIRD targets down the soil profile (>5.5 in the soil surface, and >4.8 in the subsurface) has increased from nil 15 years ago, to nearly 50% currently – a rapid and outstanding achievement. Why has this occurred? We suggest it is because the better growers are adopting best practice soil sampling to depth and apply lime at the rate and locations required. Growers who sample to depth are better at managing soil acidity, because they typically apply 50% more agricultural lime than growers who only sample surface soil. We also suggest that growers who are willing to pay for contract soil sampling are more likely act on the recommendations offered compared to their colleagues who sample only 0–10 cm for fertiliser inputs. The different sampling approaches that are in place mean that making direct comparisons between the sampling-to-depth and the topsoil-only practices is not possible. However, by looking at the proportion of surface soils sampled that are above the DPIRD target of 5.5, growers sampled by PST appear to be managing soil acidity better than their colleagues who typically only have sampled surface soil. The evidence, derived from hundreds of thousands of sampling sites is compelling, and at the same time concerning.