

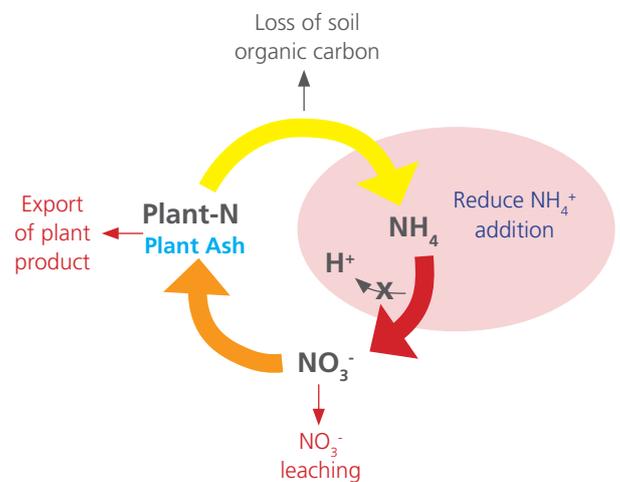
REDUCING THE RATE OF ACIDIFICATION



Slowing down the rate of acidification of soil through actions targeting the carbon and nitrogen cycles is a key management tool.

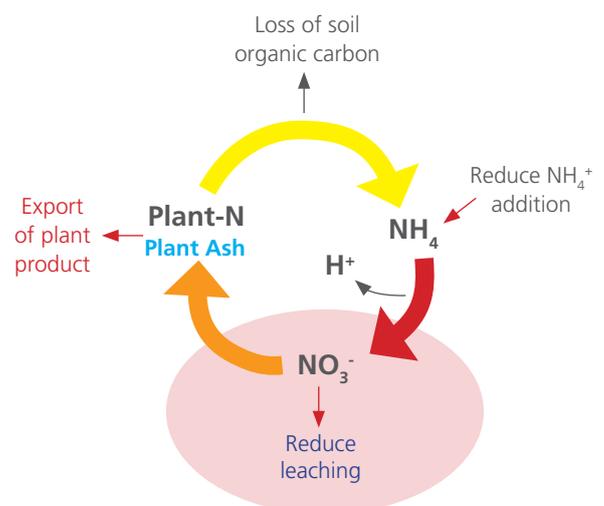
Actions to reduce the source of H⁺ by reducing ammonium

- Use legumes to provide base line supply of nitrogen, and supplement with fertiliser during periods of higher demand.
- Minimise use of ammonium-based fertilisers in favour of urea or nitrate-based products.
- Use precision technology to adjust application of fertiliser for soil conditions.
- Use reduced tillage to minimise nitrification of ammonium to nitrate from turnover of stubble and soil organic matter.



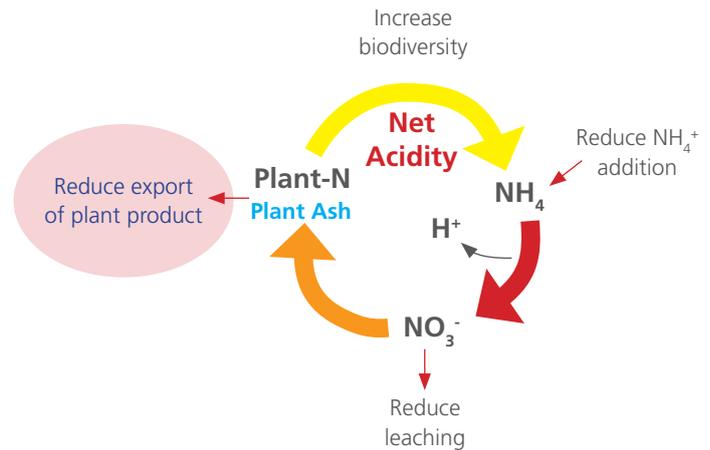
Actions to maintain neutralising capacity by reducing nitrate

- Maintain living plant cover rather than bare earth to encourage uptake of mineralised soil organic nitrogen reserves during dormancy of vines, fruit or nut trees, and between annual crop cycles; apply to areas with high winter rainfall.
- Ensure plant vigour is not impacted by disease, nutrition, compaction or other causes.
- Improve timing of nitrogen fertiliser application to match demand by plants.
- Ensure nitrogen inputs do not exceed crop demands
- Use soil water monitoring devices to ensure irrigation does not result in deep drainage when not required for leaching salt.
- Fertigate within the depth of the active root zone and allow crops to take up the nutrients before applying deeper irrigation.
- Install more water efficient irrigation systems with high distribution uniformity (DU - even horizontal distribution).
- Maintain pumps and emitters to ensure maximum efficiency and DU.



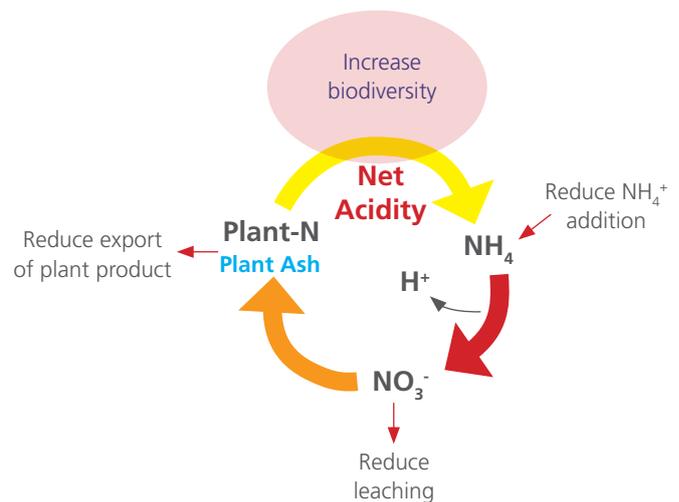
Actions to reduce export of plant materials

- Return pruned plant materials to the soil.
- Replace plant waste materials sent off for composting (e.g. from glasshouse crops).
- Fertilise to replace lost plant alkalinity contained in harvested products.
- Lime to neutralise net acidity resulting from export of plant material.
- Avoid burning stubble.
- Return the amount of hay carted from paddocks when feeding stock.
- Regularly shift animal camps.



Actions to improve biodiversity

- Use a diverse mix of cover crop species – include deep rooted perennials and species which flower at different times of the year.
- When planting cover crops use planting densities and types that suit the purpose, e.g. lighter densities to allow minimum tillage or direct seeding.
- Maintain activity of soil biota that returns plant residues to areas of active root growth.
- Inoculate soil to stimulate microbial populations, e.g. some carrot growers add a little compost at sowing.
- Return residues or compost to the crop row of trees and vines when practicable, rather than the mid row.
- Apply gypsum to help mop up excess aluminium to improve root growth, and to open up clayey soil to improve drainage.
- Apply lime to raise soil pH above pH 5 to stimulate activity of earthworms and microorganisms.



These actions will maintain higher soil organic matter which plays an important role in buffering against change in pH.



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