FACT SHEET

DESIGN AND MANAGEMENT OF OUTDOOR FREE RANGE AREAS

Outdoor Piggery Fact Sheet Series
Revised February 2018

Outdoor or Free Range (FR) pig production is often promoted on the basis of improved animal welfare and environmental performance compared to conventional pork production. However, if not managed well, outdoor production systems pose different and sometimes higher risks than indoor (conventional / deep litter) piggeries including soil degradation through nutrient overloading, structural decline (e.g. compaction), and soil erosion; water quality impacts through sedimentation, nutrient runoff and nutrient leaching to groundwater; and native vegetation damage through rooting, tree chewing and rubbing and excessive nutrients.

A good site for an outdoor piggery will:

- Ideally have an annual rainfall of less than 750 mm to minimise the nutrient runoff and leaching risk, but sufficient rainfall (or irrigation water) to encourage pasture growth during the pig phase and crop growth during the nutrient removal phase
- Have a mean maximum January temperature of less than 28°C and a mean minimum July temperature exceeding 3°C (for optimum productivity);
- Provide sufficient land for a sustainable system to operate;
- Protect surface waters by providing a buffer at least:
    i. 800 m wide between the piggery and a major water supply storage, and
    ii. 30 m wide between the piggery and a defined watercourse. A wider buffer may be needed for sensitive or steeper sites;
- Protect sensitive land uses by providing the following from the piggery:
    i. 750 m to a town, and
    ii. 500 m to a rural residential area, and
    iii. 250 m to a rural dwelling.
- Have soils that are reasonably well drained but which contain sufficient clay to retain nutrients in the root zone. Sites with very sandy soils promote nutrient leaching and are subject to wind erosion (and nutrient removal) when groundcover is denuded. Sites with heavy soils may provide poor paddock conditions during wet weather; and
- Have gently sloping land to promote low velocity runoff to remove free water from the paddocks' surface.
- Not have shallow groundwater. The lowest seasonal groundwater table should at least 2 m below the land surface.

Best management practices for outdoor piggeries include:

- Nutrient budgeting. Because of the quantities of prepared feed used in outdoor piggeries, nitrogen, phosphorus and other nutrients accumulate in the paddock soils. The accumulation rate depends on the feed used, class of pigs, stocking density and other factors. To prevent environmental impacts, these nutrients will need to be removed by moving the pigs to a new area and harvesting crops or forage from the destocked area. Grazing alone removes nutrients very slowly, and is unsuitable for stripping accumulated nutrients. It is good practice to plan the rotation between the

pig and crop/forage harvest phases by using a nutrient budget to understand nutrient additions and removals. The rotations should be planned with the pig phase ending while nutrient additions are still manageable and nutrient losses minimised; generally the pig phase should not exceed two years to minimise the risk of soil structure and nutrient issues. Following the pig stocking phase, crops should be grown to utilise accumulated N, P and K.

- Encouraging even spreading of manure nutrients. Because pigs deposit most manure between the shelters and the feeders, manure nutrients will be unevenly distributed across the paddock without active management. Manure hot spots pose an increased risk of soil structural decline nutrient leaching and runoff losses and also poses management challenges during the subsequent crop or forage phase. Moving shelters, feeders and other paddock facilities regularly during the pig phase helps to spread nutrients more evenly over the paddock.
- Adopting strategies to minimise uncontrolled movement of nutrients from the paddocks. These include starting each pig phase with full groundcover, ideally a runner forming pasture; using stocking densities and practices that retain some groundcover for as long as possible during the pig phase (in most cases the paddocks will eventually be denuded), regularly spelling paddocks from pig production and removing manure nutrients by crop or forage harvest; and provision of a physical barrier and / or a good hardy vegetative cover around the piggery perimeter.
- Ensuring wallows are located on soils with a reasonable clay content, or lining these with clay or other low permeability material. Wallows on sites with shallow groundwater may need to be regularly cleaned or relocated to reduce nutrient leaching risks. At the end of the pig phase, wallows should be remediated so the area can be cropped. This may involve ripping and applying gypsum (as needed); and proper refilling and levelling.
- Undertaking routine environmental monitoring, particularly soil monitoring. Topsoil and subsoil monitoring should be undertaken at least every two years during the pig phase to identify nutrient excesses that pose a risk to soil structure, surface water (through runoff or erosion) or groundwater (through leaching). The soil should also be tested regularly during the cropping phase to ensure nutrient levels are optimal for crop production.