Section 6 Controlling Odours and Greenhouse Gases

Gases can be generated in the barn and during manure storage and land application. These gases include methane and nitrous oxide, as well as odourous compounds such as ammonia, hydrogen sulphide, and sulphur. Although the intensity and offensiveness of an odour may be high, it is not necessarily an indication of the presence of GHGs. Research is examining if there is a relationship between GHGs and odours. Certainly it is understood that reducing nutrient losses in the production system will reduce odours, so any practice that reduces odours will likely reduce GHGs.

The primary complaint about livestock operations is odour. Completely eliminating odour from livestock operations is not feasible. However, management practices exist that can control odour impact by minimizing the intensity, frequency, duration, and offensiveness of odours.

Use Natural Windbreaks or Shelterbelts to Disperse Odours from Hog Barns and to Sequester Carbon

Greenhouse Gas Benefit

By acting as filters, the trees in the shelterbelts will remove carbon dioxide from the atmosphere. Studies performed at Agriculture and Agri-Food Canada's (AAFC) Prairie Farm Rehabilitation Administration (PFRA) Shelterbelt Centre have shown that the above-ground portion of a mature popular tree in shelterbelts will store an average of 974 kg of carbon dioxide[35]. While green ash, white spruce, and caragana trees average about 231 kg, 523 kg, and 143 kg of carbon dioxide that they can sequester, respectively[35].

In addition, shelterbelts protect soil from wind erosion by reducing wind speeds for distances up to 20 times the height of trees[32]. They also trap snow for increased spring soil moisture, reduce wind damage to crops, and decrease evaporation of soil moisture[32]. These benefits will then help to improve soil quality, which will help the soil store more carbon.

Impact on Odour

Trees can be used to control odour from hog manure storage facilities by creating turbulence that breaks up and disperses the odour in the air, in addition to providing a visual barrier for the agricultural operation. Shelterbelts can be relatively inexpensive to establish, but may take 3 to 10 years to fully develop.

Although more research is needed, it is believed that windbreaks reduce odours and dust by dispersing and mixing the odourous air with fresh air. Windbreaks downwind of animal houses create mixing and dilution, whereas placed upwind deflects the air over the houses so it picks up less odourous air[36].

Credit: Alberta Agriculture, Food and Rural Development