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### **To fertilize or not fertilize that is the question?**

When we were searching for why EPA GVRD and other authorities were so against manure being spread on fields, put in landfill or other disposal methods GreenScene asked itself why? We knew “Lignum” was not good for the soil (that's the fibrous cells in wood) but what could we reference this against?

This paper is from multiple sources and their take on using horse manures as a fertilizer.

To begin with we need to register that all manures are not created equal... the make up of cattle and poultry are wet, nitrogen rich and great fertilizers - horse manure falls short on many levels, and is compounded when it is mixed 70 / 30 with wood fibre - the main source of horse bedding.

So should horse manure be called horse manure? Or should it be called “Used horse bedding from stalls, that contains fecal mater and urine”... that's for another paper.

Currently there are an estimated 10,000,000 horses in North America and 59,000,000 horses worldwide and when stabled indoors, each horse produces approximately 1 tonne per month of used bedding. Current disposal methods include spreading on pastures and crops or composting into soil for farm and garden use, however, tipping fee costs are rising, and in many jurisdictions outdoor storage and landfill disposal is no longer permitted.

There are many industry's environmental concerns; such as contaminant leaching into waterways including phosphorus hot spots, odour control and methane off-gassing. Not to mention the smell of ammonia, dust and the black fly populations in the stables which results in poor horse and human health.

There are numerous disposal companies but they are running out of disposal options. The past options of dumping into landfills or stockpiling on farms are a thing of the past in most jurisdictions. Used horse bedding is also not well received by the agricultural community as it does not supply a lot of nutrient content due to the nitrogen capturing nature of rotting wood based manure. Also recent agricultural rule changes reduce outdoor manure storage to a maximum length of two weeks and so waiting months for the spring manure-spreading season is no longer an acceptable solution. It is becoming obvious that there are less disposal solution available and disposal costs are going up as North American and European horse owners must go farther afield to find disposal solutions.

#### **GSA Conclusion:**

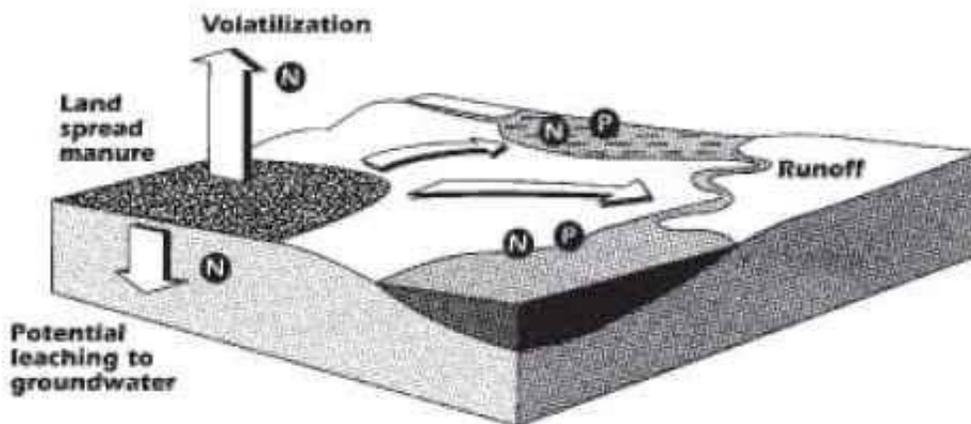
These resources show horse bedding heavy in sawdust, & shavings with around 20% - 30% horse feces ( the average for high end barns and race tracks) is not a good soil ammender. The wood fibre lignum does not break down and therefore without process of composting and adding nitrogen and oxygen - it will not breakdown and be a benefit to farm land. While the horse manure itself is a good fertilizer, the sawdust and wood shavings are not crop friendly. That's because when wood breaks down in the soil, it requires nitrogen and a nitrogen deficiency occurs, which stunts the growth of crops. Used bedding left unattended can cause methane off gassing, leaching and phosphorous hot spots leading to diseases, flies, and environmental hazards.

**Ref (1) Agriculture Ministry AB**

[http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex8014](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex8014)

**Pasture: To Spread or Not to Spread?**

Even with a diligent deworming program, manure and stall waste can contain intestinal parasites, eggs and larvae that can live for years. Therefore, spreading raw manure and stall waste directly on a pasture carries the risk of spreading parasites.

**Ref (2) Allotment and Gardens**

<http://www.allotment-garden.org/compost-fertiliser/horse-cow-manure.php>

**Horse Manure**

Horses however, are kept more as pets and in smaller numbers than cows. The average size of a dairy herd now being around 120. So whilst there is less horse manure about, the fact is that **the average horse will produce between 8 and 9 tons of manure a year.**

A livery stable with just 6 horses will be producing be generating around 50 tons a year of waste. That's a lot of horse manure! Now if those horses were in the wild, roaming across many acres of land, the droppings would just rot down and become incorporated into the soil, returning fertility to pasture. However, our livery stable has but a few exercise paddocks and the stable itself.





**Ref (4) Dc. lauda - Wellington - Loxahatchee Groves 07/24/2007**

 SEP <http://bcn.boulder.co.us/basin/data/NEW/info/TP.html>

Proaction is cheaper and easier than reaction later. Horse manure, solid waster dumping and over fertilization is degrading our water quality. Horse manure, fresh or aged (more than 1 week) has relatively high SRP [Soluble reactive phosphorus] ( $H_2O \sim 16 / NaHCO_3 \sim 8$  MG/G per dry DRY WT.) It appears that wise manure spreading on pasture lands can decrease SRP through plant growth and geo-complexation rxs. However large scale accumulations (like stock piling) **will** lead to high significant Phosphorus leaching into the water /land environment.

