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Fact Sheet 95-11

Animal Waste Management for the Horseowner

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INTRODUCTION:

Whether you have one horse or several, proper animal waste management is important, Proper manure handling and disposal is a special concern for the horse owner operating on small acreage in close proximity to neighbors. Animal waste management is often a problem when horses are confined in barns or small exercise pens. An effective waste management system involves collection, storage (temporary or long-term), and disposal or utilization. The suburban horse owner should plan a stabling and waste management program to avoid conflict with neighbors, zoning restrictions and health regulations.

LOCATIONS AND FACILITIES:

- **Distance to neighbors** - barns and paddocks should be located so that neighbor affect is minimal. County building codes and regulations usually define building "envelopes" and "set- back" lines.
- **Prevalent wind** - Locate where only the least prevalent wind will affect neighbors.
- **Topography** - Ground slope should not be greater than 3%. Consideration must be given to surface water run-off collection site, and possible influence on existing collection ditches, ponds, and streams.
- **Sun exposure** - Paddocks, pens, and stall runs that are located on southern or western slopes may dry faster from more direct sunlight. Also, there may be less odor generated with faster drying times.
- **Proximity to streams, ditches and wells** - Barns and other facilities should be located to avoid pollution of streams and ditches by stable and paddock run-off. Additionally, animals should not be maintained within a 75-100 foot protective radius around a well head to prevent water contamination.

APPEARANCE OF MANURE:

- **Color** - Usually ranges from pale yellow to black, as influenced by the color of ingested feeds and the amount of bile, a greenish-yellow secretion from the liver, necessary for digestion. High protein feeds require increased amounts of bile for digestion. Alfalfa, a protein-rich legume will produce a darker green manure than a grass diet. Oat hay, low in protein will produce light yellow to tannish color manure. Black, tarry manure with a metallic odor may indicate abnormal presence of blood higher up in the digestive tract. Reddish manure may indicate a problem in the small colon or rectum.
- **Odor** - Horse manure has a characteristic odor and is influenced by dietary factors and health of the digestive tract. High protein diets generally result in a "spoiled meat" like odor in the manure. Also, when horses are consuming alfalfa hay, urinary volume will increase with a higher level of ammonia. Horses consuming high levels of dietary grain (carbohydrates) may have a distinct sour-like odor in their manure. An uncharacteristic odor of the manure is a sign of digestive or metabolic problems. It is important for the horse owner to be familiar with the "normal" odor of horses manure so any change can be recognized immediately.
- **Consistence** - The digestive system of the horse is working constantly. It will produce 45- 50 lbs. of manure every 24 hours that is passed 8-10 times daily. This waste material is eliminated about 48 hours after feed consumption. Quantity produced is determined by total amount of feed ingested and how much is utilized. A quiet horse at rest or light work will produce more feces than an active horse. Horses consuming a normal and consistent amount of feed daily should be consistent in the production of manure. Uncharacteristic production of manure is a sign of possible digestive or metabolic problems. Consult your veterinarian.

ANIMAL WASTE CONTROL:

- **Odor** - The characteristic odor of stables and horses may not be offensive to the horse owner, however, it may be a source of annoyance and irritation to neighbors. The best method of odor control is to insure that horses are in good health, fed a proper diet and an effective sanitation and animal waste management program is in place. Unpleasant odors may occur in dirty stalls or in paddocks and in high moisture areas. When the flooring of stalls is not covered with rubber matting, the soil should be replaced annually or sooner if necessary. Manure stock piles can also be an odor and fire hazard if not composted properly. In addition to good sanitation and manure removal practices, odors may also be controlled by masking agents, counteractants, and deodorants.
- **Dust** - Dust from horse operations can create a localized nuisance during dry periods and intense use of arenas. Dust can create a nuisance to neighbors and equestrians. It can even be detrimental to the health of horses and riders. It can cause irritation to the eyes and respiratory system.

DUST CONTROL TECHNIQUE:

The quantity, concentration, direction and timing of polluted air-flow is not predictable. Therefore, the implementation of dust control methods is important.

- **Chemicals** - Various chemical compounds have been used to effectively decrease dust conditions in the past. However, care should be taken to insure that any compounds used do not result in hazardous environmental impacts; calcium chloride, oils, and asphaltic materials have been used in the past. However, they can produce adverse affects on the environment.
- **Water** - The application of water is a safe and effective method for dust control. It

may be necessary to apply water twice daily to pens and arenas during certain periods to ensure adequate dust control. Arenas will need to be worked in order to prevent compaction of the footing.

- **Manure** - Should always be removed on a frequent basis to insure good sanitation. During hot dry weather it can become dusty. To avoid dust problems in the dry period be sure pens and exercise lots are cleaned daily.

SOLID WASTE CONTROL:

A complete solid waste management system involves collection, storage, (temporary or long term) and use or disposal. Stalls and small paddocks require daily cleaning. Larger paddocks can probably be cleaned on a weekly basis.

- **Collection** All stalls and paddocks should be cleaned on a daily basis. Once manure and dirty bedding has been removed, wet areas should be treated with lime and fresh bedding added to insure safe, clean, dry and odor free conditions.
- *Note*: Horses should be removed from stalls or paddocks when wet areas are treated with lime. Flooring or footing in stalls or paddocks may require annual removal and replacement. DO NOT add fresh bedding prior to a thorough cleaning. To do so will create fly-breeding, odors and unhealthy conditions for your horse(s).
- **Storage** Manure should be disposed of on a daily basis. However, this is often not practical.

1. A 1000 pound horse will produce about 2.0 cubic feet per day of manure and soiled bedding.

2. Provide a storage area sufficient in size for the number of horses you have and expected storage time. Remember to provide slightly more storage than actual need to account for snow or mud conditions that may prevent timely removal.

3. Place the storage area in an appropriate location that is convenient for loading and unloading.

4. Storage area should be constructed to prevent leaching to streams, ditches, and ground water.

5. It would be most desirable to keep stored manure in a fly-tight area during the warm summer months. However, as this may not be practical, it may be necessary to develop a fly abatement program.

6. Storage may be in large covered boxes constructed of concrete or pressured treated lumber. Larger piles or stacks may be covered with black plastic.

DISPOSAL:

Manure disposal can be a concern for the horse owner on a small land parcel. Fresh horse manure should not be applied to horse pastures. It should be stored in a suitable covered pit for at least 6-10 weeks before spreading on a pasture. This will insure that adequate heat will be generated to destroy parasites and weed seeds. Some manure

and certainly composted manure can be used for greenhouses, gardens, flower beds, and other uses.

COMPOSTING:

Composting should be in an area that will not pollute a stream or well and not be offensive to neighbors. Manure bedding mixtures can be composted to reduce bulk, eliminate odor, and improve handling qualities when composted. Manure changes from large-sized masses that are difficult to spread, to small particles that can be applied almost as easily as commercial fertilizers. The total mass can be reduced by about one-quarter to one-half Six tons of drylot manure can be converted to about 1.5 to 3.0 tons of finished compost. Compost maturity is determined by several conditions including: moisture, temperature, oxygen, and mixing.

ANIMAL WASTE PRODUCTION AND CHEMICAL COMPOSITION:

A 1000 lb. horse can produce 45-50 lbs. of manure daily. The volume of this solid excrement may range from 0.75 - 1.0 cubic foot per day. Urine production can range from 2-1/4 to 8 gallons per day depending upon diet, activity and environmental conditions. The amount of bedding required on a daily basis to soak up the urine and provide for a clean stall will usually equal the amount of manure produced. Therefore, the total volume of daily manure and bedding removed is about 2.0 cubic feet per day per horse.

Approximately one-half the manure nutrients may be available to crops during a growing season when applied early in the spring. Part of the remaining nutrients will have value in the following years. Manure can also provide important trace elements to the soil. Manure will also improve soil water holding capacity and texture by adding organic matter.

SUMMARY:

The following recommendations should be considered when planning a manure storage and handling system:

• Dispose of manure daily if possible.

• Provide temporary storage for manure if daily disposal is not possible.

• Locate the storage in an area convenient for loading and unloading.

• Grade the area surrounding the storage to prevent all surface water from running into the storage and keep any leaching from the storage from reaching streams, ditches, or groundwater.

• If the storage cannot be emptied weekly during warm weather, provide a fly-tight cover or enclosure.

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