AGRI-SAFE • A NATURAL DEWORMER

THE MANY USES OF DIATOMACEOUS EARTH.

Agri-Safe, Inc , supplier of diatomaceous earth in its purest form, created a lot of attention at the recent Pa Farm Show in Harrisburg It was amazing to find out that so many people are really aware of all the chemicals being presented to our animals and how interested our farmers are in trying to find alternative methods of treating our livestock and pets

Melvin & Elaine Schumaker, distributing Agri-Safe under the name of Agri-Safe of the Northeast, could not believe all the interest shown at booth 622 at the Pa Farm Show, when they presented this product to the area farmers Some farmers had heard of diatomaceous earth before, but many had never heard of the product

Most of the following information is by Carol Manly, B S in Range Animal Science, Sul Ross State University, Alpine, Texas Exactly what is diatomaceous earth? It is a white, odorless powder which comes from a mineral deposit called diatomite Some people mistake it for some type of calcite or limestone, but even though it is a fossil deposit, it is the mineral remains of single-celled freshwater algae, or diatoms Whereas limestone is primarily calcium, diatomite is primarily silicon dioxide, with a beneficial sprinkling of essential minerals DE is simply the fossil remains of diatoms, or one-celled algae A single particle of diatomaceous earth is bristly in appearance Each one-celled diatom spent its entire life (less than two weeks) extracting trace minerals that were in solution in the water that it lived in, using these minerals to construct a tiny shell around itself About 85% of this mineral shell is composed of silicon, in the form of silicon dioxide The remaining 15% consists of boron, aluminum, manganese, magnesium, gallium, iron, calcium, vanadium, copper, codium, titanium, zirconium, and strongium This bristly mineral shell settled to the bottom of the lake once the algae died Vast quantities of these empty shells collected on the lake bed to form deep deposits of diatomite When these dried up and the sea receded, the deposits were fossilized and compressed into a soft chalky rock, which is surface mined and crushed into a powder looking much like flour, from whence comes DE

Though numerous types of DE exist, the one suitable for livestock producers and pet owners is called codex food grade diatomaceous earth Other deposits of diatomite, the soft, whitish rock which is pulverized into the white powder known as diatomaceous earth, but a lesser quality product, become industrial grade, and end up in cans of paint and other industrial applications Still other diatomite may be crushed, heated, and crystallized to become the product used for pool filters. That is why it is imperative to purchase the proper type of diatomaceous earth

Food grade DE, with its tiny bristles and hollow shell, is perfectly designed for desiccation, or the extraction of moisture from its surroundings So how does DE kill internal parasites, which live in the water-filled world of animals' intestines? The most popular theory is that the DE particles irritate the thin "skin" of the parasite, causing it to dislodge and die It is the physical structure of each individual algal "skeleton" which enables it to perform its most important function, the destruction of parasites How does it work? Though no one knows for sure, the popular theory is that the starburst or bristle formation of the ten to twelve micron DE particle irritates the lining of the parasite. Whether it is attached or traversing somewhere in the alimentary canal, the parasite is adversely affected by the irritating DE, and either releases its grip and is passed through, or it fails to ever attach to the intestinal lining. Codex Food Grade Diatomaceous earth does not irritate the animal's organs due to the thickness of the epithelial lining, or thick mucus coating Though DE is incapable of desiccating the worms eggs which pass out in the feces of infected animals, they can be destroyed by treating pastures and pens with DE It will dry up and destroy the eggs, thus lowering the incidence of reinfestation, and thus help to break the parasite cycle. The DE which is passed out of the animal in the feces retains its beneficial qualities. Once the manure is dry, any fly eggs which are deposited in the manure and which are exposed to the DE in the dry manure will also be desiccated and die. It is a good idea to supplementary treat pastures at the same time that animals are being wormed with DE so the reinfestation is further limited in this way.

When DE is dusted atop and around an ant mound, the ants walk through it and DE attaches to their bodies. Ants have a relatively hard exoskeleton as compared to other "juicy" insects, such as roaches or crickets, which have a softer shell. However, all insects have external skeletons, composed of chitin (pronounced kytin). Diatomaceous earth adheres to the smooth waxy surface of the insect's body, and the bristly DE scratches the protective surface, allowing moisture from body fluids to escape. DE further facilitates its desiccation by drawing water into its hollow shell, where it can store up to three times its weight in water This is how it kills external parasites such as lice and fleas, and also how it kills garden pests and other unwanted insects.

Test results indicate that diatomaceous earth that has been found to be the most efficient at killing internal parasites is between ten and twelve microns in size. In the past, there had been a problem with the consistency of the micron size of food grade DE, which resulted in a non-uniform product and sometimes sporadic efficiency as a wormer. However, new manufacturing technology has resulted in a product of uniform micron size, hence more uniform performance

Before purchasing DE, make sure that it has been filtered for a range of 10 to 12 microns. The label should also specify that the product is amorphous, meaning that it contains less than 1% crystalline silica, and that it is FDA and USDA approved. The most superior food grade diatomaceous earth contains less than 1/2 (.5) of one percent crystalline silica, such as found in Agri-Safe.

Agri-Safe can be safely fed to animals, or used as a dust spray, for parasite control. This action is strictly mechanical. The microscopically sharp edges of the product contact the offending organism and pierce their protective coatings. The parasites then dry out in a few hours and die

In addition to its ability to control internal parasites, producers have also noted other benefits For instance, while recently visiting the goat farm of Andy Cook in Columbia, South Carolina, two young goats were brought in from the pasture, nearly dead from bloat One in fact, did succomb before anything could be done for it The other was drenched with D E and water, and began recovering By the next day it was perfectly healthy, with no signs of bloat The D E drench had saved the dying kid

Several producers have mentioned that goats fed diatomaceous earth have no scour problems One goat producer in Mississippi did state that her goats were so heavily infested with worms that they all had some degree of scouring as the parasites were dislodging We believe that this is probably a natural part of the purging process, heavily infested goats are going to scour until the worms pass, after which their systems return to normal, with no losses due to scours Mortalities due to scours have ceased in all the D E herds from all reporting states. For producers of show goats, the good news is that the addition of D E to the goat's rations will produce animals with shinier coats and clearer eyes Keeping animals worm-free without relying on stress-producing chemical toxins in the diet (coupled with the trace minerals found in D E) result in healthier, more robust animals

Independent university studies have been conducted using Agri-Safe in various livestock studies They include Prairie View A & M University, Texas, with Dr Barbara Johnson, the University of Nebraska, with Dr Terry Kloppenstein; the Louisiana State University, Dr Miller, Texas A & M University, Dr Pinkerton, Alcorn State University (in Mississippi) with Dr Daggert, Fort Valley State University (Georgia), Dr Will Getz, and Clemson University (South Carolina) Dr George Smith

An organ analysis of Dairy Cows was performed at the Michigan Department of Agriculture Laboratory Division, Lansing, Michigan Upon pathological examination of the organs of dairy cows having been given freechoice feeding of codex food-grade diatomaceous earth for a period of approximately five years, no visible organ abnormalities were observed

A field report on possible hazards of feeding DE to dairy cattle was done at the University of Illinois, College of Veterinary When a 2% ration of codex foodgrade diatomaceous earth was incorporated into the feed of dairy cattle, there was no evidence of absorption nor did any residue of the product appear in the milk

A field report on free choice feeding to dairy cattle performed by the Dairy Herd Association Improvement Program, Hussey Farms, Litchfield Park, Az, showed that tests run on purebred Jersey dairy cows given free choice access to codex foodgrade diatomaceous earth, with an average intake of three (3) ounces per cow per day, after six (6) months, the following results were observed Milk production in the test group increased over 20% with butterfat remaining the same Warbles problem came to an abrupt halt Feed assimilation improved and fly control problems were brought under control

A field report feeding D E to Dairy Cows at J S Bunker Farms, Mesa, AZ showed after feeding 100 dairy cows on D E for approximately one year, the following results were noted. warbles became non-existent, fly nuisance almost completely disappeared, odors were almost completely gone, cows have better hair and coat condition, and have no desire to lick soil as in the past, vet bills have been significantly reduced, butterfat content has risen from 503 lb. per cow to 513 lb per cow.

A field report on dairy cows by Daniel M. Brandy, McFarland, Wi. resulted from feeding 5 to 6 ounces of food-grade diatomaceous earth to dairy herd for a period of five weeks; Butterfat tests have shown an increase of 3.7 to 3.9; Mastitis which had been quite a severe problem, came under control (no new cases), cows are brighter and healthier in appearance and milk production has increased without an appreciable increase in feed.

Results of D.E. fed to horses by Four Winds Stables, Robert D Horkman, Orlando, Florida. Results of feeding 5 ounces of diatomaceous earth to show horses for a period of one year Healthier looking animals with a definite sheen to their coats, absence of internal parasites, better feed conversion, reduction in manure odor, fly control, cured scours in cases where other medications had failed and improved appetites in picky eaters.

Study of D.E. on feed pigs by M. F. Petty, D.V.M., Alabama resulted in no internal parasites discovered in the test group at any time after seven days on the D E. All hogs on D. E. stopped rooting and destroying the wooden feeder after 10 days; By the end of the third week, the odor of the test group was noticably less offensive than the control group, and at the end of six weeks, the fly population decreased remarkedly

Results of feeding D. E. to poultry by C.S. Morgan, D V M. San Diego, Ca. Using two groups of birds with each group consisting of 8,000 white leghorn caged layers in their pullet year which had been producing for five months. After feeding the test group 60 lbs. of D.E. per 1-1/2 tons of standard mixed feed (17% protein) for 1-1/2 months the following results were observed:

1. There appeared to be less flies around the test group
2. Droppings are of a drier consistency, making for easier cleaning of the houses
3. Seventy-ffve percent less deaths in the test groups
4. A 2-4 case per day increase in egg production by the test group, compared to the control group.

Clinical observation of feeding D.E. to dogs by O. C. Collins, D.V.M. Midland Animal Clinic and Hospital, Midland, Tx. In clinical observations of feeding dogs over 35 lbs. 1 tablespoon a day and under 35 lbs. 1 teaspoon a day of D.E , within seven days all ova disappeared from stools. Diatomaceous Earth controlled Ascarids (Toxacara Canis), Hookworm (Ancylostoma caninym), and Whipworms (Trichuris vulipis).

Field report on experimental feeding of D.E. on Zoo Animals by Richard Smith, Hallwood Inc., Animal Food Specialties, Grand Rapids, Mi

A mixture of feed incorporating 2% Diatomaceous Earth was sent to three Zoos for evaluation John Ball Park of Grand Rapids, Michigan, Brookfield Zoos of Chicago, and Buffalo Zoo, of Buffalo, New York John Ball and Buffalo Zoos reported that their black bears on the special feed showed a better coat and cleared eyes The primates fed at the Brookfield Zoo displayed a pronounced improvement in both appearance and behavior Stool samples taken at all three Zoos showed an absence of any internal parasites - adult or egg Parasites in these animals were present prior to using the Diatomaceous Earth food mixture

The many uses of Diatomaceous Earth

1 As a dust against fleas, lice and other external pests on dogs, cats, pigs, and chickens, horses, cattle Use full strength as a powder, rub into dog or cats coats, sprinkle on pigs, dust on horses and cattle, and add to dusting boxes for chickens

2 DE can be used as a dust or spray to control massed flies in pastures, on ground, in buildings and on manure piles Due to its fine powder nature, it is best applied at night when the air is calm Dust on 15 -20 pounds per acre (20-25 pounds in quiet air) For liquid spray, mix two pounds per gallon of water and agitate while using

3 When used on stored grains and seeds, it can replace chemicals like malathion The most effective protection is achieved if grain or seeds are treated immediately after harvest by lightly coating the outside of substantially all kernels or seeds with the DE dust This is best done by applying the powder directly as it is moved into storage The rate is seven pounds per ton Barley, corn, buckwheat, oats, rice, rye, wheat, sorghum, and mixtures of these grains may be treated in this manner

4 Dusting yards like pastures or animal enclosures can work against a wide variety of lawn pests While spreading is suitable for grass and trees, spraying should be used on shrubs or other plants Place a teaspoon of flaxsoap (dish-soap) in a quart of warm water and add 4 ounces D E Keep the solution agitated when using it

5 To protect fruit trees, sprinkle a liberal amount of DE on the ground and around the trunks Also paint the trunks with the mixture of flax-soap (dish soap) DE and water The protective buffer zone will impede the migration of various fruit trees flies and worms, as well as Japanese beetles You may need to spread DE several times a year for continued control, particularly after heavy rain

6 DE is not harmful to earthworms, since they are structurally different from insects In fact, some earthworm growers use DE in the bedding material to control parasites in it and in the earthworms

7 For internal use, suggested feeding rates are

Beef Cattle - 2% by weight of total dry rations as maintenance

4% for 10 days as a worm purge

Calves - 1 oz in morning milk

Dairy Cattle - 4% by weight of daily rations

Poultry - 5% in feed

Large Dogs - (Over 35 lbs) 1 tablespoon per day in food

Small Dogs - (Under 35 lbs) 1 teaspoon per day in food

Cats - 1 teaspoon per day in food

Hogs - Same as beef cattle

Horses - 5 oz daily in grain ration per horse

Sheep - Same as beef cattle

Goats - Same as beef cattle

As a spray on livestock 50 lb DE to 100 gallons of water (Keep agitated)

As a drench 2 parts DE to 1 part water

Joel Salatin, a raiser of organic beef near Swoope, Virginia, reported excellent results by using a free choice mixture of one part stocker salt, one part natural kelp, and one half part DE.

For pasture livestock·

As a purge - 60% DE, 20% corn meal or cotton seed meal (dry molasses may be substituted for meal) and 20% salt or mineralized salt

As a maintenance - 60% DE, 40% salt or mineralized salt

A recent university study was done on Agri-Safe at the Prairie View A&M University, Prairie View, Texas by Dr Barbara Johnson Three groups of goats were treated with diatomaceous earth for ten days at 5% of diet

Pre-Treatment

Group A·	Roundworms - 300 epg	Coccidia - 2100epg
Group B.	Roundworms - 600 epg	Coccidia - to numerous to count
Group C	Roundworms - 0	Coccidia - 20,100 epg

Post-Treatment·

Group A	Roundworms - 0	Coccidia - 800 epg
Group B	Roundworms - 0	Coccidia - 12,000epg
Group C	Roundworms - 0	Coccidia - 2,200 epg

The results speak for themselves

Daily use by many has seen an absence of bloat, colic, coccidiosis, acidosis, mastitis, lice, ticks, fleas, heel flies, horn flies, house flies, and other insects along with a dramatic reduction in use of chemicals to control internal and external parasites Agri-Safe is a safe, environmentally friendly alternative to chemicals.

IN THE GARDEN.

Diatomaceous Earth is an effective alternative to toxic chemical insecticides Diatomaceous Earth (D E) helps control some of the most persistent and annoying insects in the garden and in the home It is very effective in mite and ant control, it controls spider mites, aphids, centipedes, millipedes, other crawling insects It can be used indoors and outdoors for ants, cockroaches, crickets, earwigs, and termites In home, it controls carpet beetles, bedbugs, and silverfish. When soft bodies insects come in contact with D.E , it causes massive loss of body fluids and they die When the dust is eaten by insects, the D E. inhibits breathing, digestion and reproduction Because it kills by mechanical action rather than poison, insects have not developed immunity D E is a great asset to your garden insect control and is safe and environmentally friendly Organic gardeners and organic farmers love it.

Agri-Safe of the Northeast 1-888-765-2220

Your Northeast Agri-Safe Distributor of Food Grade Fresh Water Diatomaceous Earth

Melvin & Elaine Schumaker Evenings & Weekends (610) 756-3412