



From the desk of Chris Allison.....

Prussic Acid Toxicity

There are a number of plants that, under the proper conditions, produce an excess of the glycoside of hydrocyanic (prussic) acid. Worldwide, about 1,000 plant species in 250 genera are known to release prussic acid (HCN). Many plants that are valuable forage most of the year can accumulate high levels of HCN under specific conditions. Important prussic acid producing plants in New Mexico include johnsongrass, sudangrass, mountain mahogany, chokecherry, arrowgrass, milo, cocklebur, annual goldeneye and others.

The poisonous properties of these plants depend on what condition they are in. Mature cyanogenic plants are thought to contain less potential HCN than younger plants. Cyanogenic plants made into hay produce less prussic acid than they do as fresh forage. Wilted plants are considered more dangerous than fresh plants because of their high content of preformed prussic acid. Any interference with the normal plant growth such as frost, drought or trampling, tends to increase the amount of free prussic acid in the plant.

Ruminant animals seem to be more susceptible to HCN poisoning from plants than nonruminants because the rumen microflora and pH encourage greater glycoside breakdown than occurs in nonruminants. Degradative enzymes need to be present in the consumed plant for HCN to be released in the animal. Prussic acid is absorbed directly from the rumen. HCN is a small molecule, and is rapidly absorbed and

excreted by several routes. Much is eliminated simply in breathing.

Prussic acid inhibits the action of the enzyme that links atmospheric oxygen with metabolic respiration. Body cells cease to function because they are deprived of oxygen. HCN poisoning causes asphyxiation (oxygen starvation) at the cellular level. In a poisoned animal, venous blood is bright red, like arterial blood, because the oxygen of the arterial blood has not been utilized.

Prussic acid is one of the fastest acting poisons. There is little difference between toxic and lethal HCN levels in the blood. It takes only about 2 milligrams per pound of body weight per hour to kill an animal. Plants containing more than 20 mg per 100 g (0.02%) are considered dangerous.

Animals that have ingested a toxic amount of prussic acid quickly exhibit an increase in the depth and rapidity of breathing. Weakness, tail twitching, and staggering are followed by inability to stand. They may assume a position characteristic of milk fever, that is, lying on the sternum with the neck turned backward and the head resting on the shoulder. In the final stages, the animal usually lies on one side and breathes heavily through an open mouth, and often has respiratory convulsions. Death is usually preceded by a characteristic blow. Bright red venous blood differentiates this condition from other types of poisoning with similar symptoms.

Sodium nitrate and sodium thiosulfate are specific antidotes for hydrocyanic poisoning. An intravenous injection of 1.2% sodium nitrate and 7.4% sodium thiosulfate solution in a dose of 125 to 250 cc is the best treatment for prussic acid



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poisoning. If the solution is injected before the heart stops beating, the animal may be saved. Care must be taken to distinguish between nitrate and HCN poisoning because this treatment would cause death if the animal suffered from nitrate poisoning.

Top of the Valle Bull Test Sale – The bull sale is scheduled for Saturday, October 10th at the Valles Calderas Ranch at 1:00 p.m. Lunch will be served at 12:00 noon. For further information, contact Manny Encinias at Clayton Livestock Research Center – (575)374-2566 or (505)927-7935.

The New Mexico Vegetation Management Association (NMVMA) 17th Annual Conference will be held November 18-20, 2009 in the Hilton Albuquerque. The address is: 1901 University Blvd., NE, Albuquerque, NM 87102. The telephone number is (505)884-2500 or (800) HILTONS. It is located at the intersection of I-40 and I-25. This year's theme is "Advances in Vegetation Management". **Pre-registration deadline for the Conference is Friday, October 30, 2009.** Conference & Dues Pre-registration is \$75.00, Conference & Dues Registration after October 30th is \$100, and Membership Fee for those who cannot attend the Conference but would like to remain part of the organization is \$25.00. Sorry no refunds. Make checks payable to: New Mexico Vegetation Management Association, P.O. Box 430, Mesilla Park, NM 88047. You can access the website www.nmvma.com for further information or contact Keith Duncan at (575)748-1228.

Schedule for NMVMA

Wednesday, November 18

- 1:00 pm Nyleen Troxel Stowe
Welcome & President's Address
- 1:15 pm Maury Craig- NMSU
Principals and Resources of Calibration
- 2:00 pm Craig Runyan- NMSU
KISS Calibration Method
- 2:45 pm Break/ Door Prizes
- 3:00 pm Eddy Williams – BLM
Restore New Mexico
- 3:45 pm Richard Lee – BLM
Adding New Chemistry Under the BLM Process
- 5:15 pm Door prizes/ Vendor Introduction

Thursday, November 19

- 8:00 am Nyleen Troxel Stowe
Board Nominee Introductions
- 8:15 am Jim Crosby- BASF
New Chemistry for Bareground and Selective Weeding Programs
- 9:00 am Chad Cummings- DAS
Dow AgroSciences Investment in Agriculture and the Environment
- 9:45 am Break/ Door Prizes



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10:15 am Rick Arnold- NMSU
Cheatgrass Control in Rangeland
Pasture and Canada Thistle
Control in Irrigated Pasture

11:00 am George Beck- CSU
Thistle Management

11:45 am Door Prizes/ Announcements

12:00 noon **Lunch**

1:20 pm Nyleen Troxel Stowe
Announcements

1:30 pm Rick Arnold- NMSU
Stand Establishment of Four
Rangeland Grasses to Herbicides

2:15 pm George Beck- CSU
Native Forb, Shrub and Grass
Response to Rangeland
Herbicides

3:00 pm Break/ Door Prizes

3:15 pm Jerry Pitts- DuPont
Animocyclopyrachlor- A
New DuPont VM
Herbicides

4:00 pm Steve Baca- NMDA
What is NMDA Looking
For?

4:45 pm Door Prizes/
Announcements

5:00 pm **Adjourn**

Friday November 20

8:00 am Nyleen Troxel Stowe
Announcements

8:15 am Jamshid Ashigh- NMSU
Mode of Action of Herbicides

9:00 am Break/Door Prizes

9:20 am Rodney Rogers – Four Corners
Weed Control
Handgun Applications

10:05 am Allen White - USFS
Forest Service
Management of
Invasive Plant Species

10:50 am Jim Wanstall – NMDA
NMDA Update

11:35 am Raffle Drawing
(Must be present to win)

ADJOURN

MARK YOUR CALENDARS –

**JOINT STOCKMAN'S ANNUAL
CONVENTION** is scheduled for
December 3, 4, and 5th in
Albuquerque, NM.