Considerations for decision making to salvage graze drought stricken cereal grain fields.

The risk of nitrate in our drought situation is inherently high as the conditions in SE Montana favor nitrate accumulation in our cereal forages. Standard nitrate testing protocol has been developed for harvested forages to be fed as a winter of feedlot diet – no credit is given for selective grazing by the livestock. We really have no established protocol for evaluating risk of nitrate in a grazing situation. Experience indicates that animals grazing fields that test positive for nitrate have less risk of developing symptoms that those fed similar testing forages that are harvested.

First, animals tend to eat more slowly when grazing compared to those being fed hay and the grazing cattle also tend to be more selective while grazing.  Stems have the highest level of nitrates, followed by leaves, then heads.  So, if the cattle are allowed to access these cereal fields as a whole (not strip graze) they will typically graze the upper portions (i.e., leaves and heads) first and will be consuming the lowest nitrate plant parts.  Second, more mature forages will have less nitrates than younger.  Typically, the highest nitrate levels are when cereals are late vegetative to boot growth stage and decrease toward milk and less when soft dough.  This typically only holds true, though, when soil moistures are normal, so we don’t want to judge a field based on maturity alone.

Decisions we make should take in these considerations:

·         Forages from each field considered for grazing should be tested using the newly implemented strip test at the Local County Extension office.  Two tests can be performed, one on the top portion (leaves and heads) of the plant and another on the lower stems.  To get a differential of accumulations.  (not to be confused when we are testing for hay harvest, we evaluate the entire plant in the case of hay)

·         A ‘Graze Lightly’ recommendation should be given to those fields with high NO3.

·         The graze lightly recommendation will not only allow the cows to primarily eat the low nitrate leaves and heads but it will also allow the rumen bacteria to adapt to processing higher nitrate feeds, allowing more nitrite to be converted to ammonia rather than entering the blood stream.

·         Animals at times have shown evidence of adapting to elevated levels of nitrates so a graduated approach to increasing level of nitrates would be advisable if possible. “step up nitrates slowly”

·         If at all possible, lower risk cattle should be used.  Open cows are probably the best choice followed by stockers or non-pregnant replacement heifers.

·         Turn cattle out to novel fields after a grazing bout, not hungry.  Grass waterways that are incorporated with the drought grain fields will help alleviate some issues and / or allow the cattle access to the fallow strips to pick and graze last year’s stubble also.

·         Be sure you are not compounding forage nitrates with nitrates that may be elevated in the cattle’s water source.  A normal water source with only minor levels of nitrates that on a normal year is not a problem could elevate the animal’s intake to a level the produces nitrate toxicity.

·         If the producer has an option, supplementing the cattle with an grain supplement while they are adapting to the higher-nitrate forages will supply the energy the rumen microbes need to convert nitrate into bacterial protein because it minimizes the middle step of nitrite. Use a readily available energy source for the cattle. NO energy sources with NPN. Protein should be all-natural protein.

·         Cattle should be monitored closely for signs of nitrate poisoning.

Other things to consider:

Should the crop have any grain fill it will aid in reducing nitrate toxicity but realize, wheat is highly digestible so associated grain problems could occur, Acidosis, bloat or founder. When we are talking cows the idea of increased foot problems may be important in the long run.  This may not be a high risk on some peoples list but definitely comes into play with hailed out grain just prior to grain harvest.

Be sure the cattle are on a high-quality mineral if possible 30 days prior and the entire time they are on the drought pastures

Remove cattle at the first sign of symptoms, move to a safe field.  Methylene blue is the treatment, consult your veterinarian before using this treatment.

There is only two ways to reduce nitrates in the plant, let the plant mature or ensile the crop.  Cutting and windrow grazing will do nothing to reduce the nitrates.

If the producers can keep their pregnant cattle from risk it would be best, perhaps graze yearling steers or non-replacement animals rather than pregnant animals, if possible. Think about the effect of nitrate on both the cow and bull if the bulls are still with the cows, you may negatively impact breed up.

Emergency forages will be used throughout Montana this year. Producers need to realize there are inherent risks associated with them and how each risk can be mediated or judged appropriate, so they can make the best decision for their operation.

Signs of chronic and acute toxicity can be found here:  [https://store.msuextension.org/publications/AgandNaturalResources/MT200205AG.pdf [nam10.safelinks.protection.outlook.com]](https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Furldefense.com%2Fv3%2F__https%3A%2Fnam10.safelinks.protection.outlook.com%2F%3Furl%3Dhttps*3A*2F*2Fstore.msuextension.org*2Fpublications*2FAgandNaturalResources*2FMT200205AG.pdf%26data%3D04*7C01*7Ctimothy.fine*40montana.edu*7Cd501cafb2e5e4b6971a108d93a8bb94c*7C324aa97a03a644fc91e43846fbced113*7C0*7C0*7C637605194503905749*7CUnknown*7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0*3D*7C1000%26sdata%3DKGr*2FNtqxHQAteJDaCNbhUwTXr0kG*2FO6T4AqmQ1HKI4U*3D%26reserved%3D0__%3BJSUlJSUlJSUlJSUlJSUlJSUlJSUl!!GaaboA!687NJMqMJtjHW8pSye-jRZWi72FP_LE2vdbrh_S8gUH-untBMuJVORI0_QBQ1A0Rrg%24&data=04%7C01%7Ctimothy.fine%40montana.edu%7Ceef53578be9c489252b208d94199d4df%7C324aa97a03a644fc91e43846fbced113%7C0%7C0%7C637612951243137450%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=Jn%2BbKJ0SyUfuL4POxKEj11r127eSwiN6ewgXNjfyzb4%3D&reserved=0)

Hope this helps as you try to assist producers in this difficult time.