

ACV FOR LIVESTOCK THE USER'S HANDBOOK

ACV- FINDING THE GOOD STUFF

When ranchers tell me they are giving vinegar to their livestock and I ask, “what kind?”, the response is usually, “uh, I don’t know....it’s *vinegar*”. To be honest, until recently, I really didn’t know the right answer either. I knew there was some difference, like the smelly old distilled vinegar from grain is quite different from the old-fashioned and almost tasty apple cider vinegar, which we knew was basically the “medicinal” one. Back in my childhood my mother had a funny little book called “Folk Medicine by the most old-fashioned doctor around D.C. Jarvis, MD. This Vermont doctor was one step removed from the classic horse and buggy doctor but he was probably trained by them. This was before the advent of antibiotics, vaccines and exotic pharmaceuticals, back when doctors actually had to know something that would help people. Well, some of the cures worked, and Dr. Jarvis compiled over a hundred of them in one of the most popular classic medical books in history. It’s still in print over 50 years later.

The reason for the success is that most of these particular folk remedies are actually really good, and, best of all can be done from home. My mother gave all of us vinegar for various ailments and my dad took it too for his arthritis and for his acid reflux. It works. When I had hives as a child my mother bathed me in vinegar and it worked. Great for poison ivy, chigger bites and just about any skin problem. As you read the book you kind of get the feeling that maybe we could achieve world peace if we could just get all the leaders of the world to sit down and have some apple cider vinegar and raw honey! But anyway, get the book, it’s good.

Nowadays I use vinegar on livestock and it’s working so good it makes me wonder if we will soon run out of this good thing. I mean, seriously, if the word got out, which it is, and I’m part of doing that, it could be a problem. We can worry about that day if it comes, but for now you can get all the ACV you want. As I’ve done so my “education” has continued to evolve. When people ask me “are you the vinegar guy”, I’m pleased to say, “Well, no I’m not, but I know a guy who knows a guy...” and that is the best news of all.

In the beginning, I would buy vinegar by the gallon at discount stores and it seemed to work, even though it was a bit expensive. I believe I saved a bloating bull said to be

worth over \$10,000 one time by giving him about a half gallon of ACV which made a believer out of me.

Meanwhile ... back to sourcing the good stuff

Turns out that many if not most products sold as "raw, unfiltered, unpasteurized apple cider vinegar" are really NOT that. To my knowledge there is only ONE version that is the "real deal".

It's made by ROGER FAIRCHILD in Fruitland, ID.. The livestock ACV only comes as 6% (aka 60 grain).

There are two versions, CONVENTIONAL which is made from tree-picked apples (not ground-falls), ground up in a specific manner and fermented via a complicated and computer-operated process. Roger makes 1.5 million gallons in most years but production goes up every year to meet increasing demands. He has seventy-two 50,000 gallon stainless steel storage tanks. He is also licensed to manufacture and package Certified Organic ACV ... Fairchild's Vinegar ... in quart and gallon containers. It seems like every year my insights and information about ACV practically doubles.

The ONLY ACV that rings all the bells, and that comes in wholesale quantities (that is, not a farm or small orchard product) comes from Roger Fairchild in ID. This is the only one to buy.

HOW TO KNOW.... You can easily tell if you have the right thing in your barrel.
Roger's vinegar looks like this:

- 1) Dark Brown and thick
- 2) Opaque, you can't see through a champagne glass filled with it.
- 3) When stored, living ACV will often generate a new "mother" that is a combination of fermentation yeast and bacteria. It floats on the top and resembles that "scoby" that forms when making kombucha. This is crucial stuff. The sediment at the bottom is mostly the shells of dead yeast and, while it has some protein, it's not particularly valuable. It is often confused with "mother".

CHECK A SAMPLE: If it's thin, and clear, like urine or black tea, with virtually no sediment.... DON'T BUY IT, it won't make you happy.

RATING THE DIFFERENT CATEGORIES OF "ACV"

1) The One To Buy: IDAHO-MADE 6% in barrels or totes. Available by commercial shipping from CA to NY, from Canada to Mexico and all parts in between. Demand has virtually doubled every year for the past 4 years!! You can get 1-4 barrels per pallet or one tote. All shipping is by the pallet unit. All prices are wholesale prices.

2) Close, But No Seegar: Everyone else's product. These are (according to my secret sources) made from JUICE CONCENTRATE (MOSTLY FROM CHINA).

These vinegars will do quite a bit, actually, it will increase rumen efficiency, quash many parasites (internal and external) and they are immune tonics.

Usually available for slightly less money, and less than 1/3 the enzymes and probiotics. BUT, they won't make you very happy, they are always using an inferior product.. We tried several hundred barrels of other brands of vinegar and, yep, they don't work as well. Other failures will result from not using enough, or not having good minerals available, otherwise, Golden Valley is the only product that ALWAYS works for everyone.

3) No-Apples Vinegars- That is NOT apples. Includes Cane, Rice, and others. The jury is still out. Roger says he's tried them all and none have the horsepower of vinegar made from real apples. Apples, as it turns out, have phytonutrients that turn into almost magical ingredients in ACV. it's the "other 94%" that does most of the heavy lifting for health, reproduction, detox and enhanced butterfat, IMF, egg and meat production.

4) Fugettaboutit- So-called "DRIED ACV". It's never that. According to my sources, it's always a "test tube" acetic acid concentrate. That doesn't mean it will do nothing, it actually is an extremely strong NUTRIENT CONCENTRATE. Acetic Acid, and this is about 100% acetic acid, is a prime energy source for ruminants, one that is naturally-occurring in the rumen of all ruminants. So, consider it for a pure nutrient, but not for an immune tonic, not for a wormer, not for a fly repellent, just energy. See if it dollars out for you....

1) Actually it does matter which ACV you buy, make sure it's west coast ACV, the only one of which is Whole-Apple, Idaho ACV made at Golden Valley Vinegar. The east coast commercial vinegar (Like Fleischmann's), as well as a California version are made

in bulk and are made from juice concentrate (often frozen, often from China) and are inferior where it counts: Enzymes and Microbes. They will work somewhat, but it takes more so it ends up being more expensive. The so-called “dry ACV” is merely test-tube acetic acid, not ever live vinegar. Dry does do a few things for the rumen but it’s not cost effective when compared to live vinegar.

2) I have been seeing tremendous results with cow-calf application. The 100% perfect “grass genetic” cow on 100% perfect hi-brix nutrient dense forages is the exception and needs far less help breaking down cellulose and hemicellulose, BUT anything less than 100% on either count truly appreciates the help! That’s what Idaho Whole-Apple ACV does, it adds enzymes from the apple to the rumen microbes that break down cellulose to get more energy. Cellulose (and everything else that ends in “-ose”) is a chain of sugars. We see cows that can hold their condition, we see better weaning weights, we see more pounds/acre, more dollars/acre, less cost of production, any way you want to slice it.

3) It’s fairly easy to figure how much ACV it takes, figure one gallon/cow-calf pair/month. That’s 4 oz/head/day, and there’s 128 oz/gallon. How you get it in them frankly doesn’t matter that much. Be creative. Put it in the water. Oh, can’t do that? Put it on the hay. Don’t feed hay? Put it out 50:50 with water in a tub. Can’t do that? Make a long Elizondo-style trough and drizzle it into that. Be creative.

When you bring in damaged, stressed, or malnourished stock that are coughing, scouring, wormy, weepy-eyed, bony, faded-coated, weak, run-down, ratty-looking animals..... give ACV to them free-choice 50:50 with water. Let them have all they need until they are rehabilitated. Here’s the best place to add 1/2 oz of Grassoline or up to 3-4 oz of Molasses.

4) ACV will definitely knock lice and other parasites, BUT if you have these parasites you actually have other problems, 99% of the time your livestock are showing signs of mineral deficiency. Sometimes it’s definitely genetic. Try to learn something new, don’t reach for “band-aids” for parasites (internal or external) just fix the internal problem(s). Bad water, bad forages, bad genetics, bad environment, stress, bad mineral plans, etc.

ACV won’t work fully unless you have your livestock mineralized.

5) ACV runs you about \$0.05/oz or \$0.20/head/day. However, those who keep track say it is a good, honest 20% savings in feed. What is that number per day. I have seen very few cases where you don’t save more feed cost than THE cost of the vinegar. If you get another pound of ADG per day, even 1/2 pound/day, you have already made money.

That is your ROI. All the rest is “gravy”... bloat-resistance, foot health, fly protection, scour prevention, pneumonia protection, pinkeye protection, bad weather resistance, liver health, cardiovascular circulation improvement (to the testicles, udder, uterus), less arthritis (older bulls and cows), and much more. Name me one other thing that does all that (and that you get “paid” to use?).

The art of using ACV for livestock (after you have selected the right brand!) is to find the absolute easiest way to give it. If your method is complex or if it's labor-intensive, you may not choose to stick with it. Here in Minnesota, where it does get cold for about 5 months a year, we usually just add 5 bags of Sea-90 seasalt to each 275 gallon tote (one pound of salt per gallon of ACV), stir it up and offer it either on the hay (like salad dressing) or just put some out free-choice in a low rubbermaid tub. This is just for super cold weather. Straight ACV would freeze at about 28 degrees over an extended time. It doesn't hurt it, but it's difficult to use in freezing cold weather.

Fortunately, for the rest of the year, we are able to meter it out using a Dosatron right in the waterline. These injectors are extremely accurate, use no electricity and work for everyone, just set it and forget it. There are two models, the plain version is set at 1:128, whereas the adjustable can go from 1:128, 1:256, and more. It's worth the extra bump in cost to get the adjustable version. Otherwise, one can use the 1:128 version and dilute the ACV before it goes in, say to 50:50 with water, resulting in a 1:256 solution (the dilution numbers may seem somewhat odd to some, but it's simple, they are logarithmic = Dilutions are 2,4,8,16,32,64,128,256, 512, 1024..and so on).

FOR ALL NORMAL HERD SITUATIONS Use the 1:256 dilution. One gallon of ACV to 256 gallons of water. This is perfect and will achieve all your goals, better digestion, cut feed cost 25-30%, improve ADG, and create wonderful health (they do need minerals too!)

FOR STRESSFUL TIMES, IF THERE IS SICKNESS, NEW ARRIVALS, ETC- Double the dose offering 1:128 throughout the time of stress. Could be weather stress, infectious diseases, drought, shipping or moving stock and such issues. Make sure everyone is back to good health and then start diluting it back to 1:256 when everything is back to normal.

PS extreme heat will kill and destroy all the enzymes and biology in ACV. That would occur if containers are left sitting out in the sun. Cover it if it's outside in the summer where inner temperature could easily hit 140 degrees F.

It never ceases to amaze me why it's so hard to get people to even try something that is so well-documented....

FREQUENTLY ASKED QUESTIONS

- 1) **How is the Idaho Whole-Apple Vinegar from Golden Valley Vinegar different from other “raw, unpasteurized ACV”?** There is one huge difference that makes this the strongest, most-powerful and most delicious vinegar, and that is that the Golden Valley process begins with WHOLE APPLES. While all other commercial ACV is made from the juice of the apple, GV macerates (grinds) the entire apple because there is medicine in the skin, the core, the seeds, and the meat of the

apple. This means there is more of the essential fatty acids (acetic primarily), more enzymes, and more probiotics. Juice-derived ACV will work, but just not as well, in fact, it might take twice the quantity to achieve the same level of performance. Much of the “juice derived” ACV is actually made from imported (China mainly) frozen juice concentrate. This is even less effective. Unlike GV, most manufacturers are reluctant, for obvious reasons, to divulge their sources of apples or juice, making it virtually impossible to determine (until you try it).

2) Why do some vinegars say 50 grain, 100 grain or other variations, what is “grain”?

Grain refers to the percentage of acetic acid, one way to measure the total strength and acidity of the vinegar. The strongest fermented vinegar is 60% and rarely up to 70%. That is the full-strength product as it comes from the tank. The process turns sugars into alcohols, which are then fermented into acetic acid. In most cases, if it is any stronger than 60% grain, that means it is either “distilled” vinegar, which has other uses but is vastly inferior for livestock health and efficiency, or Apple Cider Vinegar made from JUICE CONCENTRATE and not fully rehydrated. Because it is “dead”, the enzymes and probiotics have been destroyed by boiling seven gallons down to one gallon of concentrate.

3) Is Golden Valley ACV considered human edible? All our GV organic vinegar is of food grade quality and the entire process from beginning to end is certified to be food grade, that is it is certified to be human-edible. The bottling facility for our human grade is on one side of the plant and the other side being where it is packaged for the so-called livestock grade. The vinegar production methods are basically the same on both sides, The organically-certified version involves Organic apples and packaging that requires more licenses, more certification, more inspections and must be sealed accordingly.

You can get the vinegar in 55 gallon barrels, 275 gallon totes or even tanker trucks. The larger the size you buy the less expensive it becomes and the freight to ship to you is lower per gallon.

Idaho Whole-Apple vinegar is totally unfiltered and still contains the acetobacter (Mother) that is required, in any vinegar plant, to convert alcohol into acetic-acid. People have been misinformed about what “mother” is. Even Bragg tends to confuse people into thinking the sludge on the bottom is a mother, it isn’t. To make any Apple Cider Vinegar, aceto-bacter (“mother”) was/is required at the crucial step. The acetobacter converts the alcohol in the hard apple cider into acetic-acid thus turning it into Apple Cider Vinegar. Some companies pasteurize the ACV killing

the mother. That ACV is still acetic-acid which raises the ph level of the animal which can be tested in the saliva/urine.

The mother, in unpasteurized ACV, is fully distributed microscopically throughout the product. The sludge is not much more than dead protein cell walls, whereas the mother is a living substance, filled with biology and life. Every drop of Idaho Whole-Apple ACV is alive, not only with “mother” but also the full gamut of vitamins and enzymes from the Whole-Apples that that were handled with “kid-gloves” during the process at the plant. By telling the true story, your company can “trump” the old stand-by companies.

The “alkaline-forming response” from ACV is not from the mother. It is from the ACETIC ACID that the mother created. Once the mother has done its main job of this conversion, it is only one of MANY enzymes, prolamins, vitamins and minerals that Whole-Apple Idaho ACV has to bring about that 20% savings in feed.

If you allow your Idaho Whole-Apple vinegar to sit for a while, sometimes a formed mother will redevelop. If left in the sun, it will turn to a medium-dark brown as it sits.

HOW TO MAKE “VINEGAR HAY” WHILE THE SUN SHINES!

by Will Winter, DVM

Are you putting up hay this year? Now’s the time to make a plan to create delicious hay, forages that are the next-best-thing to living grass. Freshly-cut grass should be a “sugar ball” of energy. However, really good hay is rare. First of all, the grass or legumes, to be valuable, must be able to receive everything they need from the soil. If one essential ingredient is missing, the tonnage, energy and nutrient-density will be diminished. Soil testing and adding the appropriate soil amendments will bring you up to maximum production. More about that later.

Secondly, all forage plants should ideally be cut late-afternoon on a sunny day, that’s when the sugar level (Brix index) is peaking from a full day of sunshine-capturing. The chlorophyll (the green part of plants) has photosynthesized CO₂ and water into pure sugar. Almost all of that delicious sweetness is still hanging out in the solar panels (leaves and stem) until it gets dark, then it is sent to the root ball. Your job will be to capture it at it’s peak.

And, thirdly, the plant needs to be “locked-up” immediately after cutting. A cut plant is actually still alive and respirating even though it’s severed from it’s root base. Every day that lapses after cutting (say, if it rains) means approximately 1/4-1/3 of all the

available nutrients, primarily sugar but also the precious plant polyphenolic “plant medicines”, will be consumed and gone forever. That is, unless the plant is rendered into suspended animation. There are two ways to do this, the first is with hot sun, a light breeze, and the accompanied drying that results. This is ideal and we hope it can happen in just a few hours. Once it’s in the bale, it’s too late. The other way to lock up your sugar and nutrients is with the “pickling” process that occurs with fermentation or ensiling. Fermentation requires plenty of volatile fatty acids, mainly acetic, propionic, butyric and lactic acids. This is what happens with saurkraut, silage, milk products, or all other fermented foods. The natural sugars are converted first to alcohol then quickly into vinegar. The more sugar the better (high Brix) because low-sugar grasses will not “pickle” at all and are ripe for spoilage and mold problems. When the pH drops due to the acid, the hay or silage product becomes stable and will keep for long periods of time when properly stored.

To speed up the process, and to hold on to your valuable nutrients, one can buy “hay conditioner products” that are sprayed onto the freshly-cut forages. Most consist of propionic acid, which replaces what should have been there from Nature. A few products also contain special fermentation microbes that speed the process. Sadly, almost all the propionic acid conditioners are “test-tube” chemicals and therefore have no living enzymes or microbes. This means they don’t work very well. These chemical products are easy to apply but can be rather expensive and, while better than nothing, they often seem to be hardly worth the cost and bother. But, there is actually something even less costly and that works so powerfully that everyone single person that tries it will witness the results!

Savvy producers are now learning how to make “Vinegar Hay”. It is accomplished using high-quality, unpasteurized, and whole-apple-derived Apple Cider Vinegar (ACV). The sooner it is sprayed on the cut forage, the better it works. Many hay producers simply drive up and down the windrow with an ATV and spray about 3 gallons per ton of hay right on the center of the windrow. It starts working immediately with the living enzymes and microbes doing all the work. The more technical name for Apple Cider Vinegar is acetic acid. This is the natural chemical that helps Nature preserve silage or forage, but that acid is only a small fraction of a living (unpasteurized) Whole-Apple cider vinegar, and maximally only 6% of the total liquid. The next best method is to add the pure raw ACV to a tank on the front of the baler and roll it up right into the bale. Hay that is preserved in this manner can be “dry baled” at up to 23% moisture and the bales or stack will never heat up, and there will be close to zero mold! This eliminates one of the most tricky aspects to putting up hay! Everything that has been said so far also applies equally to all bagged or silo-destination forages as well.

I should add that not everyone makes their own hay. Boughten hay can be converted to Vinegar Hay very easily, starting with one labor-saving technique which is to tip all the bales up on their ends, load a tote of ACV onto the forks of a tractor and drizzle the appropriate number of gallons right into the bale. Then flip the bales back down so it doesn't run out. Don't worry that it's not evenly distributed, this is still a good technique. Finally, there is the most-commonly used technique which is to calculate the correct amount of ACV needed for 1-3 days of hay consumption, put it into a bucket and pitch it directly on the hay as it's being fed. This works great and since ACV has the flavor effect of "salad dressing" on the hay, it makes it taste very sweet and desirable. Note too that the "worse" the hay, that is, if it's stemmy, over-ripe or just old, the better the Idaho ACV works!

Not that they will need more hay overall, mind you! I've saved the best news for last! Since Whole-Apple ACV stimulates the cellulosic bacteria of the rumen, the specific bugs that digest cellulose and hemicellulose, e.g. "wood", this is a really good thing because the majority of "energy" in forage is locked up in the fiber. If the animal cannot digest the fiber, all that good energy source goes to waste and can be seen in the manure. As a result, vinegar hay will increase forage digestion efficiency by at least 20%. That means a 20% or greater reduction in your feed bill! This more than pays for the ACV and many see a 2-3X Return on Investment (ROI) for every penny or dollar spent on ACV. All the numerous health, production and fertility benefits of Idaho ACV are the cherry on top of this banana split!

To estimate the quantity required, one can use that figure of 3-4 gallons per ton. Cattle themselves operate optimally at 4oz/1000 pounds of body weight per day, or one gallon per cow per month, this is another way to calculate the total amount to buy. Most people tend to be afraid of shipping costs to their farm, but in this case, it is very affordable, ranging (depending upon distance) from only \$0.25/gallon to, at the most \$2.00/gallon. Wholesale price plus a bit of shipping is far less than the retail price. Still an incredible bargain, and, as we mentioned above, you basically "get paid" to add it! Buy in bulk and save. ACV keeps forever!

One very important benefit that I haven't mentioned for a while, is that daily ACV helps mitigate Fescue Endophyte toxicity. Also other mold toxins, some heavy-metals, iron, and pesticides. ACV is a well-known liver cleanser so that's another big plus. When you hang out in meat plants you can look at livers and tell a lot about what the animals were going through (or not going through), but most certainly, the liver really takes a bullet for us. It's probably the hardest working organ, and definitely the most complex organ. Anything that helps the liver is a good thing. But anyway, this is just one of many

reasons why we recommend using ACV year-round for everything from cow-calf to finishing.

NATURAL METHODS DESIGNED TO FIX ENERGY PROBLEMS FOR GRAZING LIVESTOCK

by Will Winter, DVM

Why not use Plan A? Just do what the bison did.

In the grass-fed finishing world, it's important to recognize that for one to become one of the successful graziers, it's absolutely essential to understand the difference between the various grasses. And then, and the sooner the better, move towards the good grasses. This is true anywhere on this planet, and in any biome. For example, one huge reason that the bison and elk survived here on the prairie, no, thrived here on the prairie, was because the native warm-season grasses "cure" at the end of fall and capture protein and energy in the above-ground parts of the grass. The nomadic herds of native animals tended to avoid these grasses throughout the summer, while they somehow "learned" to eat the other grasses and forbs. Had they stayed put and eaten it, the loss of solar panels would have knocked the grasses back, whereas eating them in the winter does absolutely no harm whatsoever to the sustainability of plants.

When we Europeans came, we didn't understand this. So, we did what we always do, kill off all the native megafauna (and, of course, the native people), then we ran our steel plows up and down the hills ripping out deep sod, and then planted what was familiar to us, European grasses, including some Asian, Eurasian, African or other "exotic" grasses. Little did we know how pathetic these plants are for winter nutrition! Of course, it goes without saying that we knew how to put up hay! We also traded in the elk and bison for European cattle breeds that graze in completely different patterns. As this practice spread, millions of acres of grazing land began to shrink in quantity and quality. One also needs to add to this equation the inevitable and episodic droughts ("improved" grasses have shorter roots), overgrazing, soil erosion and loss, the ruination of creekbeds (unlike bison, cattle like to bunch up along creekbeds), and the fires (exotics burn like kindling and thus burn way too hot). Most of the exotics, like the so-called Kentucky bluegrass and the crested winter wheatgrass for example, over-populated. Likewise, the imported and inedible invasive weeds exploded. So this is where we are today! We need energy and we need a lot of it.

Luckily, we can bring in Plan B..... “B” for “Band-Aids”

In the short term, there are some energy “band aids” and that is what I want to focus upon. These cost-effective tools can get everyone into the black very quickly. When rations become deficient, there can be many reasons as we have discussed. And for sake of brevity, we won't talk about excesses here or toxicity, just deficiencies. The most common of all is low energy. Jerry Brunetti used to say that there were two types of feeds “Go Foods” which are energy foods, mostly starch via grain, or sugars via grass, and then “Grow Foods” which are the higher protein feeds. Good levels of protein, including adequate amounts of the essential amino acids is needed for younger animals that are building frame. At the other end of the game, which one could call finishing or fattening, we need plenty of go food.

The energy sources that are now becoming the most common, even exceeding the use of lick tubs (which can also be good) is Apple Cider Vinegar (ACV). With ACV, not only do we get the average daily gain increases, the increase in forage utilization, and a host of health benefits such as parasite elimination and immune stimulation, we get more. We get more glucose for fattening, particularly marbling! And now, the story gets even better. This includes some of the side products that we derive from the fermentation processes used to manufacture ACV.

Apples contain 2.5 times as much sugar as corn, over 10 grams per 100 grams of apples, of which over 2.5 grams is already glucose. When we ferment this into alcohol, we get a 7% (14 proof) product that is ready to go to work towards making marbling

Here are some products that I recommend trying:

The number one source of excellent and pure energy is Idaho WHOLE-APPLE cider vinegar. It can be given at the rate of 1 oz per 250# body weight daily. A full-sized cow usually gets about 4-6 oz/head/day. I have tried other, cheaper vinegars, but I was always disappointed with the results as well as the return on investment. The good stuff is Golden Valley Vinegar's ACV made from whole apples; it's 60 grain (full strength), unpasteurized and unfiltered. In feeding trials on summer grasses, we have seen stockers gain an average of 0.75 pounds of gain over and above identical cattle on the same grass but without the ACV. For 500# stocker, and even at today's grassfed beef prices, this is at least an extra dollar's worth of meat for about \$0.12 worth of ACV per day. We can actually see similar gains on stored forages. The reason this works, in short, is that ACV stimulates the cellulosic bacteria in the rumen, the ones that break down cellulose, hemicellulose and even some lignin to break down more. These hydrocarbons

are made out of units of sugar molecules. The more woody and fibrous the hay or grass, the better it works.

2) We have direct access to fermented apple alcohol and it is sold as “Apple Kick-Start,” which is heavy alcohol juice blended with ACV. This is for getting grass-fed animals to marble.

Apple Kick-Start be fed at the same rate of one oz/200#/head/day throughout the fattening period. This is even more critical in the extreme cold of northern climates and during the hot weather, especially in the southern climates.

3) CANE MOLASSES (non-GMO)- There are times when we either feed it direct, or it can be mixed with ACV. Molasses is pure energy, or, really, it’s pure fuel for rumen bacteria. If we mix the MOLASSES with the ACV a 3:1 ratio is a good place to start, three parts ACV to one part molasses. One could almost call this Super-ACV because of the boost to energy. Molasses can also be drizzed on hay or grass silage when it is harvested or it can be injected into bales.

4) Another item to keep in mind is a brilliant product called Grassoline and it was patented over 20 years ago. This mixture of alcohol, cane molasses, certain minerals and probiotics supplies not only pure energy but it is also a hydrogen donor (the root of pure energy stimulation at the level of the Krebs’s Cycle). This is a long chemistry lesson to understand fully, but that process enables one to achieve full results with only one ounce of the brown liquid for a 1000# bovine. Giving any more is unnecessary and not cost effective. A full dose costs about \$0.07 per head per day.

Dosage EXCEPTION ~~ When we are faced with stress, hauling, weaning, exposure or changing seasons or rations, it’s common to give livestock all the ACV they chose to take free-choice. The easiest way to do this is to give it in a tub or watering trough mixed about 50:50 with water. They love this combination and it has proven to be very effective to help prevent them from going backwards when in transition, and it’s even shown to be a wormer (if worms are present), as well as being a great preventative against coccidiosis, cryptosporidiosis or other “shipping fever” or scour pathogens!

Furthermore, some have gone ahead and mixed in either straight cane molasses with this free-choice mix, or even the proper 1 oz dose of Grassoline. This is optional, with the ACV being the main activator of everything.

What to watch out for:

Many forages such as the early spring grasses have too much nitrate in them, after all the new plants are in need of “grow food” themselves. Nitrates in excess is very toxic to animals. High nitrate, often expressed as non-protein nitrogen (NPN) frequently causes abortions, excessively loose manure, poor daily gains, and almost inevitably weight loss. It can even be fatal, in fact it’s one of the top three killers of dairy cows. The same problems occur with excess nitrates with low-Brix, or low sugar forages. The two values are reciprocal, that is low-brix will have high NPN, and high Brix forages will naturally be low in NPN. Idaho Whole-Apple Cider Vinegar has the **“nitrate-reductase” enzyme** to help buffer this “washy-grass” problem. A true win-win when one improves Brix levels. Other winter forages such as the feeding of corn stalks can have lethal or abortive levels of nitrates, so can millet, cane or oat hay. Even certain edible weeds such as pigweed or lambsquarter can have dangerous levels of nitrates. Note too that ACV, among other things is a good mitigator of poisons such as nitrates in feedstuffs.

Tru Story USING ACV- TO GET THE BALL ROLLING!

Recently, I had a stunning breakthrough in regard to thinking about how to get started fattening cattle more quickly and more economically. As you probably know, Energy is virtually always the “limiting factor” in production, occasionally protein, but almost always Energy. No matter how you slice it, average daily gain (ADG), cost of gain (COG), return on investment (ROI), or pounds or dollars/acre, I’m pretty sure that this math will pencil out for you, like it has been working for me.

When this occurred, I was doing consulting for ranch in the Midwest that just acquired some new land that had been in corn-and-beans for probably 100 years, maybe longer. It was toxic and tired out! We wanted to convert it to pasture, so we could extend their existing grass cattle farm. We needed to get it productive again, but we didn’t have any money for a true fertilizer program or even more jump-up fertilizer. It must be organic, very inexpensive and something we could do without equipment or lots of labor.

We also didn’t have the money to spend years getting there.

Year One: We knew we would be sacrificing some time and money the first year. The only thing we did was spray it heavily with a biological stimulant and (perhaps a bit too early!) a complex seed cocktail consisting of warm/cool season grasses, legumes and brassicas. We got a big fat nothing. Scarce, scraggly weeds, less than two feet tall, so I had them sickle-bar mow it down. We want to get the pitiful biomass on the ground where it could compost and do some good.

Year Two: Yikes, big, wonderful spring rains and unbelievable weeds, six feet tall. The problem was that it was just weeds (burdock, thistles, pigweed, giant ragweed and the like). Sadly, the highest Brix I ever saw was a pathetic 3! This won’t grow animals, but we didn’t want to completely lose another year so, to add the magical alchemy from the rumens of animals, we added 43 equally-scraggly mutt cattle from the neighbor (sale barn quality). They were lost and

invisible in the weeds in seconds, but they were starved so they began munching away. They were also seriously mineral-starved, so they consumed 3 bags of my all-in-one mineral/vitamin mix within the first week. But, how to get the ball rolling? Due to the low Brix (low energy) I put out 4 oz of Idaho Whole Apple Cider Vinegar along with one oz of Grassoline (fermented molasses) per head. We had no labor on hand but we could add it to a 100-gallon Rubbermaid tub every morning then fill it with water and let them fight over it. By evening, it was always gone! I'm sure the wormier, sicklier ones probably got the most, we don't know.

They grazed from early July until Mid-November. When we pulled them out, they had somehow, magically, miraculously turned into gorgeously plump animals ready to go to town. They had arrived averaging about 450-550#/head and left between around 1100#. This was a stunning ADG of nearly 4# of 100% grass-fed beef! In other words, we made a fantastic profit! On weeds! With junk cattle! Our Secret Weapon? Energy, both from the ACV and from the super-energy of Grassoline. That year we sold them as 100% grassfed, which they definitely were, but they were what we call "grinders", in other words we didn't cut steaks from them. Since they graded USDA Select 40 or better, we still sold them for about 70-80% of our top carcass price!

MORAL OF THE STORY: We believe that anyone with good grazing ability that has "Grass-genetic" British cattle and 12+ Brix forages can easily make a good living with cattle. But here we were, we had neither of these criteria. However, via the use of Energy Supplements, we were able to achieve great results, even by the second year of soil building. As can anyone who is willing to try something new!

PS- Year Three and Beyond..... More good news! The owners are now rotationally grazing these same 80 acres and it is a rich, biodiverse combination from many of the seeds we planted, the ones that had been so reluctant to grow the first year. Already, the Brix is always over 6 so that the stocking density in an average rainfall year will already sustain 1000-2000#/acre! Due to the increased grazing energy, we no longer need the Grassoline but the ACV is still quite helpful both for increased herd health as well as improved digestive efficiency. It's now impossible to know that this land was ever tilled! With proper grazing, it gets better every year!

NEW REASONS TO GIVE APPLE CIDER VINEGAR TO LIVESTOCK

WILL WINTER, DVM

There are three good reasons we give Idaho Whole-Apple cider vinegar to livestock and the first two don't really matter as long as you understand the main reason. Well, they do matter and they are great reasons, which we can talk about later, but the newly-discovered reason to give livestock raw apple cider vinegar trumps everything else. Two main reasons to feed Idaho Whole-Apple ACV are: 1) to increase the digestibility of grains and forages, 2) as well as to improve gut health and thereby feed efficiency. This works with all ruminants, all stages of growth for swine and poultry. The gains can be most-quickly measured with dairy animals. Recently, we have done

controlled studies that clearly show that we can turn cupfuls of raw, unfiltered, unpasteurized ACV into pounds of additional meat and milk! Maybe someone somewhere already knew this but this fairly recent discovery came as a true shock to us.

Going back into history, vinegar has been fermented and used medicinally for thousands of years, for example, we have the Biblical story regarding the humane Roman soldier who gave vinegar to Jesus on the cross in order to mitigate some of his suffering. But, for our generation, such publications as Prevention magazine and the Old Farmer's Almanac have informed us that raw ACV could be used to help treat and cure sick farm animals and pets. Folk doctoring has used vinegar for everything from foot rot, pinkeye, mastitis, bloat, or milk fever, to ridding animals of biting flies, lice, ringworm and mange (that "alkaline-forming" response again). No, not quite a "silver bullet" but there are very consistent and visually noticeable jolts of immune stimulation. Best of all, it was always an inexpensive remedy, always non-prescription, always non-toxic and therefore a true home or folk remedy. My mother always kept handy her copy of "Folk Medicine", the Vermont folk doctor's little book from the 1930's that extolled the virtues of the vinegar cures. We used vinegar for many common digestive and skin ailments, and I still have and use that very same dog-eared copy of the book. Even more amazing, the book is still in print selling thousands of copies a year.

When I started working for Thousand Hills Cattle Company in 2003, and in compliance with their no-antibiotics-ever protocol, I learned the second use for ACV and that was that we could actually help prevent certain sicknesses by giving it to healthy animals that were about to be shipped, weaned, freshened, or who were being placed into other stressful situations such as weather extremes or calamities. Whereas previously I'd only given it to sick animals, I found that giving it to healthy animals **prior to stress** was a valuable preventative strategy with demonstrable results. To be able to help prevent shipping fever, milk fever, or calf scours without one single vaccine, antibiotic or drug seemed amazing to everyone, and it was.

Throughout all this evolution, the volume of vinegar that I was administering was increasing. Obviously, this paralleled the number of animals who were receiving it. Probably because dairymen work more closely with their livestock (and keep better records of details than the average rancher) it was actually the dairy herdsman (and herdswomen) that took me to the next level of awareness on this journey of discovery. Before long, especially when we started giving ACV to animals on a long-term daily basis, we saw the "magic" that was happening in the digestion department. This was what led to what I call the third great observation in the value of raw ACV for livestock. And here it is, we noticed that with the vinegar animals we were getting increased

starch digestibility, increased rumen efficiency, and measurably better conversion of feed to milk and meat. After several years of anecdotal observation, we have now scientifically documented these feed efficiency findings.

Back in 2008, a dairy nutritionist at the University of Wisconsin, Dr. Patrick C. Hoffman, was working on their new strain of floury endosperm corn (as opposed to hard dent corn). (you can find the overview of the experiment here <https://shaverlab.dysci.wisc.edu/wp-content/uploads/sites/87/2015/04/CornBiochemistryE-1b.pdf>). As part of his experiment to extract more digestible carbohydrate (starch) out of the corn, they began doctoring-up the ground corn with various essential fatty acids, not the least of which was acetic acid. As you probably know, the best source of acetic acid is apple cider vinegar, which when fully and naturally-fermented will yield a full 6% acetic acid in the final product (that is also known as 60 grain ACV). Anything rated a higher grain level than 60 has been distilled, or from concentrated apple juice, both processes kill enzymes, kill probiotics). The scientists then learned that the dissolving of the matrix of the kernel is not accomplished with direct acidic breakdown alone. Acetic acid does break down protein, that's how I make chorizo sausage. In that case I put vinegar on the ground pork and it becomes quite soft and less textured. What really happens when we use real and Whole-Apple Idaho ACV is that there may be hundreds of enzymes and cofactors that assist the acid in breaking down the protein matrix, called prolamins, thus releasing the stored-up units of pure starch (energy or TDN). Lactic acid, as in silage does this as well, but nothing like raw ACV. The article shows beautiful electron microscopy of the prolamins breaking down releasing the balls of starch. It's not uncommon to see vinegar-steeped corn experience an increase in TDN from the low 50's to the low 70's. This translates into increased production since energy is the most-common limiting factor to production. Really good corn, with TDN's already in the 70's, when steeped with ACV show additional boosts of digestible nutrients of another 10-15%.

As if that were not enough, the enzymes and bionutrients found in live, unpasteurized, Whole-Apple vinegar aid digestion at yet another totally different manner. This affects forages more powerfully. The enzyme-rich vinegar actually stimulates the cellulosic bacteria in the rumen to break down more cellulose. As you may know, each kind or variation of probiotic bacteria in the rumen primarily does one main thing, or, more correctly, has a specific desired food they eat. Some cleave protein, some work with sugars, but the home run hitters for us are the ones that break down "wood", which is pure cellulose and lignin. Cattle can't digest wood any more than we can (neither can a termite) but they host beneficial microbes that are specialists at this difficult task.

Almost all animals can digest protein, starch, sugars, fats and tiny amounts of fiber, but the ones that make us money, the ones that are the most efficient and doing something

that no other animals can do, are the ones that are efficient at turning totally ingestible substances into “food”. When it comes to digesting roughages with raw vinegar one could say that the poorer the quality of the forage, that is the stemmier and more woody it is, the better the vinegar works!

One additional aspect of feed digestion via raw vinegar that is worthy of mention is the propensity of the raw vinegars to help mitigate toxins and poisons. One of the most deadly is the mold that can contaminate any grain or roughage. GMO grains are particularly notorious for registering the highest mold levels, especially the Fusarium family of mold. This killer is subtle. Unlike the Aspergillus-type molds that can kill instantly with tiny amounts of aflatoxin, the Fusarium mold creates mycotoxins that primarily and insidiously deactivate the immune systems of the animals who consume it, thus rendering them much more susceptible to disease, including mastitis, metritis, foot rot, pink eye and many other crippling and financially-devastating illnesses. Since mold seems to be everywhere these days, we believe that mold is one of the top three killers of dairy cattle.

So, now that you have heard me tell the background of the story, here’s what our extensive testing has shown us....

~One rancher called us because he thought the ACV was making his cows “sick”. He said he used to fill the winter feed bunk with hay every three days, but now that they were drinking 4 oz of ACV a day he only filled the bunk every 4-5 days. My first reaction was to ask, well, how are they looking, are they losing weight, do they have problems showing up in the manure? No, the ranchers said, the manure was excellent and all the cows were getting as fat as “little butterballs” and, not only that, they were doing it on less hay! The truth slowly began to dawn on us.

~Here’s what happens when we “steep” ground corn before giving it to dairy cows. This is for a 2000 cow conventional dairy. We mixed enough ACV to give each milking Holstein 6 oz daily (Jersey’s or other smaller cows 4 oz daily) along with an equal amount of water, and added it to the corn. It needs to sit for as little as 24 hours, but can steep for up to 5 days. A concrete pad or floor is fine. Before serving the vitamin/mineral premix is added. Note: we have tried adding the minerals at the time we add the ACV and it somehow blocks some of the action. The result is that we are increasing overall STARCH DIGESTIBILITY by at least 30-40%. Typical corn goes from the mid-50% range to the low-to-mid-70’s. What that meant in dollars is an increase in average milk production of a minimum of 2.5# daily simultaneous with a 2.5# reduction in feed intake. Also the milk protein components go up an average of 0.8%. For this dairy, the savings in feed costs was over \$20K/month. There was also an extra \$20K in

additional milk. The increase in protein gave us \$0.40/cow/day extra for another \$800 a day. All this for the cost of the ACV which is about \$0.18/cow/day.

~Note that these numbers were for a *conventional* dairy. If we apply the same scenario to an organic dairy, the cost of the ACV goes up \$2-3 dollars a gallon, however, the cost of the corn can be 3-4 times as high, which exponentially increases savings. Additionally, the price received for organic milk means one can almost double those milk profit numbers.

More Apple Cider Vinegar Farmer Stories

Minnesota ... Winter feeding of grass fats

20-25% less forage consumption with the addition of 6 ounces of ACV/head/day. What is happening here? The enzymes in the ACV are helping the animals digest more of the nutrients that are in the dried (lignified) hay.

Kentucky ... summer grazing

Rancher split the groups of 500-600 pound yearlings and the pastures they would be grazing as evenly as possible. One group received 3 ounces of ACV/head/Day. The other group was the control. At the end of 60 days, the ACV group had gained 48 more pounds per animal than the non-ACV group.

Medicine Bow Wyoming, early March 2022. Rancher calls and said, "I just ran out of ACV 3 days ago and it is now taking 30% more hay to keep the cows happy. Get me two more totes here as soon as you can.

In most of these stories, we are getting close to a 2:1 return on investment (ROI) over the cost of the vinegar. Is there anything else that offers this kind of return? If there is, I haven't seen it.

~ And bear in mind, in addition to the upfront financial savings, we are getting all sorts of side benefits in improved foot, eye and udder health as well as additional protection from parasites, flies and disease.

~What about super corn with 71% starch digestibility? And we do see that. When treated with ACV in the same exact way, we have shot the digestibility to 80% and over. The savings mount up all the way to the lagoon manure pit and beyond.

~ We had an interesting call from an Amish dairyman who had been giving ACV to his 20 milking cow dairy herd and was happy with it, but when a traveling salesman convinced him that a new enzyme-yeast product would work even better, he switched. The results manifest in an interesting way. His son, who was responsible for shoveling the manure trough every three days, said "Dad, I don't like the enzyme product, I hope

you will go back to the ACV". Why? He was now having to shovel the trough every other day. What does that tell you?

~Back to the hay story, we have also been getting reports on the use of ACV as a hay preservative. One hay purveyor in Iowa sums up what everyone sees. By treating the hay with ACV at baling time (we use a commercial or home-made injector system on the front of the baler) at a rate of only three gallons per ton, the producer is able to put up wetter hay and can pay less attention to finding dry spells to cut and bale. We can bale alfalfa hay up to 23% moisture, which is pretty wet, and get absolutely no heating in the bale whatsoever, and virtually no development of mold later on as it dries. Obviously, the pH change from the ACV, which is the primary "pickling" principle of all fermentation, is inhibiting the growth of mold (and preventing the creation of dangerous mold mycotoxins). Additionally, we know that living vinegar is exceptionally high in enzymes and co-factors that increase the protection of the hay bale.

There is only one large plant in the US that is capable of manufacturing Whole-Apple Vinegar and it is the Golden Valley Apple Cider Vinegar plant just outside of Fruitland, Idaho.

The key difference to remember is that whereas all the other major plants begin by using juice, or, worse, frozen juice concentrate to make their vinegar, GV has developed methods to macerate the entire apple which is then anaerobically fermented as a mash. They have discovered that within the skins, the core and the very meat of the apple, there is medicine that cannot be captured just with the juice of the fruit. Obviously, the juice itself can make good vinegar, just not as good, and certainly with less enzymes and beneficial bacteria.

Sadly, the "juice-sourced" vinegar product suffers even more if the quality of the juice they start with is diminished. It is very common for these facilities to import frozen juice concentrates from China which quite often have been found to be polluted or altered, so it becomes impossible to create a valuable product when one is starting with so very little. Or, with built-in toxins. It's safe to say, if you are not getting your vinegar from the "whole apple" factory source, you are not getting your money's worth. So far we are seeing that it might take twice as much of the "cheap" ACV to do the same job as one can expect from "the good stuff". One Amishman from Pennsylvania said it took 14.8 ounces of an eastern brand vinegar to get the undigested cellulosic fiber in the manure down to the 1/3"-3/8" desired length. We also know that apples grown on the west coast of the US tend to be better apples. The dry climate is essential for apple production and

allows producers to make a better crop, with far less pesticide required and a more valuable, more nutrient-dense apple.

Once you have bought the good stuff, try not to get hung up on the details of how to administer it. Almost everyone finds that the simplest method, the one with the least amount of labor involved is the best. Every farm, dairy or ranch is different which is why we have developed some sound methods of adding ACV. Some my drizzle it onto the hay or steep the grain with it. In many cases, especially in the summer, it might be easiest to merely add it to the drinking water. It is interesting to note how many animals will simply ingest free-choice ACV, either straight, diluted with water, or even mixed with molasses. The important thing to remember is that all we need to do is get it inside the animal. Then it will work, how that is done is less important, as long as it is easy. Those of us who have been giving animals ACV for years can help you find the easiest method to give it.

Good news: You can currently acquire the absolute best ACV in the world for only a few dollars a gallon. At this time, the Certified Organic version adds only about \$2/gallon more. Golden Valley vinegar is shipped either in tanker loads, 275 gallon totes, or 55 gallon drums and it can be shipped in bulk quantities anywhere in the continental US for under \$2/gallon for shipping. For those of us who use it, the financial aspects we think about now are more about how much money raw vinegar will make us, and much less about what it "costs" to buy it!

PS- For vinegar to work, you must have your livestock fully-mineralized, or make sure they have free-choice access to good minerals. Under-mineralized animals lack the critical trace elements like CU, ZN, SE, I, BO, CO, MN, MG and others that make all enzyme chains operative. Minerals are not "optional" anyway.

Summary of Experiment- Apple Cider Vinegar Research By Tom Franzen for Practical Farmers of Iowa.

- 1) Pigs were given feed to which 5 gallons of raw ACV was added per ton. Half the pigs were raised exactly the same but without the vinegar.
- 2) The ACV pigs ate less feed (105# less/pig) but gained more weight more quickly! The study took them from 40# to an average of 260#.
- 3) Average carcass yield on the ACV pigs was 78.3% (a historic high!) whereas the non-ACV pigs only averaged 74% (farm normal).

- 4) The ACV cost \$10/pig total, and the ACV pigs sold for \$30 more, giving them a \$20/pig EXTRA PROFIT.
- 5) All the ACV pigs appeared healthier (by independent observation), and were in better condition than the non-ACV pigs.
- 6) The study is being enthusiastically repeated for improved scientific accuracy.

PFI On farm research Apple Cider Vinegar

- First of three side by side feeding comparisons began in Sept 2014.
- Control is fed normal organic diet.
- Treated group has 5 gallons of organic raw apple cider vinegar added to each ton of feed as it is delivered to the feeder.
- Vinegar is continued through the life of the market hog.
- Trial begins at about 40 pounds weight and ends at about 260 pounds
- There are no physical problems with adding the vinegar to the feed.
- First comparison was completed Jan 30, 2015.
- Second comparison began on Feb 10, 2015.

PFI On Farm Research Vinegar in swine cont.

- Vinegar fed pigs ate 105 pounds LESS feed - 3.6 vs 4.1 conversion.
- Vinegar pigs had a better appearance by independent observations.
- Fecal samples were NOT taken - a real oversight !
- There was only one group from the vinegar side and one group from the control sent to the OV Supreme Pak processing.
- The vinegar carcass yield of 78.3 % was a historic high yield.
- The control side carcass yield of 74% was normal.
- This yield added \$20 to the value of those carcasses by weight.
- AGAIN A LITTLE KNOWLEDGE IS DANGEROUS - WE NEED REPS !

PFI ON Farm Research Vinegar in swine cont.

- Batch #1 was not a good group of pigs to work with due to the tail end and uneven weights.
- Marketing of batch #1 lasted for 30 days and then some pigs were still not at weight for market.
- The second group that started on Feb 10, 2015 is very even.
- The pens with the treated group are rotated from batch to batch.
- DO NOT OVER REACT WITH THE FIRST EVALUATION.
- Livestock research is complex and requires many replications.

PFI research Apple Cider Vinegar batch #1

- Only 18 pigs were available in September - they were not even.
- They were sorted for the best uniformity possible at that time.
- Vinegar pigs ate more feed and made more gain for 8 weeks.
- All pigs were weighed on a 35 day schedule.
- By week 9 feed consumption was identical.
- In the last 9 weeks the vinegar pigs ate LESS feed yet they gained more.
- Vinegar market hogs sold to OV had a 78.3 % yield.
- Control market hogs had a 74 % yield.

A concentrated metabolite of the fermentation of organic molasses into alcohol. It becomes at least 4-5X as effective in the digestive tract as it's mother product, straight CANE MOLASSES. That being said, we have also had extremely good successes using 1-4 oz of molasses per day, either alone or, better yet, mixed with ACV. Grassoline was invented and patented back in the 1960's by Missouri State University professor Clifford Willis. It was originally designed for the feeding of confinement dairy animals as well as for feedlot cattle. Back then there was no real market or interest in raising 100% grass-fed grazing beef. It was discovered that a tiny amount, *actually one oz/head/day* could accentuate metabolism and the utilization of energy in very dramatic ways. Mainly described as a "hydrogen donor" in metabolic reactions within the cell it achieves the highest rate of most of the 'combustable' substances, carbon being the lowest, then nitrogen, then oxygen, and the most-powerful of all hydrogen.

BTW, the ACV and Grassoline do different things, the ACV tends to work primarily through the enhancement of digestive bacteria in the rumen, plus the liver cleansing and other detox effects work wonders. The Grassoline is strictly a source of hydrogen donation, that is to speed up the Krebs' cycle for metabolism and energy. Previous studies we have done with ACV show an increase in volume of milk, but also better butterfat and a bit more milk protein. For this reason, ACV is becoming very popular with dairy producers. They also appreciate the fact that it lowers mastitis, somatic cell counts, foot and eye problems, also fewer parasites. We don't yet have hard scientific numbers for the combination but that is coming.