

Jandrew

belted galloway stud

49 Molong St, Stuart Town NSW 2820
Andrew Monaghan 0417 686 455
The Costume House, Gladesville
6 12 9879 7880

E: thefrockmaker@yahoo.com.au
0428 321 440 Glenn Smith
Frank Smith Work Clothing, Bathurst
6 12 6331 7544

A VALUE IN VINEGAR

Vinegar has an interesting and respectable history as a beneficial food source and supplement. **Andrew Monaghan** of *Jandrew Belted Galloway Stud* is impatiently waiting for his first Beltie calf drop so explored some of these benefits, particularly regarding arthritis and dystocia, hoping to make time go just a little faster.

Source of Acetic Acid

Vinegar is, among other things, a diluted, impure, aqueous solution of acetic acid. It can be produced from the fermentation of fruits, and from the dilution of the acid itself. The pure form of acetic acid is strongly corrosive, causes serious burns and is very harmful if swallowed. Think of drinking a bottle of vinegar – you wouldn't be feeling too well afterwards! But the hazards of the pure acid should not be taken as representative of the vinegar product.

Acetic acid can also be derived from methanol and is included in the recipes of such

everyday things as making PET plastics (100% recyclable), polyester fibre, and water-based paints and adhesives.

Acetic acid is the most extensively used organic acid. By the end of the 19th century, the greater portion of it was actually derived from wood vinegar.

Glacial acetic acid is the solid form of acetic acid. It is anhydrous (or water-free) and solidifies at 16.7° C. It can be concentrated by dripping the impure compound over a 'stalactite' of glacial (frozen) acetic acid. The pure stuff crystallizes and the impurities run off with the liquid. Glacial acetic acid was first discovered in 1759 by Count de Lauraguais and initially known as 'copper spirit'.

In 1898, Drs. Harvey Felter and John Lloyd details the human use of *diluted* acetic acid as an antidote for poisoning by caustic alkalies, checking moderate haemorrhages and superficial wounds, application to ringworm if a stronger acid is not desirable, and preventing the occurrence of bedsores!

Apple cider vinegar is the vinegar commonly provided to stock and normally has an acetic acid content of 4-8%. Other types of vinegar aren't thought to give similar benefits.

Source of Potassium

"An apple a day keeps the doctor away" is well-known pearler from great-grandmother's days and beyond. Apples are full of potassium.

Potassium is so essential, that there would be no life in every living thing without it. Potassium is never found pure but always in combination with an acid. Apple cider vinegar is a great source of potassium along with acetic acid.

Potassium requirements are at a maximum when body tissues are being built in infancy. It is associated with growth.

It is reasoned that the versatility of apple cider vinegar is because it associates other minerals, such as phosphorous, chlorine, sodium, magnesium, calcium, iron, fluorine, silicon and many other trace minerals, with potassium. The apple's vinegar maintains the entire

mineral load from the original apple itself.

Potassium is connected to natural remedies for obesity, chronic fatigue and headaches, high blood pressure, and many other health issues.

Vinegar for Cattle

The use of vinegar as a ration for cattle is conspicuously absent in my ever-growing library of Victorian and Edwardian cattle books and farm manuals. In fact, when researching this article, it wasn't until I reached the mid 20th century texts that vinegar use rates a mention.

Why this is so is somewhat perplexing to me. I remember my grandmother, born in the early 20th century to a Sydney farming dynasty, advocating the use of vinegar as a supplement in stock feed rations per the ordinary course. She reared poultry and milch cows during the depression and war years. Where exactly did she get this information?

William Youatt, a professor at the Royal Veterinary College, London, had this to say about vinegar in 1834 when listing medicines used in the treatment of cattle: "This used to be considered almost a specific in distension of the rumen with gas, but on what principle it would be difficult to explain. It has also been given with manifest impropriety in cases of fever. On the thick skin of the ox it can have little preference to hot water as a fomentation, and may with no great loss be erased from the list of medicines."

So unimpressed with vinegar was Youatt that he even indexed the subject with "of little use in cattle practice".

Youatt's opinion nonetheless, various people over the past few decades have found success with vinegar supplementation in cattle,

supplied to prevent or remedy a number of ills.

Dr DeForest Clinton Jarvis is a graduate of the University of Vermont Medical College and was also the Rural Medicine Editor of the *Medical World*.

His book, *Folk Medicine*, first published in 1958, is the culmination of his studies of folk medicine and its principles used in farm life in Vermont, USA during the second quarter of the twentieth century.

Jarvis, a practitioner of conventional medicine, noticed the superior health of farm people who practised traditional folk medicine. He discovered the wise and successful ways of this style of prevention and cure and subsequently set about to see if science could explain its success.

Numerous case studies conducted by Jarvis, involving cattle and apple cider vinegar, are littered throughout his book. Jarvis observes, "There are many common denominators in pregnancies of cows and of women. I owe to cows many of the observations which I apply to pregnant women and infants."

For anyone interested in vinegar and its cattle applications, it is a book to seek out. The book is easily obtainable via Internet auction sites such as Ebay.

Arthritis

Broadly, arthritis is inflammation of the joints. The synovial lining of the joint becomes swollen and reddened due to either trauma, chemical or infective inflammation, or even faulty conformation. As a result of any of these irritations the joint swells with the secretions of synovial fluid or pus and rub against each other. Once a grinding action sets in, the bone structure becomes damaged with

the whole area becoming inflamed and swollen.

A chronic situation occurs with the laying down of fibrous tissue and the enlargement, and partial or complete immobilization of the joint. Occasionally the fibrous tissue becomes calcified, turns to bone producing bony enlargements, and impairs movement.

This common problem of bulls, particularly occurring in the hocks, has no cure once the joints are damaged. Arthritis can restrict a bull in serving a cow.

Sydney cattleman Rick Pisaturo, famed for his *Mandalong* cattle, spent fourteen years researching arthritis in bulls because he could not find any significant research taking place elsewhere to address this common livestock problem.

Pisaturo felt that grains were responsible, particularly wheat, maize and barley, but he also concedes that these same grains were the most beneficial in hand feeding. His firm belief was that these high protein grains give excessive heat to the body because of the slower digestive process. Boiling, or even steaming these grains, which promotes faster digestion, reduces the risk of joint damage unless excessively fed.

He also believed grain feeding created bulls that are often referred to as being too big in the shoulders. He feels again that this is caused by inflammation of the joints resulting in the shoulders spreading out. A highly inflamed pastern, he continues, causes the rarer problem of soft and overgrown hooves resulting in lameness. He notes that after a few weeks off grain, rough rings will appear around the hooves. As these grow the upper part of the hoof returns to being hard and normal.

No one cattle breed is determined by Pisaturo to be more prone to arthritis than any other. Rather, he feels that susceptibility is more likely to be found in individual families within a breed. Nonetheless, he is sure that any bull can be affected with joint damage by grain feeding regardless of his genetic background.

So how did Pisaturo solve this issue? With acetic acid.

Pisaturo believed that acetic acid stimulates a rapid digestion, even faster than boiled grains thus diminishing any excessive heat created in the digestive process.

Mandalong's first trial with vinegar began in August 1973 with a fifteen-month old red Poll Shorthorn weighing 433kg. The trial went sixty-eight days. The bull was penned with a small yard attached and daily rationed with a barley and oats mixture, which was sprinkled with 4 oz. of vinegar. A few days later, calf pellets of high protein (over 18%) were added. No roughage was provided, although the bull never ceased to crave it. Pisaturo had previously found that a bull would be affected in the hocks within a few weeks while on a vinegar-less ration of these pellets accompanied with the usual grain.

Pisaturo was astonished with the result. No sign of joint trouble and there was an improved coat and condition. At the end of the trial, the bull weighed in at 635kg – a daily weight gain of 2.82kg instead of the usual herd average of 1.81kg, representing an improvement of almost 56%. The bull's conformation and mobility was unchanged and impressive. The bull was subsequently slaughtered and the meat found to be very tender.

The trial resulted in all *Mandalong* cattle on grain feed given a daily dose of acetic acid of at least 57ml. Pisaturo felt that

Recommended Vinegar Rations

ARTHRITIS

Rick Pisaturo:

▶ Each day, add to grain ration at least 57ml of vinegar or vinegar-strength Acetic (33%) or Glacial Acetic Acid (99%).

▶ To make up vinegar-strength acetic acids:

Glacial Acetic Acid (99%) – divide by six (6) to obtain the vinegar strength i.e. 15.5 litres water to 1 litre of Glacial Acetic Acid (99%)

Acetic Acid (33%) - divide by six (6) to obtain the vinegar strength i.e. 5.5 litres of water to 1 litre of Acetic Acid (33%)

Dr D.C. Jarvis:

▶ Add 2-4ozs (60-120ml) of apple cider vinegar poured over the twice-daily feeding ration when it is placed in the feed trough (total 120-240ml daily).

DYSTOCIA

Pat Coleby:

▶ Add 100ml of *unpasteurized* apple cider vinegar per head three times per week added to feed ration or watered on hay. This programme should be started six to eight weeks coming up to calving. *Note:* Cider vinegar is obtainable now in quadruple or triple strengths – water it down accordingly.

Dr D.C. Jarvis:

▶ Throughout the pregnancy, add 2 ozs (60ml) of apple cider vinegar poured over the twice-daily feeding ration when it is placed in the feed trough (total 120ml daily). Continue each day until calf is born. (Jarvis also recommends an iodine supplement to the vinegar ration.)

Note: It's fairly clear when researching recommended dosages that they depend upon the discoveries and mindset of the individual prescriber. It appears the dosages given above aren't necessarily written in stone but reflect each prescriber's experience. Things such as the size and weight of an animal, pasture varieties, etc probably should be taken into consideration. Commonsense should prevail.

vinegar was far too expensive and substituted diluted Acetic (33%) or Glacial Acetic (99%) Acid instead.

The cessation of grain feed, and six to eight months of lush green feed, will also return good health to nearly any bull

providing the joints have not been too seriously damaged. Pisaturo says although a bull can eat his way into arthritis, you can delay complete collapse with diet and the checking of any unnecessary or surplus weight carried.

Pisaturo subsequently found similar benefits in vinegar-supplementation of horses as he did with cattle. While visiting the US, he discovered that acetic acid was a common practice among horse studmasters and trainers but a well-kept secret.

Pisaturo's conclusions concur with Jarvis' earlier observations. While studying the relation of potassium to calcium, Jarvis became interested in a cow that had enlarged, inflamed knees. A vinegar supplementation introduced to the herd at large, with no specific thought towards influencing the cow's ailment, found the cow to become more mobile with the knees returning to normal size within the year.

Jarvis naturally questioned whether the potassium and acid in the vinegar had influenced the calcium deposit favourably in both knee joints.

He relates another incident where a farmer reported to him the arthritis of a seven-year-old dairy cow who had great difficulty walking and rising to her feet, and a thickening of her milk from one quarter of her udder – so thick that the farmer could not milk it out with his machine. A 2oz (60ml) vinegar supplement was administered, raised to 4ozs (120ml) once it was clear the cow responded to it. The cow's arthritis cleared up and her milked production increased almost 300%.

Jarvis' research found that the entire physiological range of reaction of the extracellular fluid lies on the alkaline side of neutrality. The blood represents 25% of the extracellular fluid. Its reaction is weakly alkaline. When that alkalinity is increased above its normal weakly alkaline reaction, calcium is precipitated and deposited in the tissues.

In short, the cider vinegar helps to bring the pH back into

balance. This theme underpins Jarvis' general thinking regarding cider vinegar and its effect on the body.

Pat Coleby, currently Australia's pre-eminent organic farming consultant, is also enthusiastic about the benefits of apple cider vinegar. She makes a particular point to use only the unpasteurized product.

Coleby says systemic arthritis is caused by malabsorption or lack of calcium and magnesium, copper and boron. She advises that attention should be paid to the mineral imbalance in the soil and points to an appropriate lick containing the missing minerals and perhaps ad lib seaweed meal as a solution – as long as the animal is not on a diet too high in phosphates and *protein*.

She feels the diet should be confined to good grass, hay, chaff and bran with a minimum of grain. All high protein foods such as grain should be adjusted down until the bull or cow has recovered. She also notes that the addition of cider vinegar also helps recovery.

(Coleby also prescribes a teaspoon of borax per day over two weeks and reduced to twice a week thereafter for an arthritis-suffering cow on soil that is totally absent in boron. Boron naturally occurs in seaweed but if the boron in the soil is lacking, the provision of seaweed may be inadequate.)

In her notes on infective arthritis (or navel ill), Coleby does not include cider vinegar as a remedy. However, this style of arthritis also inflames the joints and one would expect a grain diet to exacerbate the problem. Therefore cider vinegar in the ration could be useful if a grain diet was unwisely continued.

Navel ill is caused by a bacterium entering the umbilical

cord after birth and settling in the joints forming an infection. Using Jarvis' thinking detailed further in this article, its not unreasonable to anticipate that the potassium content of apple cider vinegar would discourage an attractive environment for these bacteria to multiply.

Dystocia

Dystocia is the clinical name for difficult births or abnormal labour.

A deficiency in potassium causes blood vessel constriction to the cervix and uterus in the later stages of pregnancy and produces calf malpresentation and abnormal muscular contractions. Pulling calves is the result.

Potassium is inhibited by a soil too acid or too high in iron, and can be lost due to chemical fertilizers raising the soil's sodium level. The use of artificial nitrogen or phosphorous in any form inhibits potassium in the soil. Potassium deficiency causes an inability to utilize fodder correctly.

Coleby recommends adding *unpasteurized* apple cider vinegar as a short-term preventative (attention to remineralizing the soil being the medium to long term solution). "I first used cider vinegar on my milking goat herd

MAKING VINEGAR.-

Put one or two gallons of pure fermented cider in a clean cask, and place it in a garret near the roof, leaving the bung out. In two or three weeks it becomes vinegar. Small quantities of cider may be added from time to time.

- *The Farmers' Record*
Vol 2, No 4
c.1840
(American)

after a season of very difficult births. The next year I was amazed at the difference, even the largest kids from maiden does arrived relatively easily and in very good health.”

Jarvis also recommends that cattle feed be reinforced with a daily ration of apple cider vinegar to alleviate dystocia.

In the instance of one frustrated cattle owner, Jarvis recommended a twice daily feeding of 2 ozs (60ml) over the normal ration of twenty-three dairy cows (out of a mixed herd of fifty-four) that had failed to become pregnant over a year. Jarvis also suggested that the same vinegar ration be applied to the herd bull. The vinegar ration was introduced on 1st November and, by the end of the following February, all twenty-three cows had commenced a new pregnancy. There was a 100% calving rate of intelligent, strong vigorous calves.

Coleby and Jarvis’ use of cider vinegar solves both issues of arthritis and dystocia where Pisaturo’s use of diluted acetic acid does not address the dystocia.

Pattern of Inheritance

According to Charlotte Auerbach’s book *The Science of Genetics*, a lack of potassium and vitamin C at conception can interfere with the true pattern of inheritance. This should be a point of concern for stud breeders. Jarvis notes similar, “In cattle, even after superior breeding, when an excellent inheritance is marred by wrong diet, a calf will be weak and fussy”.

In fact, during a five-year study undertaken by Jarvis of a herd of 45 registered Jersey cows, one problem he was asked to solve was a consistent lack of uniform markings on the calf

drop. By observation, he assessed that the cows natural grazing habits showed preference, where and when available, for acid vegetation rather than herbage that was alkaline. Vinegar supplementation was introduced to provide the extra potassium required to counteract the absence of the preferred acidic herbage, and to balance the ration of alkaline forage. The herd improved remarkably, producing correctly marked calves.

This particular case should be of interest to Belted Galloway breeders trying to reduce the instances of thin, incomplete or target belts. Whether or not such a supplementation would reduce the occurrence (perhaps somewhere between 1:120 to 1:250 from my initial and incomplete investigations) of full blood Belted Galloways throwing solid black calves remains to be seen. This is more likely to be a genetic legacy leftover from hundred of years ago where “Galloway” bloodlines click rather than “Belted”. The mismarked belt is altogether a different issue. It would be attractive to trial cider vinegar for its effect on the development of correctly marked belts, and even perhaps for its effect on reducing the occurrence of white feet.

Other uses

Cider vinegar helps prevent bruising and assist the tissues to recover from exertion, Colby says. It can be used as a mild cure for skin conditions like ringworm (a form of tinea) by rubbing it in well two or three times a day over a couple of days. Dr Jarvis recommends doing it six times a day, just as he does the same for impetigo. Apple cider vinegar is an excellent antiseptic.

Coleby also advocates adding 500ml of vinegar to feed twice a week for stud bulls to help

prevent stones in the kidneys and ureter, a very distressing condition. This is especially useful if bulls are limited to very hard bore water.

Vinegar-supplemented cows, Jarvis records, will eat less hay and grain. He notes the same reduction in feed ration also occurs in humans.

While consistently checking on cattle during study, Jarvis noted some cows with watery, tearful eyes. These cows were also troubled by wet noses, shown by the way they ran the tongue up each nostril. Some cows coughed, indicating an excess of mucous in the throat.

Jarvis knew that potassium is insatiably thirsty, being a magnet for water, and started the 120ml daily cider vinegar regime. Immediately, the coughing, wet eyes and noses, stopped.

Jarvis concluded that a lack of potassium in daily food intake makes it impossible for a cow’s body to use the fluid. The symptoms previously expressed were spontaneous efforts to rid the water in the animals’ body. Potassium supplementation brought about the necessary dehydration thus reducing the excessive mucous.

One of Jarvis experiments revealed that additional potassium of 4ozs (240ml) per beast per day maintained the body chemistry in a state that prevented invasion of the body by destructive micro-organisms.

Jarvis made the startling observation that crows and foxes will keep away from the carcass of a potassium-saturated cow – the carcass remained in full flesh for almost four months, at which point, the maggots arrived demolishing the carcass very quickly. Jarvis’ point was that the potassium levels in the carcass

were a deterrent to the destructive micro-organisms.

With vinegar and iodine supplementation, Jarvis also noticed that lice will abscond from the hide of a cow, and that flies will not bite cows when on pasture. He notes that flies will bite young cattle not receiving the supplements. Again with a vinegar and iodine combination, he also managed to defeat the presence of cattle grubs.

The *Brucella abortus* micro-organism grows on an alkaline medium and causes contagious abortion in cattle commonly known as Bangs disease or *brucellosis*. Jarvis found this also reduced, and often stopped, the infection when the vinegar and iodine combo was administered.

With regard to mastitis, Jarvis' experiments found benefits here as well. He states, "In an ordinary case of mastitis, a swollen quarter will return to normal size within one week after the apple cider vinegar is started. If an attack is severe, two months will be required to return such a quarter to its normal size. As for salvaging cows that have chronic mastitis, about 75% can be restored to profitability in the herd." His milk production figures, recorded over three years while treating cows for mastitis with vinegar show a minimum increase in milk yield of 46%.

Because potassium had been associated with human growth, Jarvis questioned whether the issue was applicable to cattle and undertook an experiment with undergrown calves to see whether potassium supplementation would quickly bring the calves up to normal height. He succeeded. He also demonstrated that potassium supplementation of cows during pregnancy produced calves of normal height at birth.

Jarvis observes that potassium is to the soft tissues what calcium is to the hard tissues. It's not hard then to view apple cider vinegar as the healthy counterpart of dolomitic licks and the like.

"There is little doubt that potassium slows up the hardening processes that menace the whole blood vessel system," Jarvis continues. "Because potassium present in apple cider vinegar makes the meat of the dairy cow or bull tender when it is slaughtered for beef, there is very little doubt that one of the functions of potassium is to keep the tissue soft and pliable."

Rick Pisaturo relates a curious anecdote about the capacity of vinegar to tenderise meat. "I was given a piece of fox to eat when I was twelve years of age and I remember very well the man that shot the fox placed the carcass in running water overnight and then in vinegar for twelve hours. The result? Yes, it was tender." ■

Sources:

COLEBY, Pat: *Healthy Cattle Naturally*, ISBN 0 643 06765 5, Landlinks Press, Collingwood VIC, Australia, 2002

JARVIS, Dr D C, *Folk Medicine*, Henry Holt & Co, New York, 1958, & Pan Books Ltd, London, 1961

HUNGERFORD, T G, *Diseases of Livestock*, 3rd Edition, Grahame Book Co, Sydney, 1953

PISATURO, Rick, *Stud Beef Cattle & Common Sense*, ISBN 0 9595777 0 X, Self-published, 1978

YOUATT, W, *Cattle; Their Breeds, Management, & Diseases; with an Index*, The Society for the Diffusion of Useful Knowledge, Baldwin & Cradock, Paternoster-Row, London, 1834

Websites accessed 17th Jan 2007 on

Acetic Acid (for general info only):

▶ <http://antoine.frostburg.edu/chem/scene/101/organic/faq/print-ethanoic-acid.shtml>

▶ <http://www.methanex.com/products/aceticacid.html>

▶ <http://www.henriettesherbal.com/electic/kings/acidum-acet.html>

▶ http://physchem.ox.ac.uk/MSDS/AC/acetic_acid.html

So... what's YOUR story?

It would be great to do a follow-up article with your experience of using apple cider vinegar.

I'd like to know why you used it, what problems you had to solve, how you used it and what results you got with your cattle. What do you think of the stuff? Why do you think it?

It doesn't matter what type of Galloway cattle you run, or what association you belong to...it doesn't even matter if your cattle aren't even Galloways!

What truly matters is that your experience is recorded and your effort becomes part of the shared learning curve. That's progression!

That's...association!

So send me your story soon, along with your contact details to the email or street address on this letterhead and let's put something together that reflects the Australian Galloway experience!

Cheers,
Andrew

▶ http://ptcl.chem.ox.ac.uk/MSDS/AC/acetic_acid.html

Published in
*The President's Bulletin, Galloway
Cattle and Beef Marketing
Association, March 2007*
www.gallowaycattle.com.au