

PRODUCT OVERVIEW

The patented Bradshaw Back Rub Block (BRB) product has been developed as a waterproof set-and-forget primary treatment method for the control of fly-borne parasites on livestock. The BRB is a cylindrical-shaped wax-based product impregnated with an active ingredient during manufacture. The manufacturing process involves mixing and melting various waxes and oils together. A selected active ingredient is then added to the wax and oil blend, before the mixture is poured into coconut husk reinforced moulds.

The BRB patent covers the transfer method of delivering an active ingredient for the control of external parasites on livestock, and is not limited to any particular active ingredient. On-farm trials have been conducted under an APVMA Permit (PER7250). The active ingredient used in the trials, with outstanding results, was Diazonon. Promising manufacturing tests have also been conducted using active ingredients such as Chlorfenvinphos, Phosment, Coumaphos and Permethrin.

Additionally, an organic option has been manufactured using essential oil deterrents such as Citronella, Thyme, Eucalyptus, Rosemary, Peppermint and Tea Tree oils. The BRB organic product is in the early stages, with some very promising results.

The BRB product does not require recharging or maintenance for several months. A single walk-through back rub station using the BRB product will treat approximately 500 head of cattle for numerous months. Other benefits of the BRB include:

- ✓ Absolutely no uncontrolled release of chemical treatments to ground;
- ✓ Eliminates the safety risk associated with handling, mixing and storage of liquid chemicals on farm;
- ✓ Reduced infrastructure - the waterproof characteristic of the BRB product does not require a waterproof shelter.
- ✓ The BRB product will deliver consistent active ingredient strength for the life of the product, mitigating parasitic resistance build up;
- ✓ The solid set characteristic of the BRB product enables the BRB product to be installed in a vertical position increasing the coverage of the active ingredient on the animal. This is important because it places the active ingredient at the preferred feeding locations for mosquitos and midges;
- ✓ Improved transfer efficiency;
- ✓ Improved ease of set up.

PRODUCT INFORMATION

The patented Bradshaw Back Rub Block (BRB) product has been developed as a waterproof set-and-forget primary treatment method for the control of fly-borne parasites on cattle. The BRB patent covers the transfer method of delivering an active ingredient for the control of external parasites on livestock, and is not limited to any particular active ingredient. Read below to see how this product has increased efficiency and safety for the primary producer; improved animal welfare; is better for the environment; and improved sustainability.

Increased Efficiency

Yarding cattle for treatment against fly-borne, blood feeding parasites (such as buffalo fly, horn fly, face fly, mosquitos and midges) is time consuming and expensive. This is simply no longer necessary when using the Bradshaw Rub Blocks (BRB).

The new inventive and patented BRB product is a set-and forget self-applicator product, that will last several months without recharging or maintenance. The BRB product is a waterproof solid wax-based product impregnated with an active ingredient during manufacture. The BRBs are reinforced with coconut husk during the manufacturing process. The coconut husk binds the product together to provide the required structural integrity to withstand the impact of cattle. A single walk-through back rub station using the BRBs will treat approximately 500 head of cattle for numerous months.

The BRB set-and forget self-applicator system has both versatility and longevity. It is a product that can last for several months, so will provide the global cattle industry with the most efficient fly borne parasitic control system to date.

Improved Sustainability

Continued care needs to be taken with the use of parasite control products to prevent or delay the onset of parasite resistance to Organophosphate (OP) and Synthetic Pyrethroids (SP) chemical-based treatments. The overuse of chemicals (and particularly the continuous use of a single chemical treatment) is typically attributed to being the main factor for parasite resistance to OP and SP chemical-based treatments. However, there is little consideration that the existing delivery methods are in fact, contributing to the parasite resistance problem.

Oversprays and parasitic control ear tags, both have the common flaw that the concentration of the treatment is continually diminishing once applied to the animal. This flaw clearly provides a window of opportunity for parasitic resistance, as the strength of the chemical in the ear tag diminishes after being applied to the animal. There are costs and logistical issues to yard and head-bale each individual animal at the end of the fly season to remove expired ear tags. This often results in the expired ear tags remaining in the ear of cattle, until there is a need to yard and head bale cattle for other reasons.

The use of natural essential oil-based deterrents, at the beginning and the end of the fly season, is an option to reduce the overuse of OP and SP chemical-based treatments. The ability of the BRB to easily alternate between treatment options, will encourage greater use of essential oil-based deterrents. Therefore, BRB offers a quick and easy solution for the interchange between chemical products and natural essential oil-based deterrents, without any cross-contamination.

In summary, the existing transfer methods are contributing to the parasite resistance problem due to the diminishing concentration while in service. BRB is the solution to the parasite resistance build up to OP and SP based treatments. The BRB will deliver a consistent chemical concentration for the life of the product in the field.

Improved Animal Welfare

Animal welfare is at the forefront of all graziers' and farm practices. The BRB self-applicating product is an exceptionally low stress and low-cost option for the treatment of fly-borne blood feeding parasites on cattle.

Cattle will naturally rub to relieve themselves of irritation inflicted by the biting parasites. Quite often, cattle use small shrubs or saplings to scratch the underside of their belly or between their legs for relief. Nature can be cruel at times, and these blood feeding parasites will target these areas on the animal. The versatility of the BRB means that it can be mounted in a vertical position. This makes it very easy for cattle to relieve themselves of the irritation in these targeted areas, all while transferring active ingredient treatment to the animal.

The BRB has also been designed to eliminate the risk associated with the incorrect mixing and storage of liquid chemicals on farm. Some Organophosphate (OP) based products are susceptible to the highly dangerous process of hydrolysis. Hydrolysis occurs when small amounts of water inadvertently enter the chemical container during decanting or storage. This

situation can result in the stored chemical becoming highly toxic, which is not visually detectable. Unfortunately, this can result in the accidental death of livestock. The BRB eliminates these genuine and tangible risks.

Environmentally Sound

The solid structure of the BRB offers the most environmentally sound method for the transfer of chemical-based treatments to cattle for the control of fly-borne parasites.

During the design phase, it was an unconditional deliverable that the BRB must not release a single drop of chemical to ground. I am proud to say this has been achieved.

Chemical treatments, particularly Organophosphate (OP) chemical treatments, have played a pivotal role in the control of parasites on livestock globally for many years. However, due to environmental and safety concerns, some countries have moved to restrict or ban the use of OP chemicals.

Unfortunately, (due to the lack of on-farm containment infrastructure) various methods of administering OP chemical treatments, inevitably result in the uncontrolled release of OP chemicals going to ground. Without improved methods to contain and eliminate the uncontrolled release of OP chemicals when treating livestock, it is very probable that additional countries will also move to restrict or ban the use of OP chemical treatment products in the future. The BRB product has been designed to eliminate the uncontrolled release of any active chemical ingredient going to ground. The wax-based transfer method is designed not to drip; the only transfer of chemical is from the BRB to the hide of the animal.

The BRB has incorporated the use of organic products where possible in the manufacturing process. The BRB patent includes the use of coconut husk throughout the BRB to bind the product together. A timber bush is used through the centre of the BRB, to provide a sound envelope to either suspend the BRBs on a chain, rope or wire.

Safer

There are inherent safety risks involved when concentrate chemical-based treatments are required to be mixed on-farm, before being administered to livestock. Not only is there a risk of getting the mix ratio wrong, there is also

the risk of chemical contact and inhaling the chemical vapours. Too often a lack of planning to acquire the correct PPE, combined with many properties being located in remote areas where safety supply outlets are not readily available, results in poor practice when handling, mixing and administering chemical-based treatments.

Some Organophosphate (OP) based products are susceptible to the highly dangerous process of hydrolysis. Hydrolysis occurs when small amounts of water inadvertently enter the proprietary chemical container during decanting or storage. This situation can result in the stored chemical becoming highly toxic, which is not visually detectable. Unfortunately, this can result in chemical poisoning, or in the worst case, it can be fatal. The BRB eliminates these genuine and tangible risks.

During the final stages of manufacture, the BRB is coated with a thin chemical-free wax film, which wears off quickly when in service. This eliminates any skin contact with chemical products during installation.



PATENT INFORMATION

Patent rights for this invention have been granted in Australia, Canada and China and exclusive rights continue until 10th April 2039. International patents (including jurisdictions of USA, European Union, and Brazil) are in the later stages of finalisation. The patent is a legally enforceable right that excludes others from making, using, or selling the invention. The patent holder has the exclusive right to make, use, sell or licence the patent. The patent rights are broad and cover the transfer of any chemical active ingredient or essential oils using the wax transfer method, for the control of fly-borne parasites on livestock.

The patent, (that is the invention of the Bradshaw Rub Block - BRB), addresses the major impact that fly-borne blood feeding parasites have on the global cattle market. Blood feeding parasites (including buffalo fly, horn fly, face fly, mosquitos and midges) are considered to be major pests of global livestock production. Both buffalo fly and horn fly have a significant production impact to live weight gains and milk yields. Mosquitoes and midges are known to be carriers of a wide range of diseases that can cause widespread sickness and death in some animals. Blood feeding parasites adversely affect numerous regions in Europe, Asia, Africa, North America, South America and Australia.

Academic publications have confirmed the impact of horn fly in the USA is approximately US \$1 billion each year. The impact of horn fly in Brazil is estimated to be approximately US \$3 billion each year. The estimated impact of buffalo fly to the Australian beef and dairy industries, is approximately AU \$100 million each year. The irritation caused by blood feeding parasites, interrupts grazing which reduces live weight gains by up to 15%. The impact of blood feeding parasites on dairy cattle can reduce daily milk yields by up to 0.5 litre per cow per day. Blood feeding parasites can cause lesions on the skin of the animal. The presence of lesions on cattle can reduce the sale price of the animal. Additionally, once the animal is slaughtered, any damaged area of the hides can contribute to reduced value of those hides.

Academic publications have confirmed the increased global demand for animal protein, particularly in relation to meat from cattle. The presence of blood feeding parasites creates one of the greatest production problems of livestock farming in many countries the world over. Global human population growth places a high demand on the production of animal protein, particularly beef.

Increased productivity in kilograms of meat produced can be achieved through better parasitic control.

Many publications have confirmed a rapidly increasing emphasis on sustainability in agriculture. These publications state that pest management practices should be adapted to be both environmentally sustainable and economically beneficial. Animal welfare is another area of growing importance to consumers. The World Organization for Animal Health's definition of animal welfare accounts for the health, comfort, and safety of the animals. There has been a proposal for fly control to become an indicator of animal welfare. The bites from flies are painful and cause clear irritation to cattle, which adversely affects the welfare of the animal. Multiple studies have demonstrated the importance of managing blood feeding parasite populations within cattle herds. These studies have reported that parasite control helps to increase weight gain and improves pregnancy rates, which in turn increases profits for the primary producer.

The Bradshaw Rub Block (BRB) provides an improved solution to each of these concerns. The BRB addresses the animal welfare, environmental, safety and sustainability concerns, while providing a positive solution for the loss of production and financial impact to the primary producer. To date, (largely due to a lack of suitable commercialised products), the in-field self-applicating method for the control of fly on livestock remains, as an untapped global market. The patented BRB product is the solution.

We are excited about the future of the patented BRB product and invite investors and/or commercial partners to come on board with us in commercialising the BRB product to the global cattle industry. Contact us if you would like to be involved.

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