Animal Welfare Network Aotearoa (AWNA)

Meeting Summary – Animal welfare and the use of technology

Date – 26 March 2025

Venue – JetPark Hotel Auckland Airport and Conference Centre

The AWNA committee would like to thank SPCA for organising the venue and catering for the meeting.

Over 40 members and guests attended this meeting to hear from a range of speakers and discuss topics related to animal welfare and the use of technology .

Presentations

1. **Paul Edwards – Dairy NZ**

Wearable sensors for behaviour, health and welfare monitoring.

DairyNZ strategic priorities (i) accelerating on farm productivity, (iii) powering more sustainable farms, (iii) enabling sustainable and competitive dairying. Priority (iii) includes the Cow Quality of Life project that farms have practical options to incorporate into their systems which meet future expectations for animal care.

- Farmers are investing in animal sensors – represents a large pool of data
- Opportunity to use this to enhance our understanding of how a cow is experiencing her environment
- Highly complex relationships, big data unlocks machine-learning approaches
- Immediate use-case around improving our understanding of heat stress risk, when it occurs, effectiveness of mitigations, resource requirements
- Potential future use-case around:
    - Building individual animal profiles based on behaviours and how different profiles respond to different conditions
    - Animal sensor data can provide verification of animal experiences for farmers, consumers & other stakeholders
- Stockmanship is still essential to good welfare

2. **Caroline Lee – CSIRO (Australia)**

An animal welfare assessment framework for virtual fencing in livestock.

- Virtual fencing is a technology that contains animals without the use of a fixed fence, wearing collars that provide *using signals to the animals – an audio cue + electrical pulse*.
    - VF has the potential to transform animal farming through
        - Reduce labour/fencing costs
        - Optimisation of pasture use
        - Increased animal monitoring
        - Protect environmentally sensitive area
- Learning Principles when animal approaches a boundary include an audio 'warning signal' (conditioning stimulus) – if no response an electric shock is triggered. Associative learning and response avoidance.
- The electric shock is painful and aversive, and this elicits concerns about animal welfare.
- With 4 commercial products now available, there is a lot of interest in regulation to ensure AW is not compromised.
- In Australia VF is banned in several states and there is a lot of discussion in Australia about whether the legislation should be changed.
- Today, I will discuss an animal welfare assessment framework for virtual fencing in livestock. Hopefully, this framework can be used to provide assurance of animal welfare and this may help regulators to make decisions about legislation.
- This framework evaluates welfare based on the ability of animals to predict and control their environment when exposed to new technology.

Conclusions

- Predictability and controllability play a major role in stress responses and learning success.
- Animal training protocols used in VF must align with animal learning theory to ensure stress is not on-going. This will enable the benefits of VF to be realised while also ensuring AW is not compromised.

3. **Natalie Lloyd (NZVA - Companion Animal Society)**

Use of AI in companion animal medicine and use of monoclonal antibody therapy

To discuss

- Patient assessment – acute pain recognition
- In clinic diagnostics – AI diagnostic applications
- New therapeutics – monoclonal antibody therapies

Use of technology in recognition of acute pain in cats – feline grimace scale

(i) Differentiating painful behaviours from fear and anxiety
(ii) Poorly managed acute pain
(iii) Grimace scale validated scale for acute pain in cats
(iv) 5 action units – score determines an intervention point

Raising awareness of the impact of pain on animals – more frequent, earlier, more effective management of acute and chronic post-surgical pain.

Use of AI platforms in vet diagnostics

The challenge – (i) confidence in performing tests, (ii) access to expert pathologists, (iii) time to get results, (iv) space limitations in vet clinics.

Impact on welfare – (i) more timely intervention, (ii) accuracy of diagnosis, (iii) prevalence information – disease and zoonoses, (iv) appropriate parasite treatment and anthelmintic programmes.

Use of technology in veterinary therapeutics – monoclonal antibodies.

The challenge – (i) can we improve on safety and efficacy of current veterinary medications, (ii) compliance and caregiver burden re daily medications, (iii) elevated CGB treatment complexity impacts vet/client relationship.

Common human monoclonals – Herceptin, Keytruda etc

Traditional pharmaceuticals vs antibody therapy – why the interest?

(i) Antibody therapy injectable monthly vs oral daily
(ii) Mimics natural interaction
(iii) Extreme specificity
(iv) Extracellular targets
(v) Protein catabolism, minimal hepatic and renal elimination

Challenges – (i) manufacturing, (ii) education and expectation, (iii) regulator constraint, (iv) management software, clinical records

Future considerations – privacy and ethics, consent, data quality, bias.

4. **Nat Waran (CANZ)**

Pet Tech: The good, the bad and the ugly

Rapid Growth in unregulated products available in pet tech market

•Concern regarding data security and 'attacks'

•Questions regarding animal welfare (is it all positive)

•Ethical concerns regarding the storage and use of pet data (privacy)

The Good – the positives for animals

Potential for use of smart technology for improving detection, recognition, and management of health and welfare concerns

•Personalised health and behaviour insights – improving pet – owner relationship

•Tracking of food intake, exercise, animal whereabouts, containment

•Potential to provide pets with greater control of environment – more choice – more predictability **– more agency**

The bad – potential problems

Over-reliance on technology interfering with human- animal connection (*eg neglecting direct observation and/or technology failure, leading to animal welfare issues).*

•Misuse/Abuse due to lack of regulation/owner awareness of the risks

•Disruption of normal behaviour of the animal – Greater anxiety

•Unclear policies on the use of stored pet data

•Security risks for those using connected devices

The Ugly

Remote Punishers, Electric Mats, Electric Bark Collars, Shock Collars for Training, Electric Containment Systems, Freedom fences, Hidden Fences, Use of Electric Tape/Wire

Horse 'motivators' eg jiggers

Main Concerns:
Lack of evidence base (testing) for safety/welfare of many products
Lack of Regulation in relation to products freely available that can cause pain, injury and distress
Lack of Awareness/Control regarding Data Security
Security of End User

5. **Janine Duckworth (Landcare Research – Manaaki Whenua)**

Use of new technologies in pest control

So many new technologies being developed

Lots of challenges:

wild animals often with cryptic behaviour, complex environments need knowledge of interactions, unique to New Zealand problems, often involves lethal control, challenging environments, requires specialist expertise, no perfect tools available, enormous pressure to find fast fixes, and balance effectiveness against costs and benefits

No perfect tools - means not easy decisions

Decisions are made depending on : pest species, effective tools available, what drives the need for control, suitability for that environment, other species present, location, welfare impacts and social license, balance effectiveness against costs and benefits

New Technologies for control: are being developed and show promise, no silver bullets on horizon – need to be realistic, requires a complex combination of tools and strategy for success, supported by solid understanding of biology/ecology/modelling

Solutions: needed for unique to New Zealand issues, for real problems that need real immediate solutions, should aim for continuous improvement

Requires a balance of effectiveness against costs and benefits with the aim of continually improved animal welfare and maintaining social licence to operate.

6. **Krispin Kannin (VetEnt)**

Integration of new technologies on farm

Objective

New technologies on farm that lead to trusted advisor engagement

Wearable technology being used to surface valuable data to enable trusted advisors to support farmers to enhance profitability, efficiency, and animal welfare

…if you could consider both the positive and negative impacts on animal welfare of integrating new technologies on farm

Case example of farm partnership:

Learn what drives this farmer and the farm – now and into the future

What does great look like?

Review where we are at right now with the data

Settle on next steps

Use Halter on farm reach farm goals

Key drivers/goals

Keeping capital investment on farm low

Capital value of stock is important to retain

Keeping it simple is key, so that there is time to do other things like work on an epic car with son and do some building

The farm being a retirement fund is also the goal

Feeding cows well and animal health has always been a priority

Working on 5-year average of 100,000 MS.

Key Summary of Findings – August

Longer days to first heat, inconsistent transition recovery graphs based on cow behaviour – indicate room for improvement over the transition period. Better transitioned cows, have quicker days to first heat

✓ Low premating cycling rates and low/inconsistent grazing and ruminating behaviour pre-mating (-4 weeks to PSM) – indicate room for improvement in feeding strategies in early days in milk to get more cows cycling before mating

✓Lower NRR and CR in the 1st three weeks attributed to cows being mated to their 1st and 2nd heats, but doubled down with dropping protein % and flatting of the MS/day – indicating room for improvement in meeting energy demand but also making sure most cows have had their 1st cycle before mating.

Key Actions

Feed Blend breakdown to be sent to Halter CS Rep to inputted into Halter to track MJME offered and utilized and for a discussion on what the best diet composition is to meet the farm and the cow's needs

✓Premating mineral testing - liver biopsies (copper) and bloods (selenium and B12). Haven't been done in a while but need to confirm this is not impacting mating results

✓Forecasting Halter Tool – Halter CS Rep & Farmer to forecast what would happen if the Milkers went from 80m2 to 100m2 and the young cows went from 80m2 to 120m2. Will we be in a hole and if so when and what do we need to do? All of this to feed cows to their requirements and get them cycling earlier before PSM. Currently tracking behind.

✓Check-in with Halter CS Rep & Farmer on the 20th of September at 9am to review cycling, milk graphs, cow behavior and trace element tests

✓A big question around reimaging how to get feeding 'fully covered' in a low input system to match balance date with cow requirements. This planning starts at dry off possibly – it's a system thinking change – further discussion needed.

7. **Seton Butler – Veterinary Council of New Zealand (VCNZ)**

Use of AI by veterinary services and regulation

What are the benefits of using AI in a veterinary setting?

Enhanced Diagnostic Accuracy: AI algorithms, especially in imaging, can detect anomalies that might be missed by the human eye. This leads to early detection of diseases like cancer or hip dysplasia, improving treatment outcomes and reducing misdiagnosis rates.

Predictive Health Management: By analyzing large datasets, AI can predict the likelihood of future health conditions. This is crucial for preventive care, allowing veterinarians to implement early intervention strategies, potentially saving lives and reducing long-term healthcare costs.

Personalized Treatment Plans: AI can create customized treatment plans based on an animal's unique health profile. This precision approach leads to more effective and efficient treatments, enhancing the overall quality of care.

Streamlining Clinical Workflows: AI automates routine tasks in veterinary clinics, such as managing patient records and scheduling appointments. This frees up veterinary professionals to focus more on clinical care and less on administrative duties.

Telemedicine and Remote Monitoring: AI-powered telemedicine platforms enable remote consultations and virtual veterinary assistance, making veterinary care more accessible, especially in rural or underserved areas.

The NZ Government cabinet paper “Approach to work on Artificial Intelligence” advocates for New Zealand taking a “light touch, proportionate and risk-based” approach to regulating AI, utilising existing legal frameworks rather than introducing bespoke AI laws.

Existing Laws

Animal Welfare Act:. This Act sets out the obligations of animal owners and those in charge of animals to ensure their welfare

Codes of Animal Welfare: These codes provide detailed guidelines on the minimum standards of care and best practices for various species and situations.

Animal Welfare Regulations: These regulations specify detailed requirements for the care and treatment of animals, including specific procedures and conditions that must be met to ensure animal welfare

Ethics Principles

The AI Forum of New Zealand has developed principles for "Trustworthy AI in Aotearoa New Zealand," focusing on:

Transparency: Ensuring AI systems are understandable and their decisions explainable.

Fairness: Preventing AI from amplifying biases.

Accountability: Holding developers and users accountable for AI systems.

Industry-Led Initiatives: Various agricultural and livestock industry groups in New Zealand have developed their own voluntary standards and certification programs. These initiatives often go beyond legal requirements to promote higher welfare standards and the responsible use of technology.

Where mistakes are made by AI systems when being used by veterinarians – how would accountability be determined?

Professional Responsibility:

Veterinarians are ultimately responsible for the care and treatment of animals. Even when using AI tools, they must ensure that the technology is used appropriately and that decisions are

made based on sound professional judgment. If an AI system makes a mistake, the veterinarian using the system would be accountable for making reasonable efforts to verify and validate the AI and its recommendations before acting on them.

Transparency and Informed Consent:

Veterinarians should inform clients about the use of AI in their practice, including the potential benefits and limitations. This transparency helps ensure that clients understand the role of AI in their pet's care and can make informed decisions. If an AI-related error occurs, the veterinarian must communicate this to the client and take responsibility for addressing the issue.

To mitigate risks, it's important to:

(i) use AI as a supportive tool rather than a replacement for veterinary expertise. Ensuring proper training, regular updates, and ethical guidelines can help integrate AI effectively and safely into veterinary practice.

(ii) have robust development practices, thorough testing, and continuous monitoring of AI systems.

(iii) take a careful and ethical approach to the integration of AI in veterinary practice.

(iv) ensure transparency, accountability, and human oversight.

(v) ensure an informed consent approach is adopted when implementing AI tools into clinical practice.

8. **Helen Beattie – Veterinarians for Animal Welfare Aotearoa (VAWA)**

Virtual fencing technology – Ethics and Safety

Why

Animal welfare protection

Social licence to operate

Definition:

An SLO is an intangible, implicit agreement between

the public and an industry/group.

Farmer protection

New Zealand's reputation

No specific regulation for use of VF nor electricity in devices

Unsubstantiated claims – welfare and efficiencies

What

Code with animal welfare safeguarding standards

Background information (dossier)

3. Basis for regulation (i) more prescriptive than Australian guidance

(ii) animal welfare focused; not electrical safety

4. Addendum to the International Electrotechnical Commission (IEC) Standard.

Key points and concerns

Research and knowledge gaps – animal welfare, farm systems, climate claims

Extension beyond researched application eg other species

No regulation – no limits on audio cues, vibration, shocks

Unsubstantiated claims – improved animal welfare, green house gases

Farmer to farmer training

Use of NDA's – prevent issues being identified, shared and resolved with least impact on cattle, SLO – trust and transparency.

Panel Discussion

Mat Stone (NAWAC Chair) then facilitated a discussion on the benefits and risks related to the use of technology from an animal welfare perspective.

Mat provided some background and context to the discussion

Absence of reference to Animal Welfare in the New Zealand Agri-Tech Industry Transformation Plan (ITP)

No established typology of animal-base agri-tech

No generally accepted understanding of potential benefits and risks

Unlike ACVM, no pro-active regulatory consideration of animal-based agritech prior to adoption

NAWAC reviews of Codes of Welfare encounter newly adopted technologies

NAWAC reviews become the focus for debates of acceptability and risk management

Animal welfare risks and harms, and lack of pro-active consideration, undermines social licence

Current state does not reflect the ambition of NZ AW Strategy – partnership between government, industry leadership and public.

Possible typology of animal based agritech

Wearable devices (e.g., RFID eartags, wearable devices with sensing technology)

Internal devices (e.g. RFID microchip implants, electronic boluses)

Mechanical engineering within animal husbandry systems (e.g., automated crushes, scales and drafting gates; dairy parlour robotics; grooming devices; misting devices; automated ventilation systems; smart housing)

Mechanical engineering within animal slaughter systems (e.g., fish harvest systems, electrical stunning systems, sheep washing facilities)

Drones, and mobile robots Drones, self-drive vehicles

Digital technologies, including artificial intelligence (AI) (N.B. these digital technologies are typically integrated and associated with the hardware technologies listed above)

Biotechnologies that alter the genetics of animals or used as therapies for animals

How can we bring to life the partnership described in the NZ Animal Welfare Strategy to support innovation and risk management?

A panel of selected participants was asked to start the discussion by providing their thoughts on the (i) benefits and risks, (ii) responsibilities, (iii) options – regulatory and non regulatory.

The discussion was then opened up to the meeting participants to provide their perspectives on these questions.

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