INFRARED BEAK TREATMENT

INTRODUCTION

Beak trimming has traditionally been the standard practice in the egg industry to reduce injury, pain and stress associated with aggression and feather pecking among birds (1,2,5,7). The welfare advantages of beak trimming include reduced pecking, better feather condition, less nervous behavior and decreased mortality (6). Traditionally, beak trimming has been performed using a hot blade in pullets less than 10 days of age. The hot blade process, usually performed by hand, simultaneously trims and cauterizes beak tissue, which requires skill and consistency of personnel. Efficacy and variability are major factors affecting the success of hot blade trimming. Infrared beak treatment (IRBT) technology, developed by Nova-Tech, provides an efficient, precise and fully automated alternative to hot blade beak trimming, performed in the hatchery at one day of age.

INFRARED BEAK TREATMENT (IRBT)

IRBT is performed by a machine called the Poultry Service Processor (PSP), patented by Nova-Tech and available for lease (Figure 1). This machine also provides subcutaneous injections in the neck, which greatly reduces the human error associated with hand or individual injectors.

Figure 1. Nova-Tech PSP.

Features of the Nova-Tech PSP:

1. Infrared beak treatment (IRBT)
2. Automated injection with adjustable dosage amounts
3. Load/bird counter
    - o Counts birds as they are loaded
    - o Verifies birds receive all treatments
4. Boxing/sorting
    - o Customizable unload area places chicks in boxes ready for transport (Figure 2)

Figure 2. PSP sorting chicks into boxes.

THE IRBT PROCEDURE:

- Chicks are placed in head holders, securing the beak through a short sheath with guard plates to protect the chick (Figures 3–4).
- Mechanical fingers hold the chick's head securely – the period of time chicks are held is < 15 seconds (1).
- Infrared beak treatment controls the amount of beak exposure and applied energy.
- Prescriptive Treatment: adjustable lamp power and head holder configurations to accommodate variations in strain, flock age, uniformity and growing environment.
- The infrared energy treats the beak tissue and inhibits beak regrowth.
- The treated portion of the beak will appear white at first, then begin to darken after several days.
- Over the next 2–3 weeks, the treated beak tip will soften and slough off gradually.
- Beaks of infrared beak-treated chicks may appear slightly longer than those trimmed with a hot blade.

Figure 3. Placing chicks in head holders.

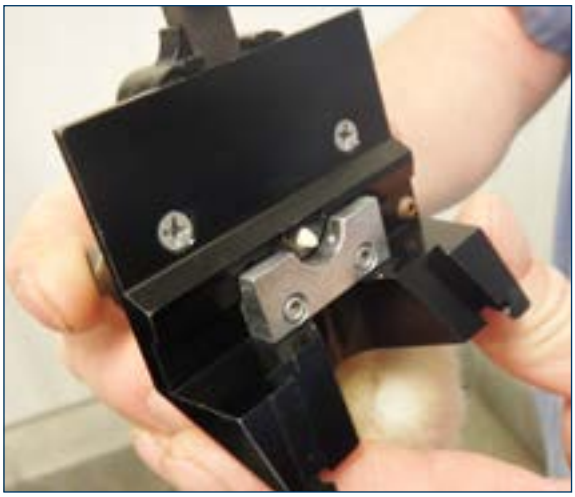

Figure 4. Beak secured with guard plates to protect chick.

TIME PROGRESSION OF THE INFRARED TREATED BEAK

Figure 5. One day post-treatment—treated beak tissue is white (vs. pink).

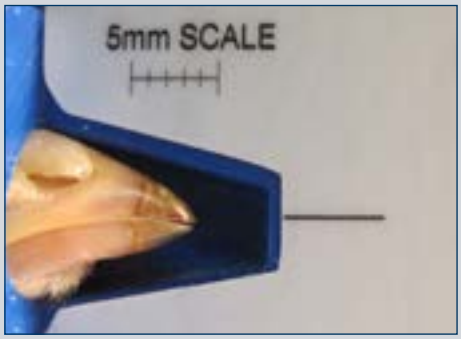

Figure 6. Seven days post-treatment—treated beak tissues become dark.

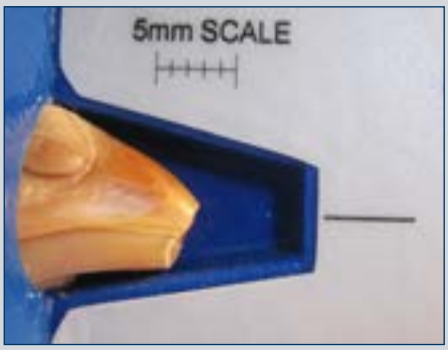

Figure 7. Four weeks post-treatment—rounded beak (not sharp).

STARTING INFRARED BEAK-TREATED PULLETS

Infrared beak treatment has been successfully used for more than a decade. Industry feedback suggests that infrared beak-treated chicks may require additional husbandry interventions during the brooding period. **Unrestricted access to drinking water is a critical control point for success with infrared beak treatment (8)**. The following management suggestions are considered best practices for all chicks.

Focus on the FLAWS

FEED

- Start chicks on full paper in cages or the floor to promote exploration of the environment and provide better access to feed.
- Place feed onto chick papers for the first seven days to encourage feed consumption.
- Chicks should not have to expend much energy searching for feed during the brooding period.
- Fill feeders to the highest level and adjust chick guards so the chick's beak does not contact the bottom of the trough or chain.

LIGHT

- Lights should be bright enough to glisten off a droplet of water hanging from the nipple to encourage exploration/drinking (30–50 lux or 3–5 footcandles).
- Start chicks in top cages, or closest to the light source.
- Use an intermittent light program of 4 hours light and 2 hours dark for 0–7 days to synchronize eating and drinking behavior.
- Shadows in cages may delay chicks from discovering water lines.

AIR

- Brood chicks from younger breeder source flocks in the warmest section of the house. The top cages, or middle of the house, is often the best area for these chicks.

WATER

- **Unrestricted access to fresh, clean water is critical for any beak-treated chicks.**
- Use 360-degree activated water nipples, which can be activated by applying pressure in any direction and require less "practice" for a chick to learn to use.
- Bi-directional (vertical pin) nipples are more difficult to use since they are activated by pushing the nipple straight up. **Provide supplemental chick drinkers if using bi-directional nipples.**
- Clean and flush water lines between flocks to remove bio-film and calcium deposits; product options include:
    1. Peroxide and peracetic acid removes scale and bio-film
    2. Anthium dioxide or chlorine dioxide removes bio-film
    3. Bleach disinfects most efficiently at a pH range of 5–7
    4. Citric acid is not an ideal disinfectant but can be helpful to acidify water before adding bleach
- Before chicks arrive, walk down the cage rows and trigger every nipple to ensure water availability for all birds.
- Decrease nipple water system pressure to create hanging drop to help chicks find water for the first three days.
- Set drinker height at the chicks' eye level for the first 24 hours after placement to encourage drinking. Raise water nipples slightly above the heads of the chicks by the second day.
- Water lines should be inspected daily to ensure nipples are clean of mineral build-up and flowing freely (minimum nipple flow rate of 70 ml per minute).
- Birds will not consume adequate feed if not adequately hydrated.

SPACE

- Fully line the cage floor with paper to maximize usable space.
- Use supplemental chick drinkers to increase water space.

BENEFITS OF IRBT

- Welfare-friendly procedure provided at day-of-age.
- Simultaneous IRBT with day-of-age vaccinations at the hatchery reduces catching and handling stress compared to beak trimming performed at the pullet farm (3).
- Biosecurity is improved by eliminating beak trimming crews and equipment moving between houses.
- During IRBT, the chick is firmly restrained, preventing head movement and enabling a precise and reliable beak treatment (4).
- Since the treated beak tip can take about two weeks to slough off, the changes in beak length and shape occur gradually, giving the bird time to adjust and alter feeding and drinking behaviors (3).
- IRBT features prescriptive treatment, with interchangeable back plates, mirrors and adjustable lamp power settings.

If you have not received infrared beak-treated birds and are considering an order, or if you would like more information about the IRBT process, please contact your Hy-Line International or Hy-Line North America sales manager.

REFERENCES

1. American Veterinary Medical Association (AVMA). Literature review on the welfare implications of beak trimming. AVMA Animal Welfare Division. February 2010. https://www.avma.org/KB/Resources/LiteratureReviews/Pages/beak-trimming-bgnd.aspx.
2. Dennis, R.L. and H.W. Cheng. Environment, well-being, and behavior: Effects of different infrared beak treatment protocols on chicken welfare and physiology. Poultry Science. 2012, 91: 1499–1505.
3. Dennis, R.L., A.G. Fahey and H.W. Cheng. Infrared beak treatment method compared with conventional hot-blade trimming in laying hens. Poultry Science. 2009, 88: 38–43.
4. Farm Animal Welfare Council (FAWC). Opinion on beak trimming of laying hens. November 2007. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/325161/FAWC_opinion_on_beak_trimming_of_laying_hens.pdf.
5. Guesdon, V., Ahmed, A. and S. Mallet. Effects of beak trimming and cage design on laying hen performance and egg quality. British Poultry Science. 2006, 47(1): 1–12.
6. Hester, P.Y. and M. Shea-Moore. Beak trimming egg-laying strains of chickens. World's Poultry Science Journal. 2003, 59(4): 458–474.
7. Shunmara, T. et al. Effects of light intensity and beak trimming on preventing aggression in laying hens. Animal Science Journal. 2006, 77: 447–453.
8. Swenson, Dr. G.R. and G.H.E. Van Gulijk. The Effect of Water Delivery on Beak Treated Layer Chicks. International Poultry Practice - Volume 28 Number 3. http://www.positiveaction.info/pdfs/articles/hp28_3p13.pdf.