



## A Strategic Long-Term Anticoccidial Program for Turkeys

**T**he choice of coccidiosis control products available to the turkey industry has always been limited. Fortunately, Clinacox™ (diclazuril), a highly effective chemical anticoccidial, has recently been added to the arsenal. Because options are limited, it is important to make judicious use of all coccidiosis control tools available to maintain their efficacy.

A strategic long-term anticoccidial program involves the utilization and management of products to provide consistent, long-term

results. By necessity, such a program relies on the development of coccidial immunity while minimizing the potential for the development of resistance or loss of sensitivity to the few products currently available for turkeys.

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### Early Impact of Coccidiosis

The first 6 weeks of life are the most critical for coccidiosis control in young turkeys. The brooder barn, which may see 5 to 6 cycles of starter poult per year, is particularly susceptible to the development of a significant coccidial challenge and has the greatest danger of losing anticoccidial sensitivity. Heavy or resistant coccidial loads may be quiet contributors to other poult enteritis problems, such as cryptosporidiosis or Poult Enteritis and Mortality Syndrome (PEMS).

Coccidiosis can also become a problem in the growout house where coccidial infection may interfere with peak growth several weeks after poults are introduced.

Control programs that allow *Eimeria* oocysts to increase through the first 6 weeks may induce partial immunity in turkeys prior to transfer to the growing facility, but may also increase the viable oocysts being shed by birds when they are transferred to the growout house. Use of an ionophore in the face of a coccidial population with moderate sensitivity can result in higher than normal levels of oocysts that peak after 28 days of age, increasing the burden on subsequent flocks and increasing the coccidial burden transferred to the growout house (Figure 1).

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### Key Points

- Anticoccidial options for turkeys are limited. Ionophore sensitivity has been reduced by long-term use.
- No new anticoccidials will be introduced to the market, heightening the need for a long-term strategy that will maximize the effectiveness of existing products.
- Coccivac®-T can restore sensitivity to existing anticoccidials.
- Clinacox™/Coccivac-T/ionophore rotation or year-round vaccination with Coccivac-T are sustainable long-term coccidiosis control strategies that can maximize flock performance.

Figure 1

Litter Oocyst Counts in Turkeys Fed Ionophore Anticoccidials

Figure 1

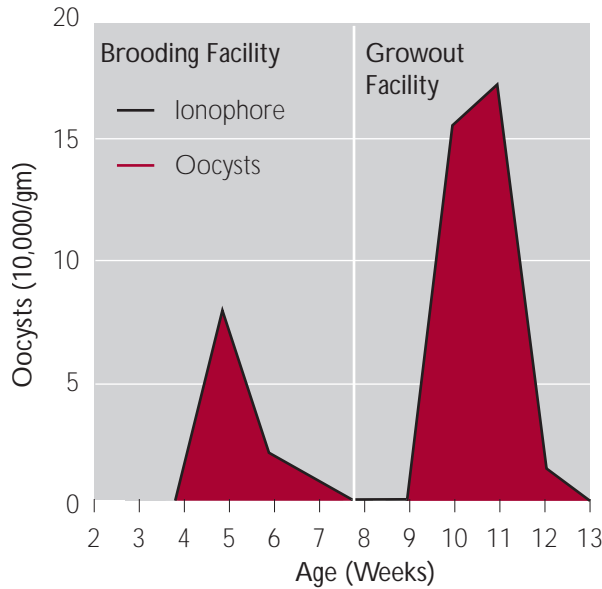
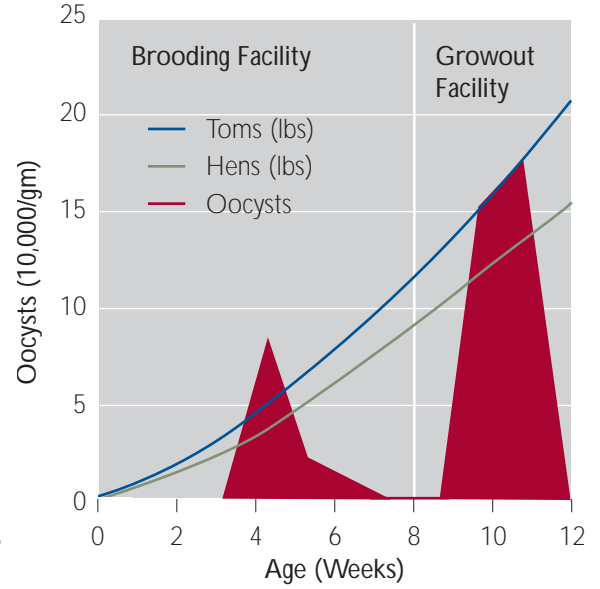


Figure 2

Market Turkey Growth Curve Vs. Litter Oocyst Counts With an Ionophore Program

Figure 2



The growth curve is relatively flat for the first 3 weeks in both hens and toms. Beginning in the fourth week and continuing throughout the growth cycle, the curve becomes steeper for both sexes, but particularly steep for market toms.

Programs that allow the oocysts to build to peak levels later than 28 days may produce an unnecessary subclinical coccidiosis burden on the flock at one or more critical points during the steep part of the growth curve (Figure 2).

### The Ideal Program for Performance

The ideal coccidiosis program would produce 100% control of the coccidial population in the brooder barn, prevent any damage to the intestinal tract during the steep growth phase and prevent carryover of a significant coccidial load to the next flock or to the growout facility.

This type of control is possible with a highly effective chemical anticoccidial such as diclazuril, the one found in Clinacox. A chemical will minimize the oocysts shed

into the brood barn and significantly reduce carryover into the growout facility (Figure 3).

Unfortunately, Clinacox isn't a complete answer. Highly effective chemicals halt the multiplication of all but naturally resistant strains. Initially, the numbers of naturally resistant coccidia are low, but after multiple cycles of uninterrupted chemical anticoccidial use, the population of resistant coccidia builds to significant challenge levels. A highly effective chemical anticoccidial program can only be used as *part* of a long-term coccidiosis control strategy.

Ionophores in the presence of sensitive oocyst populations will allow only a minor increase in oocyst population that may carry over to the next flock or to the growout facility. Unfortunately, years of limited ionophore choices and heavy usage have created coccidial populations with reduced ionophore sensitivity in most poult brooding facilities. As a result, the oocyst shedding pattern for most ionophores looks more like Figure 1 than Figure 3. Ionophores can no longer serve as the sole control program if optimum performance is desired.

Chemicals and ionophores are each important parts of a long-term coccidiosis control program. But one more component is necessary to complete the strategy, and it is vaccination.

### Vaccination: Immunity to Coccidiosis Plus Renewed Sensitivity to Anticoccidials

Vaccination with Coccivac®-T provides two major advantages over the immunity built through a partially protective ionophore. First, immunity is built during the first 3 to 4 weeks of growth, *before* the steepest part of the growth curve. Litter oocyst levels drop dramatically by 6 weeks of age when the birds are transferred to the growout facility, leaving fewer oocysts to carry over to the next poult flock or to the growout house. Ionophores may permit more carryover and a greater opportunity to build resistance.

Second, the oocysts in Coccivac-T are highly sensitive to both ionophore and chemical anticoccidials. Vaccination of poults with Coccivac-T will seed the premises with coccidia that are highly sensitive to both chemi-

cals and ionophores. Subsequent chemical or ionophore programs will be able to achieve protection closer to the 100% that's required for optimum performance.

### Long-Term Strategy and Optimum Performance

A sustainable long-term strategy can be achieved through one of two coccidiosis control programs:

#### Program 1: Rotation of Coccidiosis Control Methods

Complementary use of all of the tools available for coccidiosis control, with attention to the impact of each program on the early growth curve of the market turkey, can result in successful long-term coccidiosis control.

Chemical anticoccidials, vaccination with Coccivac-T and ionophores are all used in rotation to maximize the benefits of each.

Figure 5 depicts a sequence of programs for successive flocks in the brood barn. Use of the highly effective chemical anticoccidial Clinacox is used for a single cycle, when house conditions may promote a stronger

Figure 3

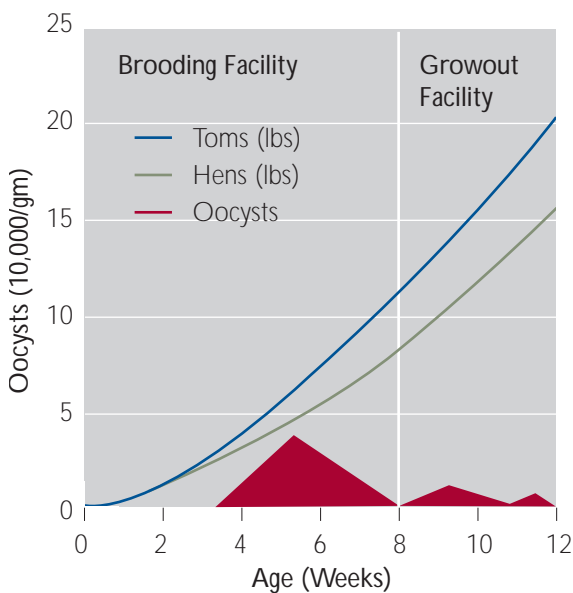


Figure 4

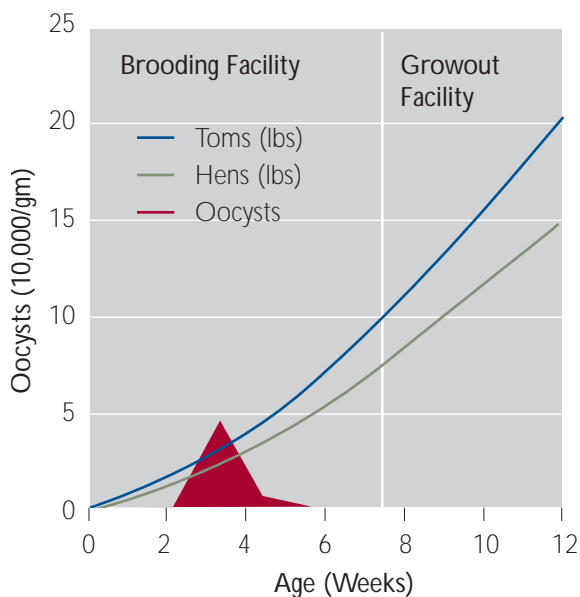


Figure 3

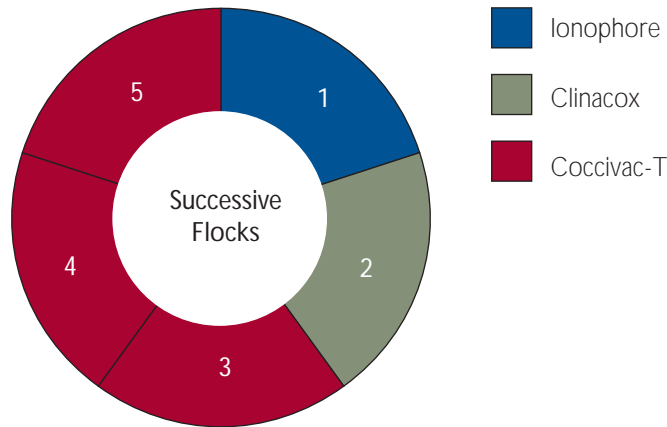
Litter Oocyst Counts in Turkeys Fed Chemical Anticoccidials

Figure 4

Litter Oocyst Counts in Turkeys Vaccinated With Coccivac-T Vs. Market Turkey Growth Curves

Figure 5

Brooding Barn  
Anticoccidial Program  
Sequence



coccidiosis challenge. Limiting Clinacox use to a single cycle will dramatically reduce the oocyst levels in the facility. The next 3 cycles use vaccination with Coccivac-T to repopulate the house with anticoccidial-sensitive oocysts. Annual vaccination ensures that the resident house coccidial population will be highly sensitive to both the chemical and ionophore programs. The vaccination cycles are followed by an ionophore. The ionophore should perform at peak efficacy since the house has been repopulated by the vaccine.

Due to the annual repopulation of facilities with anticoccidial-sensitive vaccine strains, this program will remain sustainable over the long term. The program will also maximize the performance potential of both the ionophore and chemical anticoccidial programs long into the future.

### Program 2: Vaccination With Coccivac-T as the Total Coccidiosis Control Method

Vaccination with Coccivac-T does not promote the development of resistant strains of *Eimeria* the way that chemical and ionophore anticoccidials do. The turkey industry does not rotate Newcastle disease or hemorrhagic enteritis vaccines, nor should it be necessary to rotate a coccidiosis vaccine.

Over time, the vaccine strain oocysts will largely displace the original field strain population, creating a uniform vaccine-strain coccidial population in the brooding barn. Immunity development will occur predictably before movement to the growout house, reducing the coccidiosis challenge in those facilities as well. Long-term performance should remain stable and predictable.

## Conclusion

Coccivac-T alone or in rotation with chemical and ionophore anticoccidials creates a sustainable long-term strategy for the control of coccidiosis in market turkeys.

## References

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