

An HSUS Report: The Economics of Adopting Alternative Production Systems to Conventional Manual Catching of Poultry

Background

When birds raised for meat reach slaughter weight, they must be caught and crated for transport to processing plants. In the United States, most birds are caught by hand. Catchers typically carry birds inverted by a single leg, three or four birds per hand, and throw them into transport crates.(1) Handling birds in this manner causes stress and injuries, which contribute to production losses. In a normal production day, 5 to 15 percent of carcasses exhibit bruising of the breast, thighs, or wings.(2) Griffiths estimated that 40 percent of bruises recorded at processing plants are caused by catching and crating,(3) while McGuire estimated 90 percent.(4)

Alternatives to Conventional Manual Catching of Poultry

To reduce losses to injury and to decrease labor costs, mechanical harvesters have been introduced that catch birds with a ramp or rubber-fingered rotors and pull them upright on a conveyer belt to transport crates. The most recent of these systems are less damaging to birds than conventional manual catching. Knierim and Gocke found that mechanically harvested birds had significantly lower rates of bruises, fractures, and dislocations than conventionally manually caught birds.(5) Leg, wing, and rump injuries were 50-, 22-, and 27-percent lower, respectively, and the number of birds with one or more injuries was 30-percent lower. Lacy and Czarick found that rates of leg bruising were 58-percent lower with mechanical harvesting,(6) while Elrom reviewed studies finding that mechanically harvested birds had injury rates 25- to 87-percent lower than manually caught birds.(7) In one experiment, Delezie et al. found mechanically harvested birds had 45 percent fewer wing bruises compared to conventionally manually caught birds.(8)

Knierim and Gocke(9) and Delezie et al.(10) found higher rates of dead-on-arrival (DOA) birds with mechanical catching. Delezie has hypothesized that this is because mechanical harvesters, unlike manual catchers, pick up birds who are already dead in the grower sheds.

In a Swedish study, Eckstrand found more bruises in mechanically harvested birds compared to those manually caught.(11) However, this was probably due to the gentle manual catching method used in Sweden, where birds are carried upright in small numbers.(12) It thus appears that, while gentle manual catching may be optimal, mechanical harvesting is preferable to conventional manual catching in the United States.

Effects on Production Costs

The principal cost associated with adoption of mechanical harvesting is the capital investment in a harvester—between \$150,000 and \$200,000.(13,14). Additional equipment costs include harvester fuel, maintenance, and depreciation. American Calan, a company that developed one of the U.S. mechanical harvesters, estimated these costs to be \$53,000 in a typical year for a \$159,000 harvester.(15) Adjusting their figures for inflation and substituting a \$200,000 harvester with five-year, straight line depreciation, annual costs are likely to run around \$76,000.

Mechanical harvesting systems reduce labor costs by employing crews half the size of those used in conventional

manual catching, while maintaining similar catch rates. Knierim and Gocke found that three-person mechanical harvesting teams loaded 8,000 birds in an average of 55 to 60 minutes, while six-person manual catching teams loaded 8,000 birds in 40 to 50 minutes.(16) Thus, the catch rate per person-hour for the mechanical harvester was 2,667 to 2,909 birds per person-hour—33- to 82-percent higher than that for the conventional manual catching team. Nijdam et al. found the catch rate for mechanical harvesting was 114-percent higher per person-hour compared to conventional manual catching.(17)

Accounting for the different wage scales of manual and mechanical catching workers, American Calan estimated that mechanical harvesting reduces labor costs by 67 percent,(18) or around \$183,000 per year in current dollars. Thus, the payback period for a \$200,000 harvester with \$76,000 annual running costs would be 22 months, with net savings thereafter. Similarly, Lacy and Czarick estimated a payback time of 15 months.(19) The estimated payback period would be even shorter if savings from reduced bruising were considered, as well as savings from reduced health care costs and compensation claims due to improved catcher safety.(20)

Effects on Consumption and Profits

Because additional costs involved in adopting mechanical harvesters can be recouped in a short period, there is no evidence that adoption would have any significant effect on consumption or profits.

References

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