

On Producing Boneless Chickens

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Some time ago, Gary Larson created a cartoon entitled "The Boneless Chicken Ranch." Pictured were floppy feathered creatures lying about here and there. I suppose Mr. Larson got his idea from strolling past packages of boneless chicken breasts at the grocery store; Gary Larson is so good at amusing us. But his idea is also interesting from a biological point of view, namely to grow bone-free meat since chicken meat is a valuable food source and chicken bones have little or no market value.

The value of chicken bones is

of course hidden because muscle develops in conjunction with bone. Muscle development is impaired when bone development goes awry. It is the skeletal system that establishes the shape and overall size of an organism.

Interestingly, both heavy and light breeds of chickens have bones that are more or less similar in length, when appropriate comparisons are set up, but there is tremendous variation in thickness. Increased thickness is associated with increased muscle mass. Presumably this occurs in the heavy breeds wherein bones are subjected to greater mechanical stresses due to the extensive musculature. And so production of birds that have greater amounts of muscle is unavoidably associated with more

bone-by-product.

Genetic manipulation has played a major role in producing the kinds of rapidly growing, heavy breeds of poultry available today. Would it be possible to make genetic crosses that would lead to thinner bones and more muscle meat? Possibly, to some extent; however, the propensity of bone to respond to the twistings and pullings of muscles attached to them make this unlikely.

Additionally, bones need to be sufficiently strong to allow effective handling during catching and at the processing plant. Rather than altering bone volume, probably the best direction to take would be to identify uses for bony by-products.

Another approach for reducing the mass of bone to be dealt with is to think about the possibility of growing muscle tissue in the absence of bone. Theoretically this is possible. A relatively new area of research, called tissue engineering, has been built on the capacity of cells of a variety of types to be grown in tissue culture chambers, much like the way bacteria and yeast can be cultured and be of importance to the food industry (yogurt and wine come to mind).

To produce cultures of muscle, one could start with relatively un-

differentiated muscle cells from chicks or chick embryos and place the cells in a fluid that contained all the necessary nutrients (amino acids, sugar, salts, vitamins and so on). One could then allow the cells to divide many times over while subjecting the cultures to some kind of mechanical force to produce proper muscles.

Application of mechanical force would be important for the

texture of the product. One might even create culture chambers shaped like drumsticks or some other interesting shape. Possible? Yes. Feasible? Not anytime soon because of the high costs of creating the scaled-up instrumentation, acquiring the purified nutrients, maintaining sterility and so on. Besides, it's nice to hear chickens cackle and watch them strut around.

American Farmland Trust

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Allowing farmland uses to be on equal footing with non-necessary uses of land in open competition doesn't work. In naturally rich farmland regions, farming uses will always be least considered under strict supply-and-demand competition.

Restricting all land uses to current uses is not freedom for landowners, some of whom have purposefully purchased land years ago with the intent of farming or leasing the land until retirement, and then selling to the highest bidder.

Banks and lending institutions determine the highest bidder, because they too want to make the most money the fastest.

While local governments can require developers to post bonds for certain construction activities, such as road building (because roadways are usually conveyed to local governments for traffic enforcement, maintenance and repair and ultimately the local government is financially responsible for any allowed negligence), there are no similar requirements for those who want to destroy farmland for residential or commercial development to post bonds to cover the cost of returning the land to agricultural productivity, should the project fail.

The landscape is dotted with such failures. And they sit there.

For Pennsylvania, there is basically no backbone to zoning laws.

In fact, in Pennsylvania municipalities are required by law to forever allow other land uses, even beyond point when farming has been squeezed so hard it can longer be considered a viable concern.

Politically, the problem is exacerbated by the current political campaign fund/favoritism system, whereby political candidates and decisions can be influenced not by long-term benefits or soundness of logic and fairness to constituents, but by short-term goals of capturing power and controlling common resources.

Many involved in land preservation understand the problems. Many in politics (most should) understand the situation that causes the problems, but know they wouldn't be in elected office were it not for the campaign funds they attract.

The American Farmland Trust organization is the only national private, nonprofit conservation organization dedicated to protecting agricultural resources, according to organization literature.

It was founded in 1980 with the mission to stop the loss of productive farmland and to promote farming practices that lead to a healthy environment. It has 50 staff members, and more than 30,000 members and donors nationally.



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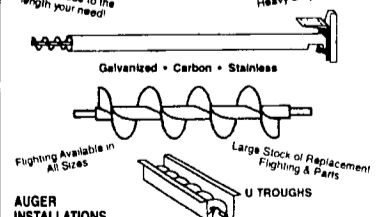
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