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at KCA

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Kentucky Forage & Grassland Council

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Lexington, Kentucky

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Garry D. Lacefield and Christi Forsythe, Editors
This marks the nineteenth consecutive year we have had a Forage Symposium at the Kentucky Cattlemen’s Convention. We challenge you to consider the content of the proceedings and the discussions of the day in light of your overall forage program. It is our hope you will go away with at least one idea or practice that you can implement to improve your overall forage-animal program.

On behalf of the program committee, I want to thank Mr. Dave Maples and all the fine folks at KCA for their support, assistance and encouragement. In addition, I want to thank the Kentucky Forage and Grassland Council for their continued support of Forages in Kentucky. My thanks to Dr. Roy Burris and Dr. Peter Ballerstedt for their presentations and papers for the proceedings.

Special THANKS are extended to Mrs. Christi Forsythe for her extra effort in program planning and in preparing and editing the proceedings.

Let me close by extending a special invitation to attend the 34th Kentucky Alfalfa Conference at the Western Kentucky University Expo Center in Bowling Green on February 20th. For more information on forages and forage-related events, see our website at http://www.uky.edu/Ag/Forage

Garry D. Lacefield
Program Chairman
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GRAZING: MORE IMPORTANT NOW THAN EVER

Garry D. Lacefield
Extension Forage Specialist
University of Kentucky

Benefits of grazing has been a major focus of the Kentucky Grazing Conference over the past decade. It has also been emphasized at thirteen Heart of America Grazing Conferences and three National Grazing Conferences. With all that emphasis, Why do I bring this up again and even have the nerve to say “More Important Now than Ever”? Well, the short answer is “things are different now!”

Things have changed and yes, things are very different relative to grazing now than they were when we started this conference. Some examples include an increased interest and demand for grass-fed, forage-fed, pasture based organic, natural, and other popular terms pertaining to more nutrients from “grazing” and less from concentrates and stored feed. Greater environmental regulations that favor pasture-based animal production. More positive attitudes toward pasture-based animal products.

Another major driving force is this movement has been input costs. You know this much better than I but a few examples are in order. Corn prices have changed, diesel has increased 159%, and nitrogen fertilizer has increased 165% over the last decade and you can add your own increase in almost all input costs. All of these and other factors lead to the reality of this presentation “Benefits of Improved Grazing: MORE IMPORTANT NOW THAN EVER”.

Grazing represents the cheapest way to feed ruminants on a cost per pound of nutrient basis. Stored feed is usually the single largest item in livestock budgets and cost or amount of stored feed is usually the best prediction of potential profitability in most beef cattle operations.

Controlled grazing, intensive grazing, management intensive grazing, rotational grazing, and intensive rotational grazing are only a few of the terms frequently used by grazing enthusiasts. Rotational grazing can help farmers to directly affect net profit by: increasing animal products per acre, reducing cost of machinery, fuel, facilities, etc., reducing supplemental feeding, reduce wasted pasture, improving the monthly distribution and yield of pasture, improving distribution and use of animal waste and fertilizer, improving botanical composition of pasture, minimizing the daily fluctuations in intake and quality feed and more efficiently allocate pasture to animals based on quality needs.
Let's review some potential benefits of “improving” our overall grazing program.

**UTILIZATION** - Grazing methods dictate how much of the overall pasture produced is actually utilized by the grazing animal. In order to better understand this aspect, let's first examine the difference between “seasonal and temporal utilization”. Temporal utilization is defined as how much of the existing pasture we utilize during a grazing period and “seasonal” is the amount of the pasture utilized over the grazing season. In a continuous grazing program, these two are the same and can help explain why most continuous grazing programs only utilize a small amount of the total pasture produced for the season (Table 1). With rotational grazing or other grazing methods, we can improve our utilization, thus wasting less (Table 2).

<table>
<thead>
<tr>
<th>Method</th>
<th>% Utilization*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenchop</td>
<td>85 - 95</td>
</tr>
<tr>
<td>Haylage</td>
<td>80 - 95</td>
</tr>
<tr>
<td>Hay</td>
<td>70 - 85</td>
</tr>
<tr>
<td>Strip grazing</td>
<td>70 - 85</td>
</tr>
<tr>
<td>Rotation two times/day</td>
<td>70 - 80</td>
</tr>
<tr>
<td>Daily rotation</td>
<td>60 - 75</td>
</tr>
<tr>
<td>Rotation every two days</td>
<td>55 - 70</td>
</tr>
<tr>
<td>Three to seven day rotation</td>
<td>50 - 70</td>
</tr>
<tr>
<td>Three to five week rotation</td>
<td>40 - 60</td>
</tr>
<tr>
<td>Continuous grazing</td>
<td>20 - 50</td>
</tr>
</tbody>
</table>

*These values should only be used as a guide. Considerable variation can exist within and among categories.

<table>
<thead>
<tr>
<th>State</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arkansas</td>
<td>44</td>
</tr>
<tr>
<td>Georgia</td>
<td>37</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>35</td>
</tr>
</tbody>
</table>

**YIELD** - Pasture plants grow at different rates throughout the growing season. Cool-season grasses grow best in spring, good in late-summer-fall, and little during summer and winter (Figure 1). Amount of growth during each period is dependent on temperature and moisture. With continuous grazing, it is difficult
to keep pasture plants in their most efficient photosynthetic growth stage. Some plants are often overgrazed while others are not grazed and become mature. This is especially a problem during spring surplus. With rotational grazing, we can keep plants at a more efficient stage that can result in more animal product per acre (Table 3). During spring surplus, we can harvest selected paddocks for hay or haylage.

Table 3. Increase in production from alfalfa-orchardgrass with rotational and continuous grazing.

<table>
<thead>
<tr>
<th></th>
<th>% Increase over continuous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrying capacity</td>
<td>43</td>
</tr>
<tr>
<td>Milk production</td>
<td>40</td>
</tr>
</tbody>
</table>

SOURCE: VPI Bull. #45

**QUALITY** - Forage quality is highest when pasture plants are young and vegetative. Pasture quality is very closely coordinated with amount of leaves. With rotational grazing, we can usually manage “leaf” content and ultimately quality better than using most continuous methods (Table 4). In addition, quality for many cool season based pastures is usually associated with legume content. With various rotational grazing methods, we can usually manage our legumes and keep them more productive and persistent than under continuous grazing methods.
The yield quality relationship can be better explained by examining the gain per acre (yield) and gain per animal (quality) relationship (Figure 2). As stocking rate is increased less forage is available per animal. Individual animal output decreases as animals compete for forage and have less opportunity to select green, leafy forage. As a result of increased forage utilization, animal output per acre increases with stocking rate until individual animal gains are depressed to the point that the additional animals carried do not compensate for the loss. At high stocking rates, photosynthetic is reduced due to insufficient leaf area, plants are weakened, and forage growth is depressed.


<table>
<thead>
<tr>
<th>Grazing Method</th>
<th>Rotational</th>
<th>Continuous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent leaves</td>
<td>46 - 49</td>
<td>31 - 36</td>
</tr>
<tr>
<td>Percent stand (3rd yr)</td>
<td>84</td>
<td>62</td>
</tr>
</tbody>
</table>

Table 4. Percent leaves and persistence with different grazing methods.

**EXTEND THE GRAZING SEASON** - When improved grazing methods are used, forage utilization usually increases and “waste” decreased. With

**Figure 2. Relationship of Gain Per Acre and Gain Per Animal.**

decreased waste, more pasture is available for grazing over a larger period of
Missouri workers used a strip-grazing approach to utilize stockpiled tall fescue. When a three day pasture supply was compared to a fourteen day supply they increased cow-days per acre by 32 with a 56% increase in carrying capacity. Farmers repeatedly tell me that during drought conditions, rotational grazing methods results in more pasture over a longer period of time compared to continuous grazing.

**STAND PERSISTENCE** - Many pasture plants can be grazed continuously and continue to persist. Examples include Kentucky bluegrass, bermudagrass, endophyte infected tall fescue and white clover. Other plants will not persist for long when continuously overgrazed. Examples include alfalfa, most warm season perennial grasses, and warm season annuals. Even the plants capable of withstanding continuous grazing will usually be more productive under some grazing method that permits time for rest and regrowth.

**ANIMAL PERFORMANCE** - As we noted when discussing Figure 2 “Relationship between gains per acre and gains per animal,” stocking rates are critical in determining yield of both plant and animal. One study conducted by a close friend and highly respected forage scientist illustrates what I believe is the potential improvement when comparing “rotational and continuous grazing systems” (Table 5).

<table>
<thead>
<tr>
<th>Percent change of rotational over continuous grazing</th>
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<tr>
<td>Stocking rate</td>
</tr>
<tr>
<td>Calf gain/acre</td>
</tr>
<tr>
<td>Hay fed/cow</td>
</tr>
</tbody>
</table>

SOURCE: Dr. Carl Hoveland, Univ. of Georgia.

**ANIMAL HEALTH** - I wish I had several years of research data to make a strong statement about improved animal health with improved grazing method. Unfortunately, I am not aware of many studies in this area. Farmers tell me and common sense suggests that if you are using a system that requires you to move animals on some schedule, you have a chance to observe more frequently for any herd health problems. Controlling problems before they get serious is a health benefit for the animal and an economic benefit for the owner.
ENVIRONMENTAL - Improving grazing systems can have a positive impact on various environmental issues, especially "water". Most improved grazing systems involve reducing pasture size, more water points, and often fencing animals out of ponds and streams or designing limited access. Each system that keeps animal manure and urine out of the water supply can have a potential environmental benefit.

Another issue involves manure and urine distribution. Approximately 75-85% of nutrients consumed by grazing animals are returned through animal manure and urine. With large pastures grazed continuously, much of the manure and urine is deposited near the water source and shade. Research has shown that other grazing methods can results in better distribution.

ECONOMICS - Making more money by changing your grazing system is not automatic. Just putting more fences and water in may just cost your money and time if it doesn't fit into the overall plant-animal-environment system. Improving your grazing system certainly offers many opportunities and indeed the opportunity to improve our bottom line; however, I again caution that we need the "system" that consists of adequate fertility, matching plant species and varieties, managing plant pest problems, matching pasture quality to animal needs, having good quality-healthy animals that can make best use of pasture available, and an overall plan to optimize grazing and minimize stored feed required.

With all of the above as "cautions", let me now tell you what I believe about improved grazing and it's opportunity for producers. I believe that our greatest opportunity for "IMPROVEMENT" rests squarely under the "Grazing" umbrella. I know of no other principle or practice that I feel offers livestock producers more potential. Again, I wish I had ten years of data that would document my belief; however, I do not. I do want to share some data from Pennsylvania (Table 6) that shows what farmers have observed using four different forage harvesting and utilization systems. In these studies, rotational grazing returned more profit per acre than continuous grazing, hay or corn silage. Missouri workers, Table 7, showed a drastic reduction in wintering cost per cow using various grazing options. Day of "hay feeding" were reduced by over 65% with different grazing options.
Table 6. Enterprise budgets for pasture and forage crops.

<table>
<thead>
<tr>
<th></th>
<th>Intensive pasture</th>
<th>Continuous pasture</th>
<th>Hay</th>
<th>Corn silage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profit per acre</td>
<td>$129</td>
<td>$75</td>
<td>$20</td>
<td>$58</td>
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</tbody>
</table>


Table 7. Daily and seasonal forage costs for alternative wintering strategies at typical yields, costs, and period of use based on 100-cow herd.

<table>
<thead>
<tr>
<th>Winter feeding period from Dec 1 to April 10</th>
<th>Hay</th>
<th>Cornstalks</th>
<th>Stockpiled tall fescue</th>
<th>Ryegrass + cereal rye</th>
</tr>
</thead>
<tbody>
<tr>
<td>$/cow/day</td>
<td>$1.32</td>
<td>$0.05</td>
<td>$0.31</td>
<td>$0.61</td>
</tr>
<tr>
<td>Days of use</td>
<td>130 hay</td>
<td>60 stalks</td>
<td>90 graze</td>
<td>90 graze</td>
</tr>
<tr>
<td>Wintering cost</td>
<td>$172</td>
<td>$95</td>
<td>$70</td>
<td>$108</td>
</tr>
</tbody>
</table>

SOURCE: Jim Gerrish, University of Missouri.

A grazing method is a tool that allows producers to efficiently harvest the forage with livestock and maintain the pasture in a productive state. Several methods can be used and each method requires management control to be most successful. This involves variable stocking rates that may be achieved by altering animal number per acre, altering the size of the land area to a fixed number of animals, harvesting surplus forage for hay, haylage, or round bale silage, and/or mowing excess growth and weeds.

SELECTED REFERENCES


ANIMAL WELFARE – ANIMAL RIGHTS
“PROTECTING ANIMALS OR A THREAT TO U.S. FOOD PRODUCTION AND OUR WAY OF LIFE?”

W. Roy Burris
Extension Professor in Animal and Food Sciences
University of Kentucky

Cattle producers are accustomed to dealing with many forms of adversity. Adversity generally comes in the form of blizzards, droughts, floods and economic conditions but now we must deal with animal activists who have their own opinions of what we can and cannot do as it relates to animal welfare and animal rights.

This is a relatively new experience for cattle producers who generally love their work, are fiercely independent and just want to be left alone. We care for, and about, animals which are under our care. Anyone of you could have chosen an easier lifestyle. Hauling hay and “breaking ice” just to keep your animals fed and watered, delivering a calf in February and March at midnight during an ice storm isn’t easy work. Nor is it done by people that don’t care about animals. Why would anyone question your interest in animal welfare? You keep your animals well-fed, vaccinated, parasite-free and free to graze on your well-managed pastures.

So what is the problem? This industry is attacked by people who have differing ideas about cattle production and ownership. Some are genuinely concerned about animal welfare but other activists question our right to own animals and want to convert everyone to a vegan lifestyle which includes not using any animal-derived products.

Since many consumers are now several generations removed from an agrarian lifestyle, they seemingly question and frequently oppose many of the things that are a “way of life” for us. The phrase “criticizing the farmer with your mouth full” comes to mind. So we are sometimes viewed as villains while our goal is to help feed everyone, maintain a rural lifestyle and make a living for our families.

Owning animals and consuming meat are not new ideas. Human-kind has been doing that for a while. Archaeologists suggest that prehistoric man consumed meat based upon bones of animals that have been found with indications of cutting on them and because “we see biological features often linked with meat eating, such as a decrease in tooth and gut size and on increase in body and brain size”.


Yet, the notion that we could care about animals and consume meat makes our position difficult to understand by some people. We believe that it is the “natural order of things” and deeply respect the process. But that position isn’t easily understood or accepted by some people.

**Animal Welfare vs. Animal Rights**

Let’s first deal with the definition of *animal welfare* and *animal rights* from the National Association for Biomedical Research. *Animal Welfare* is the desire to implement humane care and use standards for animals in research, testing, teaching and exhibition. Animal welfare is based on the belief that animals can contribute to human welfare by providing food, fiber, work, companionship, entertainment, or by serving biomedical research or education, and humans have a moral obligation to provide for well-being of animals. Animal welfare supports the use of animals by humans, and seeks to improve their treatment and well-being.

*Animal Rights* is based on the view that animals have similar, or the same rights as humans. Animal rights advocates do not distinguish between humans and animals. No matter how humane, animal rights proponents reject all animal use as exploitation, and therefore safe to ban all use of animals by humans.

Any sentient being (an animal that can sense pain) has the same rights as humans according to animal rights activists. The challenge isn’t just targeted to animal research alone but to anyone that “owns” animals. Organizations that are generally regarded as supporting animal rights are PETA (People for the Ethical Treatment of Animals) and HSUS (Humane Society of the United States).

The philosophies of *animal welfare* and *animal rights* are separated by irreconcilable differences and the enactment of animal welfare measures impedes the achievement of animal rights (Gary Francione, Rutgers School of Law). In my opinion, if the consuming public is genuinely concerned about animal welfare, we can live with that. But, if the argument is about equal rights for all sentient beings (animals that can sense pain) then we have irreconcilable differences and should focus on the majority of consumers which seem to be interested in animal welfare. Animal rights activists want to “blur the lines” between welfare and rights. They will work on humane care and legislation only until all animals can be removed from human use (www.animal-rights.com/arpage.htm).

The top Animal Rights Issues (About.com Animal Rights – Doris Lin), which are arguing points for animal rights, are listed here along with their justification:

1. Human over population – “over population is the number one threat to wild and domestic animals worldwide.”
Comment: My view is that cattle are very important in supplying the world’s need for protein, energy and other nutrients. Cattle can utilize roughages and by-products that are not suitable for human use and can convert them into high quality food and other products. We need to look at more intensively managed grazing and increase the use of by-products in cattle feeds so that we don’t compete for feedgrains with the world population.

2. Property status of animals – “every animal use or abuse stems from the treatment of animals as property”.

Comment: There are efforts to change the legal status of animals from Personal Property to Living Property. We now have 3 legal classifications of property – Real Property, Personal Property and Intellectual Property but the desire is to have a new status for animals within the legal system (Favre.Marquette Law Review 93:1021) that would designate them as Living Property. This is based on the belief that animals have the following rights:

- Not to be held for prohibited uses
- Not to be harmed
- To be cared for
- To have living space
- To be properly owned
- To own property
- To enter into contracts
- To file tort claims (to sue humans)

Animal rights advocates generally fall into two categories:

- Abolitionists – wish to do away with ownership of any sentient beings – cannot keep, posses or use animals.

- Living property advocates – believe that it is ethically acceptable to have animals within a property status described above. Not brothers, not equals, but like children.

3. Veganism. “Veganism is more than a diet. It is about abstaining from all animal use and animal products, whether it’s meat, milk, leather, wool or silk”. It rejects the commodity status of sentient animals.

4. Factory Farming – “Although factory farming involves many cruel practices, it is not just those practices that are objectionable. The very use of animals and animal products for food is antithetical to animal rights.”
Comment: The term “factory farming” belies the fact that most farms are owned by farm families. However, this statement sums it up. It’s really about the very use of animals and animal products.

5. **Humane meat** – “While some animal protection organizations promote humane meat, others believe that the term is an oxymoron.”

6. **Animal experimentation** – “performing experiments on them (animals) violates their rights. And don’t expect the Animal Welfare Act to protect them.”

    Comment: Animal experiments are conducted under strict guidelines of institutional control (Institution Animal Care and Use Committee) with protocol approval and frequent inspections.

7. **Pets** (companion animals) – “Some activists do oppose keeping pets, but no one wants to take your dog away from you.”

8. **Hunting** – Animal rights activists oppose killing of an animal for meat whether it is done in a slaughterhouse or forest.

**What are we to do?**

In my opinion, animal welfare is an issue that we constantly deal with. It is in our best interest to do so but that by itself is not enough. We must assure the consuming public that our animals are properly and humanely cared for. Programs will continue to evolve that certify that the practices and policies are complied with.

We can do this in our own operations by:

- Having adequate and properly designed handling facilities.
- Selecting docile animals that are easily “handled”.
- Cull cattle in a timely manner.
- Training cattle handlers and livestock haulers.
- Keep cattle properly immunized and healthy.
- Provide proper nutrition and health care at all times.

Animal welfare is an issue that we can and do, in fact, deal with at all times. Educational programs like Kentucky Master Cattleman, Master Stocker, Master Grazer, Professional Cattleman and Cattle Handling and Care Certification are offered by the University of Kentucky and the Kentucky Cattlemen’s Association, with funding through the Kentucky Agricultural Board, to keep our Kentucky cattlemen well-informed and certified as cattle producers that are well-trained and capable of providing acceptable care to our farm animals.
Animal rights activists are not just concerned about animal welfare but are firm in their belief that all sentient beings are equal. There’s not much common ground in our core beliefs. We aren’t going to change them and should recognize their right to choose a vegan lifestyle if they desire. However, we must fight to maintain our industry and lifestyle. Animal rights activists are passionate, well-funded and want to put you out of business, in my opinion. This activism may take the form of protests (burn labs, stage rallies, etc.) but that will likely scale back because they are becoming cautious about being seen as “extremists” and would rather be seen as compassionate people. The HSUS (Humane Society of the U.S.) and PETA (People for the Ethical Treatment of Animals) position themselves as adopting stray animals but are (in my opinion, again) more concerned about equal rights for humans and animals and, therefore, spend time and money on reaching people that can influence without seeming to be “extreme”.

Those activities are targeted toward the younger population – especially school children – and include:

- Leafleting (providing their material)
- Humane Education Study
  - vegan outreach
  - “factory farm” awareness

In other words, we are under attack for welfare issues but the intent by some is to abolish animal ownership and have a vegan lifestyle for everyone.

**Summary**

We must continue to take good care of our animals and insure the consuming public that animal welfare is our concern too. We may have to participate in programs that certify that certain guidelines are met. Since there is strength in numbers and since the threat is very real, we should join, support and fund those organizations that work to protect our well-being and the existence of our farms – which are primarily family farms.

Cattle producers should, in my opinion, respect the rights of anyone to choose a vegan lifestyle if they desire. However, the vast majority of consumers choose to eat a variety of foods – including meats. We must educate the majority of the consumers about what we do and where we do it (on family farms). Activists will likely focus on school-age children, perhaps in classrooms, to change the attitudes of the public. We must accept this challenge and provide factual information about our industry and “de-bunk” the myth about everything coming from “factory farms”.

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Finally, don’t think that everyone is against you. Animal rights proponents, although vocal and well-funded, represent a small portion of the consuming public. A lot of people envy your rural lifestyle and wish they were doing the same things that you are. We need to assure them that we are producing beef humanely on family farms that are environmentally sustainable.
The 2010 Dietary Guidelines for Americans recommends restricting our intake of saturated fat to less than 7 percent of calories, and our cholesterol intake to less than 300 mg per day (less than two eggs). They promote the use of low-fat milk and lean meat, and the use of “meat substitutes” in school lunches. These recommendations are consistent with the official dietary policy that began in 1977 with the release of the first Dietary Goals for the United States by the United States Senate Select Committee on Nutrition and Human Needs. These guidelines were not justified by the then-available science. They were adopted despite the concerns of researchers and physicians. Subsequent research has disproven the hypothesis upon which they were based. They have failed to produce the promised benefits. Since animal products are a significant source of saturated fat and cholesterol, the official advice has been to limit the consumption of animal products in general and red meat in particular. At best animal products have been wrongly accused and unfairly impacted by public policy; at worst vast physical and fiscal harm has been done to the American public.

Introduction: A thorough discussion of diet, health and human nutrition is beyond the scope of this paper. The comprehensive review by Taubes (2008) is highly recommended. Rather, this will be a brief examination of the dietary cholesterol and saturated fat recommendations.

In 1977 the United States Senate Select Committee on Nutrition and Human Needs chose one side of an on-going scientific debate. They endorsed the unproven diet-heart hypothesis, which proposed that the excessive consumption of fat in our diets – particularly saturated fats – raises serum cholesterol levels and so causes atherosclerosis, heart disease, and untimely death (Taubes, 2008). That decision was antithetical to the then-mainstream paradigm of the fattening carbohydrate, since low fat diets are higher in carbohydrates by definition. Ultimately, the goal of all dietary policy became reducing heart disease, and what was good for the heart must be good for every other diet-related matter. Thus an unproven hypothesis became the unquestioningly accepted basis for dietary recommendations for over a generation. The 2010 Guidelines, the “federal government’s evidence-based nutritional guidance to promote health, reduce
the risk of chronic diseases, and reduce the prevalence of overweight and obesity,” (USDA, 2011) continues to maintain this position. The USDA’s admission that despite their dietary advice, “more than one-third of children and more than two-thirds of adults in the United States are overweight or obese.” (USDA, 2011) suggests the need for a thorough re-evaluation of the diet-heart hypothesis. A brief examination of the effect of dietary cholesterol upon serum cholesterol levels, and the relationship between saturated fat and coronary heart disease will demonstrate that this hypothesis was not true and that advice to limit the consumption of animal products is groundless.

**Discussion:** At the time of the Committee’s decision there was a vigorous scientific debate about the diet-heart hypothesis. “Two strikingly polar attitudes persist on this subject, with much talk from each and little listening between.” (Blackburn, 1975). Three years later, the year after Dietary Goals was released, Thomas Dawber wrote: “It must still be admitted that the diet-heart relation is an unproved hypothesis that needs much more investigation.” (Dawber, 1978). Indeed, the Committee didn’t even know if their recommendations would work. The first entry on their list of “Important questions, which are currently being investigated” was “Does lowering the plasma cholesterol level through dietary modification prevent or delay heart disease in man?” (Senate Committee, 1977) Available research suggested it would not.

Two Columbia University biochemists had demonstrated in 1937 that dietary cholesterol has little or no influence on serum cholesterol (Rittenberg, Schoenheimer, 1937). This finding has never been refuted. For most individuals, the effect of following the recommendation would be “clinically meaningless.” (Howel et al., 1997). Nevertheless, we are still advised to eat less cholesterol because “telling people they should worry about cholesterol in their blood but not in their diet has been deemed too confusing” (Taubes, 2008). Lowering serum cholesterol by replacing saturated fat with polyunsaturated fats had produce mixed results. Such cholesterol lowering interventions occasionally reduced heart disease mortality, but they increased cancer mortality (Dayton et al., 1969), so there was no decrease in total mortality. More deaths were recorded in the intervention group of one study, but the results went unreported for 16 years (Franz et al., 1989), because “we didn’t like the way it turned out.” (Taubes, 2008). This relationship between low cholesterol and increased cancer mortality has been repeatedly observed (Feinleib, 1983).

Ironically Ancel Keys, the father of the diet-heart hypothesis, reported seven years after the Guidelines were released that neither high cholesterol nor saturated fat consumption predicts total mortality (Keys et al, 1984). Keys later recanted the idea that dietary cholesterol raises blood levels: “Cholesterol in food has no effect on cholesterol in blood and we’ve known that all along.” “I’ve come to think that cholesterol is not as important as we used to think it was,” he said, “Let’s reduce cholesterol by reasonable means, but let’s not get too excited about it.” (Boffey, 1987).

Just when the Committee was forming the guidelines that would shape the eating habits of every American, the first reports on Low Density Lipoprotein (LDL) cholesterol and High Density Lipoprotein (HDL) cholesterol were emerging from the Framingham,
San Francisco, Puerto Rico, Albany and Honolulu cohort studies. They demonstrated that: Total cholesterol does not predict future heart disease; LDL cholesterol is a “marginal risk factor;” HDL cholesterol is a 4-fold better predictor of risk than LDL cholesterol and the only reliable predictor of risk for men or women over 50. It was demonstrated that saturated fat raises HDL cholesterol while carbohydrates lower it (Castelli et al, 1977, Gordon et al, 1977). It was reported in 1981 that saturated fat and total fat were positively associated with longevity (Gordon et al, 1981, Feinleib, 1981). This information would not deter policy makers from labeling saturated fat “artery-clogging” and that carbohydrates were “heart-healthy diet food.” The 2010 Guidelines, still state that “Healthy diets are high in carbohydrates.” (USDA, 2010).

The basis for recommending low-fat and low-saturated fat diets has been further disproven by recent research. Meta-Analyses on “Reduced or modified dietary fat for preventing cardiovascular disease” found no effect on longevity, and no “significant effect on cardiovascular events.” (Hooper et al, 2001). An analysis of “Multiple risk factor interventions for primary prevention for coronary heart disease” demonstrated that “The pooled effects suggest multiple risk factor intervention has no effect on mortality.” (Ebrahim et al. 2006) The Women’s Health Initiative failed to prove several frequently-stated dietary myths, although policy hasn’t been affected. “The intervention did not reduce risk of CHD or stroke.” (Howard et al. 2006) “A low-fat dietary pattern did not result in a statistically significant reduction in the risk of invasive breast cancer...” (Prentice et al. 2006). “There is no evidence that a low-fat dietary pattern intervention reduces colorectal cancer risk...” (Beresford et al. 2006). “A low-fat dietary pattern among generally healthy postmenopausal women showed no evidence of reducing diabetes risk...” (Tinker et al. 2008). Prior to the release of the 2010 Guidelines, the FAO stated that “The available evidence from cohort and randomized controlled trials is unsatisfactory and unreliable to make judgment about and substantiate the effects of dietary fat on risk of CHD.” (FAO, 2010, Skeaff, Miller, 2009). And in 2010 “A meta-analysis of prospective epidemiologic studies showed that there is no significant evidence for concluding that dietary saturated fat is associated with an increased risk of CHD or CVD.” (Siri-Tarino et al 2010) Yet the recommendations to restrict total fat and saturated fat consumption continue.

Substantial evidence has accumulated that these recommendations are in fact harmful. “The low-fat, high-carbohydrate diet, promulgated vigorously ... by the USDA food pyramid, may well have played an unintended role in the current epidemics of obesity, lipid abnormalities, type II diabetes, and metabolic syndromes.” (Weinberg, 2004).

Literature Cited:


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Hooper, L., C. D. Summerbell, J. P. Higgens, et al. 2001. “Reduced or Modified Dietary Fat for Preventing Cardiovascular Disease.” Cochrane Database of Systematic Reviews. No. 3:CD002137


