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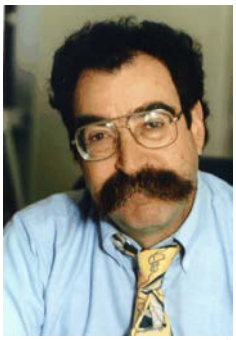
COMMENTARY

Can we redefine food safety to increase the food supply?



Kenneth Marsh[1]

The year 2015 is the endpoint for the first UN Millennium Development Goal to reduce hunger by 50% of 1996 levels. Evidence is that the world will fall short of the goal – what can we do differently?

Most efforts to reduce hunger have concentrated on increasing agricultural production. Post harvest food loss and waste have entered mainstream thinking only recently with the release of two significant FAO reports at the Save Food Congress in 2011. Global food loss and waste were estimated at 1/3 of production, 1.3 billion tons.

A global effort can reduce a substantial portion of these 1.3 billion tons of food losses and waste. Let us address three losses or wastage that we can reduce:

1) Food destroyed through food regulations that are not based on food safety
2) Food lost during storage and transportation
3) Food that is wasted; in other words discarded edible food.

1) **Food destroyed through food regulations that are not based on food safety**

Food regulations can be classified as those intended to promote food safety and those with other purposes. Regulations concerning shape, size and color of food products, and those restricting testing labs and trade, do not relate to safety issues. If our intent is to promote an abundant, safe and appropriate food supply, then food regulations should concentrate on food safety and not lead to limiting or destroying food for reasons not related to safety.

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It is important how we define safety. Safety is typically considered to result from the elimination or restriction of food components, additives or contamination that result in illness or death. If a component is found hazardous, it is easy to mandate its exclusion. But this approach has a downside of limiting the food supply. An example will illustrate this point.

There is much controversy about the use of antibiotics in raising cattle. There is little question that the practice can be abused through over-use of antibiotics, but setting a "zero" level is problematic. First let us define zero level. Zero is the limit below which test methods cannot identify any component. In 1954 when the Food Additives Amendment of the Food, Drug and Cosmetic Act defined food additives in the US, the limit of detectability was about one part per million (ppm). Today's procedures can detect one part per trillion (ppt), which is one ppm in one ppm. Many components that are hazardous can be found at this level. Returning to antibiotics, certain microorganisms in the soil produce antibiotics to survive. At a ppt, detectable levels of these antibiotics can be found in anything that grows in soil, and anything that eats anything grown in soil. So a zero level could essentially ban all food. Even if we accept a *de minimus* standard, which is an acceptable level above zero that is deemed safe, we still limit the food supply.

Other examples include limiting insect parts allowed in spices. A zero level could be set, but since any spice crop harvest will have insect parts, a zero level essentially eliminates all spices from commerce.

I propose that we expand the definition of food hazard beyond illness and death resulting from ingestion of food to include the "hazard" of non-ingestion of food. If chronic hunger, nutritional deficiency and starvation were included in the definition of food hazard, the "hazard" of deficiency would be weighed against banning out of compliance food. The level of antibiotic or insect parts should be limited in terms of safety, but not at a level that destroys an unreasonable quantity of food. In areas of food scarcity this consideration becomes critical. Standards such as those for thermal processing that destroy Botulinum spore survival, failure of which could lead to death, must be maintained. But standards that eliminate small chances of illness at the expense of large quantities of food should be re-evaluated. Let us acknowledge that suffering from lack of food, illness from nutrient insufficiency and death from starvation represent hazards to over 800 million people and address this in our food safety regulations.

2) **Food lost during storage and transportation**

Food is lost during harvest and at every stage of processing, storage and transportation after harvest (collectively post-harvest). Many universities and institutes study and develop ways to reduce post-harvest food losses. Post-harvest institutes exist around the globe, but only those relatively few that publish in the official UN languages (Arabic; Chinese;

English; French; Russian and Spanish) and participate in international forums are known to many outside of their country. The wealth of appropriate technologies to reduce food loss and waste is sufficient to meet the goal to reduce hunger by 50%. I include the term "appropriate" because procedures vary by available resources, circumstances, environment and labor costs. For example, a specific beetle that eats through the husk of nuts to access the nut meat will give up and starve if it does not reach the meat within 24 hours. So an effective "technology" is to flip the bags of nuts in the warehouse, twice daily, thereby dislodging the beetle that must begin again on another husk. This is an appropriate technology in countries with inexpensive labor and dearth of climate controlled warehouses.

Tremendous increases in the available food supply would be gained by promoting international cooperation and technology exchange among post harvest training and research institutes. Since the food has already been produced and expensed, and the technologies to reduce losses have already been developed, this approach can be very cost effective.

3) **Food that is wasted or discarded edible food**

Restaurants, especially in the US, compete on generous serving sizes, and fast foods advertise low cost "super-sizing" options. Resistance to New York City's attempted ban on sale of 32 oz. (approximately 1 litre) carbonated beverages exemplifies a system that emphasizes huge portions. This proposed regulation did not preclude anyone from drinking 32 oz. beverages, just required those who do so to refill their smaller cups.

My favorite restaurant is the Café du Paris in Geneva, Switzerland. They offer one entrée (steak and chips) with a salad, and have a significant wine list. The meat portion is delicious and adequate. The fries (chips) are served as a small portion directly out of the fryer, when taste is its best. Customers can get as many additional portions of fries they need for satiety. All customers can eat their fill, but are not given more than they will eat. Net result is virtually zero food waste. I do not expect most restaurants to offer a single entrée, but the idea to serve a reasonable portion and provide seconds to those who request them would have the multiple advantages of being healthier, encouraging reasonable eating and discouraging overeating, and reducing food waste.

Supermarkets are expected to have full selections of food products at all times, including limited shelf life items such as bakery items and fruits and vegetables. The best example of waste is fresh baked items that are discarded at the end of every sales day translating to tons of food waste. Reducing this practice and expectations will reduce waste.

"Best by", "Sell by", "Use by" dates result in substantial discards, especially in developed countries. Code dates have been required to track tainted food, but only recently (last few decades) have they been consumer readable. These dates are often confusing (how long

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does food last after "Sell by" date?), and are typically conservative to allow for unexpected abuse during transport and storage and manufactures benefit by people replacing food items that otherwise remain acceptable. With the exception of fresh meat and fish, food products remain good long past specified dates – in some cases years or more. Code dates on water and honey, for example, have little relationship to acceptability. In addition, most foods that "go bad" (such as sour milk, oxidized fruit drinks, mold on cheese, soggy cereal) are not dangerous to health. Most incidences of food poisoning are contamination or incorrect processing at manufacturer facilities before product is packaged.

Waste during manufacture is costly and often the result of inefficient manufacture. My favorite example is the president of a major spice blending company who started throwing money on the floor of the mixing room. When employees asked what he was doing, he replied "throwing money away, just like you". Spillage was reduced with significant savings of product and costs. Finding uses for unavoidable waste, such as trimmings, saves money and possibly food that is used for animal feed.

Most food waste occurs in the EU and US where food waste does not translate into hunger. But food waste reduces the food supply and has substantial cost.

In summary, total food production is sufficient to feed every person on earth. It is possible to eliminate hunger (beyond 50%) with an adequate reducing of food loss and waste.