Understanding CR's Ratings For Food-Label Seals & Claims

The way food is produced can have positive or negative effects on human, animal, and environmental health, and increasingly consumers are interested in learning the story behind the foods they buy. Short of visiting the farm or factory, a product's label is where you can get information about the issues you care about—whether it be the way crops are grown, how animals raised for food are fed and treated, or which pesticides are used. This information is communicated through claims and seals. Claims are words or phrases printed on the label, such as "humanely raised" or "no GMOs"; seals are graphics combining a logo or an image with a short claim, such as the USDA Organic seal.

But the claims and seals on labels don't always mean what consumers think they do. To determine what consumers expect from various food-label claims and seals, CR conducted nationally representative surveys in 2018 and 2019 [PDF]. Each survey included 1,000 U.S. adults.

Our results suggest that there's a lot of confusion about many common label terms, such as "natural," "organic," and "no antibiotics," and, in many cases, a disconnect between what a seal or claim actually offers and what many consumers believe it *should* offer. Many people may be buying certain foods or brands believing they're getting something they aren't, or they might not understand which labels provide valuable information and which ones are merely marketing ploys.

The fact is, meanings behind even similar-sounding label claims and seals can vary widely. And not all of them are verified—in other words, in many cases there's no government regulation a food company must follow to display a claim or seal on its label, and/or there's no one checking to make sure that the company is complying with standards set by the government or an organization such as the American Grassfed Association.

To determine what's behind claims and seals, and to figure out the differences, requires a careful reading of government regulations or an organization's policies. That's why Consumer Reports has studied the requirements, standards, and verification procedures that define a broad range of food-label seals and claims, and distilled the results into a CR rating system.

These ratings can help you distinguish between food-label claims and seals that look impressive but have little or no meaning and those that guarantee your food choices deliver on their promises.

The Goal: A Safer and Healthier Food System

Since its inception in 1936, CR has been working with consumers, manufacturers, and policymakers to improve the food system. Through our research, advocacy work, and communication with consumers, we've identified five aspects of food production highlighted on food labels that can cause confusion:

- Reducing pesticides
- Reducing the use of drugs in farm animals
- What farm animals eat and the quality of their diets
- Animal welfare: how farm animals are raised and treated
- Reducing the use of GMOs—genetically modified (or engineered) organisms

CR believes that these factors must be addressed to support a healthy, sustainable food system—one in which everyone has access to safe and healthy food, now and in the future. (You can read our take on these five factors, below.)

We hope our food-label ratings will help you shop for food with sustainability in mind, but our most important goal is to provide you with a tool you can use to determine which labeling claims you can trust in order to select products that align with the issues *you* care about.

The Methodology

CR experts reviewed government regulations and certifying organizations' standards and policy manuals to find out which criteria food manufacturers and producers need to meet to use the various claims or seals on their labels.

Then we compared those standards to the information we have from our surveys about what consumers think label claims mean (and what they think they should mean). In some areas that required additional information, we supplemented survey results with scientific literature reviews. To ensure that our ratings are consistent, we use the same criteria in our review of the standards and verification requirements for every seal and claim. The criteria fall under the following four broad concepts that we believe are necessary for a good label:

What elements of a healthy food system does it address? We start by asking whether the claim or seal addresses any of the five factors above. Not every labeling seal or claim deals with all five factors, so each one is rated only on relevant factors. For example, "raised without antibiotics" doesn't imply that the meat came from animals that were not exposed to pesticides, so that claim wouldn't be rated on pesticide use. On the other hand, USDA Organic addresses all five of the factors we use in our food ratings, so this seal is scored on all of them. For each seal or claim, the ratings for all the relevant factors are combined into an overall rating.

Is it meaningful? Some food-label seals and claims sound good but don't mean much. Either the standards behind them are weak or they claim qualities that are practically meaningless because they are characteristic of all similar products. For example, a package of chicken labeled "no hormones added," isn't meaningful because the federal government has banned the use of hormones in all chicken production—so chicken with this promise on the label is not special at all. A claim or seal gets more points in CR's ratings system if it describes a benefit or value that *differentiates* the product from the norm.

Does it meet consumer expectations? For a seal or claim to be highly rated, standards must exist *and* those standards need to mean what consumers typically think they should mean. For instance in the "raised without antibiotics" example above, our 2019 survey found that 55

percent of consumers expect this claim to mean that, in addition to not being given antibiotics, the animals are not given other drugs, such as growth hormones. So the rating for “raised without antibiotics” takes that expectation into consideration.

Is it verified? We know from CR surveys that many consumers believe someone should check to determine whether the labeling claims they see are true. In fact, that often isn’t the case: Most claims and seals that address how food is produced have *no requirements for independent verification*. In our review of each claim or seal’s standards, we determine whether verification procedures are in place and conducted by independent third parties—and factor our findings into every rating.

Verification can mean different things for different foods. For example, a “humanely raised” claim on a package of beef should be verified through an inspection of the farm and slaughterhouse. For “non-GMO” or “pesticide free,” verification should include sending food samples for lab tests.

5 Factors for a Healthier & Safer Food System: Why They Matter

Here is a deeper look at why the five factors we currently consider in our food-label ratings are worth incorporating into your decision-making process as you shop for food. (Note that more criteria may be added as CR’s ratings evolve.)

1. Reducing Pesticides

As the name suggests, pesticides are substances meant to control pests. In agriculture, this includes insects (insecticides), mold and other fungi (fungicides), and weeds or other unwanted vegetation (herbicides). They’re used directly on crops (such as fruits, vegetables, and grains), to fumigate soil or harvested crops in storage, and on animal farms to control insects.

Pesticides can be natural or synthetic. Natural ones are derived from substances that occur in nature; synthetics are created in labs and are of greatest concern.

In the U.S., the Environmental Protection Agency allows nearly 900 pesticides to be used in conventional food production and, according to the latest available data from the EPA, nearly 800 to 900 million pounds of pesticides are used in agriculture every year.

Some pesticides endanger human health. They’re designed to be toxic to the weeds and insects they target, but many pesticides unintentionally affect other plants and animals, including humans.

The EPA establishes limits for pesticides in food, which are supposed to assure safety. Nevertheless, approximately 40 EPA-registered synthetic pesticides on the market are classified as known, probable, or possible human carcinogens. And certain pesticides are suspected of disrupting human endocrine, immunological, and/or neurological systems.

Farmers and farm workers are especially vulnerable. The EPA says six chronic diseases have a well-documented association with agricultural pesticide exposure: non-Hodgkin's lymphoma, prostate cancer, Parkinson's disease, lung cancer, bronchitis, and asthma. And the EPA estimates that between 1,800 and 3,000 acute pesticide poisonings occur annually among farm workers.

Less is known about the direct effect of pesticides on consumers from eating foods treated with them, but in a 2010 report on environmental cancer risks, the President's Cancer Panel (an expert committee that monitors the country's cancer program) wrote: "The entire U.S. population is exposed on a daily basis to numerous agricultural chemicals. … Many of these chemicals have known or suspected carcinogenic or endocrine-disrupting [hormone] properties."

A study, also from 2010, found that U.S. children whose urine contained higher levels of organophosphate pesticide metabolites—which are known to disrupt the neurological system of insects and certain mammals—were more likely to be diagnosed with attention deficit hyperactivity disorder. And a 2018 study found the consumption of fruits and vegetables with high levels of pesticide residue to be associated with lower chances of pregnancy and live birth following infertility treatment. And there is some evidence that reducing the pesticide load in our diet may be beneficial. For example, a 2018 study of nearly 70,000 French people observed a significant reduction in the risk of cancer among those who reported the highest frequency of organic food consumption. (Organic farming regulations prohibit the use of the vast majority of pesticides.)

Pesticides threaten species we need and value. Certain insects play an integral role in agriculture and maintaining a healthy food system. For example, farmers would struggle to produce enough fruits and nuts without the bees and other insects that pollinate plants. Some beneficial insects kill the insects that can damage crops. For instance, ladybugs eat the aphids that can destroy tomato plants.

But there's growing evidence that pesticides are threatening some of the insect species we rely on for these functions. The European Food Safety Authority concluded in February 2018, for example, that a relatively new class of pesticides called neonicotinoids—used on a wide variety of crops—represents a risk to wild bees and honeybees.

Wildlife is also affected by the widespread use of pesticides. Decades ago, the collapse of populations of bald eagles and other birds led to the banning of the insecticide DDT. However, even now, an estimated 72 million wild birds die every year from exposure to other pesticides used on farms, according to the U.S. Fish and Wildlife Service. Studies have found that organic farming can minimize agriculture's negative impacts on biodiversity.

Pesticides are a short-term solution with long-term risks. Pesticides don't always kill all the pests they mean to kill. Some of the targeted bugs, weeds, or molds survive and reproduce, passing on their ability to withstand those pesticides to their offspring.

That's how pesticide resistance happens: Species become impervious to the chemicals that were designed to destroy them. Research has shown that in some insects, the length of time between the introduction of a new pesticide and the bugs' developing resistance to it is just a few years. This inevitably leads to a kind of arms race: To deal with this pesticide resistance, companies constantly need to develop new pesticides, which introduce even more chemicals into our food supply and the environment.

2. Reducing the Use of Drugs in Farm Animals

Animals are often given drugs to prevent disease and to make them grow more quickly. (Animals that reach market weight faster cost less to raise.) For some of the drugs, such as antibiotics, this use can threaten human health. Others cause health problems or suffering in animals.

Overuse of antibiotics in food production threatens our health. Antibiotics are used in farm animals to prevent disease. They also were previously used to make the animals grow bigger, faster. The Food and Drug Administration no longer allows antibiotics used in human medicine to be sold for the purpose of promoting growth in farm animals, but it still allows their routine use for disease treatment and prevention. In fact, more antibiotics are given to farm animals than to people.

Sick animals should be treated, but prophylactic antibiotic use is a major factor in the development of antibiotic-resistant bacteria. When we use antibiotics, most of the microscopic organisms are killed (including useful strains of bacteria). But a small number of the bacteria will have characteristics that enable them to resist—and survive—the drugs. Over time, the vulnerable bacteria die off and the resistant ones flourish in their place until the drug resistance becomes a standard characteristic of the bacterial strain. The Centers for Disease Control and Prevention estimates that antibiotic-resistant bacteria cause more than 2 million infections and kill at least 23,000 people each year.

Antibiotic resistance is an inevitable outcome of using antibiotics to fight bacterial diseases, which we've historically addressed by creating new drugs to fight the new bugs. But new drugs can't be developed fast enough to keep up with antibiotic resistance. So we can't hope to preserve the power of antibiotics to fight bacterial diseases without meaningful changes to our food system, especially livestock and poultry production.

Preventing animal disease is important, of course, but there are ways to do it that don't spur antibiotic resistance and are also broadly sustainable. In fact, most agricultural antibiotics are administered to prevent diseases that arise primarily in large-scale animal-feeding operations. In these, animals are often given low-quality and inappropriate feed and raised in crowded, unsanitary, and stressful conditions. In a sustainable system of agriculture, by contrast, producers keep animals healthy by providing them with a diet and living conditions that promote their health and well-being. And they use antibiotic drugs only as a last resort.

Hormone use may risk human health. The FDA currently allows the use of several types of hormones in raising beef cattle and sheep. Among them are six steroid hormones, including

estrogen, progesterone, and testosterone. Whether administered in feed or implanted under the skin, hormones are used to increase the speed at which animals convert food into muscle and fat. The FDA also allows the use of recombinant bovine growth hormone in dairy cows to increase their milk production.

These hormones may enter the human body directly, when you eat meat or dairy products from treated animals, or indirectly, when you drink or breathe water or air that has been contaminated by runoff and airborne particulate matter in and around animal feedlots.

Relatively little is known about the effects of these hormones on human health, but experts are deeply concerned about potential cancer risks and impacts on the endocrine system, which regulates a wide range of body functions, including metabolism, growth, development, and reproduction. In fact, the European Union has banned growth hormones in beef and dairy cattle because of these concerns.

Drugs can also undermine animal health. Studies show that using recombinant bovine growth hormone in dairy cows increases the frequency of mastitis, an udder infection, leading to more antibiotic use in these animals.

Other drugs of concern include beta-agonists, such as ractopamine and zilpaterol, which are used in pigs, turkeys, and cattle to promote weight and muscle gain. However, these drugs have been linked to thousands of instances of negative effects on animals, including severe foot disease and even death.

3. What Farm Animals Eat and the Quality of Their Diets

The food that farm animals eat has an impact not only on the health and welfare of the animals themselves but also on the safety and nutritional qualities of the food derived from them.

Animals are fed other animals. The Food and Drug Administration allows substances derived from animals to be used as part of other animals' feed. This is true even for animals that are natural herbivores, such as beef and dairy cattle, which are commonly fed slaughterhouse waste from pigs and chickens.

There are some restrictions: The FDA prohibits protein from cattle or sheep in cattle feed to prevent possible bovine spongiform encephalopathy, commonly known as mad cow disease. But there are no similar restrictions for pigs and poultry, and cattle can still be fed slaughter byproducts from other types of animals.

Animals are fed "poultry litter." Animal waste, such as manure and used litter from the floor of chicken houses, may be processed into animal feed ingredients. This cost-cutting practice has been in use for decades.

In 2009, Consumer Reports endorsed a citizen petition asking the FDA to ban poultry litter in feed for cows because it can contain disease-causing bacteria, antibiotics, heavy metals, and

even foreign objects such as dead rodents, nails, and glass. The FDA continues to allow poultry litter and other animal byproducts in animal feed.

The FDA doesn't verify compliance. The FDA does not actively check to determine whether even its limited regulations are being followed, instead leaving that role to the states. But state regulations can be weak. Meanwhile, the FDA merely recommends that feed manufacturers conduct lab tests for materials such as drugs, pesticides, pathogenic organisms, heavy metals, parasitic larvae or ova, and mycotoxins.

Grass-fed meat and milk have benefits. Beef and dairy cattle have evolved to digest high-fiber and low-starch grasses. The standard industry practice, though, is to feed them low-fiber, high-starch grains, which cause beef cattle to gain weight more rapidly and dairy cows to produce more milk. But this diet also creates an acidic environment in the cows' digestive tract, which can lead to ulcers and infection. Antibiotics are often used to prevent these conditions, but the way the cows are raised makes the need for them much less likely.

Milk from grass-fed cows also has a somewhat healthier nutrition profile than milk from conventional cows. A 2018 study comparing milk from 100 percent grass-fed cows, cows being raised organically, and conventionally raised cows, found that milk from grass-fed cows contained higher levels of conjugated linoleic acid (CLA), a type of fat, and a lower ratio of omega-6 to omega-3 fatty acids. Meat from grass-fed cattle also has more CLA and a lower omega-6 to omega-3 ratio, and lower levels of two types of saturated fatty acids. These differences are favorable to heart health, but they're small and don't cancel out the overall health concerns related to eating red meat.

4. How Farm Animals Are Raised and Treated

There's a spectrum of possible definitions for what it means to raise a farm animal in a humane fashion. CR's food-label ratings do not take a position on that ethical question. Instead, we used our survey data to determine what consumers expect when they see a "humanely raised" food-label claim.

Consumers expect "humane" treatment to mean something specific. To the question of what consumers expect when they see a "humanely raised" claim on a food label, the answer is clear, according to CR surveys: A majority of consumers think farms should treat animals in a humane manner prior to slaughter and to provide living conditions that allow animals to engage in their natural behaviors, such as scratching and pecking for chickens, and grazing on grass for cattle. These behaviors increase the animals' comfort and provide them with stimulation.

Neither of these expectations is guaranteed by law. No federal laws protect animals raised for food or dictate animal treatment on farms, and farm animals are explicitly excluded from protection under the Animal Welfare Act. Most states also exempt farm animals and practices from their anti-cruelty provisions. Two federal laws cover farm animals during transport and slaughter, but both exempt poultry. Physical alterations, such as hot iron branding or removal of body parts (such as tails, beaks, or testicles) without pain relief are permitted.

The way most farm animals are raised does not meet consumer expectations for humane treatment. The vast majority of animals raised for food in the U.S. are raised in concentrated animal feeding operations (CAFOs), large-scale facilities designed to produce animal foods efficiently and at low cost.

The conditions of CAFOs vary by species.

- **Beef cattle** are generally raised on a pasture or range for the first part of their lives, then transported to feedlots, where they are fattened on a grain-based diet. Processed feed is shipped in, and drugs are often used to reduce the number of animals getting sick in their confined and crowded conditions. Major welfare problems in feedlots—in addition to the animals' inability to engage in their natural grazing behaviors—include exposure to extreme heat, muddy conditions without a dry place to stand or lie down. Physical alterations—such as castration, hot iron branding, and horn removal—can be performed without pain relief.

- **Dairy cows** in the U.S. generally have no access to pasture. Instead, they are housed indoors, and more than a third of them live in stalls that restrict the animals' movement. Physical alterations are often performed on dairy farms. For example, about half of dairy farms in the U.S. practice tail docking and about 90 percent of operations practice dehorning; both procedures are usually done without anesthesia or pain medication.

- **Chickens** are mostly raised by contract farmers in large, windowless buildings called grow-out houses, where tens of thousands of chicks are placed on a litter-covered floor. Dim lights are kept on nearly continuously, making it hard for the chickens to sleep and encouraging them to eat highly concentrated feed around the clock. This speeds up the rate at which the chickens reach market weight (rapid growth can make the birds sick). And the birds' excrement is typically not cleaned or removed from the house during the short lifetime of each flock. One result is ammonia-filled air, which can negatively affect the chickens' health.

- **Egg-laying hens** are usually raised on farms with over 100,000 hens, most in cages that give each bird a space smaller than the size of a sheet of paper. To prevent hens from pecking at their cage-mates (or flock-mates in cage-free systems), their beaks are typically trimmed when they are chicks. While this reduces the harm they can inflict on each other, it does not address the root causes of aggressive behavior—which is that the animals are too densely housed and unable to engage in natural behaviors, such as pecking for seeds, insects, and other food outdoors; seeking a dark place to lay eggs; perching; and dust-bathing.

- **Pigs** are typically housed indoors, with very little space per pig. Female pigs used as breeders are often kept in narrow gestation crates while they are pregnant and then moved to a farrowing crate prior to giving birth. Neither type of crate allows the animals to turn around or move, let alone follow their strong natural instinct to build a nest with materials such as straw. Other natural pig behaviors include foraging and rooting, which

is not possible for breeder pigs or growing pigs housed indoors on concrete floors. Typical physical alterations include tail removal (to prevent other pigs from biting the tails), cutting notches in their ears for identification, and castration; these procedures are often performed without pain relief.

5. Reducing the Use of GMOs—Genetically Modified (or Engineered) Organisms

Genetically modified (or engineered) organisms, or GMOs, are plants and animals whose genetic code has been manipulated in a lab rather than altered through traditional breeding.

Our food system is already flooded with GMOs. GMO crops have been grown on a commercial scale in the U.S. since 1996. According to the most recent data available from the Department of Agriculture, 99 percent of U.S. acreage of sugar beets, 95 percent of rapeseed (the source of canola oil), 93 percent of soybeans, 92 percent of corn, and 13 percent of alfalfa was planted with genetically engineered varieties.

Most corn and soybeans are used to feed farm animals, including beef cattle, pigs, chickens, and turkeys. However, when Consumer Reports tested processed foods made with corn and soy in 2014, we found that almost all of those *not* labeled as organic or non-GMO contained substantial proportions of genetically engineered corn and soy.

In the U.S., GMOs are not required to be safety tested. Genetic engineering has the potential to introduce allergens and toxins into food crops, change their nutritional value, and have other unintended effects on human health. Yet, unlike the parallel agencies in Europe, Australia, Japan, and China, the Food and Drug Administration does not require premarket safety assessments of GMO crops. (The agency does invite companies to go through a voluntary safety consultation procedure.)

GMOs encourage the overuse of herbicides. GMOs are frequently touted as a necessary tool for providing enough food for the Earth's growing population. However, more than 99 percent of the GMO crops grown in the U.S. today were designed not to provide more food or nutrition directly but to withstand the application of herbicides, or to produce their own pesticide.

A case in point: The most widely grown genetically engineered crops have been engineered to withstand an herbicide called glyphosate. Since glyphosate-tolerant GMOs were introduced commercially in 1996, glyphosate use in the U.S. has risen almost 15-fold. The International Agency for Research on Cancer, a division of the World Health Organization, classifies glyphosate as "probably carcinogenic to humans." There is also evidence that glyphosate can have hormonal effects.

In addition to potential direct effects on humans, glyphosate sprayed on crops also ends up in the surrounding soil, air, and water, where it kills other plant species that were not being targeted and sets off a domino effect of unintended consequences. For example, glyphosate kills the milkweed plant, which is key to the survival of monarch butterflies. Monarch populations

have declined dramatically since the introduction of genetically engineered plants in 1996. Studies link this phenomenon to the enormous increase in glyphosate-tolerant corn throughout the U.S. corn belt during that time.

GMOs escalate the pesticide-driven arms race with nature. As discussed above, more pesticide use means the emergence of pesticide-resistant weeds. As of 2012, at least one glyphosate-tolerant species of weed was found on roughly half of U.S. farms, with more than a quarter of farms having two or more glyphosate-tolerant weed species.

This has led farmers to spray more glyphosate, and to spray other herbicides as well, such as 2,4-dichlorophenoxyacetic acid (2,4-D), which has been classified as “possibly carcinogenic to humans.” That, in turn, has led to the genetic engineering of crop seeds that withstand 2,4-D, and the cycle continues.