

## Organic, Grass Fed, and Free Range: What Do They Mean?

What Research Tells Us About Quality		
<i>Food Label</i>	<i>Nutritional Characteristics</i>	<i>Other Information about Quality</i>
<b>Organic</b>	<ul style="list-style-type: none"> <li>● Evidence that higher antioxidant concentrations and lower Cd (a toxic metal) concentrations linked to the non-use of mineral N and P fertilizers, respectively)</li> <li>● Organic milk has significantly higher Vitamin E and Iron concentrations; also significantly higher in essential fatty acid concentrations than conventional dairy products</li> </ul>	<ul style="list-style-type: none"> <li>● Contains fewer pesticide residues and reduces human exposure to pesticides</li> <li>● Prohibited. non-therapeutic use of antibiotic agents potentially reduces human disease linked to drug-resistant organisms</li> <li>● Farming reduces fossil fuel consumption and environmental contamination with pesticides and herbicides.</li> </ul>
<b>Grass-fed</b>	<p>Grass-based diets have been shown to enhance precursors of fatty acids and vitamins with antioxidant properties, both of which are crucial to a healthy diet and lowering risk of disease.</p>	<p>The differences in fatty acids give grass fed beef a distinct flavor and unique cooking qualities when compared to grain-fed beef.</p>
<b>Pasture-raised</b>	<ul style="list-style-type: none"> <li>● Pasture feeding has been demonstrated to have a positive impact on the nutrient profile of milk, increasing the content of some beneficial nutrients”</li> <li>● Pastured hens generally have elevated vitamin levels (due to sunlight exposure and access to fresh vegetation.</li> <li>● Pasture-raised hen eggs can have higher oxidative stability, which is a characteristic of elevated vitamin E and carotenoids (vitamin A).</li> <li>● Hens pastured on mixed cool season grasses produced eggs with elevated levels of vitamin E (compared to those produced by conventional methods).</li> <li>● Vitamin A content of eggs was 38% higher from pastured hens.</li> </ul>	<ul style="list-style-type: none"> <li>● Pigs raised in indoor facilities express significantly less enzymatic antioxidants compared to pasture raised pigs.</li> <li>● Pasture grazing can increase yolk carotenoid (vitamin A) and alpha tocopherol (vitamin E) content. This is influenced by forage composition and level of intake.</li> </ul>
<b>Free-range</b>	<ul style="list-style-type: none"> <li>● Increase in fat levels (particularly omega-3 fatty acids) in eggs produced on the range                             <ul style="list-style-type: none"> <li>○ Possible contributors include forage consumption and increased intake of wild seeds or insects associated with pastures (species of edible insects can have higher fat levels)</li> </ul> </li> <li>● Compared to eggs produced using conventional methods, free range eggs contained elevated levels of folic acid and vitamin B12.</li> <li>● Beta-carotene (vitamin A) levels are elevated in range eggs compared to those produced by conventional methods.</li> </ul>	<ul style="list-style-type: none"> <li>● Two key aspects of free-range egg production that can affect nutritional value are exposure to sunlight and pasture consumption.</li> <li>● Eggs laid from hens from free-range systems using traditional methods and ultra-weak luminescence (USL, a method correlated with growth activity) had over three times higher content of natural antioxidants in the form of carotenoids (Vitamin A).</li> <li>● Factors that influence egg nutrition and ultimately characteristics include consumption on the range, plants, insects, and soil.</li> <li>● Free-range eggs can have lower triglyceride levels than cage eggs.</li> </ul>