

University of Hawai'i at Mānoa



Marianas Grazing and Livestock Management Academy

College of Tropical Agriculture and Human Resources

Ranching Sustainably: A Case for Environmental Stewardship

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Dr. Mark S. Thorne
Range and Livestock Extension Specialist
University of Hawaii at Manoa
Cooperative Extension Service



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What one important American thought about how nations prosper...

“Finally, There seem to be but three ways for a Nation to acquire wealth. The first is by war as the Romans did in plundering their conquered neighbors. This is Robbery.

The Second by Commerce which is generally cheating.

The third by Agriculture the only honest way; wherein man receives a real increase of the seed thrown into the ground, in a kind of continual miracle wrought by the Hand of God in his favor, as a reward for his innocent life, and virtuous industry.

Benjamin Franklin



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Definitions:

Agriculture, in simplest terms...

...is the systematic production of food and fiber for consumption...by individuals...society...

...covers all activities essential to food/feed/fiber production, including all techniques for raising and "processing" livestock.

As of 2011:

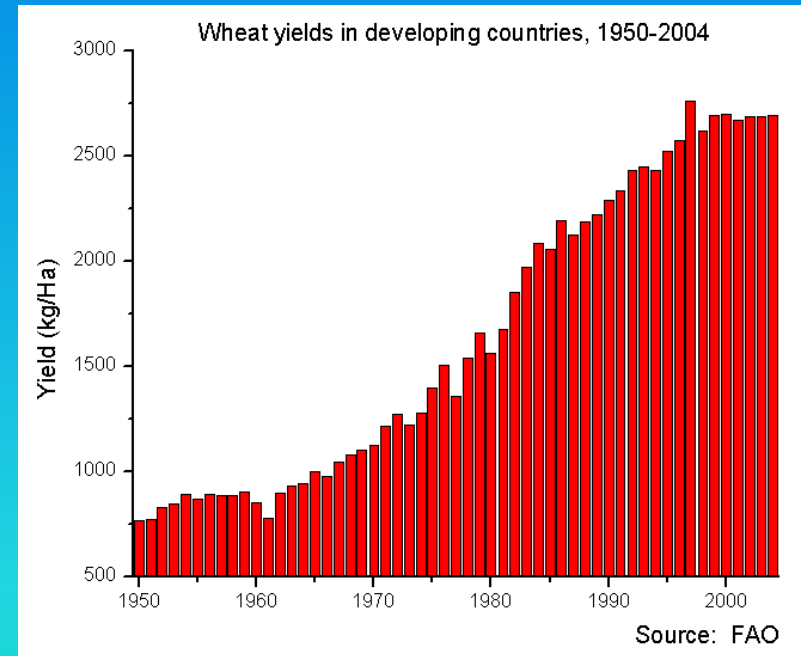
- 36% of the world's workers employed in agriculture
- this is down from 42% in 1996
- less than 2% of the U.S. population is involved in Agriculture
- agricultural production accounts for less than five percent of the gross world product (aggregate gross domestic product).

In short...the importance of agriculture is declining in our post-modern culture...what can this mean?





Norman Borlaug And The Green Revolution



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The Green Revolution:

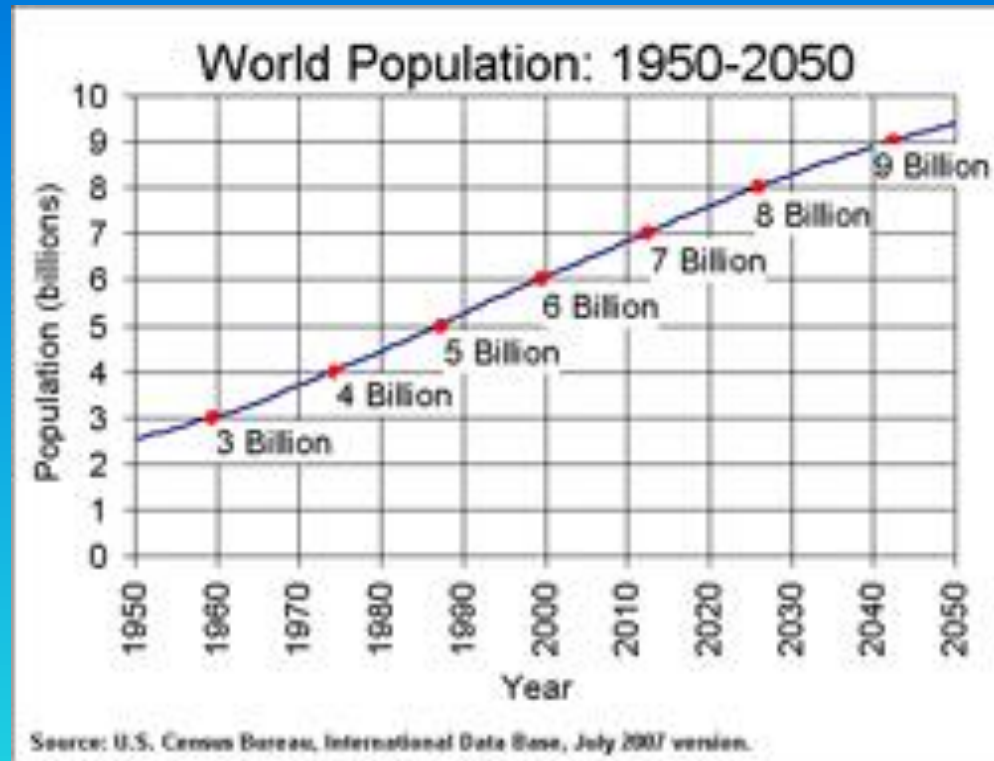
- between 1950 and 1984, the Green Revolution resulted in a 250% increase in world grain production (among other agricultural products)

- this increase in production was the result in improved agricultural practices and advances in fertilizers, pesticides, and irrigation techniques

At the same time:

- world population has grown by four billion since the beginning of the Green Revolution

- without the Revolution, there would be greater famine and malnutrition than the UN presently documents.



100 years of Famine:

1907 east-central China;

1914-1918 Mount Lebanon, Belgium, Germany; (750,000 deaths), Russia, Persia

1917-1921 Turkestan during Bolshevik revolution (1/6 of population died)

1921-1929 Russia and Tatarstan, northern China (3 million deaths), Ruanda-Burundi (Africa)

1933-1936 Ukraine, Russia, Kazakhstan, Caucasus, and China (5 million deaths)

1940-1944 Warsaw Ghetto, Leningrad, Greece, China, Bengal, Ruanda-Urundi, Netherlands

1945-Vietnam

1946-1947 Soviet Union

1959-1961 China (estimated 20 million deaths)

1967-1972 Biafran, Sahel

1973 Ethiopia

1974 Bangladesh

1975-1979 Cambodia

1980 famine in Karamoja, Uganda

1984 Ethiopia

1996 North Korean

1998 Sudan

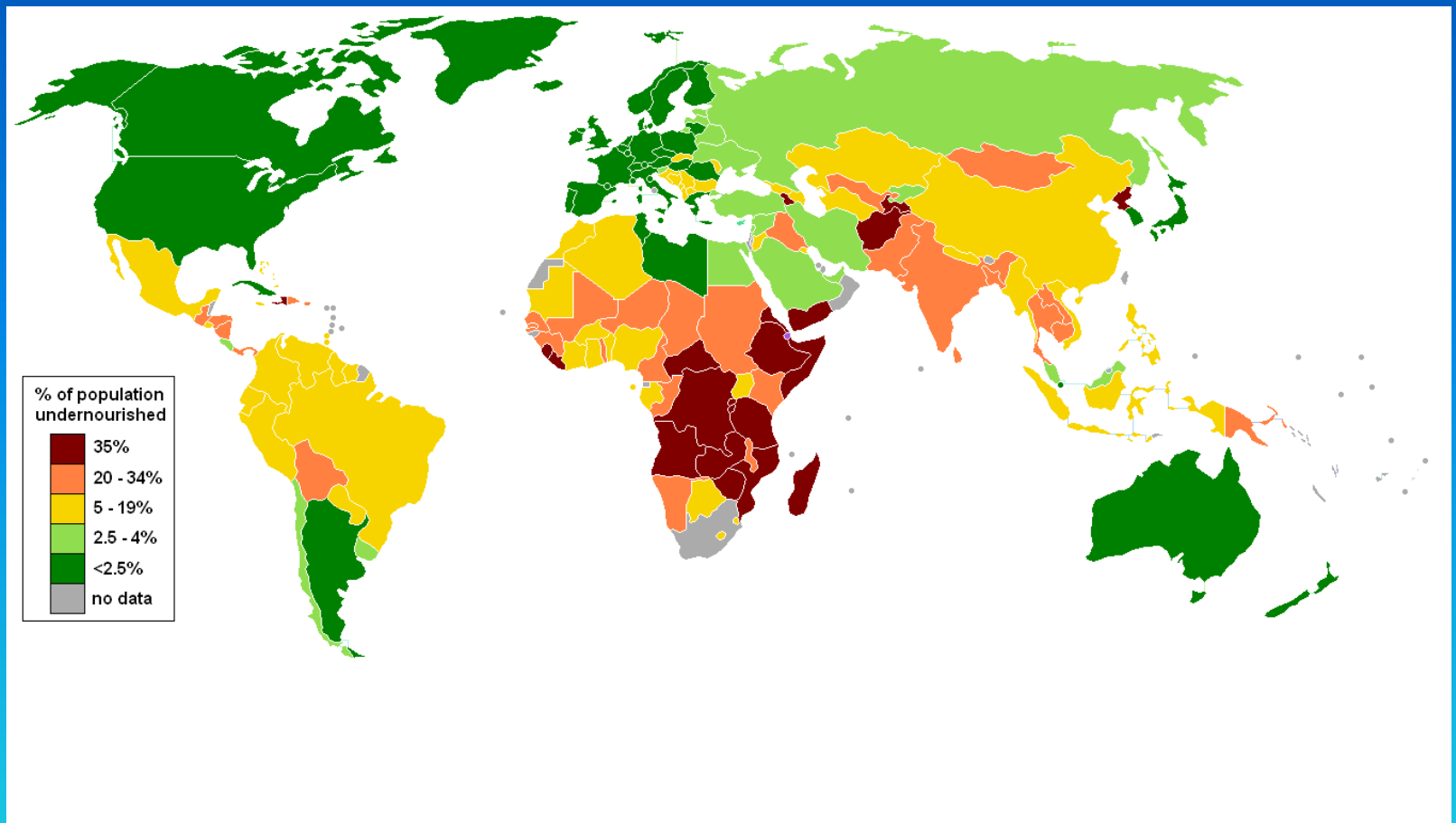
1991-1993 Somalia

1998-2000 Ethiopia, Congo (3.8 million deaths),

2000-2007 Zimbabwe, Sudan/Darfur, Malawi, Niger, Horn of Africa.

44 major famines spread across 63 of the past 100 years resulting in an estimated 75 million deaths





According to the Food and Agriculture Organization of the United Nations: there are currently **1 billion undernourished people worldwide in 2012.**

This is an increase of 400 million over the past 10 years

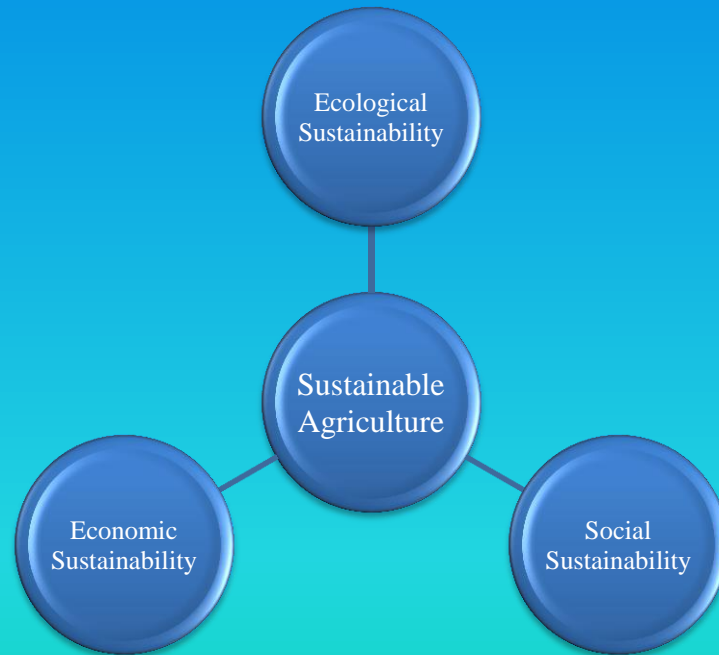


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Definitions:

Sustainability: ...keeping in existence; maintaining; enduring; withstanding (Webster's II New Riverside University Dictionary).

Sustainable Agriculture: ...an agricultural production system that maintains the economic viability of the farm or ranch operation, the ecological integrity of the land base, and that provides a constant supply of food and fiber to society.



Definitions:

How Do We Define a Sustainable Animal-Based System?

- Two types of systems:

Livestock Production Systems
(sustainable does not
necessarily mean organic)



Wildlife Systems
(Most wild large
ungulate populations
are not sustainable)



Definitions:

What can we learn from wild populations with regard to sustainability?

Agricultural sustainability must be planned and managed for.

A sustainable animal production system is an intensive management enterprise.

Sustainability does not mean “management free”!



Animal Production in a Sustainable Agricultural Perspective

Remember, a sustainable production system must:

1. Conserve or improve natural resources (ecological sustainability)
2. Meet the needs of society (social sustainability)
3. Be profitable (economic sustainability)



Therefore, we may assume that grazing livestock production meets all three of these criteria, if it

1. Provides high quality protein and fiber needed by society
2. Provides a fair profit for the producer
3. Causes no detrimental environmental effects such as erosion, pollution, or loss of species.

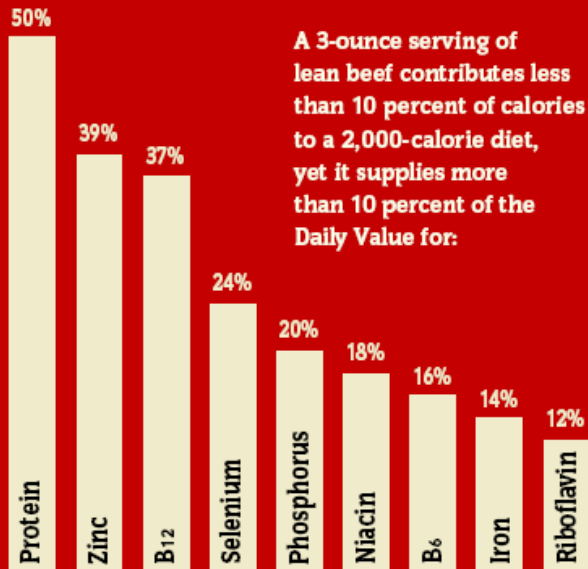


Animal Production in a Sustainable Agricultural Perspective

Importance of Livestock Production:

Livestock grazing converts water and nutrients into highly nutrient dense food from sources that are largely unsuitable for human consumption.

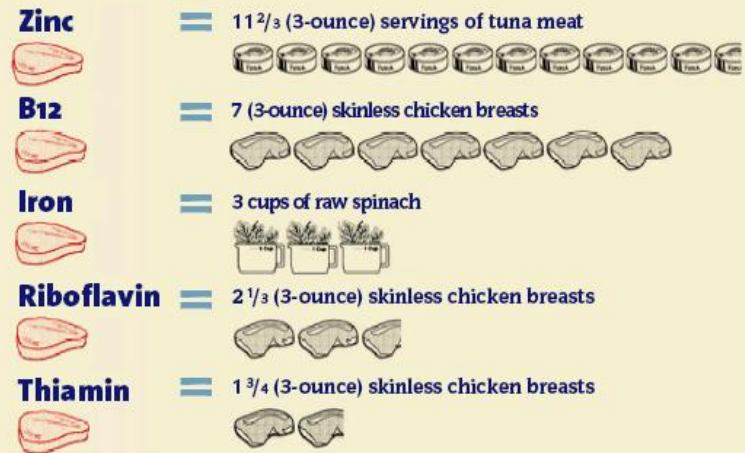
Choose Your Calories by the Company They Keep



U.S. Department of Agriculture, Agricultural Research Service, 2002.
USDA Nutrient Database for Standard Reference, Release 15.



To get the same amount of key nutrients found in a 3-ounce serving of beef, you need to eat:



Source: U.S. Department of Agriculture, Agricultural Research Service, 2002.
USDA Nutrient Database for Standard Reference, Release 15.

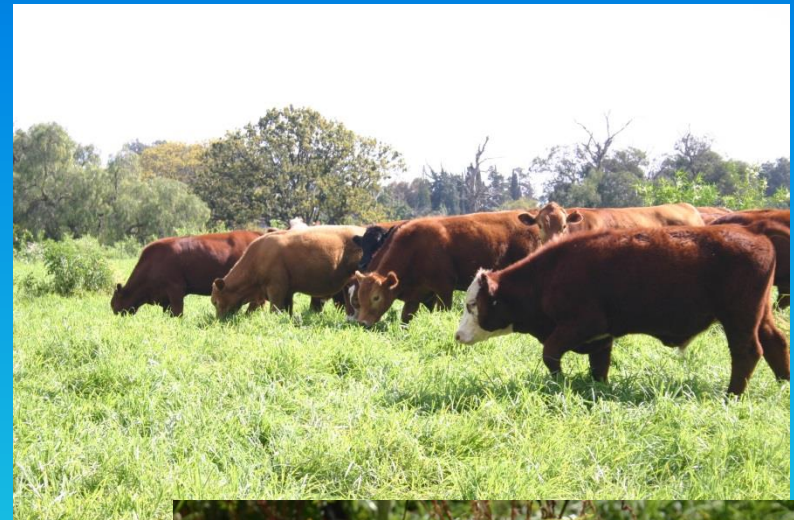
Animal Production in a Sustainable Agricultural Perspective

Importance of Livestock Production:

Much of the land area of the world is not capable of sustainable cultivated crop production.

In the U.S., for example, more than 90% of the 800 million acres of land used as grazing are too high, too rough, too wet, too dry, too rocky, or too cold to grow crops for human consumption.

Food can only be harvested from the majority of these lands via ruminant animals, such as cattle, sheep, goats.



Animal Production in a Sustainable Agricultural Perspective

Importance of Livestock Production:

Grazing can be justified economically if it is considered as a “value adding” enterprise.



That is, livestock grazing is a means of converting vegetation on marginal land or crop residues, that have little or no economic value in and of themselves, into usable and economically valuable products.

Properly managed grazing is therefore, an economically sustainable way to utilize these plant materials to meet social needs.



Animal Production in a Sustainable Agricultural Perspective

Importance of Livestock Production:

Grazing has been a natural process in many ecosystems for thousands of years.

Properly managed grazing is potentially one the most ecologically sustainable forms of agricultural production available.

Livestock grazing can be used as a tool to accomplish several land management objectives.

1. Improve wildlife habitat
2. Improve and stabilize soils
3. Enhance nutrient cycling within the pasture system
4. Improve or sustain range or pasture condition
5. Weed control
6. Water management

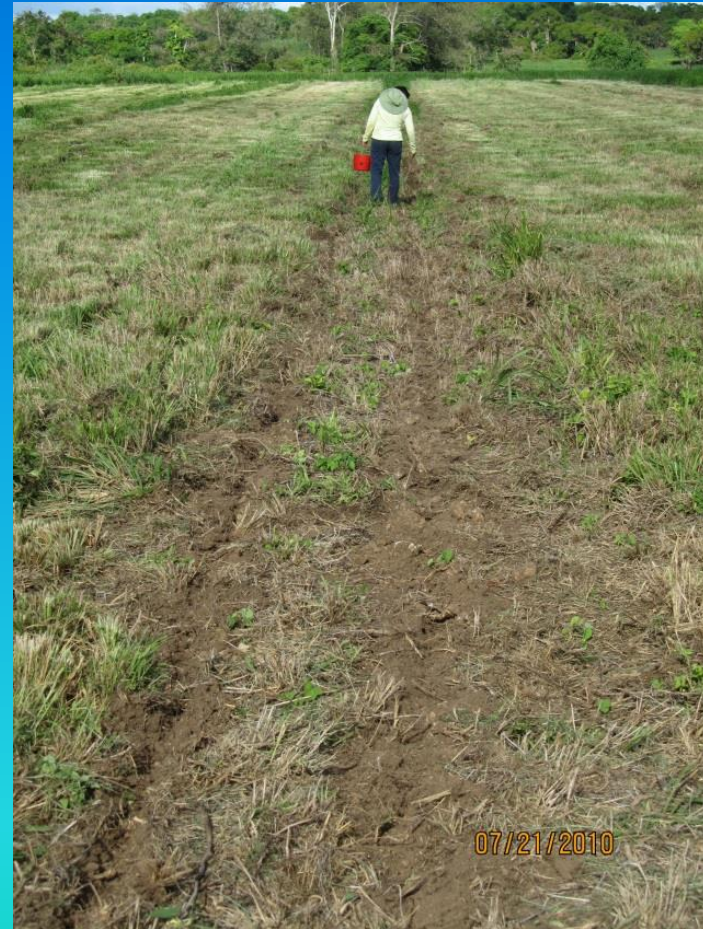


Sustainability in Agriculture will mean adopting new technologies and better practices



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Leucaena



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Wonder Graze



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As Livestock producers:

You are part of the new
Green Revolution for your
island

You are part of the
sustainability of your island

You are a source of food
security for your islands



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Questions?



THE END



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