

The Science of Natural Farming

Facilitated by Deepthinker Oh

Science Circle, Tuesday, Nov 2, 2010, 12:30 to 1:30 PM SLT

1. Do the dangers of genetic engineering of food crops and animals outweigh the benefits?

Genetically modified organisms: do the benefits outweigh the risks? Hug, K. Medicina (Kaunas), 2008, 44 (2), 87-99 ?

(Full text available at <http://medicina.kmu.lt/0802/0802-01e.htm>).

2. Is there a place for genetic engineering in the sustainable food movement?

Farmed out: Wes Jackson on the need to reinvent agriculture. Bahnson, F. The Sun, Issue 418, October 2010, 4-12(No ?

on-line version available. Print only).

The Sun article about Wes Jackson is super. He is developing a perennial wheat, and other food grains, to grow on ?

prairie grasslands. He anticipates that his group, the Land Institute, can have economically viable crops in 10 th 20 ?

years. Perennials avoid the need to plow and to use nitrogen fertilizers and pesticides, thus reducing erosion and ?

pollution of rivers.

3. Where are the methods of production most critical? In industrialized countries or emerging nations? Are the issues ?

different? What is the potential for approaching farming from a sustainable viewpoint (based on the assumption that ?

current methods are NOT sustainable)?

Global Value Chains in the Agrifood Sector. Humphrey, J. United Nations Industrial Development Organization, 2006 (from http://www.unido.org/fileadmin/user_media/Publications/Pub_free/Global_value_chains_in_the_agrifood_sector.pdf).

4. Is there an "Ivory Tower" syndrome in agriculture research? How does getting out in the muck with real farmers ?

compare to slicing genes in the laboratory? Which location gives one the best perspective and what are the issues?

Sustainable Agriculture Research and Education in the Field: A Proceedings. Board on Agriculture, National Research ?

Council, 1991. (Full text: http://www.nap.edu/openbook.php?record_id=1854&page=1)

Ethical Issues Concerning Animal Research Outside the Laboratory. Russow, L-M & Theran, P. ILAR Journal, 2003, 44 ?

(3), 187-190. (Full text: <http://pdfcast.org/pdf/ethical-issues-concerning-animal-research-outside-the-laboratory>)

And, has this discussion triggered any further ideas, questions for the group, or final comments?

Consumers in industrialized countries are becoming more aware of the improved food value of "whole foods." Whole foods are grown/raised under organic/humane conditions, and include such products as free-range chickens and eggs, grass fed beef and pork, unprocessed sugar and grains, and local produce grown without pesticides.

The current practice in animal husbandry and agriculture has been to produce more food at less cost. Many of these practices, especially genetic engineering of food plants and patented genomes, have raised concerns about the long-term effects of food on health. The compromises made between food abundance

and food quality have become a topic of concern. Consumer awareness of these compromises has been raised by several popular films: Fast Food Nation, Food, Inc. and King Corn. Some food products have been engineered to fill needs that need never have existed. One such example is high fructose syrup which is made from hybrid corn that was developed solely for making syrup and as corn-on-the-cob is unsuitable for human consumption.

Consumer consciousness is shifting towards foods that come from heritage seeds and old-line breeds that are grown/raised using "sustainable" methods on local farms (Eat local movements). Much of this consciousness seems to come as popular culture with a feeling of being fashionable rather than better, especially as whole foods generally are more expensive. However, there is a movement towards researching and developing sustainable farming methods that goes deeper than consumer fads and has rather wide support among farmers and food scientists. To be specific, there is growing scientific support that whole foods can be more nutritious than current commercial products, be produced at competitive prices, and not exhaust the land in the process (For a quick insight, see <http://www.landinstitute.org>).

I want to give an example from the dairy industry. I have farmer friends who are implementing sustainable methods on their family dairy farm and I have directly observed their practices. In order to both reduce erosion on the land and improve the health of their cows, my friends divided 30 acres into 25 paddocks. All bounded by solar-powered electric fences. These paddocks were planted in grasses and legumes and allowed a year to rest. No pesticides or chemical fertilizers are used.

The idea is to let a herd of cows graze in each paddock for a day. During that day the cows eat and deposit manure and tramp around. Then, that paddock is left alone for 24 days to re-grow the grasses and process the manure. This creates a self-sustaining environment. Some acreage is also planted in the same manner, but cut and stored for Winter. When it is very cold, the cows need to go to the feed lot to stay warm and are fed the stored hay. This process of managed grazing results in lowered costs, healthier animals, and a better food product.

A simplified description of this method can be found at <http://www.hobbyfarms.com/crops-and-gardening/managed-grazing-14837.aspx>. My friends received financial support for this project from the Environmental Quality Incentives Program (EQIP) which is administered by the Natural Resources Conservation Service (<http://www.nrcs.usda.gov/programs/eqip>).

Further information can be found at:

Pasture-based livestock farming - <http://www.sustainabletable.org/issues/pasture>

The Stockman Grass Farmer - <http://www.stockmangrassfarmer.net> - Recent articles include: Grazing

dairies economically competitive with confinement operations, Pastured dairies really shine with higher oil prices, Managed pig grazing can improve hardwood timber stands while producing an artisanal pork product.

Basic information on sustainable agriculture is available from:

Alternative Farming Systems Information Center <http://www.nal.usda.gov/afsic/pubs/agnic/susag.shtml>

National Center for Appropriate Technology - <http://www.ncat.org>

For the mathematically inclined:

A mechanistic model for predicting intake of forage diets by ruminants. Hackmann T. & Spain J. Anim Sci., 2010, 88, ?

1108-1124 (Abstract available at <http://www.ncbi.nlm.nih.gov/pubmed/19854989>).

Photograph of grass fed cows from <http://www.samishbaycheese.com>

[12:47] Deepthinker Oh: Thank you for coming today.

[12:48] Deepthinker Oh: A disclaimer. Academically I am interested in human behavior. My interests in farming are personal as I live in rural Texas on my family's land. We use a number of sustainable methods but I'm not an expert in agriculture.

[12:48] Deepthinker Oh: I do have friends who are experts however and I think that as we all eat, food crops and products are of interest to us all. So, today we will explore the role of science in modern food production.

[12:48] Deepthinker Oh: Have you all read those first 5 paragraphs?

[12:49] Deepthinker Oh: Yes Let's begin with the first question

[12:49] Vic Michalak: Are those "contented cows"? [possible inside joke based on an ad]

[12:49] Silverwing Benoir: my limited understanding is that mass production of food using fertilizers and pesticides have greatly increase the food supply and as such have saved millions of lives. Returning to natural methods would eventually cause catastrophic mass starvation.

[12:49] Deepthinker Oh: 1. Do the dangers of genetic engineering of food crops and animals outweigh the benefits?

[12:50] Silverwing Benoir: sorry, my comment came out before the question!

[12:50] Deepthinker Oh: Yes, one side is the vast increase in food quantity with fertilizers and pesticides

[12:50] Vic Michalak: What ARE the dangers of genetic engineering of food crops and animals....to humans I mean?

[12:50] NullSubset Burner: if the science is mature i.e not skewed by vested interests why not?

[12:50] Betz Darwinian: we have always done genetic engineering. corn, wheat, squash are examples.

[12:50] Deepthinker Oh: Is the "purity" of science ever a given?

[12:51] NullSubset Burner: lol - agrees unfortunately

[12:51] Silverwing Benoir: the dangers of genetic engineering remain to be seen but it has been done for a hundred years in one form or another and the planet continues to populate

[12:51] Deepthinker Oh: and that's a good thing?

[12:51] Pila Mulligan: there is a difference between selective breeding a direct gene manipulation

[12:51] Deepthinker Oh: good point

[12:52] Vic Michalak: It is my understanding that every time you have a baby cow that the two adults have done some genetic engineering...

[12:52] Silverwing Benoir: one danger of genetic engineering is 'ownership' of food stock seeds by a few companies

[12:52] Pila Mulligan: yes, quite so Silver

[12:52] Vic Michalak: Silver... sounds like an economic problem to me, not a biological one...

[12:52] Pila Mulligan: it is both Vic

[12:52] Melchizedek Blauvelt: What exactly is the difference between selecting on geno-or fenotype?

[12:53] Jady Firehawk: welcome airedale, welcome tonina, please take a notecard from the little blue ball in the center and read the first five paragraphs for today's discussion

[12:53] NullSubset Burner: cultural as well- but this is a tangent sorry Thinker

[12:53] Silverwing Benoir: genetic modification has good potential and also scary potential

[12:53] Deepthinker Oh: Anyone remember the idea of Ice 9 from Kurt Vonegut's novels?

[12:53] Tonina Rodenberger: Hiyas and ty:-)

[12:53] Deepthinker Oh: water that freezes at room temperature

[12:53] Silverwing Benoir: it could release unstoppable disease or strains which are so alike they can all be wiped out by a single problem

[12:53] itsme Frederix: I missed that one deep

[12:53] Pila Mulligan: organic papayas have disappeared from the island where I live because enough people used genetic modifications that the modifications spread everywhere

[12:54] Vic Michalak: Why scary potential? Unless the cow has the head of tarantula...

[12:54] Pila Mulligan: they have displaced the original papayas

[12:54] Jady Firehawk: and what about the chances of one big "oops"?

[12:54] Silverwing Benoir: because when we genetically modify to create one benefit we can also create an unintended bad effect

[12:54] Pila Mulligan: a lot of people would prefer the originals :)

[12:54] Jady Firehawk: hi derry, please take a notecard from the little blue ball in the center and read the first five paragraphs for today's discussion

[12:54] NullSubset Burner: Canadian fish farms are another example- modified stock breeding with wild populations

[12:54] Melchizedek Blauvelt: To what extent is it possible to reverse engineer in case of problematic behaviour?

[12:55] Pila Mulligan: :) good luck

[12:55] Vic Michalak: So you just don't breed the mistakes...

[12:55] Silverwing Benoir: reverse engineering can be done but it is likely to take years

[12:55] NullSubset Burner: Einstein quote: Intellectuals solve problems Geniuses prevent them- hehehe

[12:56] itsme Frederix: I think if we follow the science/tech loop we can't stop it and are not anymore able to rely on nature, so that's another new era

[12:56] Deepthinker Oh: As Spielberg said in that dinosaur movie, "Life will find a way."

[12:56] Betz Darwinian: well we already are dealing with plants that get away like cutzu in the southeast us. danelions that were food in some countries and an annoyance in others, English sparrows in the u.s. this is not a genetic whoops, but is an example of runaway species.

[12:57] Silverwing Benoir: and as the black death plague showed us in Europe, death will also find a way

[12:57] Vic Michalak: AND without any genetic manipulation... that is just "globalization" of species...

[12:57] Jady Firehawk: killer bees were also species that "got away", yes betz

[12:57] Betz Darwinian: and killer bees may be an genetic interbreeding

[12:57] Silverwing Benoir: great quote!

[12:57] Vic Michalak: So are we talking about dangers to humans or to the environment?

[12:58] itsme Frederix: so we can wait for killer-cows and killer cucumbers

[12:58] Deepthinker Oh: both. Either

[12:58] Tonina Rodenberger: Its in the end the same:-)

[12:58] Vic Michalak: I like killer cucumbers...

[12:58] Jady Firehawk: usually it comes down to "dangers to humans," yes?

[12:58] Silverwing Benoir: as long as there is lots of diversity, I see no problem with genetic engineering

[12:58] Silverwing Benoir: when diversity disappears the risks to humanity are huge

[12:58] Jady Firehawk: welcome duranduran

[12:59] NullSubset Burner: in truth these are technologies we are going to have to exploit not only for our current problems- but for mars and such as well

[12:59] DURANDURAN Boxen: ty

[12:59] Silverwing Benoir: mars? are you talking the planet or the candy bar?

[12:59] Sphynx Celestalis: well certain growth hormones that are used in the states are not allowed in Europe from what I heard, is that true?

[13:00] itsme Frederix: Sphynx the same for certain books and electronics

[13:00] Melchizedek Blauvelt: That's correct Sphynx

[13:00] Sphynx Celestalis: lol :P

[13:00] NullSubset Burner: lol- mars(n!)=mars1,mars2.....marsn!)

[13:00] Silverwing Benoir: every country has its own rules

[13:00] Vic Michalak: So the primary concern is that some genetically engineered species may be more able to endure than their "natural" varieties and therefore supplant them?

[13:00] Deepthinker Oh: One movement that is looking into options are groups focusing on sustainable farming

[13:01] Deepthinker Oh: so a second question: Is there a place for genetic engineering in the sustainable food movement?

[13:01] Deepthinker Oh: Farmed out: Wes Jackson on the need to reinvent agriculture. Bahnson, F. The Sun, Issue 418, October 2010, 4-12(No on-line version available. Print only).

The Sun article about Wes Jackson is super. He is developing a perennial wheat, and other food grains, to grow on prairie grasslands. He anticipates that his group, the Land Institute, can have economically viable crops in 10 to 20 years. Perennials avoid the need to plow and to use nitrogen fertilizers and pesticides, thus reducing erosion and pollution of rivers.

[13:01] NullSubset Burner: I have friend that do a 10 acre organic- when I have asked them that question they give an emphatic no- but I'm not sure that's how the whole community feels

[13:02] Sphynx Celestalis: so the trouble with Gh especially is for peds...when their food is diversified ..and really the long term consequences won't be seen for many decades imho

[13:02] Jady Firehawk: i think yes there is a place for genetic engineering in sustainable agriculture, yes, Deepthinker, i like to think if "integrated pest management" (IPM) as a parallel

[13:02] Jady Firehawk: used "appropriately" it can be of great service

[13:02] Jady Firehawk: as with any technology

[13:03] Betz Darwinian: We have to put out survival of the fittest. It is survival of the most adaptable. An organism can be king of the hill when the environment is to its liking. Change the environment; they may not be able to survive. Example grey wolf in us.

[13:03] Deepthinker Oh: What is the potential for approaching farming from a sustainable viewpoint (based on the assumption that current methods are NOT sustainable)?

[13:04] itsme Frederix: sustainability!

[13:04] Jady Firehawk: sustainable means looking at it from a biocentric point of view: sustainable environments

[13:04] Betz Darwinian: Sustainable agriculture is based on a lot of habitable land and cheap human labor.

[13:04] Vic Michalak: In other words, going back to a time when the world could not support half of its current ?

population...

[13:05] NullSubset Burner: traditionally- but does industrial farming have to be the only option?

[13:05] Tonina Rodenberger: I am sorry I have to leave:-)

[13:05] Tonina Rodenberger: ty:-)

[13:05] Deepthinker Oh: thanks for coming

[13:06] NullSubset Burner: apologizes for typos- it's a horrible habit:(

[13:06] Vic Michalak: Does industrial farming mean chemicals? Is that the definition...?

[13:06] NullSubset Burner: it's a whole system as Deepthinker can explain better I'm sure

[13:06] itsme Frederix: Vic, yep that's another issue - should the population be the elite feeding with nature food

[13:07] Deepthinker Oh: Chemicals have increased yields in the Midwest and pollution from the Midwest is killing fishing crops in the Gulf

[13:07] Silverwing Benoir: I've never seen an entire system energy balance for current high yield agriculture

[13:07] Jady Firehawk: industrial means large-scale mechanized, focused on maximizing profits, i think

[13:07] NullSubset Burner: I've seen a few primitive crab cycle models about - but weren't very informative really

[13:08] Vic Michalak: Yes, that IS an issue... We could not sustain the world's population now or in the future without the use of pesticides and genetically engineered food and computer-enhanced monitoring of soil and dense production...

[13:08] itsme Frederix: a better approach would be, less eaters so less food needed (and also more space to let it grow available) but ...

[13:08] Vic Michalak: Exactly, but talking about population control these days seems to be taboo..

[13:09] Deepthinker Oh: and why is a possible solution off limits

[13:09] Melchizedek Blauvelt: Only slightly related - India has announced it expects a 40% increase in use of fossil fuels, short term

[13:09] Vic Michalak: It was a bit topic back in the 70s when we were talking about this exact same thing, when we had half the population on Earth as we have now..

[13:09] Jady Firehawk: a possible solution is off limits, what does that mean, deep?

[13:09] Vic Michalak: A big topic...

[13:09] itsme Frederix: Vic it's a strange discussion, for example if we eliminated you and your children would help a bit, do you join?

[13:09] Deepthinker Oh: population control is never seen as a real alternative

[13:10] Vic Michalak: Population control is the only ultimate solution...

[13:10] NullSubset Burner: not necessarily

[13:10] Jady Firehawk: how about reducing consumption rates?

[13:10] Silverwing Benoit: population control will happen naturally as soon as we lose our ability to have reliable food supplies

[13:10] Deepthinker Oh: yes

[13:10] Vic Michalak: More people, more need for resources, more pollution, more pressure, more need for everything...

[13:10] Jady Firehawk: by over consuming countries?

[13:11] Vic Michalak: Silver... yes, that is where we are headed.... but water will be the limiter first...

[13:11] Vic Michalak: We will have water wars before we have food wars...

[13:11] Deepthinker Oh: I'm going to keep us on time, so without trying to cut off any though threads, here is question 3

[13:11] itsme Frederix: and overproducing workers, who mentioned "cheap labor" to work on the most essential things we need?

[13:11] NullSubset Burner: social evolution plays the long game-social and environmental pressure have always driven our development

[13:11] Melchizedek Blauvelt: Costa Rican citizens use only 20% of the resources Westerners use, while maintaining a living standard that is almost on a par, Vic...

[13:12] Deepthinker Oh: 3. Where are the methods of production most critical? In industrialized countries or emerging nations? Are the issues different?

[13:12] Jady Firehawk: oh definitely the issues are different, i think, deep

[13:12] Silverwing Benoit: Melch. I've been to CR. Their standard of living is nothing compared to industrialized western countries

[13:12] Vic Michalak: Mel....that is why the U.S. economy is not sustainable.... One day we will have to accept that ?

"growth" is NOT the only formula...

[13:12] Pila Mulligan: population control has already happened --

annual population increments peaked about 1990, so that the number of new people added each year is already declining

[13:12] Silverwing Benoit: for instance, CR hasn't discovered asphalt roads yet :-)

[13:13] Vic Michalak: Pila.. that is only in some places in Europe...

[13:13] Jady Firehawk: to reiterate deep's question: Where are the methods of production most critical?

In industrialized countries or emerging nations? Are the issues different?

[13:13] Silverwing Benoir: I think industrialized countries are already stable

[13:13] Pila Mulligan: world wide

[13:13] Silverwing Benoir: emerging countries have the big problem

[13:14] Melchizedek Blauvelt: asphalt roads have a significant influence on micro climates (increase temperature)- I'm not sure they categorize as "an improvement"

[13:14] Pila Mulligan: <http://www.un.org/popin/#trends>

[13:14] Vic Michalak: Emerging nations have a hard enough time just feeding their people.... no luxury to worry about "sustainable" practices..

[13:14] Deepthinker Oh: and I fear it's just the reverse

[13:14] NullSubset Burner: I would say less developed nations- perhaps they can avoid our mistakes all together

[13:14] Vic Michalak: Pila... are you saying that the world's population is now decreasing???

[13:14] Pila Mulligan: no, just the incremental rate has slowed

[13:14] Jady Firehawk: environmental problems due to industrialized farming are "older" in industrialized nations so ?

in some sense sustainable methods can be said to be more dire for more developed countries

[13:15] Deepthinker Oh: yes, being "undeveloped" means you can profits from other's efforts and errors

[13:15] itsme Frederix: Pila/Vic we are already at q3

[13:15] Vic Michalak: Pila...yes, because it cannot continue to be exponential like it has been over the last century!

[13:15] Silverwing Benoir: aren't there already a half billion people who are on starvation diets right now?

[13:16] Vic Michalak: At least... I think that is an underestimation..

[13:16] Jady Firehawk: let's steer this off the population question, per se, and back to agriculture, yes?

[13:16] Vic Michalak: Jun 23, 2009 ... For the first time, the number of chronically hungry people worldwide is greater than 1 billion, according to a recent UN Food and ...

[13:17] Vic Michalak: <http://www.news-medical.net/news/20090623/102-billion-starving-people-worldwide-UN-says.aspx>

[13:17] NullSubset Burner: as I said- we are really very young in terms of or understanding of these

processes- nature has been doing this for what (4.54×10^9 years \pm 1%).

[13:17] Pila Mulligan: part of the problem is the expectations of the developed world -- meat and potatoes for diner all the time

[13:17] Melchizedek Blauvelt: true Null

[13:17] Pila Mulligan: a healthy vegetarian diet is sustainable world wide now

[13:18] Deepthinker Oh: Population cycles are found in the historical record, how might better knowledge of the past help us now?

[13:18] Silverwing Benoir: if science can make broccoli smell like bacon the problem will solve itself

[13:18] itsme Frederix: Deep, prospecting is so difficult, special if it's for the future

[13:18] Deepthinker Oh: yes

[13:19] itsme Frederix: Sil I do not like bacon, and love broccoli

[13:19] Vic Michalak: The real problem... as itsme asked me pointedly, is who amongst developed countries (or us here) is going to be the first to go vegetarian or even reduce our meat and potatoes to help the undeveloped countries? I have not seen this in my lifetime...

[13:19] Silverwing Benoir: economics can easily change human behavior

[13:19] NullSubset Burner: as a starting point - but may have to look to bacteria or sum such - because we can't find anougoulos populations to model on

[13:19] Silverwing Benoir: as meat gets more expensive, people will switch to more efficient foods

[13:19] Vic Michalak: By necessity... not by choice..

[13:20] NullSubset Burner: oo good point!

[13:20] Deepthinker Oh: Are we so sure other foods are more efficient?

[13:20] Deepthinker Oh: Have we examined all the options?

[13:20] Silverwing Benoir: Everything I've read says that meat is the most expensive food in terms of resources consumed per nutrient delivered

[13:21] NullSubset Burner: by efficient do we mean on consumption or production or both- lots of bad metrics about in the farming world these days

[13:21] Deepthinker Oh: Sustainable meat producers have some differing thoughts

[13:21] Jady Firehawk: ah but those costs are mainly "externalized" silver, people don't usually feel those costs in their pocketbook

[13:21] Pila Mulligan: John Ikerd, Professor Emeritus, U MO, highly respected and passionate

sustainability expert, wrote Meeting the Challenge of Peak Oil with Sustainable Agriculture. In his article, Prof Ikerd states: 'Shifting to a vegetarian diet would be one obvious means of reducing energy use in agriculture, since most food crops are net energy producers – possibly cutting the food energy input/output ratio in half.'

[13:21] Melchizedek Blauvelt: At the moment my country is dumping wheat, milk products and tomatoes into the ocean - in order to control the prize...

[13:22] Vic Michalak: Just like global warming... there are mathematics and nature behind the problems or too many people and too little clean water or food... Things will be decided for us, in very undesirable ways, unless we make the decisions ourselves.... I wish I was more optimistic right now [I usually am when I am more rested, but I am totally exhausted these days and my mood swings to the negative...]

[13:22] Deepthinker Oh: aw

[13:22] Pila Mulligan: necessity is the mother of invention :)

[13:22] Silverwing Benoir: Vic, eat a Mars bar. you'll feel better

[13:22] Vic Michalak: :)

[13:22] Deepthinker Oh: OK, my last question, wanders back to the academic

[13:22] Deepthinker Oh: 4. Is there an "Ivory Tower" syndrome in agriculture research? How does getting out in the ?

muck with real farmers compare to slicing genes in the laboratory? Which location gives one the best perspective and what are the issues?

[13:23] NullSubset Burner: anyone else find that kind of waste disturbing--we should be colonizing the solar system- mining the kuppier belt?

[13:23] Jady Firehawk: blended perspectives always seem to be best

[13:23] Melchizedek Blauvelt: Very, Null

[13:23] Pila Mulligan: the ivory tower operates on grants from the food industry -- I recently read a book titled "In Defense of Food" by Michael Pollan -- his website has this observation: "In the so-called Western diet, food has been replaced by nutrients, and common sense by confusion. The result is what Michael Pollan calls the American paradox: The more we worry about nutrition, the less healthy we seem to become." <http://michaelpollan.com/books/in-defense-of-food/>

[13:24] NullSubset Burner: my family we farm folk(chatam tabacoo producers) - and they had a real prejudice against exerts even if the info- was good

[13:24] Betz Darwinian: because we think more food is healthy in itself...burp.

[13:25] Deepthinker Oh: And, has this discussion triggered any further ideas, questions for the group, or final comments?

[13:25] itsme Frederix: Deep "getting out in the muck with real farmers " means mostly less money/earnings/status is my view on it.

[13:25] Melchizedek Blauvelt: So how can we help developing populations understand food production better?

[13:25] Deepthinker Oh: yes

[13:25] Deepthinker Oh: good

[13:26] Melchizedek Blauvelt: Since we don't seem to understand it very well ourselves?

[13:26] Pila Mulligan: thanks Deep, nice topic

[13:26] NullSubset Burner: Thank you Deepthinker

[13:26] Silverwing Benoir: science is only useful if it can solve practical problems in the end so the food scientists and the farmers have to cooperate in the end for any progress to happen

[13:26] itsme Frederix: For me, although its an important issue .. it is not on my skin. And that might be the deepest problem.

[13:27] NullSubset Burner: and everyone for your patience ol null tends to ramble

[13:27] Jady Firehawk: how so, itsme?

[13:27] Betz Darwinian: Is it food production or what you do with food? In the US you can grow a small amount of corn, make corn liquor (yum) and make a living. The corn crop alone will not provide cash.

[13:27] Deepthinker Oh: yes

[13:27] Deepthinker Oh: I want to close on time and do apologize for our late start

[13:28] Silverwing Benoir: np. thanks for being a good moderator

[13:28] Deepthinker Oh: Thank you all for your participation

[13:28] itsme Frederix: I've (yet) no trouble with food, my environment is 'rich" and these problems are of 'academic" interest and of course triggers ethical/philosophical thinking about yourself and the world jady

[13:28] Jady Firehawk: great discussion particularly under the (region restart) circumstances

[13:28] Silverwing Benoir: are these natural grain fed cows we are looking at?

[13:28] Deepthinker Oh: Thank you Jady for providing us with an alternative meeting place

[13:28] Betz Darwinian: this is very nice

[13:28] Deepthinker Oh: Oh yes, grass fed

[13:28] Jady Firehawk: you're quite welcome

[13:29] itsme Frederix: Deep I'm sure you could fight the bull and will survive that also!

[13:29] Deepthinker Oh: pastured in fields of mixed grasses and legumes

[13:29] NullSubset Burner: its philosophical now- but if disrupted in any way tends to become much less academic very quick

[13:29] Deepthinker Oh: delicious milk

[13:29] itsme Frederix: Null sure

[13:29] Betz Darwinian: darn, is it over??? i was just getting started!

[13:29] Jady Firehawk: i think that example you provided about the pastured livestock is fascinating, deep

[13:30] Jady Firehawk: the sustainably* pastured

[13:30] Deepthinker Oh: thank you. It's an interesting approach

[13:30] Melchizedek Blauvelt: There's always a bunch of people who like to discuss afterwards Betz :)

[13:30] Jady Firehawk: diversity of approach is something that i hope we never lose

[13:30] Deepthinker Oh: Yes, and everyone is welcome to stay. We'll just switch to an informal mode

[13:31] Melchizedek Blauvelt: I'd love to see more diversity, if anything

[13:31] NullSubset Burner: you folks do cattle- Deepthinker?

[13:31] itsme Frederix: informal is much more "cozy" for issues like this

[13:31] Deepthinker Oh: chickens for us

[13:31] NullSubset Burner: eek- i had to muck a few lil coups when i was young

[13:32] Deepthinker Oh: It's my friends who do dairy cattle

[13:32] Jady Firehawk: ooh mucking out, funnnnn

[13:32] Silverwing Benoir: I raised 200 chickens in my back yard growing up. I prefer buying them from Kroger

[13:32] Deepthinker Oh: Ours are very clean and wander about a lot

[13:32] NullSubset Burner: do you find much pressure to get on the - big producer treadmill?

[13:32] itsme Frederix: I remember thousand of little chickens, you had to find the men versus woman and throw these separate in a ... barrel

[13:32] Deepthinker Oh: yes, it can get grim

[13:33] itsme Frederix: during the night

[13:33] NullSubset Burner: the reason I'm asking is a number of our nerbriors had to keep themselves on their farms

[13:33] Betz Darwinian: A discussion in the US is how much has welfare, urban sprawl, roads galore, etc. affected people's willingness and ability to do small farming. Grocers benefit from food stamps.

[13:33] Deepthinker Oh: ours are just for our own use, so very small scale

[13:33] Deepthinker Oh: and eggs

[13:33] Deepthinker Oh: the older hens go on retirement instead of the pot

[13:34] Betz Darwinian: thank you all I have to go now.

[13:34] Jady Firehawk: take care betz

[13:34] Deepthinker Oh: Yes, Null, family farms can be both a blessing and a great challenge

[13:34] Betz Darwinian: always love teh conversation. it is a highlight of my day.

[13:34] Melchizedek Blauvelt: bye Betz

[13:34] Deepthinker Oh: bye

[13:35] NullSubset Burner: informative as always - again my thanks all- have a wonderful day:)

[13:36] Deepthinker Oh: And I need to go and vote. So, I'll excuse myself. Elections in the US today.