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Agriculture in Peril

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ABSTRACT

Agriculture is the most beautiful and easy profession in the world; yet marked by drudgery and exploitations. It is a beauty to behold nature: plants, animals, insects, air, water, soil, rock, food, medicine, drugs. It is prestigious and honourable to have food on the table: morning, afternoon and evening. It is very appetizing to have various food stuff and ingredients. Food is always delicious if not abused. A well fed man is a happy man. A hungry man is an angry and sad man. Food! Food! Food everywhere; yet they are unavailable and unaffordable. Something must be wrong: with ourselves or how we embrace agriculture. But nothing is wrong with agriculture; except where we checkmate and abuse nature, in the name of agricultural revolution and increased food production. This paper reviews agriculture in peril. Happy reading.

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Introduction

The economic success of the United States of America, Europe and Malaysia are based on well developed agricultural and agro-industrial setup. Economic freedom of a country can only be achieved when the country can produce sufficient food to feed itself, backed by a strong agro-based industry which is self sufficient in local raw materials. Political freedom is also based on economic freedom (Sobulo, 1994). The US agricultural empire is worth over US\$520 billion (White, 1994; USDA, 2015). Globally, agriculture is worth trillions of dollars with over 80% of the world population dependent on it.

There is no debate that something is wrong with our agricultural and food systems. Despite great progress in increasing productivity during the last century, hundreds of millions of people remain hungry and malnourished. Further hundreds of millions eat too much, or the wrong sorts of food, and it is making them ill. The health of the environment suffers too, as degradation seems to accompany many of the agricultural systems we have evolved in recent years (Pretty, 2002).

In the earliest surviving texts of European farming, agriculture was interpreted as two connected things, *agri* and *cultura*, and food was seen as a vital part of the cultures and communities that produced it. Today, however, the experience with industrial farming dominates, with food now seen simply as a commodity, and farming often organized along factory lines. Humans have been farming for some 600 generations and for most of that time the production and consumption of food has been intimately connected to cultural and social systems. Foods have a special significance and meaning, as do the fields, grasslands, forests, rivers and seas. Yet, over just the last two or three generations, we have developed hugely successful agricultural systems based on industrial principles. They produce more food per hectare and per worker than ever before, but only look efficient if the harmful side effects namely: the loss of soils, the damage to biodiversity, the pollution of water, the harm to human health are disregarded (Pretty, 2002). For over 12,000 years history of agriculture, there have been long periods of stability, punctuated by short bursts of rapid change. These have resulted in the fundamental shifts in the way people

thought and acted. There are many transitions that involve trade-offs. A gain in one area is accompanied by a loss elsewhere. A road built to increase access to markets helps remote communities, but also allows illegal loggers to remove valuable trees more easily. A farm that eschews the use of pesticides benefits biodiversity, but may produce less food. New agroecological methods means more labour (Pretty, 2002).

The world population is currently put at 6 billion, expected to grow to 8 billion by 2025 and reach 10 billion by 2050 with greater majority living in poor and hungry sub-saharan Africa, Asia and Latin America (UN, 2015; Pretty, 2002). The total land area of the world is put at 13.07×10^9 billion hectares with 11.3% cultivated for crops, 24.6% on permanent grazing, 34.1% on forest and woodland and 31% occupied by urban sprawls, industry, roads and infrastructure (Baird, 2001). It is estimated that nearly 2 billion hectares of land worldwide are degraded. Three-quarters in Africa (490 million ha), Asia (750 million), Latin America (240 million ha), Europe, North America and Australia each having 100 – 200 million ha. They suffer from a mix of physical degradation by water and wind erosion, crusting, sealing and waterlogging; chemical degradation by acidification, nutrient depletion, pollution from industrial waters and excessive use of pesticides and fertilizers and biological degradation by organic matter depletion and loss of soil flora and fauna (Pretty, 2002). It is also estimated that one third of the world's total crop yield is destroyed by pests or weeds during growth, harvesting and storage (Baird, 2001).

Agricultural revolution came with intensive and extensive farm mechanization, use of fertilizers, pesticides, hybrid crops, hybrid animals; genetic modification of crops and animals with consequent gains and losses. Many indigenous seeds and seed-banks have disappeared following the era of hybrid and genetic modified seeds. The losses in soil fertility, surface and underground water contamination and pollution, pests and diseases incidences, problems of food distribution and marketing arising from tariffs, quotas; embargos, trade restrictions, limited agricultural land, poor farm labour/remunerations, poor yield, farm drudgery, climate change, global warming and myriads of problems have put agriculture in peril. The whole argument lies

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that we have refused to put nature and culture back into agriculture matter (Pretty, 2002). Some may ask how?. To appreciate Pretty position on the subject matter, let us go into his classic analysis of world food problem.

The world food problem

To Pretty, we already know how to increase food production (very controversial assertion, do we actually know how to increase food production?, will come back to that). In developing countries, there have been startling increases in food production since the beginning of the 1960s, a short way into the most recent agricultural revolution in industrialized countries, and just prior to the green revolution in developing countries. Since then, total world food production grew by 145%. In Africa, it is up by 140%, in Latin America by almost 200% and in Asia by a remarkable 280%. The greatest increases have been in China, an extraordinary fivefold increase, mostly occurring in the 1980s and 1990s. In the industrialized regions, production started from a higher base. Yet, in the US, it still doubled over 40 years, and in western Europe grew by 68% (Pretty, 2002).

Over the same period, world population has grown from 3 to 6 billion. Again, per capita agricultural production has outpaced population growth. For each person today, there is an extra 25% of food compared with people in 1961 (also very assertive and controversial; why hunger! hunger! hunger everywhere in the world including citizens living in affluent and foods areas like USA; I will come back to that). These aggregate figures, though hide important differences between regions (Good one. This is true). In Asia and Latin America, per capita food production has stayed ahead, increasing by 76 and 28% respectively (This is on paper. Such food allocation is not actual per citizens table. It is economic figures for planning). Africa, however, has failed badly (fallen to gutter indeed!; useless leaders and lazy citizens).; with food production per person 10% less today than in 1961 (Pretty is magnanimous enough in figure. It has fallen to less than 0.000000000000001%). China, again, performs best, with a trebling of food production per person over the same period (Good success story. My thumbs go up for China. This is real in a country of over 2 billion, compared to useless Nigeria with more than 900,000 km² of agricultural land but propaganda radio and tv agriculture). Industrialized countries as a whole show similar patterns: roughly a 40% increase in food production per person.

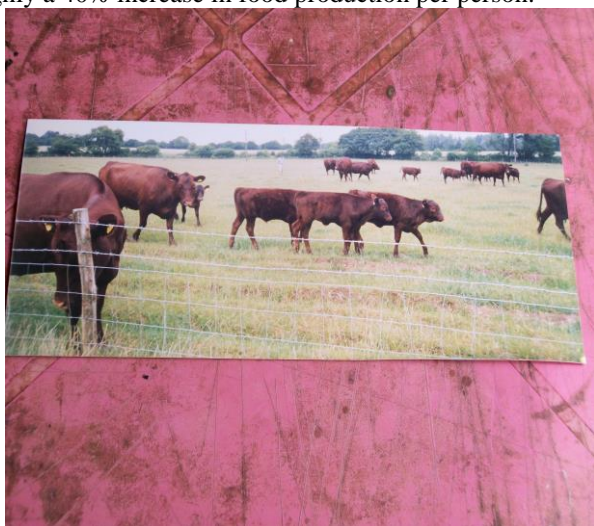


Fig 1. A typical grassland under pasture at Writtle College, UK

Yet, these advances in aggregate productivity have only brought limited reduction in incidence of hunger (probably for developed world, including china, but not for Africa and many

developing countries). At the turn of the 21st century, there were nearly 800 million people who were hungry and who lacked adequate access to food, an astonishing 18% of all people in developing countries (This figures are not actual. Over 1 billion should be real and over 80% in developing countries). One third according to Pretty (2002) are in East and South East Asia; another third in South Asia, a quarter in sub-saharan Africa and one twentieth each in Latin America and the Caribbean, and in North and the North East. Nonetheless, there has been progress to celebrate. Let us find out from Pretty (2002) account. The incidences of undernourishment stood at 960 million in 1970, comprising one third of people in developing countries at the same time (must be lower than that). Since then, average per capita consumption of food has increased by 17% to 2760 kilocalories per day, good as an average, but still hiding a great many people surviving on less (33 countries, mostly in sub-saharan Africa, still have per capita food consumption under 2200 kilocalories per day). It is less than 2 kilocalories per day. Who dash monkey bananas is an African-english adage; meaning it is impossible for real). The challenge remains huge (Good one. Infact, the challenge remains super huge).



Fig 2. The second grassland under pasture at Writtle College, UK

There is also significant food poverty in industrialized countries (Pretty is now coming to reality). In the US, the largest producer of food in the world, 11 million (should be over 50 million) are food insecure and hungry and a further 2.3 million (should be over 10 million) are hovering close to the edge of hunger. Their food supply is uncertain but they are not permanently hungry (They can be permanently hungry if food slips and kitchens disappear, but that will only happen when America disappear). Of these, 4 million children are hungry and another 10 million are hungry for at least one month each year (infact, every child in africa is hungry and in developed world being fed with what they do not want or need, with their parents wasting all their social benefits on toys and gadgets, while stealing 99.9% for their tobacco, alcohol and pub life at the children's ignorance. What a shame!). A further sign that something is wrong is that one person in seven people in industrialized countries is now clinically obese, and five of the ten leading causes of death are diet related, coronary heart disease, some cancer, stroke, diabetes mellitus and arteriosclerosis (Why not!. When many social benefits cheats and mothers just spend 24 hours on shop floor, eating, drinking, watching television, video, sexing with little or no work, sports or outdoor activities as everyone cages indoors because of right and only me society).

Alarmingly, the obese are outnumbering the thin in some developing countries, particularly in Brazil, Chile, Colombia, Costa Rica, Mexico, Peru and Tunisia (Of course. They copy developed countries lifestyle from tv and radio. Moreover no work, no access to personal land for farming and exercises. So, what next!. Relax, eat social benefit money, cheat one another for couples as much as you can, divorce, remarry in courts, get compensations. Take children custody and social money. Over pamper children. No smacking of children by parents, teachers and police. Life must go on indoors. So eat, eat, eat to finish and quench).



Fig 3. A typical arable land under barley at Writtle College, UK

Pretty (2002) warns. Despite great progress, things will probably get worse for many people before they get better. As total population continues to increase until at least the latter part of the 21st century, so the absolute demand for food will also increase. Increasing incomes will mean that people will have more purchasing power, and this will increase demand for food. But as our diets change, so demand for the types of food will also shift radically. In particular, increasing urbanization means people are more likely to adopt new diets, particularly consuming more meat and fewer traditional cereals and other foods, what Barry Popkin calls the *nutrition transition* (This is for people who have a choice in developed world. Not for Africa and Nigeria where even Professors are yawning from morning to night on empty stomach while illiterate leaders and politicians are siphoning trillions to Swiss account, South Africa, Ghana, Great Britain, Americas, eating and drinking to over obese state, fucking every single and married they meet on the road, with no brain, talent or skill. They only know how to carry money in Ghana must go and how to divert nation's treasury and international development money into their Nigeriaand swiss account. In Nigeria, financial and economic crime commission is only for the hawker in the street. Not for president or governor who have 100% immunity before and after office).



Fig 4. A typical pristine woodland at Writtle College, UK

According to Pretty (2002), one of the most important changes in the world food systems will come from an increase in the consumption of livestock products. Most demand is expected to double by 2020 (5 years to go. Let us know whether the forecast will come to pass); and this will change farming systems. Livestock are important in mixed productions systems, according to the author, using foods and by-products that would not have been consumed by humans (Good. If we make use of our brains in Africa, it is surplus). But, increasingly farmers, according to the worker are finding it easier to raise animals intensively and feed them with cheap cereals (The question are how intensive is the intensive!. How global!. How cheap is cereals on global scale!). Yet, this is very inefficient: it takes 7 kilogrammes of cereal (which can feed 20 babies in Africa) to produce 1 kilogramme of feedlot beef (which cannot satisfy meat appetite of one day old baby); 4 kilogrammes to produce one of pork and 2 kilogrammes to produce one of poultry. According to Pretty (2002) this is clearly inefficient, particularly as alternative and efficient grass-feeding rearing regimes do exist (where are the grasses!. In temperate grasslands they can be regenerated by planting. It can be possible there. But in tropical forest cum annual grass ecosystem prone to slash and burn system of agriculture, the grasses are limited. In Africa, no farmer is ready to spare such volume of feedlots for intensive feeding of less products from livestock when the cereals are food themselves and more yummy than beef, pork and chicken).



Fig 5. A typical Hanslope arable soil after pulverization

Nevertheless, the worker is of the opinion that dietary changes will help to drive a total and per capita increase in demand for cereals (not only for livestock, but more for humans, especially in Africa who cannot afford to feed animals with food that can cure them of hunger and starvation). The bad news according to Pretty (2002) is that food-consumption disparities between people in industrialized and developing countries are expected to persist (Thank, Sir!. It is not only persisting but perpetual). For Pretty, annual food demand in industrialized countries is 550 kilogrammes of cereal and 78 kilogrammes of meat per person. By contrast, in developing countries, it is only 260 kilogrammes of cereal and 30 kilogrammes of meat per person (This is too generous for Africa developing countries where cereals and meat are essential commodities that should be eaten by the affluent politicians especially in Nigeria, while they scavenge for any scavengable in the name of food. In Nigeria scenario, a beggar has no choice). For Pretty, the gaps in consumption ought to be deeply worrying to us all (Sorry, Pretty, even though you were born and bred in Nigeria, if you come to the country now, you will shed tears for poverty in

midst of plenty and the “I don’t care attitude of leaders and the led).

Food! Food! Food! Everywhere but very unavailable and unaffordable

The fact that United States of America can feed the whole world and yet several millions of its citizens are still living on food stamps, food slips or soup kitchen, no matter the name is very embarrassing, worrisome and annoying. The capitalist world, whereby farmers are paid subsidy to destroy agricultural produce or throw them to the oceans and seas, to maintain and drive commodity and price stability, at local and international levels is very inhuman. Even supermarkets prefer to throw farm produce to the bins instead of risking fall in commodity prices, instead of reducing them to hungry customers.



Fig 6. A typical ryegrass-grassland being rejuvenated for permanent pasture at Writtle College, UK

More worrisome, in developed countries where over 98% of the citizens have no access to private land, or available and affordable rented or leased farm land for farming, and where all food consumed are based on supermarkets and pocket bargaining power. The smaller your income, the more hungry you are, as there are unlimited food in supermarkets, but untouchable, except your purse or credit cards are loaded with money. Even where credit cards are loaded with money, you spend your entire life and beyond working to pay off debts to supermarkets chains, banks and financial institutions, making every citizen including the affluent very miserable, angry, hostile, dejected and secluded because they know that all is not well, but just pretending to be well. Worst still, is that most of the social benefits money are borrowed money by government, or peoples taxes which shall be paid back by present and future generations.

Have we actually known how to increase food production?

Pretty (2002) asserts that we already know how to increase food production. The question is “have we actually known how to increase food production?. If yes or no, how, where, what, when, why?. Other questions include: have knowledge of how to increase food production addressed world food problem. If no, it means we have no knowledge or confused on the knowledge or abandoned the knowledge of how to increase food production. The knowledge of increase in food production is only relevant to countries who have agriculture at stake as a major player in national and international economy, and politics. It is not relevant to countries who are defecating in their fertile agricultural lands in pursuit of fossil fuel and oil money; as if they are going to drink fossil fuel and oil, assuming other agricultural countries refuses them access to importation of their farm produce, irrespective of the revenue they may loose.

Thank God for the current glut in oil price. It has happened several times in the past, present and will persist to the future; yet these useless leaders from most of these oil nations especially in Africa and Nigeria have refused to read the handwriting on the wall. They are doing tv and radio agricultural propaganda; while wasting over 90% of their annual budget addressing importations of every kind of food, rubbish including refined petroleum products, which they are shamelessly doing irrespective of being producers; without thinking of trade imbalances. Nigeria is a case point of Africa. A country full of political bigots who know only how to embezzle public fund to infinities. Shameless bastards everywhere from clerical to national levels, including myself and babies in the womb.

Food Aid! Food Stamp! Food Slip! Whatever you call it

How can countries gifted with good agricultural and fertile soils, human and material resources sleep and lazy about in the name of food aid, food stamp or whatever you call it. While other countries are passing sleepless days and nights producing food, other countries stay idle and habitually complain or ask for food aid or support. Such people especially who have access to private freehold agricultural lands that never attracts any tax or rent, as in Nigeria and who are still lazy to farm should be allowed to die in hunger and starvation by all countries and leaders of the world. Except, there is drought, pests and diseases, erosion, flooding incidences of extraordinary proportion that have rendered all farms devastated, I see no sense and logic thinking and dying for a lazy man who cannot just open the soil, put seeds, weed occasionally, dump refuse around them as manure and harvest grains on daily basis for his immediate needs and that of family.



Fig 7. The popular lake at wivenhoe park with enormous wildlife during winter (the hob of tourism) at University of Essex, UK

Where everyone do that, how can we be talking of hunger and starvation, with or without government support and subsidies. With or without fertilizers, pesticides, improved seeds, mechanization and all the methods of increasing food production as Pretty puts them. The crops will grow naturally. The rains and dews will come naturally. The sunlight will come naturally. Each crop have natural tendency to cope according to ones’s ecosystem, with or without global warming, climate change and all the grammar on ozone layer depletion. Ozone layer depletion has not depleted our hands, legs, brain, eyes, nose, ears and other organs which we can use to walk out early in the morning, with self made tools, open the soil, put seeds, open ways for water, irrigate manually from shallow wells or harvested water during rainfall and get enough foods for our daily needs with or without government support, white collar jobs.

What prevents our domesticating sheep, goat, cattle, chicken, pigs, rabbits and all forms of livestock in our back gardens and farms, by allowing them to roam freely and take their needs, with supplemental water and feeds from kitchen wastes; with only capital outlay of purchasing the initial stock or you can rent a stock and pay back with same age of stock when it reproduces. The only citizens that should be hell bent on government support, jobs, food stamp or soup kitchen are those without access to private agricultural land of their own or affordable and available rentable agricultural land for their everyday food requirement, and who squash in flat and house accommodation system, with little or no backyard garden, and even where there is backyard garden, cannot produce foods for fear of court litigations by neighbours on environmental pollution and food/water poisoning via pesticides and wastes arising from agriculture.

For such group it is not entirely their fault. They are helpless, and the government must inherit their helplessness for ever and ever, till they discover more land for them, or move to other planets to colonise, and give everyone enough space, free of charge to farm and feed themselves. Likewise, all the multi companies that are colonizing their fatherland, in the name of farming, must feed all the citizens that have no access to land free of charge, or at minimal cost, instead of being paid subsidies to throw away farm produce to oceans and seas, to maintain local and international market prices. Any thing outside that amounts to slavery of fellow citizens, at the few purse of shareholders and investors. If those citizens they are holding their land to ransom die of hunger and starvation, their blood are on their head, before God and humanity.

Is population control a solution to world food problem?

When we compare the world land mass and the present and projected world population, and set life expectancy at 100 years (including developing and underdeveloped countries); we shall see that population growth is not the cause of world food problem; but world with massive borders (beyond the Berlin Wall). We are politically globalizing the world in terms of economic imperialism or exploitation; but we are not exploiting world without borders or territorial integrity for all citizens of the world, where any citizen is free to move in and colonize any space in the world: land, sea, air, ocean/sea floor, moon, stars sun free of charge, litigations, deportations and imprisonment for life.

The superpowers are daily proliferating and manufacturing nuclear arsenals, while forbidding other developing and underdeveloped countries who have both the resources and the technology. The same super powers command the affairs of United Nations, World Bank, World Trade Organisation, World Environmental Organizations and other policy engines of the world who favour military, economic, social, religious, and political expeditions that are favourable to one another; while other countries are guinea pigs that can be exterminated within seconds to reduce world population and reduce hunger and starvation. Is this fair to all concerned. There is no fairness in the government of world super powers. Their philosophy is "conquer and occupy forever and ever if possible". This is part of the world food problem.

The massive resources of the developing and underdeveloped countries, are daily being depleted to service food and other commodity political imports from developed world, that are given as condition for their continuous patronage, in terms of food aid, loans from IMF and World Bank; with massive interest, imposed democratic styles and monetary

policies, that favour super countries economies, that lingers for eternity and keeps developing and underdeveloped countries impoverished, and in perpetual bondage from generation to generation, world without end. Moreover, super nations dictate and impose leaders directly and indirectly through their spy, intelligence and economic networks that make sure that only imbeciles without brains will ever be allowed to enter corridor of power in developing and underdeveloped countries, who must dance to their tunes or be got rid off immediately.

The super nations orchestrate economic, political, religious and other woes and theories on developing and undeveloped countries, and follow them to actualization over centuries at the stalement of dejected, humiliated and rejected citizens of those countries, most of whom the illiteracy, awareness and exposure levels are chronic. To them, it is their leaders who are not delivering dividends of democracy, without knowing it is their indirect imperial super nations and leaders, that dictate to their leaders every action they take. They even know where their heads of state sleep and their sex lives with wives, concubines and girlfriends; just as they chased Saddam Hussein to the hole, massacred him and took his dinner plates to the museum in their countries. The super nations train their day old babies to fly their flag alone in the world and to take off and land in Washington, D. C.; London, Paris, Beijing and Moscow. They train terrorist to topple autocratic leaders of developing and underdeveloped countries, and laid the foundation of modern day terrorism in the world; after religious jihads of Outman Dan Fodio.

Is the neglect of attachment to nature and common values the problem of world agriculture and food problems?

Lets take another look on what Pretty (2002) described as commons and connections. For the worker, in most of human history, the daily lives have been played out close to the land. According to him, since our divergence from apes, humans have been hunter-gatheres for 350,000 generations, then mostly agriculturists for 600, industrialized in some parts of the world for 8 to 10 and lately dependent on industrialized agriculture for just 2 generations. For Pretty, we still have close connections to nature. Yet, many in industrialized countries do not have the time to realize it. To the author, in developing countries, many are still closely connected, yet are tragically locked into poverty and hunger (Good one. They have nature, but do not know how to use nature, to get their needs).

For Pretty (2002), a connectedness to place is no kind of desirable life if it brings only a single meal a day, or children unable to attend school for lack of food and books, or options for wage earning that are degrading and soul destroying (That is the basis of lack of invention and patents in developing and underdeveloped countries. Most of the fresh and hungry brains fail to be utilized to harvest skills and talents as everyone, from parents to siblings are poor, hungry, dejected, hopeless and a hungry man is an everlasting angry and hostile man and has little or no time to think about new knowledge, skill or ways of doing things differently or changing attitude of man and the society. That is why every talent are never recognized, especially in Africa; except the pop and hop nollywoods and their likes, who use their music and films to exploit and downgrade the misery and poverty of the people, even if through one second laughter. After which they will realize that their problems are still starking bitterly at their faces).

For Pretty, as long as people have managed natural resources, we have engaged in forms of collective action. Farming households have collaborated on water management, labour sharing and marketing; pastoralists have co-managed grasslands, fishing families and their communities have jointly

managed aquatic resources. Such collaboration has been institutionalized in many local associations, through clan or kin groups, water users's groups, grazing management societies, women's self-help groups, youth clubs, farmer experimentation groups, church groups, tree associations and labour-exchange societies.

To Pretty (2002), through such groups constructive resource management rules and norms have been embedded in many cultures, from collective water management in Egypt, Mesopotamia and Indonesia to herders of the Andes and dryland Africa; from water harvesting in Roman North Africa and South-west North America to shifting agricultural systems of the forests of Asia and Africa, and from common fields of Europe to the *iriaiichi* in Japan. It has been rare, prior to the last decade or so, for the importance of these local institutions to be recognized in agricultural and rural development. In both developing and industrialized countries, policy and practice have tended to be preoccupied with changing the behavior of individuals rather than of groups or communities, or indeed, with changing property regimes, because traditional commons management is seen as destructive. At the same time, modern agriculture has had an increasing destructive effect on both the environment and rural communities.

For Pretty, a search through the writings of farmers and commentators, from ancient to contemporary times, soon reveals a very strong sense of connectedness between people and the land. He cites the Roman Writer Marcus Caro in his book "Di Agri Cultura" written 2200 years ago, where he celebrated the high regard in which farmers were held as follows ".....when our ancestors.....would praise a worthy man, their praise took this form: "good husbandman", "good farmer", one so praised was thought to have received the greatest commendation". He also said "a good piece of land will please you at each visit". In Pretty (2002) account, Roman Agricultural writers as Caro, Varro and Columella spoke of agriculture as two things: *agri* and *cultura* (the fields and the culture). It is only very recently that we have filleted out the culture and replaced it with commodity.

For Pretty, only in China, that there is the greatest and most continuous record of agriculture's fundamental ties to communities and culture. Li Wenhua dates the earliest record of integrated crop, tree, livestock and fish farming to the Shang-West Zhou Dynasties of 1600 – 800 BC. Later, Mensius said in 400 BC: "If a family owns a certain piece of land with mulberry around it, a house for breeding silkworms, domesticated animals raised in its yard for meat, and crop fields, cultivated and managed properly for cereals, it will be prosperous and will not suffer starvation" Pretty (2002) also records an account of the earliest recognitions of the need for the sustainable use of natural resources like this "If the forests are timely felled, then an abundant supply of timber and firewood is ensured, if the fishing net with relatively big holes is timely cast into the pond, then there will be no shortage of fish and turtle for use". Still later, treatises such as the collectively written Li Shi Chun Qiu (239 BC) and the Qi Min Yao Shu by Jia Sixia (AD 600) celebrated the fundamental value of agriculture to communities and economies, and documented the best approaches for sustaining food production without damage to the environment.

These included rotation methods and green manures for soil fertility, the rules and norms for collective management of resources, the raising of fish on rice fields, and the use of manures. As Li Wenhua says "these present a picture of a prosperous, diversified rural economy and a vivid sketch of pastoral peace". For Pretty (2002), It was to be Cartesian

reductionism and the enlightenment that changed things many centuries later, largely casting aside the assumed folklore and superstitions of age-old thinking. A revolution to science occurred during the late 16th and 17th centuries, largely due to the observations, theories and experiments of Francis Bacon, Galileo Galilei, Rene Descartes and Isaac Newton, which brought forth mechanistic reductionism, experimental inquiry and positivist science.

These methods brought great progress and continue to be enormously important. But an unfortunate side effect has been a sadly enduring split, in at least some of our minds, between humans and the rest of nature (True!. That is the aftermath of human civilization and the quest to conquer the world and one of the trade-offs between agriculture and technological gadgets. That is another topical issue which I will exhaust another time under another paper "Where is the money – Agriculture or Technological Gadgets".

Is environmental health the problem of world agriculture and food problems?

Most economic activities affect the environment, either through the use of natural resources as an input or by using the "clean" environment as a sink for pollution. Pesticides, nitrogen and phosphorus nutrients, soil, farm wastes and micro-organisms escape from farms to pollute ground and surface water. (Pretty, 2002). In his account, agriculture also contributes to atmospheric pollution through the emissions of four gases: methane from livestock, nitrous oxide from fertilizers, ammonia from livestock wastes and some fertilizers and carbon dioxide from energy and fossil-fuel consumption and the loss of soil carbon. These in turn, contribute to atmospheric warming (methane, nitrous oxide and carbon dioxide), ozone loss in the stratosphere (nitrous oxide), acidification of soils and water (ammonia) and eutrophication (ammonia).

Modern agriculture has had severe impact on wildlife and biodiversity. Overgrazing of uplands has reduced species diversity, and herbicides have cut diversity in arable fields (Pretty, 2002). According to this worker, one problem with the redesign of landscape for modern agriculture is that important natural features and functions are lost. Watercourses, according to him is one of the most tamed and abused of natural landscape features. Wetlands have been drained, rivers straightened or hidden behind levees, aquifers mined, and rivers, lakes and seas polluted, mostly to ensure that productive farmland farmland is protected from harm or excessive costs. For Pretty, the narrow view that farmland is only important for food production has caused secondary problems. He cites a survey by National Research Council, where 47 million hectares of wetlands in the US were drained during the past two centuries, and 85% of inland waters that are now artificially controlled.

This according to Pretty (2002) creates new farmland, to the benefits of farmers; but remove the wetlands and the many valued services they provide such as habitats for biodiversity, nutrients capture that run off fields, flood protection and cultural features of landscape. Another case country given by Pretty is Japan. Their irrigated paddy rice fields are subject to severe flood risk, because its high rainfall is concentrated into a few months, within a landscape characterized by high mountain chain. In Pretty (2002) account, there are more than 2 million hectares of paddy rice in Japan, and each of these hectares holds about 1000 tonnes of water each year. In the Koshigaya City basin, 25 kilometers north of Tokyo, paddy fields close to the city have been steadily converted to residential uses over the past quarter century. But as the area of paddy has declined by about 1000 hectares since the mid 1970s, so the incidence of

flooding has increased. Each year, 1000 to 3000 houses are flooded. In whole watersheds, woods and farms on steep slopes have been identified as having the greatest value in buffering and slowing water flow, and minimizing landslides. Diversity, though is critical.

Similarly in China, the 500,000 hectares of wetlands that have been reclaimed for crop production during the past 50 years have meant the loss of flood water storage capacity of some 50 billion cubic meters, a major reason for the US\$20 billion flood damage caused in 1998. In many agricultural systems, over-intensive use of the land has resulted in sharp decline in soil organic matter and/or increase in soil erosion, some of which, in turn, threatens the viability of agriculture itself. In South Asia, one quarter of farmland is affected by water erosion, one fifth by wind erosion and one sixth by salinization and waterlogging. Pretty (2002) appears to have forgotten Africa in this wind and water erosion account. It remains one of the greatest threat to agriculture in the region. At gully level of water erosion, most of the soil may be lost permanently for agriculture or will require enormous control measures to ensure socio-economic development (Oparaugo, 1994; Haruna, 1994).

Agricultural systems contribute to carbon emissions through the direct use of fossil fuels in farm operations, the indirect use of embodied energy in inputs that are energy intensive to manufacture and transport (particularly fertilizers and pesticides), and the cultivation of soils resulting in the loss of soil organic matter (Pretty, 2002). According to this author, agriculture is also an accumulator of carbon, offsetting losses when organic matter is accumulated in the soil or when above ground woody biomass acts as either as a permanent sink or is used as an energy source that substitutes for fossil fuels.

Agriculture, as an economic sector, according to Pretty also contributes to carbon emissions through the consumption of direct and indirect fossil fuels. With the increased use of nitrogen fertilizers, pumped irrigation and mechanical power, accounting for more than 90% of the total energy inputs to farming, making industrialized agriculture less energy efficient. Hence, the difference between sustainable and conventional systems of production is striking. Low input or organic rice in Bangladesh, China and Latin America is some 15 to 25 times more energy efficient than irrigated rice grown in the US. For each tonne of cereal or vegetable from industrialized high-input systems in Europe, 3000 to 10,000 megajoules of energy are consumed in its production. But for each tonne of cereal or vegetable from sustainable farming, only 500 to 1000 megajoules are consumed (Pretty, 2012).

Environmental health can make or mar agriculture and food production when we get it right or wrong. To tame the environment in the midst of hunger and starvation is a herculean task, as farmers and investors can go to extreme to get value for their land and money. To them., they cannot fold their arms and avoid any measure(s) that can compensate for their time, labour and resources even where it will harm the soil where the actual farming is taking place, or pollute sources of their domestic and irrigation water, or pollute the air they breathe. The end, to them, justifies the means. Agricultural just like industrial revolution and environmental health are two paradigms that challenge and hunt humanity for life. However, Fig 1 – 7 show remarkable features to shoot about in agriculture.

Conclusion

There are many challenges facing agriculture in the world. These challenges also affects food availability and affordability. The environmental implications of taming nature are vast. The consequences of inaction is catastrophic, both to human race and the environment. The world of technological gadgets where the money lies, as will be detailed in next paper, is driving agriculture to extinction. Everyone remembers food, but forgets agriculture, where they come from. Children and even adults feel that chickens are plucked from trees, as most of them are so locked up in urban offices, that they have never seen one roam in countryside.

Everyone is obsessed with making phone calls, sending texts, twitting, facebooking, music, dancing, dressing, sleeping, loitering, travelling, leisure, holidaying with intermittent breaks to load the stomach or eat as you work as practiced in developed world who are paying most wages on “second, minute or hour basis”. Hence, to gain all money and hours, workers are made to work and eat simultaneously on the industrial or shop floor. Even agricultural produce pickers and processors are tempted to do the same thing. At times the joy of taking food is no more there, as the stress and pains surpasses the sweetness of the food.

Sometimes sweet food turn to sour food because of much suffering and pains to make ends meet and there are citizens who work twenty four hours a day (especially immigrants as I once was) to make ends meet. This is a big crime crying against humanity. The issue of direct and indirect slavery amongst developed, developing and underdeveloped countries in the midst of capitalism, have left everyone in pains and suffering, including our leaders. They cannot pretend that all things are right, under these scenarios. Watch out for my book “Agriculture in Peril” in the bookshelf as much as my brain and purse can carry.

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