

DISCUSSION: ENERGY COMPETITION FOR FOOD CROPS

TABLE OF CONTENTS

I.	GENERAL INFORMATION.....	1
II.	INTRODUCTION OF THE TOPIC	1
III.	LIST OF CONTRIBUTIONS	2
	Contribution by Brian Thompson, Nutrition Program Officer, FAO, Italy.....	2
	Contribution by Tony Piccolo, Aquatic Biofuel Specialist, Italy.....	2
	Contribution by Douglas L. Young, Washington State University, USA.....	4
	Contribution by Abdalla Adam Osman, Research Scientist, Agricultural Economic & Policy Research Centre, Sudan	4
	Contribution by Alessandro Flammini, Global Bioenergy Partnership Secretariat, FAO	4
	Contribution by El Fadil Ahmed Ismail, Associate Research professor, Food Research Centre Agric. Research Corporation, SUDAN.....	4
	Contribution by Abdalla Adam Osman, Research Scientist, Agricultural Economic & Policy Research Centre, Sudan	6
	Contribution by Marcus Finco, Phd Candidate (Germany) and Assistant Professor (Brazil)...	6
	Contribution by Fatima Mohammed Ali, Agriculture Economic Research Policy Center, Sudan	6

I. GENERAL INFORMATION

Duration:	03. 06 - 20. 06. 2008
Number of participants:	9
Number of Contributions:	9

II. INTRODUCTION OF THE TOPIC

Dear all,

I'm Eltighani Elamin, from Sudan. I was promoted to full professor in March 2003, after a working period as a policy research economist with the Agricultural Economic & Policy Research Center since my graduation from WSU in production economic & agricultural finance.

The issue of **bio-fuel** is one of my research fields. It has been argued a lot despite its very short

time of emergence. However, most debates have taken the dark side of this new technology on skyrocketing of food prices with their repercussions on human life. Let's look at the bright side of the bio-fuel technology, since knowledge, the by-products of human brain, is always manageable for the benefit of human kind. Having said that, could I look through these pro bio-fuel arguments:

1. **Diverting more agricultural land to bio-fuel could reverse the global demand of agricultural products from being inelastic to elastic.** Elastic demand of agricultural product means more demand for incremental decreases in farm product prices that in turns manifested in increased incomes of rural poor and implied poverty reduction for these communities who suffered much from income poverty. **Could it be argued that way?**

2. Increased bio-fuel should reduce the use of anti-environment energy and clean the environment for healthy life for our future generations; this fact could more than offset the transitory increases in food prices before global food consumption adjusts with bio-fuel technology via reconciliation of reduced consumption by affluent societies (the price of clean environment) and increased transshipment of food to needy people. **How far is this statement correct?**

3. The needy people mostly concentrated in Africa and the least developed countries should gradually go out of poverty by having more income from diverting more of their farm land to bio-fuel and eventually become rich enough to import food from developed countries. **Is it a new concept for revising the periphery theory?**

4. **Could the energy competition for food crops trigger a save return to traditional-forests, biodiversity and wildlife based food?** Aren't People in the ancient past used to live long and healthy life because they feed themselves directly from the nature?

I'd like to learn your opinions and insights on these issues. They are interesting and challenging to me as they take back agricultural economists to restoring their role in leading the global political economy, in all aspects from food, nutrition and health through environment to energy sectors. This topic should also be relevant to all groups who are concerned with food security.

Many thanks and best regards,

Professor Eltighani Elamin (PhD)
Agricultural Economic & Policy Research Center
Ministry of Science & Technology
Shambat Street, Box 30
Khartoum North, Sudan

III. LIST OF CONTRIBUTIONS

Contribution by Brian Thompson, Nutrition Program Officer, FAO, Italy

Please find an FAO/IFPRI paper entitled "**Impact of Climate Change and Bioenergy on Nutrition**" (http://www.fao.org/ag/agn/agns/files/HLC2_Food_Safety_Bioenergy_Climate_Change.pdf) which is relevant to this discussion. It may be found at:

http://www.fao.org/ag/agn/index_en.stm

Brian Thompson

Contribution by Tony Piccolo, Aquatic Biofuel Specialist, Italy

The recent high concerns caused by agricultural biofuels (agro-fuels) have brought to light other

resources which could be used to generate energy. The extraction of oil suitable for producing biofuels can derive from aquatic resources.

Micro Algae and fish waste can generate a biofuel suitable to run engines in a sustainable manner without major impacts on Food security, land use, biodiversity, markets and so on.

Please find more details in my recent paper “**Aquatic bio-fuel**” at http://km.fao.org/fsn/resources/fsn_viewresdet.html?r=446

Tony

Aquatic biofuel – Summary
Tony Piccolo

BACKGROUND

Recent talks on biofuels have outlined their un-sustainability in the production phase; commodities such as corn, rapeseed, palm oil and soya are being grown and harvested in a way that could have negative economic, social and environmental effects, and have a global impact on land use, food security, water resources, deforestation and global markets.

The main impacts Agricultural Biofuels (Agrofuels) have, are on:

- **Biodiversity:** The greater adaptation of land used to produce crops for biofuels; the greater the loss of habitats will be for animals and wild plants
- **Markets:** Biofuels are becoming more lucrative for farmers, the farmers subsequently grow crops for biofuel production instead of food production.
- **Food Security:** Due to the fact that commodities which were once used to feed the poor and hungry are being sold for fuel stock
- **Excessive amounts of Nitrogen in the environment**

AQUATIC ALTERNATIVES

Therefore looking at aquatic resources for energy production makes not only ecological sense but economic sense too. Two alternatives do exist to agrofuels, these are; the extraction of oil for biofuels from **micro algae** and oil for biofuels from **fishgut** or **fish waste**.

AGIFISH (Viet Nam) and AQUAFINCA (Honduras) are the 2 main companies producing biodiesel from fish waste and fish gut. . Fish oil is derived from the leftover gut/waste after fish fillets are produced and is mixed with methanol (roughly 10%) and other products. 1kg of fish gut/waste can produce just over 1lt of bio-diesel.

Micro algae has been used for many years for the production of pharmaceuticals. The oil contained in some species of micro algae is very similar to vegetable oil making it very suitable for energy production. Micro algae oil has a yield 40 times more than rapeseed and 100 times more than soya, and does not use up land that is suitable for food production, because the algae is grown in special photo bio-reactors. Injecting CO₂ into the algae increases oil content and speed of production.

Both Shell Oil and Marine Institute (IM) of Comodoro Rivadavia, along with other companies are investing time and money to determine the economic viability of the technology.

CONCLUSION

Aquatic resources that produce clean energy may not be the total solution to the world's energy needs and demands, but they do offer a partial solution, a solution which does not interfere with the production and costs of food and most importantly does not put a strain on food security. They are carbon neutral, and producing and using them has little or no impact on the environment.

Contribution by Douglas L. Young, Washington State University, USA

Dear Eltighani,

I have also been very active in biofuels research recently. I am a bit less optimistic about using maize, oilseeds, and other food crops for biofuels in the long run, but they might provide a transition strategy. The long run sustainable solution in my view is technology to produce biofuels from non-food feedstocks and incentives for conservation and clean energy (solar, wind, etc.) in extremely high energy using countries like the United States. I have attached a PowerPoint presentation on these topics (at http://km.fao.org/fsn/resources/fsn_viewresdet.html?r=448). Your comments are most welcome.

Prof. Douglas L. Young

Contribution by Abdalla Adam Osman, Research Scientist, Agricultural Economic & Policy Research Centre, Sudan

Biofuel being viewed as a source for food inaccessibility in the future for many communities, this is the dark face of it, whoever there is some merit concerning biofuel production and use as reported by Prof. Elamin.

My contribution will cover some adverse thought. As said by Prof. Elamin biofuel will divert more agricultural land in some areas for cultivating and cropping biofuel crops that may raise problems to agricultural sustainability by over use of agricultural inputs and natural resources. Also according to soaring international oil prices the demand for biofuel will be raised consequently, therefore production of some staple food crops for biofuel market can have a negative impact on availability of grain for direct consumption as food and as feed. In addition to that sustainable production of energy crops could have negative response as known as serious environmental costs in terms of deforestation, water use, production of greenhouse gases,... etc.

Best regards

Abdalla Adam Osman

Contribution by Alessandro Flammini, Global Bioenergy Partnership Secretariat, FAO

Dear Mr. Abdalla Adam Osman,

Thank you for introducing this new topic.

I agree that indiscriminate use of biofuels could lead to a number of threats but this should not stop the progressive replacement of oil with biofuels.

I like to compare biofuels with drugs. "Are drugs good or bad??".

Certainly an indiscriminate use of drugs could lead to diseases more serious than the illness these drugs intend to cure! But thank God these drugs exist to help avoid illness and to prevent death.

There is an urgent need for SUSTAINABILITY CRITERIA to be agreed at the international level but, in general, we can't forget the huge benefits that bioenergy exploitation could provide in light of the few (although serious!) drawbacks. Moreover in terms of environmental drawbacks, the effects are not clear and still unknown. More research, investments and demonstration are needed to better understand the unintended impacts.

Looking forward for your replies,

Thank you all,

Alessandro Flammini (FAO)

Contribution by El Fadil Ahmed Ismail, Associate Research professor, Food Research

Centre Agric. Research Corporation, SUDAN

Dear all,

Responding to the questions raised by Prof Eltighani Elamin who looks at the bright side of biofuel energy problem I would like to add the following comments:

We all know that, abundance/scarcity of material resources together with the human need determine the type of technology to be used to serve or satisfy that need. It is true that New Generation Biofuels (NGB) can provide well-off consumers with quality biofuel solutions that reduce the emission of greenhouse gases; and serve as a path to more sustainable, renewable energy resources. Practically, this would remain only a dream for countries that strive for basic food needs to combat hunger and malnutrition, and for sure, not for enhancing their national energy security. **However, most important technologies that can provide energy lie out side agriculture** (solar energy, nuclear energy, wind energy, etc).

For developed countries, the cheapest sources that provide energy under current oil prices are largely the non-renewable energy resources and Biofuel energy becomes minor under the renewable energy sources particularly for USA. Under this current situation, at least **for some countries**, in the northern hemisphere, **Biofuel can be both cost effective and environmentally friendly in the long run** compared to atomic energy or solar energy despite the fact that the latter is not widely there. Therefore, the apparent question concerning biofuel production is: **should it be from food crops** (maize, wheat, sorghum) or **should it be from non-food agricultural products**, if this remains potentially an option? In my opinion, two options might emerge for the Biofuel concern:

a) Short run strategy that considers the solution of energy problem is only a matter of technology –time- and those who support this opinion can choose to use food biofuel as only transitory.

b) Long term strategy that considers biofuel from agriculture (food & nonfood sources) is the best alternative to current/future oil soaring prices. However, if we left such a strategy to prevail this means to divert more agricultural land to bio-fuel under the assumption to reverse the global demand of agricultural products from being inelastic to elastic. However, the assumption might be true for people of high purchasing power, but it ignores the majority of people around the globe who earn less than a dollar/day and ultimately will be out of this utility concept. Still, elastic demand for agricultural products by the richer can be also constrained by inelastic supply on part of poor farmers in less developed countries if these price hikes are not transferred onto them. The argument raised by prof. Tighani that the price hikes will be an opportunity and shall have a positive effect on farmers' incomes and enable them to invest in expanding production and improving efficiency is debatable. For instance, poor farmers who lack sufficient financial support to use appropriate technology that increase their yields are not expected to benefit from such an opportunity made by these price hikes. Consequently this means a decline in their incomes leading to more poverty in these communities.

With respect to the **second argument that an increase in bio-fuel production would reduce the use of anti-environment energy and clean the environment for healthy life** for our future generations; seems to overlook the environmental damage that might accrue if people tend towards biofuel as a main source of energy and abandon oil, nuclear, coal, and gas energy which constitute almost 94% of energy needs of USA, the biggest energy consumer in the world. What on earth to accept that all land (including land on Moon and Mars) to be sufficient and sustainable to produce the global energy needs. Tighani's assumption might lead to **erase forest cover; reclaim marginal lands unsuitable for producing biofuel plants, and even invent some new technology to plant on seas to meet the huge demand on biofuel.**

The break up of the vicious circle of poverty would **not be**, in my opinion, **by going for biofuel from food crops**. On the contrary, diverting more farm land to bio-fuel would benefit the MNC

that would emerge to maximize their returns on the account of the poor producers. A typical example widely prevailing in African crop markets where intermediaries (and not farmers) are the most gainers from these market transactions. As a result, the consequences rising from the biofuel (I expect) will only concentrate and add new dimensions to the centre periphery theory!

Last but not least, I find myself agree with prof. Tighant wishes that the energy competition for food crops can trigger a safe return to traditional-forests, biodiversity and wildlife based food where people can have healthy life for it remains the sole option for the majority of people who have purchasing power of less than a couple of dollars a day.

Dr. El Fadil Ahmed Ismail

Contribution by Abdalla Adam Osman, Research Scientist, Agricultural Economic & Policy Research Centre, Sudan

Dear Alessandro Flammini

Many thanks for you comments and thought , I agreed that, all your consideration are correct, but I still feel that production of food crops for biofuel purposes will soon or later have a negative implications on poor households for their farming and cropping systems, although they produce food crops for their self-sufficiency. As you know maize and sorghum are capital and labour intensive crops in arid zones.

Processing of biofuel is less extensive than atomic or solar energy, also there is no any barriers on production of it. If so, biofuel production tools will be posted at any agrarian regions thus, factories demand for agricultural products will compete consumers demand for their food.

Finally I am not feeling gloomy for this technology but hazard will be taken from its implications.

Best regards,

Abdalla Adam Osman

Contribution by Marcus Finco, Phd Candidate (Germany) and Assistant Professor (Brazil)

Dear all,

I would like to say that this discussion must be draw regarding **specific features of the countries** we are talking about. In Latin America, especially in Brazil, rural poor communities might have the opportunity to be better off once they are cultivating alternative cultures aiming to produce biofuels. In addition, the competition between "**food agriculture**" versus "**energy agriculture**" here in Brazil is not a reality and the probability is that this competition will take at least several decades to begin IF (I say IF) this competition be carried out in a non sustainable way.

Best

Marcus Finco

Contribution by Fatima Mohammed Ali, Agriculture Economic Research Policy Center, Sudan

This topic interests the whole world, now that some governments meeting in Rome for talks on food price to tackle the injustice of food crisis.

I think the Energy competition the food crop means increasing food prices; and supply and demand become imbalanced, making about 860 million people hungry and most of them became malnourished.

Biofuel production has an impact on food security dimensions such as availability, access, stability and utilization. For example concerning utilization, it's closely linked to health and nutrition factors, such as access to clean water, sanitation and medical services. If biofuel feedstock production competes for water supply, it could make water less readily available for household use, threatening the health status and thus, the food security status of affected individuals.

On the other hand, small scale production of bio-energy in rural areas may **reduce reliance on fuel-wood**, which means less pressure on the forest and less burden for women who usually are tasked with collecting fuel-wood. In addition, there would be less health risk for household members who would no longer have to inhale the smoke from cooking with fuel-wood in enclosed.

With best regards,

Fatima Mohammed Ali