FSN FORUM DISCUSSION FROM 12TH NOVEMBER – 7TH DECEMBER 2007: "TOPICS ON WHICH RESEARCH IS NEEDED"

TABLE OF CONTENTS

I. GENERAL INFORMATION

Duration: 12.11 - 07.12.07

Facilitator: Andrew MacMillan, Retired FAO staff member

Number of contributors: 17

Number of Contributions: 25

II. REQUEST FOR SUGGESTIONS ON TOPICS ON WHICH RESEARCH IS NEEDED

My name is Andrew MacMillan. I am an agricultural economist, specialized in tropical agriculture. I retired from FAO at the end of 2005, after 35 years in the Organization. My final job in FAO was to serve as Director of the Field Operations Division, which included the Service responsible for the management of the Special Programme for Food Security.

Over the years I have become more and more convinced that the **eradication of hunger and most aspects of malnutrition** in the world is an **entirely feasible objective** and that **our collective failure to make faster progress in this direction amounts to criminal negligence**. Through our generation's inaction, we are effectively condemning millions of our fellow humans to a needless premature death.

One of the problems facing any institution committed to reducing hunger and malnutrition is that there is an **extraordinary DEARTH of RESEARCH on WHAT WORKS and WHAT DOES NOT** – and hence **interventions have to be planned LARGELY on the basis of good INTUITION rather than HARD EVIDENCE**.

Some of our **typical claims** in FSN fields include:

- A **cash transfer programme targeted on very low-income families** will result in **higher** expenditure on food and, in turn, better family nutrition, improved health and ultimately better work and learning performance. We may also stick our neck out and claim that the funds spent on such programmes are likely to generate their own stream of economic benefits and probably also higher fiscal revenues.

- It makes sense to address hunger and malnutrition directly rather than to wait for them to disappear as a result of progress in reducing poverty. Progress in the reduction of poverty is likely to be slow, as long as a large proportion of a country's workforce is effectively incapacitated through under-nourishment and malnutrition.

- Programmes which aim for high productivity gains by small-scale farmers are likely to have **relatively limited food security impacts**. This is because, at least where demand for incremental farm output is fairly inelastic, big productivity gains by a few farmers – usually those who have best access to inputs and are least food insecure – will simply swamp local markets. Instead, tactics aiming at small productivity gains (and more diversified production) when achieved by very large numbers of farmers who are themselves food insecure, and translated into better nutrition within their own families

– are likely to have a **much greater FSN impact**.

- **Comprehensive** FSN programmes need, at the very least, to combine components for **targeted cash transfers, school meals, nutrition education and low-cost participative learning opportunities** for small-scale farmers and investing in such programmes makes economic sense.

- Most practitioners agree on the importance of **school meals** components, especially when they are locally sourced,within comprehensive food security programmes.

Unfortunately I find a **serious LACK of EVIDENCE to support those claims**. For example, what work has been done to assess the extent of lifelong benefits accruing to children whose nutrition is improved through school meals? What is the impact of school meals on attendance at school, and what are the lifetime benefits stemming from school attendance at various ages?

The most convincing evidence that I have seen on the links between better nutrition and economic development comes from R. W. Fogel's work on the contribution of improved nutrition to long-term economic growth in UK and France, and from Jean-Louis Arcand's analysis of the relationship between nutrition and GDP growth in developing countries. I have just had my attention drawn to another useful piece by Joseph M. Hunt, entitled "The potential impact of reducing global malnutrition on poverty reduction and economic development. **But there must be much more relevant work.**

Therefore, it would be great, if we can **POOL a ROBUST LIST of REFERENCES with which to SUBSTANTIATE SUCH CLAIMS**. If there is **not**, it would seem to be **high time to BEGIN some SERIOUS STUDIES** – or else we shall continue to see **massive underinvestment in FSN programmes** simply because of our **inability to show categorically that they generate good returns**.

In other word, **I'd like to ask Forum colleagues to**:

- Provide **REFERENCES with which we can substantiate the above-mentioned claims**

- Give your opinions and insights on the **TOPICS on WHICH RESEARCH IS MOST NEEDED**

- Give your opinions and insights on **HOW to solve the lack of necessary research/evidence.**

Unfortunately the moral - and human rights - justification for hunger eradication – though powerful – still commands far too little weight in resource allocation decisions. I believe that many people share my view that it is morally repugnant that, in a world of ample food availability, any fellow human should pass through life hungry – but we don't seem yet able to persuade those that control the purse strings to address the issue on anything like the scale required.

Andrew MacMillan,
Retired FAO staff member, Scotsman living in Italy

III. LIST OF CONTRIBUTIONS

Contribution by Paul J. von Hartmann

Dear Mr. MacMillan and FSN friends,

I could not agree more. It is criminally negligent for the UN FAO to ignore Cannabis seed as a nutritional resource, merely because of the politics of a failed "drug war" raging against marijuana.

How bad do conditions have to get before all solutions are considered?

Here are my contributions to a realistic discussion.

- Provide REFERENCES with which we can substantiate the above-mentioned claims

- Give your opinions and insights on the TOPICS on WHICH RESEARCH IS MOST NEEDED
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Of greatest priority is an immediate reassessment of Cannabis seed nutrition and the role of hemp in sustainable agricultural economies:

See:

*"Hempseed as a nutritional resource: An overview"

J.C. Callaway, Department of Pharmaceutical Chemistry, University of Kuopio, FIN-70211 Kuopio, Finland; (e-mail: callaway@uku.fi) http://www.finola.com/HempseedNutrition.pdf

All crops must be considered.

*"Lowest Food Supplies in 50 or 100 Years: Global Food Crisis Emerging" Press Release - National Farmers' Union, May 11, 2007. http://www.organicconsumers.org/articles/article_5660.cfm

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- Give your opinions and insights on HOW to solve the lack of necessary research/evidence.

End the prohibition of drugs, stop enriching the black market, and free Cannabis hemp agriculture so that farmers can actively investigate the many benefits of this essential food crop.

See:

*"U.S. Mayors Declare Drug War a Failure"

July 18, 2007. http://www.jointogether.org/news/features/2007/us-mayors-declare-drug-war.htm

*"UN Report: Organised crime - $2 trillion threat to the world's security"
http://www.guardian.co.uk/international/story/0,,2167133,00.html

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Recognize the potential for monoterpenes produced by Cannabis agriculture to effect climate change, remineralize the soil, expand the arable base, and benefit other crops.

*Intergovernmental Panel on Climate Change :Fourth Assessment Report Working Group III Climate Change 2007: Mitigation of Climate Change Summary for Policymakers
http://www.ipcc.ch/SPM040507.pdf

*"Carbon storage potential in natural fiber composites."

Author: Muhammad Pervaiz, Sain, M. M.

Author Affiliation: Faculty of Forestry, Advanced Wood Composite Group, Earth Science Center, University of Toronto, 33 Willcocks Street, Toronto, Ont. M5S 3B3, Canada. Document Title: Resources, Conservation and Recycling, 2003 (Vol. 39) (No. 4) 325-340
http://www.cababstractsplus.org/google/abstract.asp?AcNo=20043048573

I feel strongly that the science done on atmospheric aerosols producd by pine trees now needs to be done on faster-growing food, fiber and medicine crops, such as Cannabis, which produces 58 monoterpenes and sequesters a ton of carbon per acre per year, producing a protein rich seed, safe and effective herbal antibiotics, antifungal, antiviral, antioxidizing, pesticidal agricultural products -- to name only a few.

*"High Natural Aerosol Loading over Boreal Forests"

Science 14 April 2006:

Vol. 312. no. 5771, pp. 261 – 263

DOI: 10.1126/science.1123052 http://www.sciencemag.org/cgi/content/abstract/312/5771/261

Looking forward to hearing from you soon,

Paul J. von Hartmann

California Cannabis Ministry

Contribution by Andrew MacMillan, Retired FAO staff member

Dear Paul,

Many thanks for these useful references on Cannabis sativa. Callaway's paper on the food value of the seed is particularly interesting. FAO also recognizes the value of cannabis seed as a source of animal feed (see

www.fao.org/ag/aga/frg/afris/Data494.HTM)

Because so much of the spotlight has been on Cannabis sativa as a source of drugs, people tend to forget that the same species produces valuable fibre

(hemp) as well as an edible oil seed of high nutritious value.

One of the policy dilemmas which faces governments committed to both reducing drug availability and to improving the food security and incomes of their rural populations is how to handle crops such as Cannabis. Sale of the narcotic products of Cannabis can be a very attractive source of income for small-scale farmers in remote areas who are faced with few other opportunities to grow alternative crops which generate similar returns - and many drug eradication programmes have a devastating impact on their living standards. Where governments are committed to drug eradication policies, clearly these must include measures to safeguard the nutrition and living standards of producers of the banned product - whether through promotion of alternative agricultural products or creation of other livelihood sources, or improving access to services, especially water supplies, education and health services.

Where a good regulatory system can be put place, governments committed to restricting drug production, could still presumably promote Cannabis cultivation for its non-drug products. Hemp, for instance comes mainly from the male plants (which are easily identifiable) and the seeds, of course, come from the fertilized female flowers - whereas I believe the best quality marijuana comes from the dried unfertilized female inflorescences (Purseglove 1968). Whether there is a sufficiently remunerative market for either hemp or Cannabis seed to make production attractive, however, remains to be seen.

The broader issue which you raise is whether there is a not a NEED for MORE RESEARCH aimed at improving the food production performance of LESSER KNOWN CROPS, and I am sure Forum participants will have quite a lot to contribute on this.

Best wishes,

Andrew

Contribution by Jane Sherman, FAO Consultant, Rome

Andrew,

I agree with you entirely about lack of research evidence on which to base action initiatives. Just one point: I wonder if we should also subject our premises to similar investigation - for example, is there in fact “AMPLE FOOD AVAIBILITY”? An article I read recently cited the book Vital Signs produced by the Worldwatch Institute in Washington as showing that “…production of the three main staple grain crops – rice, wheat and maize – was 1,883m tonnes in 1996 but in 2006-7 it was only 11m tonnes more. The decline in food per person over the decade has been nearly 5%”. (“Feeding the world: the politics of consumption” by John Vidal, Guardian Weekly, October 19-25, 2007)

A newspaper article is hardly a primary source. Is there any hard data to support this point?

Jane Sherman

Contribution by Paul J. von Hartmann

Dear Andrew,

Thank you for your thoughtful reply and kind wishes. I am sincerely gratified by your reception of the Cannabis nutritional information.

The sparse UNFAO reference to Cannabis as food for animals is shamefully inadequate. Practical assessment of the world's most nutritious seed is an essential factor that warrants reintegration into food security discussions. I trust that the UNFAO will begin to actively investigate the true potential of this critically determinate crop.

Between our present condition and a sustainable future, are unfortunate political imbalances that are killing us one way or another at an acellerating rate. If not by imposing malnutrition and disease, then by laying the foundation of imbalnces leading to wars, environmental degeneration and weakened immune systems. The good news is that the global brain is awakening in discussions such as this one.

"Governments committed to restricting drug production" will be interested to learn that inadvertent pollenation by male industrial hemp plants makes female 'marijuana' plants less desireable on the black market, because of the un-smokable seeds that result. There is no legitimate reason to restrict industrial hemp to produce protein-rich food, biofuels, cloth, paper, biodegradable plastics, herbal therapeutics, paints and varnishes, building materials, and lubricating oils. Since the low-THC, industrial strains are physically distinct and impossible to confuse with the high-THC varieties, distinguishing between the high- and low-THC strains is not an obstacle to food security.

In terms of sheer numbers of people effected, food insecurity and malnutrition are undoubtably among the greatest harms of prohibition. Critical agricultural knowledge and effective seed stock development is being inhibited because of the costly, counter-productive "drug war." This is as irresponsible as it is tragic. I trust that the UN Office for Drug Control and Crime Prevention (UNODC) will recognize the harm being done to food security and the environment by abandoning the global war against Cannabis coming up for its ten-year review in March of 2008 at the UNGASS in Vienna.

UNGASS: Public Letter to Kofi Annan http://www.drugpolicy.org/global/ungass/letter/

The fact that Cannabis is the only common seed with three essential fatty acids (EFAs) in proper proportion for long-term consumption (Erasmus 1991), and is potentially the best available source of organic vegetable protein, leads many people to conclude that Cannabis is one of the world's most valuable agricultural resources. Protein production determines carrying capacity.

The increasing urgency of researching Cannabis agriculture, in every soil and climate condition that it will grow, is a function of how badly people wish to survive. The monoterpene production capacity of Cannabis, and the potential for "climate forcing" with biogenic atmospheric aerosols, has implications beyond food security and nutrition, though all are related to issues of global warming and global broiling by the effects on food production by increasing intensities of UV-B radiation.

Global broiling is mitigated by Cannabis agriculture more directly than by any other agricultural crop. No genetic modification needed or recommended. The plant adapts readily to soil and climate conditions after only a few planting seasons.

Certainly the "Sale of the narcotic products of Cannabis can be a very attractive source of income for small-scale farmers in remote areas who are faced with few other opportunities to grow alternative crops which generate similar returns - and many drug eradication programmes have a devastating impact on their living standards."

I would add that the toxic futility of marijuana eradication programs, and the black-market prices that make cultivation of other crops less attractive, demands another approach. In the US, everyone remembers Al Capone and the violent empire he built on alcohol prohibition. With marijuana the impossibility of eradication is even more certain because Cannabis is an herb, not a drug. Drugs don't make seeds. Herbs do.

Anyone can "make" marijuana just by puttting a seed in the ground. This fact makes it impossible to eradicate. Prohibition is effectively driving up street prices, creating hard drug epidemics, exposing consumers to the dangers of untraceable, contaminated products, and increasing the demand for the "forbidden fruits" being created that attract youthful experimentation. This obviates control of "controlled substances" while engendering myriad problems.

Corruption of our polical and economic structures is inevitable as the economics of punishment become institutionalized (Thornton, 1992). Poverty leads to desperation, drug abuse, crime and a bloated prison economy.This impoverishes households and disintegrates communities as much as the spraying of paraquat and glyphosate degrades the environment, even further impoverishing entire agriculturally communities.

I suggest that a formal assessment of Cannabis agriculture and the effects of prohibition on the global hemp production be initiated before next spring. The limiting factor is time, and we don't have a planting season to waste.

Best wishes,

Paul

Contribution by Andrew MacMillan, Retired FAO staff member

Dear Jane,

There are various sources of data on global and country level agricultural production. You may want to look at FAOSTAT on the FAO website (www.fao.org) which provides comparative statistics over a long period for all major agricultural products.

In referring to "ample" food availability, I did not want to contribute to complacency about the long term balance between food availability and needs. You are right to express concern about the slowing down in the growth in the output of major cereals. Total cereal output has only grown at a rate of 0.8% per year over the last decade.

Probably we would have found that cereal output would have grown faster had global prices risen significantly as, for instance, they are now doing. Presumably the relatively low international prices were a response to the seemingly adequate balance between availability (including carry-over stocks)and demand. One would have to also look carefully at the figures to see whether there was not, at the same time, a willingness to accept a reduction in the proportion of global cereal needs covered by stocks considered necessary to safeguard world food security.

What I have tried to imply by the term "ample" - though I should have been more precise - is that, at least for now, the world seems to have the ability to meet all the food needs of its 6 billion+ people. The problem from a food security and nutritional perspective is that over 800 million people are unable to express their "need" for incremental food consumption as effective demand in the global market place and hence continue chronically hungry.

Turning to the future, however, I am enormously concerned about growth prospects in food production. There is less and less good land for the undamaging expansion of the agricultural frontier, opportunities for increasing irrigated areas are limited by water scarcities, and these problems seem likely to be compounded by climate change.

What concerns me most, however, is that the technologies on which the remarkable growth in productivity of the past 60 years has been based are simply not sustainable in the longer term. Our high yielding crop and livestock breeds appear to be drawn from ever narrowing genetic resources; inorganic fertilizers, when applied in large quantities, are polluting water resources; inversion tillage systems are destroying soil stability and the costs to human health of the vast quantity of pesticides that end up in our food systems, I suspect, are frighteningly large. Given the very long gestation period for innovation in agriculture it would seem tremendously important to greatly increase the research effort that goes into looking at alternative technologies on which to put high yielding agricultural systems on a more sustainable footing.

Perhaps one of the reasons for what appears to be serious under-investment in the types of research required is that the technologies which may be found most feasible will probably not generate the same commercially appropriable benefits that come from the current technology mix. Improving water use efficiency, cutting the frequency of tillage or harnessing soil biology processes, such as biological nitrogen fixation, to greater effect have little potential for increasing the demand for farm inputs.

What I am trying to say is that I believe we currently have the capacity to make sure that everyone on earth is adequately fed - but that we need, at the same time, to embark urgently, with public funding, on really serious wide-ranging investigations aimed at creating NEW FOUNDATIONS for TRULY SUSTAINABLE FARMING SYSTEMS. Continued underinvestment in such research could endanger the balance between production and need that we fortunately now enjoy.

I am copying this response to two former FAO colleagues, Nadia Sciallaba and Peter Kenmore, as I believe that they may have something to add on the latter set of issues.

Andrew

Message from Jane

"I agree with you entirely about lack of research evidence on which to base action initiatives. Just one point: I wonder if we should also subject our premises to similar investigation - for example, is there in fact "AMPLE FOOD AVAIBILITY"? An article I read recently cited the book Vital Signs produced by the Worldwatch Institute in Washington as showing that "...production of the three main staple grain crops - rice, wheat and maize - was 1,883m tonnes in 1996 but in 2006-7 it was only 11m tonnes more. The decline in food per person over the decade has been nearly 5%". ("Feeding the

world: the politics of consumption" by John Vidal, Guardian Weekly, October 19-25, 2007)

A newspaper article is hardly a primary source. Is there any hard data to support this point?

Jane Sherman

Contribution by Paul J. von Hartmann

Hello Jane and Andrew,

With regard to the question of "ample food availability," I offer the following excerpts from a 2004 report by UNICEF and the Micronutrient

Initiative.(1)

"A ... lack of basic vitamins and minerals in the diet is damaging the health of one-third of the world's people and holding back the economic development of virtually every country in the southern hemisphere.

"Iron deficiency impairs mental development in young children and is lowering national IQs. It also undermines adult productivity, with estimated losses of 2 per cent of GDP in the worst-affected countries.

"Vitamin A deficiency compromises the immune systems of approximately 40% of children under five in the developing world, leading to the deaths of 1 million youngsters each year.

"Iodine deficiency in pregnancy is causing as many as 20 million babies a year to be born mentally impaired.

"Severe iron deficiency anaemia is causing the deaths of an estimated 50,000 women a year during childbirth.

"And folate deficiency is causing approximately 200,000 severe birth defects every year and is associated with roughly 1 in 10 adult deaths from heart disease.

"The report states that the effects of vitamin and micronutrient deficiency on adults, particularly on women, are subtle and insidious. The effects on nations, and on economic development, are only just beginning to be measured. But at the heart of the VMD problem is the fact that it is in the vital, vulnerable, earliest months of life when poor nutrition has its most devastating and durable effects.

"The report says that whole populations can be protected against vitamin an micronutrient deficiencies by tested and inexpensive methods. Those solutions

include:

Education: Informing communities about the kinds of foods that can increase the intake and absorption of needed vitamins and minerals." (end of excerpt)

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Cannabis seed is certainly one of these foods. It is potentially, the best available source of organic vegetable protein, essential fatty acids, essential amino acids and several of the micronutrients mentioned, for the greatest number of people.

The following is from the introduction "The Composition of Hemp Seed Oil and Its Potential as an Important Source of Nutrition"

"Hemp (Cannabis sativa L.) seed oil is valued primarily for its nutritional properties as well as for the health benefits associated with it. Although its fatty acid composition is most often noted, with oil content ranging from 25-35%, whole hemp seed is additionally comprised of approximately 20-25% protein, 20-30% carbohydrates, and 10-15% fiber, along with an array of trace minerals (Deferne and Pate, 1996). With a complete source of all essential amino and fatty acids, hemp seed oil is a complete nutritional source. In addition, constituents exist within the oil that have been shown to exhibit pharmacological activity (Deferne and Pate, 1996; Erasmus, 1999)." (2)

I submit that because of its exceptional nutritional profile, and potential for widespread regional availability, a primary responsibility of the people participating in this forum is to actively urge the UNFAO to openly reconsider the unique and essential benefits of Cannabis agriculture and nutrition. Cannabis is the "elephant in the living-room" that no one wants to acknowledge, as a direct result of the "drug war." What is urgently needed is for the scientific community to speak louder than the voices of prohibition, in a rational, science-based discussion of Cannabis agriculture and nutrition. This is long overdo, to the point of criminal negligence.

Andrew, you observed that: "There is less and LESS GOOD LAND for the undamaging expansion of the agricultural frontier, opportunities for increasing irrigated areas are limited by WATER SCARCITIES, and these problems seem likely to be compounded by CLIMATE CHANGE. "

This brings up several critical points to which Cannabis agriculture is relevant.

Among several compelling reasons to investigate Cannabis agriculture is its exceptional utility as a soil conditioner. Grown in rotation with other organic crops, hemp benefits the soil by producing a fiberous root ball around a tap root, that penetrates deep into the Earth. Hemp reduces soil erosion, breaks up compacted soils, detoxifies contaminated soils, discourages pest infestation, and remineralizes depleted soils.

Other crops benefit from the shelter of hemp's thick seasonal windbreak, that can stand five meters tall or more after five to six months. Hemp also provides unique and essential feed and cover for wildlife.

Andrew also pointed out that: "...inorganic fertilizers, when applied in large quantities, are polluting water resources...and the costs to human health of the vast quantity of pesticides that end up in our food systems, I suspect, are frighteningly large."

Precisely so.

Interestingly, the steam-distilled essential oil of hemp is rich in compounds which are toxic to insects. This extract is not harmful to the environment or people, and can be applied to protect other crops, and serves as an effective mosquito repellent. Biogenic pesticides, crop rotation, and other non-toxic methods of maximizing food production are most effective in the long run, and are no longer optional.

"...it would seem tremendously important to greatly INCREASE the RESEARCH effort that goes into looking at ALTERNATIVES TECHNOLOGIES on which to put high yielding agricultural systems on a more sustainable footing."

The use of natural resources to heal natural systems makes the most sense to me. The scale of the problems we face demands a proportionate response. Developing hemp to its fullest potential seems to be the most potent strategy.

The "green herb" Cannabis was given to mankind by whatever power or process created the Earth. The "god-given, self-evident" right to farm "every herb bearing seed" (3) figures prominently in many religious faiths. Cannabis happens to be an unique and essential "strategic" food resource (4).For that reason alone it is beyond the rightful, moral jurisdiction of any court to impose scarcity of it.

Decades of economic inertia, political corruption and irrational social prejudice have made Cannabis a controversial "outlaw" agricultural resource. Fortunately, the plant's evident value is rapidly overcoming this prolonged paucity of reason.

Best wishes to all,

Paul

Contribution by Charles Lagu, National Agricultural Research Organization-Uganda

For the last three weeks i have been in the village where access to Internet is quite difficult. that was why I was limited in the forum discussions but I have been able to get all the postings and I shall read them through now that am back to office.

I wish to contribute to areas where research is needed urgently to address food security and nutrition related concerns in Sub Saharan Africa (SSA).

1. The IMPACT of CLIMATE CHANGE on food security and livelihoods (noticing that climate change is real and has begun to have devastating effects on food security as noticed by current floods and drought in Sub Saharan Africa (SSA). e.g. Uganda

2. The need for research into LIVESTOCK LABOUR SAVING TECHNOLOGIES for improved production even for Persons living with HIV/AIDS.(we can notice that most of the livestock production related activities and technologies are labour intensive.)

3. The role and contribution of SHEA PLANT in food security in sub Saharan Africa.

Thank you very much

Charles Lagu (Dr)

Contribution by Marie Claude Dop, Nutrition and Consumer Protection Division, FAO Rome

Dear Paul and others

this is the first time I hear about cannabis seeds !! I understand Paul is strongly convinced of the nutritional qualities of these seeds and it's quite possible that he is right.

There are many other foods that have exceptional nutritional qualities !! take nuts for instance (protein, essential fatty acids, anti-oxydants, etc), or pumpkin seeds, I could list many....

all these could be part of a healthy diet... but would you like one as the basis of your diet ?? .... probably not

are they easy to process ? I don't know for cannabis seeds but most seeds are difficult to process at household level...

we have seen in the past many well intentioned scientists and developers promoting a MAGIC FOOD to save the world from hunger... remember Spirulina (the blue algae !!)...

many foods that are healthy in small amounts are harmful when you eat of lot (eg cassava, cabbage, cinnamon !!)

what people need is a VARIED BALANCED DIET with diverse foods so as to cover all the nutrient needs and give pleasure to the person

that's in the definition of food security :FS is when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life

an approach relying heavily on one food for ensuring food security would be dangerous from the nutritional as well as the agricultural perspective (if that crop fails what do people do ?)

best to all !!

Marie Claude Dop, MD, PhD

Nutrition Officer

Nutrient requirements and assessment group (AGNA)

Nutrition and Consumer Protection Division

Food and Agriculture Organization of the United Nations,

Rome , Italy

Contribution by Prabir Dutta, Dg Foundation

In response to Paul's post:

Foods of animal origin covers protein etc. moreover income generation for specific foods as required are considered to be more ideal than cannabis or other seeds in isolation.

Prabir

Contribution by Benjamin Davis, FAO Rome

Dear Andrew,

I think that there is actually a fair amount of empirical evidence already, at least for some of the issues that your bring up.

For example, the **positive impact of cash transfer programs** (and particularly conditional cash transfer programs) **on food expenditure, nutrition and health** is pretty well established. I reviewed the available evidence of the impact (and implications) of conditional cash transfer programs on food security for a conference last year at the regional office in Santiago, which has been uploaded to the Forum's site at http://km.fao.org/fsn/resources/fsn_viewresdet.html?no_cache=1&r=276&nocache=1 . The next **link to better work and learning performance** seems pretty logical, but is difficult to show empirically. We had reviewed the available evidence in **SOFA 2001** (http://www.fao.org/docrep/003/x9800e/x9800e00.htm#TopOfPage**)**. The final **link to economic growth** (or local or regional income multipliers) is also logical, and while difficult to show empirically, potentially positive effects via modelling have been demonstrated. That should be enough to argue for the positive effects.

Overall, part of the problem is that, at least here at FAO, **providing empirical evidence and backing** is often considered **a useless academic endeavour** in the face of the urgent need to implement programs. This means that **few of our programs are seriously evaluated** and we can't show, beyond intuitive reasoning, what works and what doesn't. It seems to me that one needs to **combine**

the two. At least within FAO, **program people need to be more open to the power of research, and the researchers need to link their work to more practical challenges**.

Finally, for some of your other points, they really depend on the **particular context of a country or region**. For example, certainly, when designing a comprehensive FSN program, all the elements you mention should be taken into consideration (plus an evaluation, so we can figure what works and what doesn't), but the design of a specific comprehensive FSN programme very much depends on the context, and the profile of the food insecure. Small subsistence farmers do not always make up the bulk of the food insecure.

Benjamin

Contribution by Saif Abbasi, International Islamic University, Islamabad, Pakistan

Dear Andrew,

It is really good initiative on your part to asked research community about the lack of research on important socioeconomic issue, particularly access to food.

The expanding cities are adversely influencing **peri urban agriculture**. Peri urban agriculture is the main source of fresh food for urban population. The **unplanned expansion of cities** especially in developing countries is continuously posing threat to this important source of food production for urban areas. There is need to conduct research on this important aspect of food production.

With best regards,

Dr. Saif Abbasi,
International Islamic University,
Islamabad, Pakistan.

Contribution by Andrew MacMillan, Retired FAO Staff Member

It is good to see more ideas coming in from various parts of the world.

I particularly like Marie-Claude's contribution because, in recommending a good mixed diet as a basis for healthy eating, it reinforces the view that, while food and nutrition policies may benefit from additional research, the most important ingredient is "**common sense**".

To me, it is "common sense" that someone who is undernourished will be unable to do a full day's work and therefore will **not be able to make much of a contribution to economic development**. If a fifth, or a quarter, or a third of a country's population are under- or mal-nourished, it seems pretty obvious that that country's economic prospects will be severely curtailed (unless it is rich in minerals) Presumably the converse is also true, that enabling people to eat adequately allows them to become active participants in the economic growth of a country.

However obvious this may seem to me, **policy-makers** will want to know where the **evidence is for such assertions**. The mainstream view is that improving food and nutrition security is "welfare" and not a sound investment in development and that reduction of chronic hunger will be a consequence of economic growth. To turn this around, it seems that we need to appeal to more than "common sense", and demonstrate through **rigorous research** that our claims are well substantiated.

I referred in my introductory piece last week to two writers who have made what I believe are significant contributions to the understanding of the **relationship between nutrition, "environmental prudence", health and long term economic growth**. For those who may be interested, I will briefly summarise their claims.

R.W Fogel, in a paper entitled "**Health, Nutrition, and Economic Growth**", looks at the **relationship between food energy consumption, health, body size, work output and economic growth** in Britain between 1800 and 1980. He concludes that his analysis "suggests that the average efficiency of the human engine in Britain increased by about 53 per cent between 1800 and 1980. The combined

effect of the increase in dietary energy available for work, and of the increased human efficiency in transforming dietary energy into work output, appears to account for about 50 per cent of the British economic growth since 1800. In other words, the **impact of nutrition on long-term economic growth accounts for most of the previously unmeasured increase in British total factor productivity**."

Joseph M. Hunt, writing in "**The potential impact of reducing global malnutrition on poverty reduction and economic development**" makes the point that "Modern medicine (e.g. antibiotics) is a 20th century intervention and access to health services of life-saving potential was remote for most people during (the) period of rapid mortality decline" which he demonstrates took place in N. America and Europe between 1700 and the 1970s. He claims that "***improvement in health at the population level is largely determined by good policies that protect the environment and the people, that raise the quality of the working and living environments, and that assure the permanence of life's necessities - air, water, food and shelter - as widely as possible***." He also notes that "Of the 25-30 years of increased life expectancy (in developed countries) seen in this (the 20th) century, about 80% can be attributed to public health measures) improved water, sanitation, nutrition, immunizations, decreased environmental pollution, reductions in major injuries, and healthier, safer work places) and only about 20% to technical advances in health care." Mr. Hunt's paper goes on to demonstrate the **impact of improved nutrition** (especially improvements in micronutrient intake) on **raising economic growth rates.**

Andrew

Contribution by David Mfanimpela Myeni, SAFANS Coordinator (Swaziland)

My name is David Mfanimpela Myeni working for Christian Relief Organization in Swaziland as a Food and Nutrition Security Co-ordinator. I am an Agriculture Economist by training has worked with small-holder agriculture development in Swaziland for the last 10 years.

I would like to contribute on the issue raised by Dr. Charles Lagu from Uganda on the need for urgent research to address the issue of food and nutrition Security in Sub-Saharan Africa (SSA).

1. The most affected part of our society of course is the **poor communities**. A detailed diagnosis of **their coping mechanisms** should precede a prescription on addressing the food insecurity issue. **Identified approaches should blend proven appropriate technologies with valuable indigenous knowledge systems that will enhance community resilience and viability**.

2. **Small-holder agriculture production** is commonly used as an intervention for food and nutrition security given the relative access to land and labour for the poor communities in our traditional set-up. Experience in our countries has however shown that for this intervention to make a meaningful contribution **the level of productivity for the small-holder sector needs to be raised**. Data in the country indicates that poor households derive only 20% of their food consumption from production and about 50% from purchases/transfers. An in-depth analysis is therefore required to come up with **approaches that will look at the feasibility of both sides (food production and income generation) for particular situations to address the issue of food and nutrition security in a sustainable way**.

3. In the majority of the cases, out of desperation our interventions are undertaken **more as a relief** rather than a **sustainable development measure**.

4. I believe our challenges within the SSA countries is **multi-dimensional** i.e. structural, systematic and policy related. Can we share experiences from other people who have developed some **working models** on this issue so that they can be adapted to our situation?

Thank you.

Regards,

David Mfanimpela Myeni
SAFANS Coordinator (Swaziland)

Contribution by Florence Imaikorit Oumo, NATIONAL SEMI – ARID RESOURCES RESEARCH INSTITUTE, Uganda

I reference the call made by Mr MacMillan. I would like to agree with him.

Find below a few topics which I feel could make a difference within our communities:

1. **Establishment and sustainable management of community information centres**. (I one time took part in study 'assessment and management of information sources by farmers at sub-county level in Uganda'. One of the issues which came out was the **lack of community memory**. Quite often service providers go to do some work within the community and would go back with most of their training materials leaving communities **without any reference point**, unless they have to travel back to them. But there were issue on the establishment and sustainable management of these community information centres.

2. The role and contribution of **different partnerships in the management of food security and nutrition in sub-Saharan African**. (Most of the research outputs. 'technologies' are adopted, leaving different players pointing figures to each other).

Florence Imaikorit Oumo,
NATIONAL SEMI – ARID RESOURCES RESEARCH INSTITUTE, Uganda

Contribution by Subhash Mehta, Devarao Shivaram Trust

Dear Forum Members,

We need to focus on quality, nutrition and safety, not just production in agriculture.

The paper "Nutritional quality of organic versus conventional fruits, vegetables and grains" (at http://www.ioia.net/images/pdf/orgvalue.pdf or http://72.14.235.104/search?q=cache:jmdobD9pScQJ:www.ioia.net/images/pdf/orgvalue.pdf+nutritional+value+of+organic+produce+versus+conventional+food&hl=en&ct=clnk&cd=8&gl=in&client=firefox-a) maybe a good starting point!

This is an area where research has been done successfully over a decade and the results need to be taken for developmental programs if we are to correct mal nutrition and food security.

Warm regards

Subhash Mehta,
Devarao Shivaram Trust

Contribution by Andrew MacMillan, Retired FAO Staff Member

The references in Ben Davis' contribution are most pertinent. The SOFA 2001 piece provides a very good overview of the **links between nutrition and work and learning performance**, though is hesitant to claim the extent to which better school feeding improves academic performance and how much this, in turn, generates in terms of economic benefits. His own excellent paper prepared for the Santiago meeting provides, as he says, lots of relevant information on conditional cash transfer programmes and their impact on food expenditure, nutrition and health – but almost all the studies to which he refers relate to Latin America. Ben might also have drawn attention to the article in SOFI **2004 (http://www.fao.org/docrep/007/y5650e/y5650e00.htm), entitled "The economic cost of hunger: billions in lost productivity, earnings and consumption**".

Ben correctly laments the unfortunate **lack of built-in evaluation associated with FAO-led food security and nutrition programmes**. This has made it difficult for the Organization to claim that its programmes really are generating benefits which justify the costs involved – but it does not mean that the benefits are not there.

One of the purposes of the questions that I posed at the beginning of the discussion on "topics on which research is needed" was to see if anyone could point to **other relevant empirical studies**

which would strengthen the justification for investing in food and nutrition security. As long as **national decision-makers and international bankers** perceive the **funding of food security** as a form of "**welfare**" **rather than a highly viable area for investment**, FSN programmes will, I believe, continue to be **seriously under-resourced**.

Dr. Abbasi touches on the issue of **competition for land between urban expansion and peri-urban agriculture**, resulting in the displacement of the latter, and calls for more research on this. Oddly enough, my own Ph.D. studies focused on peri-urban vegetable production on the fringes of Port-of-Spain in Trinidad and Tobago in the 1960s! One of the reasons for studying small-scale farming in the Aranjuez area was to try to understand the reasons for the **extraordinarily high intensity of land use by small-scale farmers and the factors contributing to their exceptional innovativeness**. While city expansion may be over-running areas of peri-urban agriculture or city authorities may be deliberately displacing urban livestock production enterprises – such as the great milk colonies of Dr. Abbasi's Pakistan, on public health grounds, new forms of urban agriculture appear to be emerging and probably warrant serious investigation for their impact on food security and nutrition. Huyen may wish to contact Wilfried Baudouin former FAO urban agriculture specialist (and enthusiast!) on this and bring him into the discussion. In the meantime, Dr. Abbasi and others interested in the subject might like to look at **www.ruaf.org/** for useful references and links.

Andrew

Contribution by Julia Mambo, Dept of Geography Archaeology and Environmental Studies

Wits University

Dear Andrew,

I have read with a great deal of interest your issue about new topics for research. I agree with Charles on the issue of **climate change** especially in terms of **adaptation for the subsistence farmer is an essential topic which needs to be tackled by both NGOs and governments**. Most rural populations (particularly in Africa) still rely on **subsistence farming** thus there is a great need to invest and research in this sector, to equip the rural folk on how to feed themselves because in my view food aid is but a short term solution to solving hunger and malnutrition in poor countries. Let us not forget **the issue of the Aids pandemic and HIV infection especially the importance of nutrition as a mitigation measure, again in the context of subsistence farmers and the rural population**.

Julia Mambo,
Wits University, Dept of Geography Archaeology and Environmental studies

Contribution by Jose Luis Vivero Pol, Oficina Regional de FAO para América Latina y el Caribe

I just want to add another resource linked to last issue chaired by Andrew, I added to the Forum database a compilation paper that I prepared within the Regional Initiative where one can see figures on the economics of hunger in LAC. Most of this data come directly from SOFIs since 1999 till 2007 (http://www.fao.org/sof/sofi/) . See
http://km.fao.org/fsn/resources/fsn_viewresdet.html?no_cache=1&r=280&nocache=1

Regards,

Jose Luis Vivero Pol
Iniciativa "América Latina y Caribe sin Hambre"
Oficina Regional de FAO para América Latina y el Caribe

Contribution by Andrew MacMillan, Retired FAO Staff Member

One of the really good things about this Forum is that so many of those who are taking part are "**practitioners**", and so most of the issues that are being raised emerge from their daily work.

David's observations on the need to **understand community coping mechanisms** before

prescribing any interventions seems to state the obvious – but, however obvious it may be, it is a step which is too often forgotten!

On **small-holder agriculture**, I have been concerned for some time that many food security interventions are based on the assumption that any improvement in productivity – especially in crop yield per unit of land – will necessarily have an impact on food and nutrition security. The designers of such programmes congratulate themselves when they can show that participants are able to double or triple the yield of maize or rice. Perhaps we need to think much more about what it means to look at the development of small-holder farming through a food security and nutrition lens. In some situations, **the doubling of yields may, paradoxically, reduce food and nutrition security**, as it may mean that **local markets for staple foods become glutted, prices drop and farmers go into debt to pay off the costs of the high level of inputs that they have used**. In many situations, it may be more in keeping with the opportunities facing small-scale farmers to concentrate on interventions that **raise the productivity of labour** (put simply, using fewer calories to produce more calories) and **make better use of locally available resources** (such as manure and compost) than rely heavily on purchased inputs. Where hunger is essentially seasonal – as in much of West Africa – **crop diversification, especially into crops which come into production during the hungry season**, may be a better tactic than raising the yield of the main staple crop. From a family nutrition perspective, most forms of diversification tend to be valuable (as is being emphasized in the current discussion on nutrition education).

What I believe we also tend to overlook is that improving small-scale farmer performance does not necessarily translate into better nutrition within the farm family. More seriously, it may not have any impact on the food and nutrition security of the most food-insecure members of most rural communities, especially the landless families.
To return to my first observation – **all this would seem to be stating the obvious, but for some reason seems to be given little attention in designing food security programmes**.

One implication is that some research might be warranted on **best practice approaches to working with rural communities** when the objective is to improve food and nutrition security.

Andrew

Contribution by Charles Lagu, National Agricultural Research Organization-Uganda

With deep appreciation I acknowledge the best efforts made by forum members in coming with topics where research is needed from 12th-19th November 2007.

Kindly let me know whether there are **mechanisms to start research related areas in these gaps that have been identified** and if so am interested to know **these strategies**. Otherwise thank you very much for the good work on FSN online interactions.

Charles Lagu

Message from Cheikh Ahmadou LO, from Senegal

Hello,

My name is Cheikh Ahmadou LO; I am from Senegal. I am an engineer in chemical engineering and applied biology major food sciences (Polytechnic school), I am also a MSc in supply chain management (Lille1). I have work in R&D for food industries and been consultant for different companies (world pharmaceutical group, pesticides industries, food industries...).

This is a really interesting topic, I have read with attention.

The problem of **climate change** affects African countries and especially Sahel region, because of the problem of water access and a most important area the rain based agriculture which makes food security in the region dependent on rainy season.

Regarding those, it's became urgent to develop first new ways for water access by helping those countries in developing irrigation (remembering a fact in all those countries we can find rivers: Senegal river, Niger river etc...).

To address the problem of food insecurity we have to globally **measure how much money we spend in food aid and the real impact of that aid** and **what we can obtain by irrigating dry region by canal to improve water access and irrigated agriculture**.

Cheikh

Message from Lalita Bhattacharjee, Nutritionist, FAO

Hello, I am Lalita Bhattacharjee, Nutritionist working with the National Food Policy Capacity Strengthening Programmme (NFPCSP) an EC-USAID supported FAO Project being implemented in collaboration with the Food Planning and Monitoring Unit, Ministry of Food and Disaster Management, Bangladesh. The programme has been initiated since December 2005 to enhance the national capacity to implement the National Food Policy and its ensuing Plan of Action. On behalf of our team in Bangladesh, I would like to share some of the activities that we are undertaking as part of the project's research component.

One of the core objectives of the NFPCSP is to **expand and deepen the capacity of civil society to conduct high quality research on food security** and support **effective dialogue between policy makers and researchers** so as to inform and enrich the implementation of the National Food Policy and its Plan of Action. In undertaking this, the NFPCSP has carried out a **participatory assessment of food security policy related research needs**, involving consultations with a range of stakeholders from civil society and government as well as from other development agencies. The outcomes of the needs assessment have been consolidated in a Bangladesh Food Security Research Needs Digest (RND) (available at http://www.nfpcsp.org). A Benchmark Survey (BMS) has also been conducted to cover **three decades of literature relevant to food security in Bangladesh**. This is meant to serve as a reference tool for both researchers and decision-makers in **identifying food security research gaps and priorities.**

NFPCSP is also supporting/promoting under its **Research Grant Award** Initiative, **socio-economic research** on a **broad range of food security issues and policies** related to **food availability, access, and utilization for nutrition, as well as cross-cutting issues such as gender, governance, environment and infrastructure .**

As part of NFPCSP efforts to promote high quality food security research, an **evaluation of Research Institutions** in the field of food security research has also been undertaken to identify research institution(s) potentially able to take a lead role in coordinating research under NFPCSP Programme Research.

In improving government-civil society dialogue and sharing knowledge on food security issues and policies several workshops and seminars have been organized to discuss research needs, priorities and research plans (based on the awarded researches) and various consultations with civil society have also taken place in the process of developing the NFP Plan of Action. These interactions are on -going and expanding as part of the NFPCSP follow-up on food security research work and NFP monitoring activities.

For more information, check out our website on www.nfpcsp.org or write to info@nfpcsp.org

Lalita

Message from Ghazanfar Abbas, Pakistan Agricultural Research Council, Islamabad, Pakistan

I am Ghazanfar Abbas working in Pakistan Agricultural Research Council, Islamabad since 1985. I have taken keen interest in reading almost all contributions on this forum relating to Research Areas where the scientists should put more emphasis these days. I believe that research areas for Agricultural Scientists in the Developing Countries should include: For the benefit of all readers, I have sub-divided the areas into Plant, Natural Resources, Animal Sciences and Social Sciences.

Plant Sciences:

1. Genetic improvement of crops especially through application of biotechnology and molecular biology

2. Epidemiology, diagnosis and control of emerging and re-emerging infections and pests of crops

3. Diversification of agriculture emphasizing horticulture, and livestock for improved farm profitability (farming system approach) return/farm/year

4. Integrated pest management models for cotton-wheat, maize-wheat, rice-wheat and horticulture systems and their field implementation, scaling out and scaling up strategies

5. Fate of pesticides and other pollutants in soil and food chain and its impact on human, animal health, and on environment

6. Reduction of post-harvest losses and improving product quality in field crops through improvement of farm equipment, facilities and methods

7. Farm machinery research focus on developing and improving machinery for planting, harvesting, grading and processing.

Natural Resources:

1. Prevention of soil degradation for sustainable ecosystem management, particularly dry lands

2. Improving water productivity under irrigated and rain-fed production systems

3. Sustainable management of rangelands

4. Apiculture for quality honey production / export and increased farm productivity

Animal Sciences:

1. Genetic Improvement of Animals (livestock, fisheries and poultry)

2. Epidemiology, diagnosis and control of emerging and re-emerging infections of animals – bird flu, foot and mouth, rinderpest, warble fly, etc.

3. Improving nutrition through better feed and fodder products

4. Inland aquaculture and fisheries development

Social Sciences:

1. Agricultural Production and Value Chains Vs Small-holders

2. Agricultural Growth and Poverty Reduction

3. Agricultural Policy Analysis (pricing, subsidy, incentives)

4. Globalization and International Trade

5. Technology Transfer and Impact Assessment

6. Capacity Building of Agricultural Scientist

Message by James Tefft, Agricultural Development Economics Division, FAO Rome

I would like to offer a few comments on the discussion related to the "Topics on which research is needed" that is being facilitated by Andrew MacMillan. In particular, I would like to respond to his question on "**how to solve the lack of research and evidence**" for eradicating hunger and malnutrition. I would argue that there have actually been numerous activities undertaken throughout the world over the last twenty-five years that have been very effective in reducing poverty or improving nutritional outcomes. The problem is that **we are not always successful in communicating these results and building upon them in other contexts or on a larger scale**.

I believe that **this problem relates partly to the manner in which research is conducted and information and analytical systems have developed**. We have invested heavily in establishing nutritional surveillance systems, early warning systems, market information systems and monitoring and evaluation systems to name a few. We have also financed billions of dollars in a myriad of research programs and studies which, from a country or region's perspective, have often been conducted on a fairly ad hoc basis (i.e., everyone doing what they deem important, many externally driven and centred on one discipline). Many of these initiatives have naturally produced meaningful results. Where we have **not seen much work** is in the **development of an "experiential monitoring and learning system" for food and nutrition security**. By this, I mean simply a systematic and integrated way to monitor field level activities, to consolidate, analyze and distil lessons, to reformulate and retest in different conditions and then to go to scale with the factors that have been identified as criteria for success.

I think we have a pretty good idea of the content of interventions required for example to improve nutritional outcomes. We need to **invest more in developing and disseminating results of effective processes that achieve the desired results**. This is particularly important for multi-sector issues like nutrition that cut between disciplinary lines. The analytical issue is not so much one of "**what to do**" to reduce hunger and malnutrition as it is a question of "**how to do it**". In this context, I believe that we need to strive for a **better understanding of the manner in which political, institutional and governance factors condition incentives and affect the behavior of the large diversity of actors involved in development**. We focus so much attention on the behavior and incentives for household X or farmer Y but underplay the important role played by a health worker, elected official, NGO worker or development specialist. Their behavior may strongly determine the outcome of the activity.

Learning needs to be **ubiquitous** in all we do, involving men and women in communities, national level monitoring and analysis across districts, and regions across countries. It also needs to be **demand-driven** by practitioners. The dynamic or continuous learning aspect comes from the **systematic way in which the users and analysts iteratively assess experiences, draw lessons, disseminate and feed them back into the process**.

Whether at national or international levels, an **experiential learning system** may contribute to establishing the **evidence of what works and what does not**, helping to build an **institutional memory of innovative, credible and successful interventions**. The **relevance** and **sustainability** of this type of system depend partly on **its ability to respond to the priority information and analytical needs** of a potentially large user/client base**, its cost-effectiveness and flexibility** in carrying out its mission.

James Tefft