ASSOCIATION FOR ADVANCEMENT IN PLANT PROTECTION

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Inside This Issue

From the Editors' Desk :

Theory & Principles of the Practice of Resistance Revisited

While reading articles related to fuel, food and inflation, the author came across a few essays from Stan Goff and De Clarke on related issues. To share their thoughts with the readers through a brief on them was alluring. Both are US -based freelance radical essayists and can be reached at stan@stangoff.com. The scenarios primarily relate to US economy.

We stated in our last column that the oil-food link has resulted in a steep food price rise all over the World with inflation hitting peripheral economies like a Tsunami. '*Though the brunt as always is now being borne by the most marginal and fragile economies, the over-developed industrial metropoles are not escaping the impact of this crisis. The US economy is culminating in a credit crisis resulting from a* ***'stagflation'*** *economic recession, combined with price inflation. The key products driving the cost of living in US are basically gasoline and food'.*

In US one needs a car to go to a job the job gives their livelihood without which they do not eat. Gasoline and food are intimately entwined in the mesh of dependencies that keeps them all obedient to their bosses of the monetized economy as most people have driven themselves out of the land and live in high density *'people storage'* buildings without access to living soil or they have lost their skills to produce their own food (kitchen garden) or the soil has been literally killed by industrial farming (IF) practices and can now only produce through massive external inputs purchased from the '*extractive economies'*. '*The fossil/extractive industries (EI) and the money economy have built fences all around the food industry/supply from production to consumption. We play their game or we don't eat. Now their game is coming apart at the seams'*!

These EI have a reductionist approach that isolates the '*valuable'* in any '*resource base'*, separates it from the '*dross'* and discards/externalizes the dross while selling the '*high value'* extracted produce for the best price possible. We now practice farming as an EI, mining topsoil and fossil water, growing only a handful of productive varieties and seek best price in markets (at present biofuel) even if it destroys industry that produced food for local people or forests that maintained climate stability. Fishing and dairy farming is practiced as strip-mining, pumping external inputs and keeping the high value catch/milk and rejecting the dross, leading to collateral damage.

Ecosystems, like animals, function as a whole. The forcing of higher rates of return from biotic systems requires doing such violence to individuals and entire ecosystems that very soon huge external inputs are required to maintain an unsustainable '*harvest'*. In agriculture it translates into the systemic weakness of monocrop plantations which require increasing dosage of pesticides, herbicides, fertilisers etc. These external inputs are all fossil-based, dependent on cheap fossil energy, not compatible with a fuel price above $120/barrel. (The collapse of Lehmann Bros. and Morgan-Stanley has recently brought down the fuel price significantly to ca $75 from a high of >$150).

The dismal quality meted out is tolerated because the public believes in the industry propaganda (sensu ***Margaret Thatcher***) '*There is no alternative'*. The gist of the propaganda by the industry is (1) IF (aka the Green Revolution-GF) has increased yield per ha. (2) Given the pressure of population growth, only the IF can feed the world. (3) IF is hygienic, scientific, smart and safe. '*Sounds like a con game given there is nothing hygienic about an approach that pollutes the environment, nothing scientific about an approach that defies the basic principles of ecosystem theory and management and what is prudent about a system that totally depends on a fast depleting finite resource like the fossil fuel?'* So the Industry now throws the technology tool at it - genetic modification to produce crops that will tolerate the pathogenic conditions of IF.

The IF, using large mechanical devices to plant, harvest and process uniformly engineered monocrops from vast regimented populations means labour can be minimised. So long as fossil fuel was cheap, this appeared efficient. But in the long term it seems patently absurd to call a farming method efficient that invests 10 fossil fuel calories to produce one calorie of food, or if it uses an inch of topsoil for every 13 years of farming the same fields.

In the long term, the initial successes of GR are hollowed by downsizing returns and inconvenient facts: (1) Losses to pests per ha in now higher. (2) Monocrop plantations are too sickly and pests are too rapidly evolving and adapting for anything other than an endless treadmill of escalating costs and increasing toxicity. (3) Synthetic fertilisers and pesticides are *'slow poisoning'* the soil. (4) Over-irrigation and heavy equipments compact soil into a hard pan and what was fertile becomes essentially semi-desert.

Is There an Alternative? Yes: *Intensive biotic polyculture - cultivating of many species of food plants in a small footprint using biotic soil amendments and nutrient recycling produces more food than IF on the long run using far less water and helps build top soil. What this does not do is maximise money profits, minimize labour inputs or facilitate large scale extractive cash cropping.*

This is why the protagonists of IA don't want us to know that it works. Vermiculture practices double

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Agriculture Livelihood and Agriculture Governance: Alignment Wide Apart–

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Livelihood is means of securing living with dignity. Central to the understanding of AL is the agriculture related activities from production to marketing. Central to the AL programs are small farmers' farming situations. Small farmers are mostly poor people with vulnerability in production and marketing. AG includes institutions dealing the issues of Agriculture Research and Extension, viz: Agricultural Universities and ICAR. Agriculture Research (AR) is pivot to both AG and AL, scientific community, in the present article, is quite often referred as Plant Protection (PP) scientists/researchers as their roles hold the key to small farmers' profitability. Small farmers' profitability is one of the building blocks of AL program.

Small farming has the best potential to pull rural people out of poverty. The need is to implement the contextualized (location specific) AL programs to increase profitability in small farming. Profitability in small farming depends on reduction in cost of production more than product price realization. Reducing cost of production in small farming requires knowledge inputs of plant protection (PP) measures to introduce low cost PP options in AL programs. Meaningful involvement of PP scientists is a must in AL program implementation to increase small farmers' profitability. Increasing small farmers' profitability presupposes changes in Research Agenda (RA) in AL program. The participation of PP scientists in AL program is fraught with risks as small farmers' profitability related RA may be captured by 'research elitism'. The 'research elitism' is historically biased against research dealing with profitability in small farming. The research dealing with lessened application of PP chemicals (integral part of cost reduction process) is anathema to the research funding coming from pesticide industries. The existing 'Career Appraisal' rules of scientific community, which AG religiously pursues, are also clear disincentive to PP scientists participating in AL program. AG needs to cushion PP scientists participating in AL program to insulate them from the prejudiced 'Career Appraisal procedure' as elitist judges (also scientific fraternity) so passionately pursue.

The AL program implementation offers ample learning which can enhance knowledge base about small farmers' profitability. The publication and discussion of such learning emanating from AL program is not considered intellectually stimulating. However, the research output with more quantitative information and more amenable to statistical package is embraced.

The AG has started receiving project fund (National and International) for integrating PP research in AL program. AG has to create incentive for PP research community for researching issues dealing with reducing cost of production in small farming through AL programs. AG has to create conducing environment for helping PP researcher to mobilize fund for implementing AL programs. There were plenty of issues where AG had lost opportunity to learn. System of Regional Research Stations (RRS) of any university has given platform for at least 50 scientists for last 15 years to get their career advance. Their contribution in small farmers' development had never been looked into. It precisely exposes the AG's bias in favor of elitists' research. More than 500 Krishi Vigyan Kendra (KVKs) have never undergone third party evaluation which exposes AG's reluctance to stand up against public scrutiny. The 'Service Organizations' or 'Trade Unions' of scientific community have not negotiated the AL issues with AG. The positive outcome of such negotiations could have helped the poor small farmers. Instances are abounding when scientists are involved in AL programs executed by NGOs or private sectors when they retired from their jobs. The retired scientists simply do not fit in AL program implementation. Their earlier knowledge exposures are inadequate compared to the requirement in AL program. These scientific communities could have been more useful if they were exposed in AL program during their prime time in service.

The editors solicit comments,opinions, for or against the thought muted by the author.They will be published in the next issue

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earthworm's volume through reproduction every 90 days. A pound of earthworm consumes ½ lb vegetable kitchen scraps each day, excreted as high quality compost. In 12 sft one can grow 3 species of food, six plants in each: How many of these one can build into an acre? '*The key is always in the design'. Neither Syngenta, nor Cargill nor Archer-Daniels-Midland wants you to know this.* The IA system has arrived at what ***Ivan Illich*** called *the second watershed;* "*all our cures*" have become the disease. We are in a state of accelerated iatrogenesis.

The Politics of Food– *The US gives a very liberal subsidy for agribusiness in the form of a "Farm Bill". Free trade agreements are ultimately designed to convert foreign economies into dollar generating export platforms. Agriculturally this means monocropping at the expense of the peasants, the urban poor, and the globe's disappearing forests. The US agricultural 'dumping' also introduces patented and GMO foods and seeds into the 3rd World to extend the reach of IPR related lawsuits (a prime weapon of the extractive nexus against small producers). Passing on pesticide-laden food is passé because IF requires chemicals and contaminants for eliminating the pest component in the biotic system. The Western junk foods with global tentacles are responsible for various debilitating diseases (McDonalds, KFC etc). Children are made to eat junk food in schools. Hospitals have these food outlets.*

One of the imperial fiats issued (order 81) was the imposition US-IP Laws on the subjugated IRAQ. Iraqi farmers were forced mandatorily to use US patented GMOs, destroying there own premiere national seed bank of traditional varietal cultivars. *These are food issues*.

There is resistance in India and Brazil against Agribusiness and in Europe against GM crops. Food dependency has always been the most essential weapon of the oppressor. It applies equally to the yeoman farmers deprived of agriland and forced as desperate wage slaves. It applies to citizens of Zimbabwe forbidden by President Mugabe to keep out vegetable gardens in the yards of their urban and suburban house. *If somebody else controls your access to food then you have, by definition, no self determination. Food independence, food autarky is not possible without greater separation of food from monetized economy.*

What is to be Done? There is already a food movement organic culture, farmer markets to community supported agri-gardening. The industrial food system is riddled with crises and contradictions that will no more be palliated '*by throwing petroleum at it'*. It has reached a breaking point. The praxis of food autarky and

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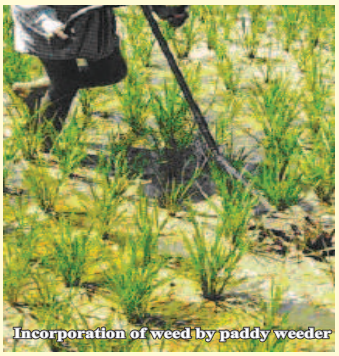
● **Careful Nutrient Management Helps Control Input Costs--** ARKANSAS farmers are enjoying record high prices for rice, wheat, corn and soybeans, but parallel spikes in the costs of fertilizer and other agricultural inputs are tempering the boon. In light of current input costs, you have to ask yourself, '*Do I really need it*'. The bottom line for producers is net profit. They have to do what works best for them. Urea, costed about $700 per ton in May in US, up from $450 a ton a year ago and a jump from $515 a ton in January. The prices of triple superphosphate and diammonium phosphate (DAP) cost more than $1,000 a ton, up from around $300 a ton a year ago. Potash, has nearly tripled in price since 2006 and many micronutrients are seeing similar price hikes.

Soil tests are the backbone of nutrient management. Annual soil tests let producers know what nutrients are available and what they may need to add. Soil Test labs analyze the samples and issue soil test reports. Fertilizer recommendations based on years of soil fertility research are designed to help farmers make fertilizer decisions that will give them optimal yields. It's important to soil test. It's also important to understand how the recommendations were developed. There are two lines of reasoning behind the recommendations. The first, and most traditional, is sufficiency. The second approach, adopted a few years ago is '*build and maintain*'. It recommends higher rates of fertilizer and is designed to maintain soil fertility and sustain agricultural land for the long haul. If sufficiency is to fertilize the crop, then build and maintain is to fertilize the soil. Crops may remove more nutrients than are added under sufficiency recommendations. The result is that soil nutrient levels decline and fields require increasing application rates in subsequent years. Producers who have been following this pattern are now faced with having to add more fertilizer now while prices are higher. Those who used higher application rates to build and maintain the soil may now be reaping the benefits. They put in more nutrients when prices were lower and, because they have maintained soil fertility, they require lower fertilizer rates now, when prices are high! Many growers are opting for crops that require less fertilizer. Many cotton growers, for example, are switching over to soybeans, legumes that provide their own nitrogen through a symbiotic process with bacteria in the soil. If their soil phosphorus and potassium levels are high enough, they aren't using any fertilizer at all. The best solution is to ask questions to relevant Agricultural and Extension officers.

The publication, Wayne E. Sabbe Arkansas Soil Fertility Studies 2007, is available free from the U of Arkansas, Division of Agriculture. E-mail nkyle@uark.edu and ask for Research Series 558. Download it from the Web in PDF format: arkansasagnews.uark.edu.

(**Source**:**Rick Thompson. EMAIL :** rthompson@uaex.edu. Posted 20 June 2008. Crop Management.)

● **SRI : A Promising Method to Combat Pest Incidence on Rice Crop--** RICE is the staple food for most populace of Asia and also the second largest staple food after wheat in the world. However, yield of present high yielding varieties is almost stagnant. Some times it shows a decreasing trend. The probable reasons are: (1) The same varieties are being grown for long periods and their yield potential is decreasing. (2) To achieve higher yields and greater profitability input-dependence of modern agriculture has brought some pests problems. (3) Resistance against pesticides is increasing day by day. (4) Improper and unnecessary use of pesticides and herbicides disturb the agro-ecological balance.


Incorporation of weed by paddy weeder


Strong roots of seedlings of SRI rice

At present nearly five KL of water is required to produce only one kg rice. *Boro* rice requires huge amount of water, being lifted from underground water reservoir. As a result, lowering of ground water level in larger parts of West Bengal has been noticed. This creates two major problems (1) drinking water are likely to be contaminated e.g. with arsenic, (2) there is scarcity of drinking water, particularly during summer months. To overcome these problems a new technology of rice production has been developed, which increases the rice yield without disturbing agro-ecological balance. **SRI (System for rice intensification)** addresses partly these problems. Through SRI substantial increase in rice yield can be obtained with 25 to 50% less water than is commonly used for irrigated rice because non-submerged soil conditions are used. The system offers many advantages for the growth of plants and soil fauna. In traditional cultivation spacing is 20 x 20 or 20 x 15 or 15 x 15 cm, where as in SRI system wider spacing is maintained, as 25 x 25 or 30 x 30 or 35 x 35 cm. It has been found that in SRI system of rice cultivation pest incidence is low.

Rice was considered to be a water-loving plant. But rice cannot thrive well under water logged conditions. Due to changed ecosystem rice fails to express its full potential as could be achieved under arable condition. Excess humidity makes rice more vulnerable to pest attack. Heavy dose of nitrogenous fertilizer under flooded conditions makes the rice plant succulent which favours pest incidence. In SRI system wider spacing allows sunlight to reach the ground and there is free air movement between the hills and rows, even at maximum tillering. Unlike the flooded condition here humidity is less. Due to heavy application of organic manure and less application of fertilizers, rice plants become hard. These factors favour SRI plant to fight against pests. Research findings show that natural enemies of BPH in SRI fields like spider, wasp, long horned grasshopper, ground beetle, mirid bug etc are enormously increased and sheath rot incidence in rice remarkably decreased.

Due to non-flooded conditions in SRI fields, weed infestation increases. But due to wider spacing these weeds can be easily controlled by using a rotary hoe. Additionally the much needed huge amounts organic matter is added to the soil. In near future SRI will be an effective weapon for increasing water use efficiency and higher yield of rice through reduced pest incidence.

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community-thru-food can only enhance our chances of survival and resistance during a period of potentially extreme dislocation. *The 'kitchen garden' may be symbolically called the victory garden against foreign enemy, domestic authority and thus partially withdraw from the money economy and the wage slavery and debt on which it is based.*

Capitalism began by kicking people off their land and forbidding them to grow their own food.The end of it may come when people grow their own food and share it with neighbours, saying a resounding **NO** to capitalism's end-phase esterminism.

"*The left may even learn something about organizing a social change from the permaculture principles*. (*The adoption of permaculture principles and techniques reduces the drudgery of food production considerably; the permaculturist is assisting the food to grow rather than forcing it to do. What it does not do is maximise money profits, minimize labour inputs or facilitate large scale extractive cash cropping)*; *it may be that we don't 'grow' revolution any more than we grow plants; it may be that social change is not forced but is assisted to happen by creating the preconditions for an explosion of vitality, diversity and robustness in our (counter) culture. It may be that successful social change is more like gardening and less like war, than our rhetoric and our habits of thought assume. Thus the left and the food underground need each other. The history has opened a path -- a teachable moment for all of us. It is an unfamiliar path, perhaps, but not nearly as perilous as standing still"*.

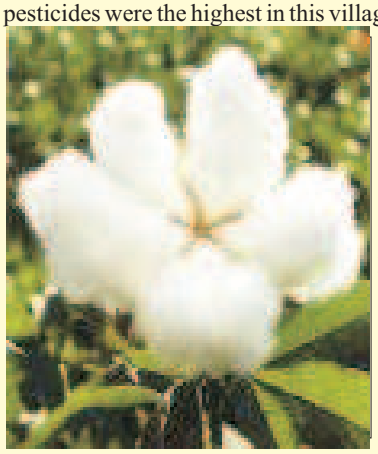
Do you agree? Do react! If nothing else, this is serious food for thought particularly for those who are directly or indirectly involved in assuring food security!

Chitreshwar Sen,
Editor-in- Chief, On behalf of the Board of Editors

● **Punjab Cotton Belt in Death Row--***Kartar Kaur of Jajjal is a 90-year-old mother, who has seen all the changes in their land in the last century. Today, she lives with little hope. She has lost her three sons, one by one to cancer. The family had a debt of Rs.nine lakhs, borrowed for treatment, and after losing the sons, the family still has Rs. six lakhs to pay off. The family has had to sell all their moveable things and even their tractor. Even in the face of this disaster, they have got no aid or relief from the government.* Upendra Dutt, a freelance journalist, had this story to tell sometime back..


Kartar Kaur of Jajjal

JAJJAL is a small village under Talwandi Sabo block with 500-odd households and a population of about 3500. This is Punjab's south-western region, called Malwa, a predominantly cotton growing area. In 2002, Jajjal village made headlines and posed a burning question to the state administration. The cancers in the Malwa region have been a raging story for a few years now. The village had witnessed about 48 cancer cases out of which 38 persons died and 10 others are currently battling for their life. The rise in cancers has been linked to environmental and in particular, drinking-water contamination, due to farmers' excessive use of pesticides in cotton based cropping system. Pesticide sale and use has been growing in this region. Studies from the Centre for Science and Environment (CSE) and Greenpeace had shown earlier that environmental loads of pesticides were the highest in this village. In June 2005, CSE released a



report showing presence of pesticides in blood samples collected from villagers. The report noted the presence of cocktail of 6 to 13 pesticides in the blood samples. CSE also found organochlorines and residues of the 'non-persistent' pesticides organophosphates in blood. Organophosphates are far more toxic than the older organochlorines. In February 2005, the Post Graduate Institute of Medical Research (PGIMR), Chandigarh, had reported that the levels of heavy metals such as As, Cd, Cr, Se, Hg in drinking water were generally higher and pesticides such as heptachlor, ethion and chloropyrifos were also higher in samples of drinking water, vegetables and blood samples in Talwandi Sabo block as compared to other cotton growing blocks. Moreover, the higher pesticide consuming block of Talwandi Sabo had a far higher rate of cancer prevalence and deaths as compared to other cotton growing blocks. Jajjal is still awaiting a full-fledged environmental-epidemiological study and house-to-house campaign for simple early cancer detection and fewer use of eco-friendly pesticides under integrated pest management (IPM) system, much necessary even to understand and combat the depth of this furious crisis.(*India Together*, 28-02-07)

● **Pesticides Related Troubles in Amphibians** – *Do you miss the croak of frogs from shrill to high baritone all through the rainy season? Sitting at the semiurban small town of Kalyani, we all missed it this year!*

THE MYSTERIOUS and widespread decline in amphbians is taking place in various regions of the world. There are undoubtedly many causes of the various declines, and, in 2002, it was reported (Science, Vol. 296) that some frog species are very sensitive to Atrazine, the most heavily used herbicide in the US. This compound has been banned in many European countries, and is being reviewed by the EPA in the US. EPA's safe drinking water standard for this compound is 3 ppb (parts per billion), yet, in lab studies, frogs exposed to concentrations as much as 30 times lower than that (i.e., 0.1 ppb) show disruptions in their hormone systems. Male tadpoles, for example, develop extra gonads and become hermaphrodites. Atrazine also lowered male frogs' testosterone levels to below that of female frogs and reduced the size of their vocal chords, which are used to call potential mates. Sixteen percent of the animals experienced such effects at atrazine levels as low as 1 ppb. No control animals exhibited such abnormalities. Field collections in areas of high Atrazine use show a higher number of frogs with endocrine damage than do collections from areas devoid of the compound. "Roundup," herbicides when applied according to the label instructions, can be very lethal to tadpoles and juvenile terrestrial frogs and toads, based on experiments in which ponds were sprayed using various concentrations of this herbicide. (Ecol. Appl. 2005). Some suggest that it may not be the herbicide itself that is so problematic, but rather the surfactant in the formulation that causes problems for amphibians. There is also the possibility that observed effects were not only direct (as in causing toxicity) but were indirect also via causing decreases in algae (food). (***Patricia Muir,***muirp@science.oregonstate.edu at Oregon State University; last updated Jan 28, 2007)


A cane toad

Thus, pesticides can affect **species diversity** (the number of species in an area), **food chains** (the pathways by which energy and nutrients move from plants to other organisms in the ecosystem), and, potentially **many other aspects of ecosystems**. Organisms in ecosystems exist in complex interdependent associations and losses of species (reduction in diversity) because of pesticides (or other causes!) can have far reaching and unpredictable effects on human civilization.

Economics , Industrialization and Lifestyle:

Industrialisation allowed us to increase our population as specialisation increases 'efficiency' of production - both industrial and agricultural. Our economic activity increases - but with industry (and agriculture) frantically refusing to accept the costs to the environment of their activities - externalising as many costs as possible onto the community, we have a distorted sense of how many we can support in our materially wealthy lifestyle. Developing countries also aspire to our lifestyle which we sell them through our films and television - but the externalities are coming home to roost! In simple terms the planet isn't big enough to allow us to continue along this path. A possible way forward was demonstrated by the Cubans when they were forced into an early oil crisis as Russia stopped their supply. They reorganised the basic structure of their society, and those with farming skills moved up the social ladder to become leaders. Everyone included growing food as part of their activities and cities and towns became productive gardens feeding their inhabitants. Specialisation and increased productivity can only work if we stay within the limits of the supportive natural systems - not the limits defined by myopic economists who can't see beyond their inappropriate unworkable models. Our economic system stinks! and we will not become sustainable until economics assumes its rightful place as the lowest of the big three questions - 1. can this be sustainable ecologically? 2. is it socially beneficial? (not - is it profitable?) and - only when these first questions are answered positively - 3. how can we use economics to do it efficiently? Currently economics drives the system and is so unrelated to reality that it directs us down the road to self destruction.
(Posted by biopug on 29/07/2008)

PPN: HUNT THE HUNTER

Current Approaches of Nematode Management in Crops-- PLANT parasitic nematodes (PPN), the farmer's hidden enemy is posing problems for crops worldwide. In recent years, PPN is causing severe crop losses in new situations like protected cultivation system to the dimension that its management is becoming increasingly important and at the same time difficult because of non-availability of suitable nematicides. The PPN mostly feed on plants' roots and some of them are adapted to establish parasitic relationships on the above ground parts like flower, bud, stalk, stem, or leaves and induce deformities of various kinds.

Management of crop pests under intensive crop production system is heavily dependent on pesticides - be it chemical, biological or of botanical origin. PPN management is not an exception but hardly any nematicides worth their salt are available for recommendation against nematode pests of crops and most of the currently used nematicides are insecticides having slight to moderate nematicidal property. Earlier, several nematicides like DD, EDB, DBCP, 1-3D, MIT liberators, MBr etc. proved effective in killing nematodes and were used to establish nematodes as potential pathogens of crop plants. However, nowadays most of them have been withdrawn from the world market for environmental concerns. Some of the organophosphates (OP) and carbamate insecticides are toxic to PPN at dosage higher than recommended for insect control. Thus, higher doses of OP and carbamate are not justified for their cost and harmful effects on the non-target organisms in the agroecosystem.

It is a great challenge to the scientists to explore alternative approaches to tackle nematode problems of crops in their cropping environment. Currently, options available to the growers include alternatives directed to limit the impact of nematodes in crops. These include: 1) judicious use of OP and carbamates restricting their use in nursery beds, bare dip of root, seed treatment, spot application (spot/pit/basin/row treatment); 2) harness nematode-suppressive crop sequence (crop rotation with non-hosts); 3) growing antagonistic/nematode suppressive crops like marigold, crotalaria, velvet bean, rapeseed-mustard, castor bean etc. as intercrop or in rotational sequences; 4) use of decomposed organic matter, concentrated organic matter like neem, oilseed and karanj cakes and green manures (like dhaincha, crucifers leaves, neem leaves etc.) for suppression of nematode population in soil; 5) use of potential biocontrol agents like *Paecilomyces lilacinus*, *Pochonia chlamydosporium* and *Trichoderma* sp.(specific strain) among the fungi and *Pasturia penetrans*, *Pseudomonas fluorescens* (specific strain) among the bacteria; 6) use of botanicals like NSKE and other neem based commercial formulations for above ground nematode parasites of crops; 7) use of nematode resistant or tolerant cultivars; 8) small scale adoption of soil solarisation for preparation of nematode-free nursery bed, pot soil and raising high value ornamental and flower crops in commercial scale; 9) site-specific management in precision farming system as the nematode infestation appears in patches in the field and treatment is restricted to the site and its periphery. With the adoption of this technique, the growers could save labour, critical input cost and crops in the noninfested areas of field by restricting nematodes within the area of infestation, and 10) practicing organic farming helps to reduce the nematode population as the organic environment is not congenial for the PPN. This farming system is heavily dependent on various organic sources, recycling of crop residues and bio-based approach of pest and disease management. The major limitations PPN management through use of efficient, cheap and potent nematicides could be adequately addressed through popularisation of organic farming.

(Column run by Matiyar Rahman Khan, Nematologist, BCKV, Mohanpur. **E-MAIL**: mrkhan_bckv@rediffmail.com

AGRICULTURE LAND LOCKED ?

● **Manipur Resists Land Alienation**– WHEN the government sought to acquire 512 acres of land for modernisation and expansion of the runway at Imphal's Tulihal airport to international standards (as part of Prime Minister Manmohan Singh's special package for the State), there were widespread protests. On April 2, 2008, dissent against land acquisition reached a peak, and residents of villages that will be affected by the expansion -- Malom, Ningombam, Meitram, Kodompokpi, Mongsangei and Konjeng Leikai -- fought pitched battles with the police.

The airport modernisation issue has been simmering for over a year. And it is not an isolated case. A couple of other infrastructure development schemes that entail relinquishing agricultural land, like construction of the National Institute of Technology complex at Langgol and expansion of Manipur University in Canchipur are on the anvil. At a time when a global food crisis looms large, the most important concern at the micro level in Manipur is scarcity of cultivable land (around 2,200 sq km of fertile land interspersed with wetlands). This flatland, however, comprise barely 10% of the State's area and, due to its better accessibility and location of the State capital, Imphal is already under pressure from population and infrastructure expansion.

So, even if only 250-odd families, or 10,000 people, are displaced by the Tulihal expansion, in real terms, the human cost would be monumental, ranging from loss of ancestral property and secure livelihoods to ecological imbalance and impoverishment. Although the government has promised "handsome compensation", Sabokam says: "The land is our life. It is priceless." The government says loss of arable land will be compensated by a growth in tourism.

Meanwhile, the fight against land alienation grows ever more belligerent, with the populace trying to convince the policymakers that they are missing the wood for the trees.

(**Source**: ***Monideepa Chaudhury,*** *InfoChange* News & Features, May 2008).

● **The SEZ Versus the 'Unrewarding' Small Farm--**KAKINADA is an increasingly important port. Among the companies that are interested in making investments in the planned SEZ is India's largest oil and gas company, ONGC (though there have been some doubts regarding its participation because of saturation of refining capacity on the east coast). If a major oil refinery comes to the area, a local NGO activist points out, as many as 30,000 fisherfolk along the coast will lose their livelihood because of the dumping of chemical waste into the ocean. Needless to say, no environmental impact assessment was done for the SEZ before approval was granted

Kakinada port - a view
(Inset :Map showing location)

The collector in the region claims that three-quarters of the 10,000 acres of land for the planned SEZ has already been acquired. According to a legal activist in Kakinada, a Congress and a Telugu Desam MLA have together managed to corner over 1,000 acres of this land. In theory, much of the assigned lands have already been allotted to tribals or dalits, but without the knowledge of the latter.

The SEZ was earlier planned right on the coast in order to facilitate shipments of refined oil. However, an MLA who would have lost land in the bargain prevailed on the Congress government led by Rajsekhar Reddy to shift the location further inland. As a consequence, 16 villages are going to be displaced by the SEZ.

It is no surprise that the SEZ promoter wants precisely this area of land: water is accessible less than 10 feet below the ground and there are plenty of springs and waterholes in the area (the (Godavari, Pampa and Suddagadda rivers are not far either). Government officials continue to argue that these are 'dry' lands, 'encourage' farmers to quit the land and leave it for SEZ. In a series of moves, other than terrorising villagers from time to time, it has been withdrawing all development programmes from these Kakinada villages (NREGS), the village school, primary health centres, old age pension funds, road-building work etc.

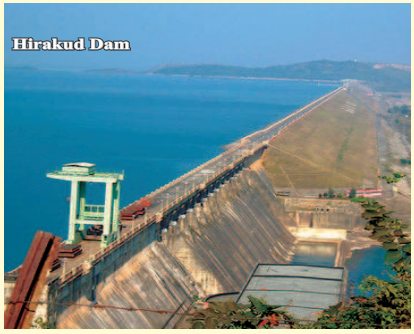
(**Source**: ***Aseem Shrivastava***, Freelance Journalist).

● **Industry vs Agriculture: The Battle Over Water in Hirakud--** BEFORE 1997, total allocation to industry of water from the Hirakud reservoir was 31,912 lakh gallons per year. In the nine years since, an

'allocation committee' has allocated 27 times more water to industry. This has, of course, been at the cost of water for irrigation.

There is a web of canals crisscrossing this command area of the Hirakud reservoir system. It's hard to believe Hota when he says that only 25% of cultivable land gets irrigated. But his fellow villagers echo his words. Hota's village -- Tamamura in Subarnapur district -- is around 80 km from the Hirakud reservoir. '*Industry drawing water from the reservoir is nothing short of a* tremor,' says Ashok Panda of Kaudiamunda, a nearby village. "*It's paving the way for the farmers' burial*."

"Our crop area has reduced and we are planting the dalua crop on only one-third of cultivable land in the village this time. "The irrigation area is shrinking year by year," Such fears are being transformed into huge public resentment. On October 26, the farmers formed a human chain stretching 20 km, from Hirakud at one end to Burla at the other end of the dam. More than 20,000 farmers participated.


Hirakud Dam

Water allocation to industry was at the bottom of the priority list of uses as late as November 26, 1990. "We don't know the technical jargon. But we strongly object to government officials certifying that irrigation is not suffering and will not suffer in the face of industrial supply from the reservoir. We know that our crops are dying'. Industries have just started drawing 0.031 MAcF of water, and already the farmers are feeling the effects.

Clearly, the battle lines have been drawn and the region appears to be headed towards greater conflict

(**Source**: ***Ranjan K Panda***, Freelance Orissa based Jounalist).

PESTS & PEST MANAGEMENT

● **Pest and Disease Management in Coconut** – COCONUT is the major crop cultivated by small and marginal farmers of south India, particularly Kerala. This crop is affected by many pests including rhinoceros beetle, red palm weevil,coconut eriophyid mite and coreid bug and termites in nursery. Diseases are root- (wilt), leaf rot, bud rot, stem bleeding etc. A comprehensive cost efficient approach in management and plant protection can collectively save these coconut farmers:


Wilt affected Coconut tree
Inset : Red Palm Weevil in coconut

Management practices **:** (1) Open the basins during April-May with the receipt of initial rains and apply1.0 kg lime and after one week, apply 25kg FYM per palm. (2) At sowing, 30 g per palm of green manure, seeds of sun hemp or cowpea in the basins and incorporate into the soil during Aug-Sept. or apply 50-100 kg green leaf manure during June-July or Oct.-Nov. (3) To minimise heat load during summer, apply lime solution on the trunk up to a height of 2-3 mts at the start of the season. (4) Apply one-third of the recommended dose of fertilizer viz. urea - 250 g,rajphos - 280 g,potash - 360g. During Apr-June and the rest two third rrea - 500 g, rajphos - 570 g.,potash - 720 g. During Sept. - October. (5)Apply Borax at 150 g per palm to those with boron deficiency symptoms like choking and non furling of leaves due to boron during April- May and 500 g of Magnesium sulphate to the palms which show yellowing symptoms. (6) Clean the crown of palms during April-May. Hook out Rhinoceros beetle adults from the attacked palms using beetle hook. (7) Fill the innermost three-leaf axils with a mixture of 250 g neem cake +250 g sand against rhinoceros beetle and red palm weevil during April- May and September October.

(**Source**: ***G Suja, T.N. Vilasini & M. Indira*** . Onattukara Regional Agricultural Research Station, Kerala Agricultural University, Kayamkulam, Alappuzha, Kerala. Posted. August 5, 2008).

● **Beware of Golden Kuhol a Snail (*Pomacea canaliculata*) after Planting Rice as This Voracious Pest can Devour a whole Paddy Overnight**-- YIELD loss owing to golden kuhol can be massive but variable. In the Philippines, losses range from 5% to 100% depending on locality and the level of infestation. Yield loss is also related to the density and size of the snails. A single snail can eat 7 to 24 rice seedlings a day.The golden kuhol, which came from South America, was introduced in Taiwan as food. The snails multiplied rapidly and began to escape in waterways. The golden kuhol later spread to Indonesia, Thailand Cambodia, Hong Kong, southern China, Japan, and the Philippines. Its high nutritive value as food for humans and farm animals generated interest among both public and private sectors. A few years after its introduction, however, it became a major pest of rice. The golden kuhol directly affects the livelihood of Asian farmers by infesting and damaging over half of the rice fields in the Asian region. It is most destructive when the length of the shell is from 10mm (size of a corn seed) to 40mm (size of a pingpong ball). This is the stage when they need large amounts of food for their growth and survival. Rice fields are an ideal habitat for golden kuhol. It feeds on young succulent plants such as newly transplanted rice seedlings and emerging tillers as well as weeds during the night and at dawn. The following are some of the recommendations for management: (1) Before the final harrowing, destroy egg clusters and handpick golden kuhol from rice paddies in the morning and afternoon when they are most active and easy to find. (2) Use plants containing toxic substances against golden kuhol such as tobacco, red pepper crucifers. (3) Put a wire or woven bamboo screen at the main irrigation water inlet and outlet to prevent the entry of hatchlings and adults.(4) Molluscicides can kill non-target organisms and other beneficial organisms. Improper use of molluscicides can cause skin irritation and can damage nails. These must be handled properly. (**Source**: Posted by ***Questrom***...Pagsasaka sa Pilipinas - http://juanmagsasaka.blogspot.com/).


Mulluses on rice stem


Egg cluster of a snail

● **LSU AgCenter Agent Gives Lawn-Care Tips--**THE MOST popular grasses in Louisiana are St. Augustine, followed by centipede, Bermuda and Zoysia. St. Augustine requires moderate to high maintenance and takes shade better. Centipede grass is gaining popularity. It is an erect grass with a fine, slender blade that requires less water during dry periods. But it does not do very well in shade. Bermuda grass requires full sun. The more it has, the better it is going to thrive. It is high maintenance. You have to mow it a lot. Zoysia is the highest quality Bermuda. Sharpen the equipment with a light bleachsolution after use to prevent fungus problems in the lawns. But it should not be grown in full sun. Planting can be done by seed, sprigs or sod.

When you leave a footprint that doesn't pop back up or when grass colour is changing, your lawn needs water. Watering a half inch for sandy soils and 1.5 inches for cla


A well kept lawn

yard to measure amounts. Ideal times to water are between 4 a.m. and 8 a.m. Avoid night watering. By that you are introducing every plant disease known to lawns.

When fertilizing, be sure to follow the directions provided waiting until March. For mowing, the blade height for St. Augustine should be 2.5 to 3.5 inches and 1.5 to 2 for centipede

(**Source**:LSU AgCenter. www.coa.lsu.edu. Posted 18th Aug.2008. Turfgrass Science. Contact: Troy Maynard, tmenard@agcenter.lsu.edu).

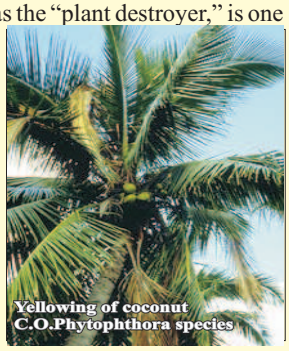
- **Scientists Identify Fungal Disease Culprits with Molecular Genetics --** A NEW method that rapidly detects the "genetic fingerprints" of fungi responsible for millions of dollars in losses in western wheat has been developed by ARS scientists in Pullman, Wash. Though not ready for commercial use, the real-time quantitative polymerase chain reaction (PCR) assays set the stage for building a comprehensive risk-management database that will help farmers decide the best way to counter the fungi, based on how many of them are present in the soil, as well as other factors such as prevailing conditions, the type of crop grown, and other variables.

The assay method now detect 10 *Pythium* and seven *Rhizoctonia* species. The assay the team developed uses laboratory-built molecules called primers to detect specific sequences of fungal DNA in soil or plant samples. The primers bind with the sequences and prepare them for PCR amplification, which generates millions of copies. A fluorescent signal that's measured and displayed on a computer screen at each amplification cycle.

The assays' chief advantages over conventional methods are speed, specificity and sensitivity. Before, it was necessary to culture the fungi, examine their features under a microscope and conduct greenhouse trials to observe disease symptoms--a weeks-long process. The assays yield results in one day.

(**Source**: ARS Rept. July 30, 2008).

- **APS PRESS Announces New Phytophthora Identification Key --** THE GENUS *Phytophthora*, known as the "plant destroyer," is one of the most important group of disease causing organisms. The new identification key, ***Phytophthora: Identifying Species by Morphology and DNA Fingerprints***, enables diagnosticians and regulatory personnel as well as researchers to identify *Phytophthora* species with speed and confidence. There were only about 50 identified species when the last key was published in 1990, but now that species number is approaching 100. In addition, there have been tremendous efforts in search of a reliable, high-resolution molecular character for rapid identification. This book presents a new key, integrating the classical morphological approach and a new DNA fingerprinting technique called PCR-SSCP. The dichotomous key uses minimal morphological characters, followed by pictorial illustrations. The DNA fingerprint key uses only the rDNA-ITS region amplified with a single pair of primers; a detailed step-by-step fingerprinting protocol is provided.


Yellowing of coconut
C.O.Phytophthora species

Sixty of the important species and taxons are presented in the book. Each species is presented on its own two-page section that includes a description, PCR-SSCP fingerprint key, and illustrations for morphological characters. A total of 652 original photos are included to illustrate individual species covered as well as a partial list of other molecular characters used for description of new species and differentiation of existing species in recent years. This book will be an excellent resource for those who are interested in identifying Phytophthora species.and can be purchased for $79.00 plus S&H (USD) from The American Phytopathological Society.

(**Contact**: Ashley Armstrong, APS PRESS. aarmstrong@scisoc.org. Posted 21 July 2008. Crop Management).

- **Beetle-borne Fungus Rides in, Decimates Walnut Trees-** A FUNGUS-CARRYING beetle is infecting black walnut trees in Boulder and other cities with "thousand cankers disease," a devastating affliction that starves the trees. The culprit is the walnut twig beetle, a bug that carries *Geosmithia*, a fungus that kills by depriving the trees of nutrients. The beetle carries the fungus with it, and when it attacks these trees and funnels down through the bark, the fungus cuts off the flow of food and water to the tree.

The disease, which turns the leaves yellow and resembles Dutch elm disease, was first noticed in Colorado in 2003. By September 2007, it had killed more than 250 black walnuts in Boulder. Experts originally believed the beetles were killing the walnuts but have since learned the fungus is the killer. Affected trees best removed.

(**Source**: By Tom McGhee, The Denver Post. Last updated: 08/08)

ROBBERY OF SOIL

"There are always insects in our harvest field which, in spite of their robbery, tend to leave a sufficient surplus for the tillers of the soil, so that it does not pay us to try to exterminate them altogether. But when some pest, that has an enormous power of self multiplication, attacks our total food crop we must consider this a great calamity. In human society, in normal circumstances, there are many causes that make for wastage, yet it does not cost us much to ignore them. But today the blight that has fallen upon our social life and its resources is disastrous because it is not restricted within reasonable limits. This is an epidemic of veracity that has infected the total area of civilisation. We all claim our right, and freedom, to be extravagant in our enjoyment if we can afford it. Not to be able to waste much upon myself as my rich neighbour does merely prove a poverty in myself of which I am ashamed, and against which my women folk and other parasites, naturally cherish their own grievance. Ours is a society in which, through its tyrannical standard of respectability, all the members are goading each other to spoil themselves to the utmost limit of their capacity. There is a continual screwing up of the ideal level of convenience and comfort, the increase in which is proportionately less than the energy it consumes. "

From 'The Robbery of the Soil' as the Introduction to Leonard Knight Elmhirst's lecture on the same topic at Calcutta in 1922 [See L K Elmhirst, The Poet and the Ploughman (Visva-Bharati, 1975).Courtesy: Prof. M. K. Das Gupta, Sriniketan],

E-Mail : oikos_sriniketan@rediffmail.com .

Registration No.S/1L 37974/2006-07, Kolkata

● **Indian Farmers Shun GM for Organic Solutions** -- ***FARMERS in the village of Lakshminayak Thanda in Warangal district of Andhra Pradesh took a decision to stop using pesticides and Bt cotton, the genetically modified variety manufactured by US biotechnology firm Monsanto.***

When the promised wonder Bt cotton variety was first introduced cotton farmers did well. Scientists found however that over the years, farmers were not achieving big yields. This perhaps was to be expected, because Bt cotton had been engineered to reduce pesticide use, not to increase yields. But farmers were facing serious problems with secondary pests. On an average, the income of non-Bt farmers was 60% higher than that of Bt farmers.

There have been other, more alarming problems. Goats died after spending all day grazing on post-harvest Bt cotton plants. In 2006, more than 1,800 sheep died in similar circumstances in other villages in Warangal district. The symptoms and post-mortem findings suggested that they had died from severe toxicity. Hundreds of agricultural workers had also developed allergic symptoms when exposed to Bt cotton. Bt cotton also suffered from severe wilt. Monsanto contests these accounts.

Farmers of Warangal say that practical considerations led to the change in farming by Non-pesticide Management (NPM), as it was clearly more profitable, not because yields are higher but because expenditure is so much lower. In Yenabavi, about 30 miles away, the farmers have gone further, becoming organic and declaring their village GMO-free. Almost 2,000 in Andhra Pradesh have already adopted NPM. Sustainable agriculture involves hard work and does not guarantee huge profits, but it will not harm the farmers' health; it brings personal satisfaction, and involves fewer financial risks. It is crucial to remember what is truly sustainable for small farmers. ***(Source: Sue Branford***, The Guardian, July 30 2008. Http://www.guardian.co.uk/environment/2008/jul/30/gmcrops.india).

● **Biodiversity of Bananas** A GLOBAL initiative is in place to harmonize Musa taxonomy for use by the banana research community. In turn, this will help curators make decisions regarding the rationalization of their own collection. The data generated by the field verification and molecular characterization of the accessions at the International Transit Centre (ITC) will serve as a reference to collections worldwide.

The Musa Germplasm Information System (MGIS) is a database that contains detailed and standardized information on Musa accessions stored in a range of genebanks around the world. Centralizing the data facilitates the identification of duplicates and unique accessions as well as gaps, in addition to highlighting classification problems. At BCKV, Kalyani, a team of Scientists made sustainable efforts at developing MGIS for Musa varieties in W.B. So far 69 varieties cultivars of different genomic groups collected from the different banana growing regions of West Bengal were planted and raised in the Horticultural Research Station, Mondouri of Bidhan Chandra Krishi Viswavidyalaya, Mohanpur, Nadia, West Bengal and characterized. Resource persons may be contacted for details.

(**Source**: ***Abu Hasan, Shantanu Jha***, BCKV, Kalyani,741235. E-Mail: shantanu_jha@hotmail.com).


Mandouri Local (BBB)


Seed Banana (BBB)


Baruipur Parthenocarpic (BB)

● **Call Centres for Farmers--** EIGHTY-FOUR call centres across the country are answering farmers' queries related to everything from fungus on brinjals to kisan credit cards and prices of insecticides

Set up by the Department of Agriculture, under the Ministry of Agriculture, in January 2004, the Kisan Call Centres - a single-knowledge pool catering to Indian farmers across the country - are proving a boon for the farming community. Farmers can dial the toll-free telephone number to get specialists, to answer a repertoire of questions related to agriculture and allied fields.

These call centres provide Level One support to farmers. And when the agents are not able to handle the query, the calls are diverted to Level Two, comprising experts identified by the Department. All unanswered calls and recorded calls are sent to the respective directorates (Level III support) for answering in an offline mode, through the post. Call centre agents are usually agriculture graduates or people with an orientation in science, agriculture and dairy farming.

KCC agents often fail to comprehend the queries. Farmers are mostly illiterate and unable to express themselves well. Also, language and dialect is a big divider. Thirdly, the call centre agents aren't specialists so they too take time to understand and diagnose the problem. Hence, the KCCs are now planning to get in touch with local panchayats to address this problem. Another issue affecting the efficacy of the KCC project is telephone connectivity. With the toll-free number accessible only through BSNL phone lines, farmers subscribing to GSM and other basic service providers or using CDMA phones cannot avail of the facility.

. Customer relations, in other words a humane and empathetic farmer-sensitive approach, is required. And it is here that the call centre agents play a catalytic role.

(**Source:** By ***Neeta Lal***, Krishi Bhavan).

● **Sipping Organically--** TWENTY-eight years ago, Vveronique Raskin, CEO and founder of the organic wine company, started selling two organic wines made from grapes grown on her family's property in

France. Now she boasts more than 60 choices overall--and she's just one of many organic beverage dealers who are seeing growth. Steven Frenkel, owner of Organic Vintages, located in Ukiah, Calif., believes that consumers should be educated that as many as 200 chemicals are commonly used in conventional wine production. Impressive growth aside, organic wine and beer remain a budding subset in the more mainstream acceptance of organic foods. Wine is impacted by variations in growing seasons and in the terroir of the region where grapes are grown. "Some are well suited for organic production, and some have difficult growing conditions that generally make it harder to produce a dependable supply of grapes."

Biodynamic wines are an emerging wave in ecologically focused beverage purchasing. According to the rules of biodynamic agriculture, a form of organic farming, grapes are produced on a farm where soil, plants and animals are considered a closed, self-sustaining system. Compost includes herbs instead of artificial fertilizers, herbicides and pesticides. The method is thought to improve soil fertility, crop nutrition, and pest, weed and disease management--leading to better tasting crops

(Source: Specialty Food.com. - Smt. Veena Seetharama Annadanaa. E-mail:annadanaa@organicabc.in).

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