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AgriZim

Volume 1 Number 7

In this Issue:

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Partners For Success

Volume 1 Number 6

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The sun sets over Kariba as storm clouds gather on the horizon.

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QUOTE, UNQUOTE...

"Farming looks mighty easy when your plow is a pencil and you're a thousand miles from the corn field."

- Dwight D Eisenhower

Foreword

Message from the President

It is with great interest that we follow what is currently happening in Africa regarding democracy, as democracy in Africa affects us all.

Although there is a lot of noise in the affected countries, there still seems to be a disturbing silence overall. This is not new. Closer to home, where was the voice of SADC when the SADC Tribunal (created under the SADC Treaty which makes important provision for international human rights and the rule of law), came under attack from Zimbabwe?

We need to take heed of three cases that all have a bearing on democracy in Zimbabwe.

The first is the Campbell Case, which is well known to us all. During the trial when the GOZ tried to delay proceedings, Judge Dr Alberto Luis Mondlane of Mozambique commented that "We are trying to build a house of justice in this region". The Tribunal (presided over by the Chief Justice of Mauritius) directed that the case should continue. The Zimbabwean High Commissioner in Windhoek ordered the Zimbabwean legal team to withdraw, and they walked out of court.

The Tribunal granted an order holding the Government of Zimbabwe to be in breach of its obligations under the Treaty. Justice in Africa had been found at the hands of a team of senior black judges. Unfortunately, SADC, Africa and the world at large was quiet when Zimbabwe refused to adhere to the ruling, and democracy took a step backwards in Africa.

Another case heard in the Tribunal is that of Luke Tembani, one of the first black Zimbabweans to obtain freehold title to agricultural land in Zimbabwe in 1980. He built up a successful farming enterprise, employing many, and also built a school on his farm providing education for over 300 children. He borrowed some money from Zimbabwe's Land Bank. A dispute arose, and the case ended up in the Tribunal. Luke succeeded in obtaining an order from the Tribunal that said that the action taken was inconsistent with Zimbabwe's treaty obligations. Once again, there has been an overwhelming silence on the non-compliance.

Another recent case concerned a Zimbabwean human rights NGO, which assembled over 40 litigants who had succeeded in obtaining final judgments for damages from Zimbabwean courts, but whose judgments were simply ignored by the Government of Zimbabwe. The claims arose from assaults and even torture by members of the security forces of Zimbabwe.

The Tribunal has ordered the Government not only to honour its own judgments; it has set in place a mechanism to have the awards revalorised so as to address the delay and the ravages of inflation. (You can read all about these cases on the SADC Tribunal website).

We have seen the SADC Treaty and BIPPA agreements disrespected,

and the GPA not fully implemented. Yet SADC and the world remain silent as the majority of Zimbabweans continue to suffer.

As farmers, investors and citizens of this country we ask for equality of all under democratic rule. The respect of basic human rights, property rights, the rule of good law and the independence of the Judiciary, army and police force.

We watch with interest as the wave of democracy sweeps through Africa...

Deon Theron
President
Commercial Farmers Union

In The News

Floods Threaten Crops Across Southern Africa

Floods and heavy rain across southern Africa have damaged thousands of hectares (acres) of farmland and more may be hit in coming weeks, raising fears for food supplies, - according to the UN FAO food agency.

With the rainy season still only half way through, and with the cyclone season around the corner, agricultural areas along the region's rivers remain at high risk of flooding, the Food and Africulture Organisation warned.

Most countries in the region, including Botswana, Lesotho, Mozambique, Namibia, South Africa, Zambia and Zimbabwe, are affected, it said.

Cindy Holleman, FAO regional emergency coordinator said, "Food insecurity levels are already critical in the affected areas of some of these countries and floods will only further worsen the ability of poor farmers to cope and feed their families in the coming months,"

The FAO is working with regional and national early warning systems to monitor the evolution in major river basins and to assess the impact on food crops, the statement added.

The agency is also providing governments with technical advice on flood monitoring systems, preparedness, and measures to prevent the outbreak or spread of animal disease, while preparing to provide aid such as seeds, and restoring agricultural activities after flood waters recede.

In Lesotho, one of the poorest countries in the sub-region, up to 60 percent of harvests have been lost in some areas and more than 4,700 head of livestock, mainly sheep and goats, are dead, the FAO reported.

Localized crop losses are also reported along river banks in southern and central Mozambique. The government has declared a red alert for central and southern Mozambique as water flows in the major rivers are above alert levels.

South Africa has already declared a national state of disaster in many districts of the country due to the floods that have destroyed thousands of hectares of crop land, and caused damages estimated in millions of dollars.

Carbon Balance Sheet - Africa in the black

Africa will now be able to keep a real-time check on its carbon balance sheet. This is expected to give it a more powerful voice in international climate talks and strengthen its bargaining position in negotiations for the Clean Development Mechanism (CDM) and the Reducing Emissions from Deforestation and Forest Degradation (REDD) programme.

The continent's first network for measuring carbon emissions is behind the development. It is based on mechanisms called flux measurements, which calculate the quantity of gas exchanged between an ecosystem and the atmosphere. The network was set up as part of the European CarboAfrica project,

In The News

which was launched in late 2006 and has just ended. The initiative, which explored various aspects of the carbon cycle in Africa, involved 15 African and European organisations. Its main conclusion was that the continent's carbon balance sheet is positive, since African ecosystems absorb more carbon than they give off, a factor that should prove a strong argument in international climate change negotiations.

Access Agri-Statistics on the 'Net

FAOSTAT, the world's largest statistical database on food, agriculture, and hunger, is going free. Previously, users could download a limited amount of information from the database without charge, but access to larger batches of statistics required a paid annual subscription. Now access is open, unlimited and entirely without charge.

FAOSTAT offers data on agricultural and food production, use of fertiliser and pesticides, food aid shipments, food balance sheets, forestry and fisheries production, irrigation and water use, land use, population trends, trade in agricultural products and the use of agricultural machinery. It can be consulted in English, French and Spanish. Visit - http://faostat.fao.org

Zimbabwe Ban Hits Country Bird Exports

In a recent newspaper report in South Africa, financial director for Country Bird Holdings, Robbie Taylor said that his company were losing sales of 600 tons of chickens a month to Zimbabwe as a result of the reworked chicken controversy that broke out a few months ago.

The Zimbabwean exports account for the lion's share of Country Bird's total monthly exports of just more than 1000 tons.

Solomon Zawe, chairman of the Zimbabwe Poultry Association, called for a ban on the import of South African chickens, saying they contained harmful additives not fit for human consumption and risked importing diseases into the country.

"They don't need an excuse. They close the border

for every single reason they can find. They are not competitive," Mr Taylor said.

Mr Taylor said while imports of chickens from Country Bird were blocked, other South African suppliers had not been blocked.

Country Bird, whose Supreme Poultry unit said last month it reworked chickens by thawing, washing, injecting with brine and refreezing them, says the practice conforms with food health standards and is widespread throughout the industry.

The issue of reworked chickens raises the question of whether there is sufficient disclosure about the processing of frozen chickens.

Mr Taylor said his company's disclosure practices met all required standards, and he would be "happy" to put as much information on packaging as customers wanted, provided the same requirements applied to all players in the industry.

He said chicken importers, which supply about 15% of the South African market with products brought in from Brazil and Argentina, should also be subject to the same disclosure requirements.

AGROFORESTRY
A Tree That Cossets Mango Plants

For years, farmers near Thiès in Senegal, have used the nguiguiss or camel's foot (Piliostigma reticulatum), a small tree that favours the growth of mango trees by retaining water in the soil around its roots.

"The well developed foliage of this shrub means that it also retains the arable land buffeted by the wind, in doing so creating oases of fertility which planted mango trees can take advantage of", said Dr

Ibrahima Diédhiou, a researcher at the Higher School of Agriculture in Thiès.

This innovative agroforestry technique has led to joint experiments between farmers and researchers as part of the Profeis project (Promoting Farmer Experimentation and Innovation in the Sahel to improve food security and the preservation of natural resources).

In Keur Ndioguou Ndiaye, a village 20 km from Thiès (70 km from Dakar) farmers have learned how to make nurseries for this leguminous tree. In August 2009, they planted young mango shoots in the midst of clumps of nguiguiss. Several months later, the farmers witnessed impressive growth in the young mango plants.

Nguiguiss (Piliostigma reticulatum) favours the growth of mango trees.

By Dr. C. Levy, Plant Pathologist, Commercial Farmers Union

Red Leaf Blotch of Soyabeans

Red leaf blotch (RLB) of soyabeans, which is caused the fungus, Phoma glycinicola (***syn: Pyrenochaeta glycines***) has been a persistent problem to farmers in Southern, Central and West Africa since the late 1950s. Due to soyabeans being mainly grown in small plots in many of the northern localities, it has really only caused economic losses where there has been large-scale production – in Zambia, Nigeria and to a lesser extent, Zimbabwe.

An intensive research programme was established by a team of Zambian, Zimbabwean and American breeders and pathologists in the early 1980s, when it became problematic. At this time little was known on this fungus, its survival and its parasitism of its hosts. However, the field research programme heavily centred on the establishment of practical controls Some 6000 breeding lines obtained from all over t he world were screened for resistance and approx. 40 fungicides were sprayed on heavily-infected plants over the next decade Only eleven soyabean lines were found to be resistant to RLB, but these were agronomically-unsuited to the Southern African growing conditions. Only fentin acetate (Brestan® 60WP; Hoechst A.G.) controlled the pathogen chemically. The breeders ultimately incorporated some of this resistance into the 'SCS1' (Zimbabwe) and 'Tunia' (Zambia) varieties, but even these were not immune to the disease.

Two major events caused the down-scaling of RLB research. Firstly, frog-eye leaf spot (FELS) (Cercospora sojina) devastated large areas of soyabean production in both countries, and secondly, fentin acetate manufacture was stopped internationally due to its association with various human cancers. The breeders concentrated on combating this new threat and disposed of most of their germplasm. Those found to be resistant to RLB, however, were very susceptible to FELS, and therefore, were also discarded. Shortly after FELS was contained, soyabean rust (Phakopsora pachyrhizi) blew into the region, and again the research effort had to be re-focussed. Thankfully, both these pathogens have now been contained!

Red leaf blotch is not as aggressive as these two diseases. It did not compete well with either for nutrition, but even so, it still persisted in many fields at low severity during the intervening years. Without effective chemical and genetic controls, and being partially soil-borne, RLB levels started to increase, especially in fields which were planted to soyabeans each summer. The effective control of its competitors further favoured its resurgence in the sub-region. In the last five or six seasons, RLB has once again become problematic - by infecting previously-resistant varieties, e.g. SCS1 in Zambia, and by causing significant leaf destruction of newly-released varieties, e.g. 'Serenade' in Makonde, Zimbabwe.

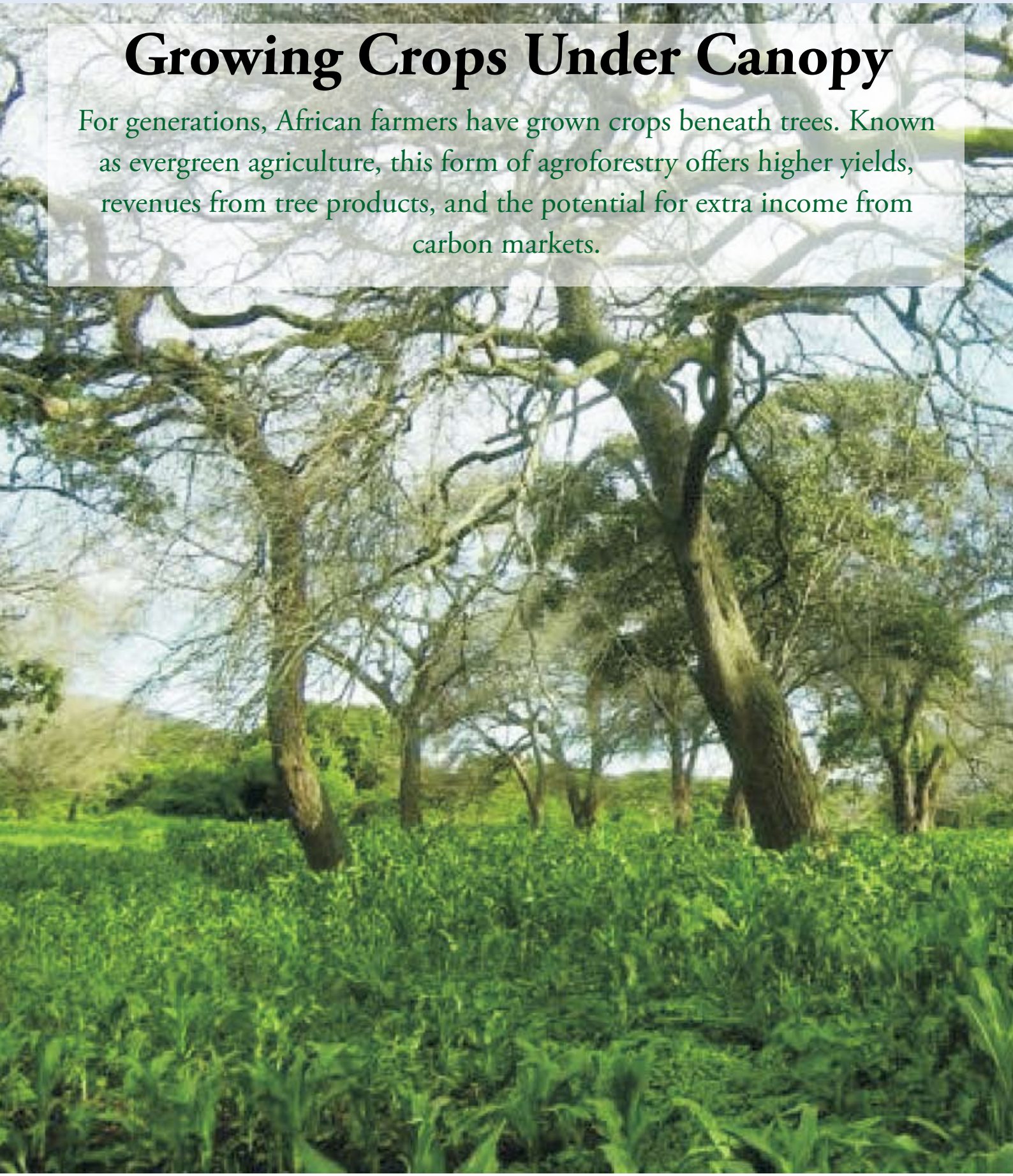
The challenge is to contain this resurgence by the introduction of new varieties that are resistant to all three diseases, - and to find a fungicide(s) that will economically control at least RLB, and at best, both soyabean rust and it. The challenge comes during a period of agricultural chaos in Zimbabwe and a global recession, so research funding is not as forthcoming as in the 1980s.

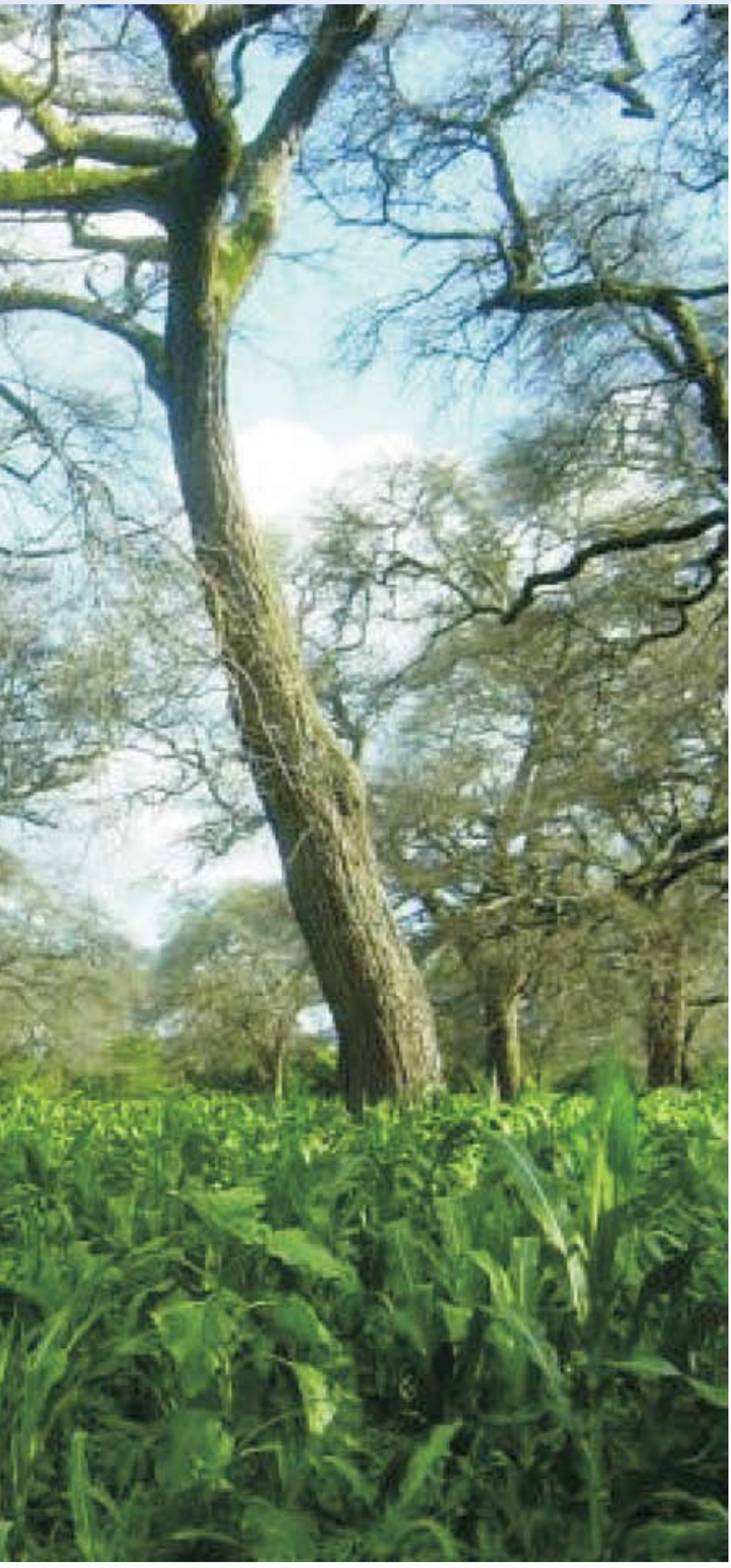
Interview

An Interview with Dennis Garrity - From Spore Magazine

Growing Crops Under Canopy

For generations, African farmers have grown crops beneath trees. Known as evergreen agriculture, this form of agroforestry offers higher yields, revenues from tree products, and the potential for extra income from carbon markets.





What is evergreen agriculture and how does it work?

Evergreen agriculture is a practice where trees are intercropped in annual food crop and livestock systems. It sustains green cover on the land throughout the year and also involves the integration of appropriate fertiliser trees into agriculture. This approach bolsters nutrient supply through nitrogen fixation and nutrient cycling, and increases direct production of food, fodder, fuel, fibre and income from products produced by the trees. Such trees also greatly enhance carbon storage above-ground and below-ground compared to conventional agriculture, thus improving opportunities for rewards in the form of agricultural carbon offsets for farmers.

Do we have proof that it works?

Yes. We have solid proof that it works because it has been used by millions of farmers for many years. There is evidence of the use of evergreen agriculture in Burkina Faso, Niger, Malawi and Zambia where farmers have successfully restored their exhausted soils with richer sources of organic nutrients, dramatically increasing their crop yields and incomes.

How are African farmers involved in evergreen agriculture?

In Niger, for example, we have evidence from satellite analysis that 5 million ha of land are covered by Faidherbia albida, an indigenous African acacia, and this has enhanced millet and sorghum production, with up to 160 trees on each hectare. I was in Malawi last year and visited a couple of women farmers who showed me maize growing under a full canopy of 70 Faidherbia albida trees in 1 ha. They explained that they had planted the trees 20 years ago and their yields were three times higher than before they planted the trees. Farmers have recognised the value of trees for generations and only recently is the scientific community realising the revolutionary importance of these trees to agriculture.

What is special about Faidherbia albida?

Faidherbia albida is already a natural component of farming systems across much of the African continent. Unlike most other trees, it sheds its nitrogen-rich leaves during the early rainy season and remains dormant throughout the crop-growing period. The leaves grow again when the dry season begins. This makes it highly

compatible with food crops because it does not compete with them for light, nutrients, or water during the growing season.

If African farmers have known about this technique for generations, why have scientists taken so long to validate it?

That is a question that has puzzled me for many years. The scientific community has had ample evidence of the value of these trees for a long time. The first research paper on this goes back to 1952 and hundreds of other papers have been published. But modern agriculturalists have a certain mindset that where you grow crops you do not grow trees. There is a need to campaign to higher levels of government, policy makers and science to accept these practices. We also need to reach out to the farmers with no trees and no knowledge of the value of the trees.

Is evergreen agriculture a solution to the impact of climate change on agriculture?

There are few practices in agriculture that dramatically increase crop yields and resilience and at the same time increase carbon sequestration. Evergreen agriculture is one such option. If carbon markets are developed by selling the carbon in the trees, crops and soil, evergreen agriculture will be one of the most attractive investments in the future for African farmers.

There is criticism that evergreen agriculture takes a long time to deliver results?

There are those who want quick fixes and short-term solutions, but the planting of fertiliser trees can provide fertiliser within a few years, lasting generations – at no cost. We have trees such as Sesbania sesban and Tephrosia candida which mature within a year and can provide the short-term benefit. Faidherbia albida takes a long time to grow but we are looking at sustainability here – the health of the soil in the long term. Fertiliser companies make a case of this because they see the trees as competition, I see this system not as competition but as complementary.

There is evidence of the use of evergreen agriculture in Burkina Faso, Niger, Malawi and Zambia where farmers have successfully restored their exhausted soils with richer sources of organic nutrients, dramatically increasing their crop yields and incomes.

Save the trees - Farmers have recognised the value of trees for generations and only recently is the scientific community realising the revolutionary importance of these trees to agriculture.

Dr Dennis Garrity

Dr Dennis Garrity, an agronomist whose career has focused on developing small-scale farming systems in the tropics, is Director-General of the World Agroforestry Centre (ICRAF). He also chairs the steering committee of Landcare International, a movement that promotes innovative solutions for natural resource management.

By Maxwell Mutema

Why it Matters and What are the Fundamentals

Introduction

Land is the most important asset of any country, both developing and developed. In the former, a high proportion of income, employment and export earnings stems from agricultural production and other land-based activities. Land issues are of crucial importance to economic and social development, growth, poverty reduction, and governance.

Globally, agriculture is expected to produce as much food in the next 25-40 years as has been produced in the last 10 000 years due to large increase in world population, most of it in Africa where agricultural systems are already struggling to provide sufficient food.

This enormous demand on agriculture is all against the backdrop of very limited suitable land on which production can be expanded. Scientific agricultural productivity increase between 1920 and 1990 was backed up by expanding area under cultivation but now in terms of cultivable land expansion the world is fiddling on the edges.

I feel, therefore, there is need to carefully examine the subject of land policy, as it is critical in addressing these challenges: increasing world food demand and declining suitable land on which to expand agricultural production.

This article mainly focuses on rural land policy, and its links to agricultural and rural development and economic growth.

Governments need to listen and engage the public and stakeholders, providing them with a platform for discussion on policy options. If a land policy is to be effective on the ground, it needs to respond and be "owned" by the many land users which it will affect.

Land Policy

Land policy must be in line with the national vision and long term economic strategies. It must achieve certain objectives relating to the security and distribution of land rights, land use and land management, and access to land, including the forms of tenure under which it is held. It must define the principles and rules governing property rights over land and the natural resources it bears as well as the legal methods of access and use, and validation of transfer of these rights. It must detail the condition under which land use and development can take place, its administration, i.e. how the rules and procedures are defined and put into practice, the means by which these rights are ratified and administered, and how information about land holdings is managed. It also must specify the structures in charge of implementing legislation, land management and arbitration of conflicts.

Land policy fundamentally influences whether land is put to its most productive use. When investors' choices are limited by the land policy of a country, land may be held primarily for its value as a secure asset, not for its value as a factor of production. Thus, land ownership may be concentrated in the hands of individuals whose principal motivation is not to utilise the land to its full economic potential. Such a result denies the rest of the citizens the opportunity to obtain land and put it to its most productive use. When the land policy of a country supports a land market system in which information is widely available, and other barriers to entry are removed, land is more likely to be sought for its productive value.

A land policy which provides clear and secure land tenure supports the transformation from traditional subsistence to modern commercial agriculture. When ownership or use right to a parcel of agricultural land is unclear or insecure, that land may be left fallow or may be worked only for immediate or short-term gain, often with adverse consequences on the productivity of the land over the long run. Significant increases in agricultural productivity of land are more likely to occur when the owners or users of land feel secure in their ability to obtain sustained benefits from investments in the land.

A market-based land tenure system has the following key characteristics:

- Transactions occur between willing buyers/lessees and willing sellers/lessors.
- Transactions occur for economic gain and not primarily for non-economic considerations which have as their purpose the establishment or maintenance of a pattern of land tenure based on social or political factors.
- Land tenure is sufficiently

secure so that arms-length transactions can occur.

o Land tenure is sufficiently secure so that land may be used as collateral for the purpose of obtaining capital.

o Entry into the market for land is unrestricted by legal or administrative barriers that artificially limit the number of buyers/lessees and sellers/lessors.

o Knowledge of the opportunity to buy or use land is widely disseminated, as is knowledge of the transaction process.

Land Policy and Land Administration

A land administration system is the set of structures and institutions which implement the land policy. It involves a range of different functions: information on rights and transfers, adjudication, and arbitration supported by systems for land survey, mapping, land information, valuation, registration of rights, recording of transactions, issue of title, and collection of fees or rents. The objective of a land administration system should be to offer effective security to the land rights on land and natural resources and to promote sustainable land management. Land administration systems must be managed by specialist formal land institutions.

In many developing countries, there is a gap between formal and local land administration systems, between the law and the practices of land administration and the operation of formal structures and procedures are often poorly understood. Given the value of land, the area of land administration provides fertile ground for corrupt practice and political patronage, whether it be in allocating rights to one user rather than another, agreeing to a change of use from farmland to building plot, or deciding in favour of a particular party in a dispute over land claims. Thus, the design of rules, structures and procedures regarding land tenure must consider how best to minimise such risks. This should be done by establishing checks and balances on how procedures are carried out, through public scrutiny and information dissemination.

Key Principles for Successful Land Policy Formulation

Participatory Approach: Public Engagement and Wide Consultations

Processes of land policy formulation are long-term and complex. The choices made today will have a long term consequences for the distribution of economic and political power, and access to economic opportunity for many years to come. Therefore, governments need to listen and engage the public and stakeholders, providing them with a platform for discussion on policy options. If a land policy is to be effective on the ground, it needs to respond and be "owned" by the many land users which it will affect.

For example, in the particular case of our country, the 99 Year Leasehold versus the Freehold (Title Deed) debate must be examined in the context of what the generality of the people of this country prefers. A brilliant land policy which might sound more political convenient and acceptable can be frustrated when people don't buy into it. A typical example is the Ujamaa Co-operative System in Tanzania. On paper it was a brilliant system but people did not buy into the idea. In Zimbabwe, a good starting point and simple test would be an honest and transparent research to find out if the people of this country prefer a 99 Year Lease or Freehold Title, without imposition or manipulation.

Harmonising Statutory Law and Practice

Success of a land policy depends on changes in practices and not on the legal texts alone. A change in legislation is not in itself sufficient to achieve the broader objects sought by many land policies.

Carefully Craft the Rules and Tools

Always, "The devil lies in the detail". Rules, tools and procedures have to be carefully discussed, designed and tested to go along with a land policy to make it work.

Dissemination of Information

Failure to disseminate information properly about the scope and content of the policy, legislation and procedures negates the whole purpose of coming up with one.

Land Policy has to include sound Land Use Planning

Land is hugely variable, whether in quality, value, location or vulnerability to degradation. Land policy needs to take such diversity into account, in terms of tailoring rules and procedures for particular settings, for example, allowing provision for change of use and incorporation of environmental principles and objectives.

Implementing Land Policies

New land policies must fit within the reality of states establishing more democratic forms of governance at national and local levels, and should offer all citizens a guarantee of their rights and ways of addressing the problems they face.

By Dr. Ross Cooper and Haitham A.A. El Doumani

Bird Louse

Fig. 1 Microscopic image of dorsal aspect of male Saemundssonia australis louse (x 100 magnification)

Birds are often infected with ectoparasites. Fishermen many be exposed to lice from birds. Opportunity is facilitated for the dispersal of louse populations via hosts that share similar ectoparasitic faunas (1). The richness of louse populations in the feathers of diving parents is reduced (2) possibly reinforcing significant horizontal transmission between bird contacts. Vertical transmission between parents and nestlings is likely less frequent (3). Indeed, physical contact between birds may contribute towards homogenizing symbiotic assemblages within populations (4). It is possible for co-speciation and host switching by lice (5). A study of host switching suggests host-parasite co-evolution facilitating spread of ectoparasites between hosts of similar sizes (6). One study demonstrated that body lice are more host specific than wing lice reinforcing the notion of co-speciation in the former (7). Host defence mechanisms including preening which re-enforced co-speciation in birds to prevent lice from switching between hosts of differing sizes (8). Additionally, the optimization of host defence and parasite evasion strategies may select parasites for site segregation (9) and isolate them to areas like the head and torso. Seabirds and lice have co-speciesised synchronously and lice have evolved at approximately five-and-a-half times the rate of seabirds (10). Eco-morphological adaptation of lice via whole-body insertion, tarsal claw use and mandible use allows effective attachment to feather barbules (11). In a study of lice on swans, mouth parts were equipped to penetrate skin: mandibles were robust and asymmetric and the maxillae had serrated inter-cutting surfaces (12). Harrison's rule ensures that the larger the host, the larger the parasite, typically evident in bird wing feathers, although there is no correlation between size of parasite and body feather (13). Other ecto-parasites like mites may damage feathers with energetic consequences (14) which may compromise chick development rather than effects on adult birds (15).

Examination of microphotographs is characteristically done on morphological characteristics of the head and genitalia and confirmed with museum specimens, e.g. a male Saemundssonia australis (Fig. 1).

Anatomical considerations of the skin in the birds is important, particularly if modified in a great variety of ways where bare, non-scaly skin appears in a continuum on the head and extends just around or beyond the eyes (18). These areas may provide some degree of protection against biting ectoparasites. The relative proportions of feathers should be noted. For example, downy barbs are slender, flexible and fuzzy, together creating vanes with a thick, fluffy texture. The barbules thereof possess long, distal portions with small outgrowths at the nodes. The prongs prevent the barbules from becoming entangled and matted, hence permitting the barbs to stay fluffy

and trapping air in the plumage for thermal insulation (18).

During bird ectoparasite research, there needs to be completed allied and detailed studies of seasonal variation, intensity of parasitism on different age and sex classes, and influences of parasite load on host physiology. Detailed drawings of species of louse to highlight taxonomic characters are essential.

Acknowledgement

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Growing Crops Without Soil

Growing plants in nutrient solutions is attracting growing interest in some ACP countries. Hydroponic vegetables are prolific and consistently reliable, and they also need less land and water. But growing soil-less crops comes at a price.

As every school child knows, plants need light, water and soil to grow. Or do they? Pupils in schools as far from each other as Guyana and Zimbabwe are learning that flowers and vegetables can thrive without any soil at all, often producing much healthier plants and bigger yields. Hydroponics (from the Greek words hydro, water, and ponos, labour) is the term given to soil-less cultivation, and it is taking off in a number of ACP countries. The technique, which involves growing plants in water laced with nutrients, or in an inert medium such as gravel or perlite, is particularly well suited to locations where land is scarce or soil is of poor quality. One of the earliest hydroponic systems was set up back in the 1930s to grow vegetables for airline passengers on Wake Island, a rocky atoll in the Pacific Ocean used as a refueling stop.

Crops grown this way – usually plants such as tomatoes, lettuce, cucumbers, herbs and

flowers – require a fraction of the space of those grown in the ground. In soil, vegetables grow a large root system to search for food and water. With hydroponics, food and water are fed directly to the roots, enabling plants to spend more energy growing the part above the surface. Because they have smaller roots, plants can be grown much closer together. In general, hydroponic gardens require about 20% of the overall space required of soil gardens for the same output. At some hydroponic plantations in the Caribbean, herb and vegetable plants are stacked on top of each other to make towers, each plant fed by pipes bearing nutrient-rich water.

Small spaces

Hydroponic systems can be highly sophisticated, with computerised nutrient delivery, or far more simple. Beds for crops grown in water can be made from locally available materials such as discarded tyres or plastic containers and soil-less substrates can be made of rice hulls and ground coconut husks. A CTA-funded hydroponics workshop held in Kiribati in 2008 explored the scope for using low-cost organic compost made from seaweed, copra mill and fish waste.

Given the use it makes of small spaces, hydroponic cultivation is especially suited to urban and peri-urban settings, with plots on roof-top gardens, balconies and in back yards. One of the chief merits of soil-less cultivation is that it produces higher yields. A 1-acre (0.4 ha) hydroponics greenhouse produces the same output as 10 acres (4 ha) of fields, according to one US study. Other advantages include little or no weeding – since plants grow in a near sterile environment – clean conditions for planting and harvesting, no hard labour for ploughing and digging, and optimum use of water, which stays in the system and can be reused.

Consistent supplies

On a commercial scale, hydroponics is often practised inside greenhouses, which regulate temperature, humidity, and carbon dioxide levels to produce the highest levels of growth and productivity. Plants grown this way have another important asset. Consistent production is assured, regardless of outside conditions such as weather. This is proving an important factor for producers in the Caribbean who are now able to guarantee constant supplies of top quality produce to tourist outlets. In Jamaica, farmers have been given training in the technique, and a hydroponic greenhouse farm in Middlesex, St Elizabeth is producing vegetables to supply some of the island's leading hotels. Yields are more than twice those of similar-sized traditional farms. At St Andrew and Manchester, hydroponic greenhouse production is growing tomatoes, lettuce and strawberries.

But in spite of the undoubted benefits, hydroponic cultivation is not without its drawbacks. Systems generally involve high investment and are therefore better suited to higher value crops than those cultivated by many ACP farmers. The process involved is technical, and people involved need to be trained in procedures such as preparing nutrient solutions and maintaining correct acidity levels. Hydroponic units require electricity or some alternative source of energy, as well as additional inputs to maintain optimum temperature. Growing soil-less crops is an interesting technique for those in a position to make the investment in time, cash and expertise. But hydroponics is not for the faint-hearted!

Food and water are fed directly to the roots, enabling plants to spend more energy growing the part above the surface.

By Ernie Flint, Ph.D., CCA, (Area Agronomist Mississippi State University Extension Service)

Glyphosate... Some Unexpected Effects!

One of my favorite professors at Mississippi State used to say that herbicides have negative effects on plants; and that they only damage some plants more than others.

Field observations of winter wheat in 2008-2009.
Left - Short-term glyphosate use (1 year). Right - Long-term glyphosate use (10 years).

Those are not his exact words; but his point was that herbicides are meant to interfere with the growth of plants, even though some plants appear to tolerate them. There may be subtle effects that will show up later in "nontarget" or crop plants. Every "selective" herbicide I can recall has shown at least some unwanted effects.

Some of these "latent" effects may be showing up in fields where glyphosate has been used. This herbicide has been used so widely that it has displaced or replaced many of the products that were used prior to its introduction. We should also recognize that the effects of glyphosate may still not be as detrimental to crops as some of the products commonly used before it was introduced. The point is that we have accepted the idea that glyphosate has no significant effect on tolerant crops. It has been accepted as "biodegradable"; or that glyphosate-tolerant plants are able to "metabolize" it into harmless byproducts. As with so many things, we have accepted what we wanted to hear without much question.

Based on information that has been trickling into the discussion over the past few years, the idea that glyphosate is an "innocent" participant is being

replaced by the suggestion that it may be complicating several processes that are involved with the growth of crops. As with any discussion about things natural and biological, there can be no real beginning or end to the story; but a few of the ideas are becoming fairly well documented. A more correct statement might be that the issue is being "debated".

Most of the discussion about glyphosate and its influence on crops appears to be related to the absorption, uptake, and movement of nutrient elements. Dr. Don Huber, at Purdue University, commented in the Fall 2007 issue of Fluid Journal that: "As little as 2.5 percent of the recommended rate of glyphosate can greatly inhibit uptake and translocation of iron and manganese"; and that "Corn yields were 10 bushels per acre higher with in-furrow gypsum if additional Zn was supplied as a seed treatment." He attributed this latter effect to evidence that calcium supplied by gypsum offsets some of the negative effects of glyphosate.

More recently, in the Spring 2010 issue of Fluid Journal, Dr. Huber described growth suppression in wheat by long term applications of glyphosate to summer crops grown in rotation on the same fields; and that crop plants became more susceptible to diseases caused by soilborne fungi such as Fusarium, Pythium, Rhizoctonia, and Phytophthora. He also commented that Glyphosate is not readily degraded in the soil and can accumulate over time with repeated applications. This last point is different from the opinions many of us have formed through the years.

A study by Zobiole and others, published in the 2010 Journal of Plant Nutrition concluded that "Increasing glyphosate rates (in Glyphosate Resistant soybeans) revealed a significant decrease in photosynthesis, nodulation, macro and micronutrient accumulation in leaf tissues, and decreases in nutrient uptake. The reduced biomass in (Glyphosate Resistant) soybeans represents additive effects from decreased photosynthesis as well as lower availability of nutrients in the tissue of glyphosate-treated plants."

Before we jump to conclusions about this, we need to apply common sense and accept that our crops have generally performed well under long term applications of glyphosate. Other studies have reached conflicting conclusions (such as Powell and others, 2008). The primary difference in results from one study to another seems to be the rates and length of time during which the product has been applied prior to evaluation, combined with applications made to the current crop.

Our eyes and yields tell us that this is likely not as big a problem as some might suggest; however it may also mean that the product needs to be monitored closer than we have in the past. There are almost certainly more factors influencing this than have been studied. As is often the case, we are learning about this product with the passage of time. More will likely be discovered about this and other products as the years go by.

The next question about glyphosate is whether it has "unexpected" effects on life forms other than plants. Since virtually all animal life is dependent upon the phothsynthetic capabilities of plants, it only follows that this question should be asked. There are some interesting findings in the literature already; but that's another story.

SOURCE: Dr. Don Huber, Purdue University

World's First Flu-Resistant GM Chickens 'Created'

UK scientists have created the world's first genetically modified chickens that do not spread bird flu.

Writing in Science journal, the team says their work demonstrates it is possible to create a variety of GM farm animals resistant to viral diseases.

The research team inserted an artificial gene into chickens; this introduces a tiny part of the bird flu virus into chicken cells.

These birds become infected but render the virus harmless to other poultry.

The team believes that the genetic modification they have introduced is harmless to the chickens and to people who might eat the birds.

Professor Helen Sang of Edinburgh University told BBC News that genetic modification is potentially a much better way of protecting against diseases than vaccination because the GM technique works even if the virus mutates.

"It will protect a whole flock from avian influenza infection. This is really exciting because bird flu is a real challenge to poultry production and if it were introduced to poultry breeding it would protect our large scale production flocks from avian inlfuenza," said Professor Sang.

Broad Protection

The researchers say that, in principle, the technique could be used to protect any farm animal from any disease. The eventual aim is to develop animals that are completely resistant to viral diseases.

Genetic modification could be an alternative to vaccination, scientists say

According to co-author Dr Laurence Tiley, from the University of Cambridge, UK: "Agricultural selective breeding has made huge improvements on productivity of many livestock - but it's reaching the point where it's now limited.

"And the GM technologies allow you to introduce novel genes that don't exist in nature but are based on our detailed knowledge of the molecular biology of viruses. We can specifically target these viruses to prevent them from replicating."

The researchers say they think the technology has the potential to boost food production and reduce costs.

"There's going to be a real problem in feeding the world as the population increases," says Professor Sang.

"As the demand for animal products increases and it's going to get increasingly expensive and we are looking at different ways to tackle that problem."

GM techniques could also have benefits for human health, according to Professor Sang. If fewer animals are carrying viruses there is a lower chance of them mutating into a form that would be deadly to humans and so create a pandemic.

Cautious Welcome

But the news received a cautious welcome from the poultry industry. Peter Bradnock of The British

Poultry Council said more research was needed to assess the long term impact on farm animals before food producers would even consider using the technology.

Even then, companies would have to assess the likely reaction from consumers: "We have to have a big debate as to whether society wants to have GM animals even for this very good potential benefit," he told BBC News.

"Your Honour, it is in my client's nature to cross the road. The defendant here was clearly trying to kill him!"

And Tim Elsdale, who is an organic farmer in East Sussex, said it was better to adopt good farming practices to avoid animals getting diseases in the first place than to create GM farm animals.

"We don't suffer much from animal diseases on this farm," he said.

"Organic methods of husbandry doesn't encourage disease if the animals are well spaced enough. They live in a natural environment and they eat normal food then a lot of diseases that are prevalent on conventional farming would not be apparent to us".

If the food and farming industry did want to use GM technology in this way in the UK, they would need to seek prior approval from the Food Standards Agency (FSA). The FSA would conduct a full detailed safety evaluation before any of this GM produce could enter the market.

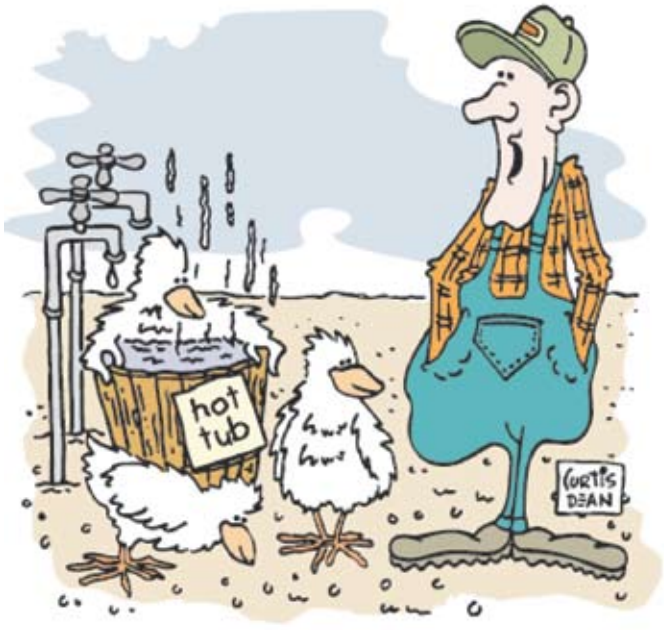
In addition to that, produce would need to be labelled so that consumers would be able to make a choice about the food they eat. If there were an application, the authorisation process could be carried out in a matter of months.

The FSA's Chief Scientist, Dr Andrew Wadge said it would be interesting to see if the debate over GM animals would go the same way as the debate over GM crops:

"I do think it's interesting that so far with GM technology it's not really a benefit for consumers and wouldn't it be interesting if we had produce that did offer a benefit?

"For example, food safety for us is about a bacteria found in chickens called Campylobacter which makes 500,000 people ill each year.

"If we could develop a GM chicken that is resistant to Campylobacter it would be very interesting indeed to see how consumers saw that technology and whether it was a technology they would be willing to embrace".



"Okay, which one of you has been laying the hard boiled eggs?"

John Deere:
Moving Toward a More Technological Age

According to dealerships in the USA, tractor giant John Deere is moving towards a more technological age with its new products aimed at making agriculture more user-friendly and efficient dealers.

"It's moving toward the ease of use and increased efficiency so farmers can get more done with less equipment," said Matt Strong of Strong and Bradley in Livingston. "John Deere is increasing producers' productivity and efficiency with their equipment."

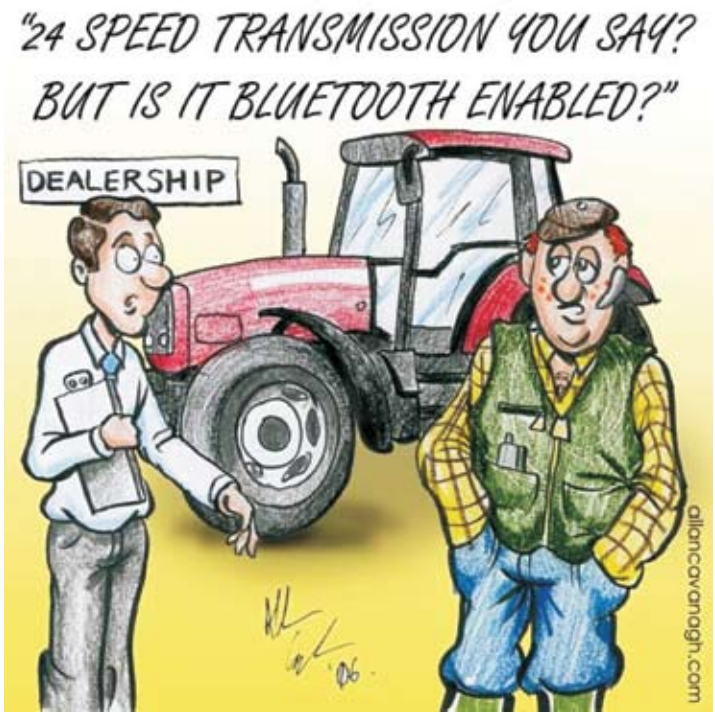
One such product that has been introduced to help producers manage their agriculture applications is John Deere's GreenStar 2 System for precision agriculture management. The GreenStar 2 system comes in two models, GSD2100 and GSD2600, which feature state-of-the-art full-colour screens that allow the operator to configure and simultaneously view multiple applications for farms, fields or other agriculture tasks, according to the John Deere company.

Compact flash cards inserted into the display records and stores large amounts of information, which can be easily transferred between the display and GreenStar Apex, the new farm management software introduced by John Deere AMS.

"With all the new features of the GreenStar 2 system, including the GSD 2100 and 2600, enhanced software modules and improved documentation and guidance systems, John Deere has taken precision

agriculture to a higher level," said Gordon Culp, John Deere AMS marketing manager of Lenexa, Kan.

Guidance systems such as the GreenStar 2 are very popular in the hay and cattle country in Montana and Wyoming. Also popular among those raising cattle and hay is John Deere's new transmission and suspension technology. Strong said the newer John Deere tractors are truly "state-of-the-art" with countless options available to customize the tractor to the producers' needs.



Popular features include triple-link front suspension, infinitely variable transmission# and hydraulically suspended cab and loader suspension kit.

With the infinitely variable transmission, the shifting is completely seamless. The operator can set it for anything they want because it is infinitely adjustable.

John Deere is going in the direction of creating more 'user-friendly' equipment. For example, John Deere's revolutionary combine with STS Bullet Rotor, uses a tapered, bullet-shaped front-end and rifled threshing element to reduce rotor load and engine power requirements. This improves the efficiency of the entire threshing and operating system of the combine. By doing this the amount of engine power required to drive the rotor is decreased by as much as 20 percent.

The STS 60 combines series include the high-torque variable feedhouse designed for use with corn heads, new engine air scoop to reduce the load on air cleaning components, StalkMaster corn head chopping system - to chop and size stalks while harvesting, and the folding and unloading auger, which folds around the back of the combine reducing the total length of the machine.

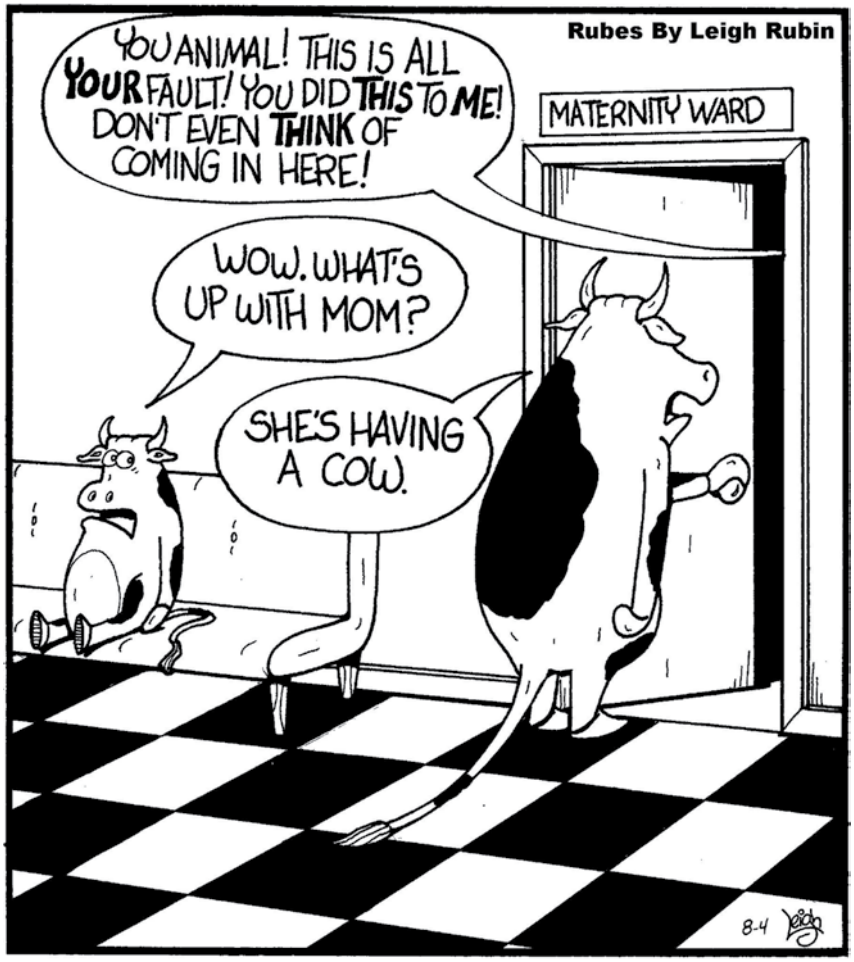
Update

By AJS Kirk - Chairman (NADF)

National Association of Dairy Farmers

STABEX '95 MARKETING PROGRAMME

The EU funded Stabex '95 Trade and Marketing Program ended on 31 December 2010. Final reports have been written and the audit required by EU is currently underway. Final results are very encouraging, showing a 700% increase in milk production, an increase in membership of the 7 dairy associations and a marked increase in the number of women in leadership positions. The 7 Centres now contribute 2% towards the National Milk Intake, which was the ultimate goal of the program.



In the meantime, NADF has been lucky to be granted a small sub-award and partnered with Land O Lakes (USAID) for the 3 months January, February and March 2011. Sue Bell and Linda Nielsen continue to work with the same seven Centres as they did with Stabex, but with the inclusion of Dowa and Chikwaka; both starting from 'ground zero'.

In January, we visited Guruve, Marirangwe, Umzingwane and Gokwe, where we conducted Committee training on Strategic Planning and SWOT Analysis, staff training on standard milk quality platform tests and inspected the demonstration plots planted last year. These silage maize and forage sorghum crops are exceptionally good, especially in Guruve, Gokwe and Umzingwane. Maize seed used was SC 608 (yellow, long season) and the sorghum Sugargraze.

Our scope of work covers training, mostly in Planning and Budgeting, Forage, AI scheme and the continuation of the Accounting Bureau System.

LABOUR AFFAIRS

An excerpt from our CFU Calling bulletin sent out for the week ending 28th January 2011:

"We have been advised by our umbrella employer's representative organisation the Agricultural Labour Bureau (ALB) of a number of key points as follows:

NEC Dues SI 101 of 2010

The ALB have instructed their lawyers to take action against the Collective Bargaining Agreement (CBA) formulated and later published as a statutory instrument 101 of 2010. This will mean the dispute over the NEC dues will be placed before the Labour Court for its determination. Until this case is finalised the ALB have advised that members continue to not remit dues to the NEC. If members are deducting NEC dues from their employees they should ensure that these amounts are kept aside and properly

accounted for and if possible deposited into special accounts or with their legal representatives.

We understand that the NEC will attempt to make reports to the Zimbabwe Republic Police of Contraventions of section of the Labour Act which is a criminal offence. However, the reasons for not adhering to the CBA of are bona fide and further this matter will be sub judicae before the Labour Count. It is therefore improper for a docket to be opened against an employer until the Labour Court determines the dispute and unlikely to be the case.

Legally Binding Nature of Collective Bargaining Agreements

The position as to wages is clear in terms of section 79 and 80 of the Labour Act CBA are only legally binding once they have been registered and published as a Statutory Instrument. The Statutory wages set are to be found in SI 12 of 2010 (US $32) and SI 155 of 2010 (US $ 50) for the General Agriculture and Agro and Horticulture sectors respectively.

It is the employer's discretion to implement an agreement that has not been registered or to implement when it is registered with back pay. BACK PAY IS YOUR DISCRETION.

Any Trade Union official, Workers committee member NEC designated Agent of Labour Officer who incites an illegal strike is guilty of a criminal offence in terms of section 109 of the Labour Act and is further personally liable for the pure economic loss you may suffer as a result of the strike.

If members have any further queries please do not hesitate to contact us. Inform yourself of your rights as employers and insist that any allegations or complaints by Trade Union officials or designated Agents are placed in writing so that they can be properly considered and responded to."

LIVESTOCK INFORMATION

We have in stock and available at our offices at present :

Animal Foods of Central Africa Technical Handbook @ US$10,00 each

Stock Registers @ US$5,00 each

Recommended Guide to Good Dairy Farming Practices @ $2.00 each

Dairy Handbooks @ US$40,00 each

Cattle Producers' Association Beef Production Manual @ US$40,00 each

Mastitis Mint @ $10.00 per bottle

Should you be interested in purchasing any of the above, please call at Commercial Farmers Union, Agriculture House and see Debbie Mylroie.

THE STABEX 95 ESSENTIAL VACCINE PROGRAMME

The main objective of the action/programme was to improve the health status of livestock in Zimbabwe by facilitating an increase in the availability of essential livestock vaccines to livestock farmers at affordable prices. To motivate farmers to participate in the programme for their benefit, consensus was reached whereby four vaccines, namely Quarter Evil, Lumpy Skin Disease, Botulism and Anthrax were offered free of charge while the remainder of the vaccines were charged at US$0,20/dose. These four diseases pose a major threat to livestock, particularly in the rural areas.

Although the programme officially started on the 01/01/2009 the first vaccinations only took place on the 18/08/2009 due to delays caused by procedural/administrative issues. This resulted in the partial loss of one vaccination period because in Zimbabwe livestock vaccinations are undertaken seasonally.

It was projected that a total of 5,700,000 doses of a composite range of vaccines would be distributed during the duration of the programme. As at 31/12/2010 a total of 4,548,199 doses,(80% of projection), had been distributed with an additional 123,439 doses still to be collected giving a grand total of 4,671,638 doses,(82% of projection). Taking into account the loss of an entire vaccination period as outlined above this is a very good result.

Cooperation between the NADF and the Department of Veterinary Field Services,(DVFS), and the Farmers' Unions improved as the programme unfolded and this resulted in significant incremental increases in the distribution of vaccines and vaccination of livestock.

A substantial number of DVFS and Farmers' Union staff (310), and farmers, (2350), were trained in preventative vaccinations of livestock as well as general information on the common diseases and the transportation, handling and administration of vaccines. Training took place in all Provinces. Many farmers are now aware of the benefits of vaccinating their livestock and have indicated that they will resuscitate vaccination programmes in the future.

Equipment such as syringes, drawdown tubes, needles, cooler boxes and ice packs were issued to all Provincial Veterinary Officers and a number

of fuel coupons were also issued to enable field officers to travel to communal dip tanks where mass vaccinations took place.

Key achievements of the Stabex 95 Essential Vaccine Programme are:

- Disease control during 2009 and 2010 with tangible results expected in 2011; resulting in lower livestock mortalities and an overall improvement in the health status of the national livestock sector.
- Reduction in livestock mortalities to enhance food security and improve availability of animals for draft power and ceremonial practises in communal areas.
- Training and educating DVFS staff, extension workers and farmers
- Motivating livestock farmers to continue to vaccinate their livestock
- Facilitating DVFS staff to fulfil their role in national disease control
- The Farmers' Unions benefited through increased membership

ACKNOWLEDGMENTS

The NADF wishes to acknowledge and thank the following for their valuable contribution to the Essential Vaccine Programme:

- The European Union for sponsoring the programme
- The Department of Veterinary Field Services for assisting with the mass vaccination
- Fivet Animal Health for assisting with the administration of the programme and providing storage facilities
- FrontLine Farming for providing a distribution outlet in Bulawayo
- Personnel employed by the three Farmers' Unions who played a key role in mobilising farmers and the distribution of vaccines.
- Coopers Zimbabwe who assisted with training seminars
- Onderstepoort Biological Products for supplying the majority of the vaccines and sponsoring their technical staff to conduct training workshops in Zimbabwe
- Pfizer Laboratories for supplying vaccines
- The NADF team whose commitment and dedication is beyond description.

Traditional Lamb Stew

Ingredients:
1 kg breast of lamb
1/2 cup sliced onion
2 cups boiling water
2 tablespoons rice
2 cups potato cubes
1 cup strained tomato
2 tablespoons butter or pork fat
salt and pepper

Directions:
Brown the onions in hot fat, cut meat in two-inch pieces, add to onions, cover with hot water, and simmer two hours. Parboil potatoes. Add rice when meat has cooked one hour. Add parboiled potatoes one half hour before serving. Add tomato ten minutes before serving. Season with salt and pepper. The tomato may be omitted and one cup of water substituted. Serve with roasted vegetables.

Handy Kitchen Tips

Here are some useful tips and hints to help when things go wrong in the kitchen!

Lumpy or Greasy Gravy

If you are really interested in having some lump free gravy, add just a pinch (no more) of salt to your water before you begin mixing the gravy. Also, if you find that your gravy is too greasy, add a pinch of baking soda to get rid of that nasty greasiness.

Fatty Stews and Soups

Sometimes fat has a way of accumulating in things like soups and stews. If you find yourself faced with a this problem, all you need to do is drop a few ice cubes into the mix. Stir everything around, and then remove the ice cubes before they melt. The fat will stick to the ice cubes, allowing you to get rid of it when you remove the ice cubes.

Soggy Lettuce

If your lettuce has turned slightly soggy while it was sitting in the refrigerator, don't worry. All you need to do to do to fix this problem is to put a little bit (no more than a few drops) of lemon juice to a bowl of cold water. Place the lettuce into the bowl and set it in the refrigerator. Let everything sit for about an hour, and then dry and serve the lettuce.

Salty Soup

If you have some salty soup, solve the problem by simply adding some sliced potatoes. Allow the potatoes to cook, and then remove them. The potatoes will draw out a lot of the salt, and help return the soup to more acceptable levels.

Wilted Vegetables

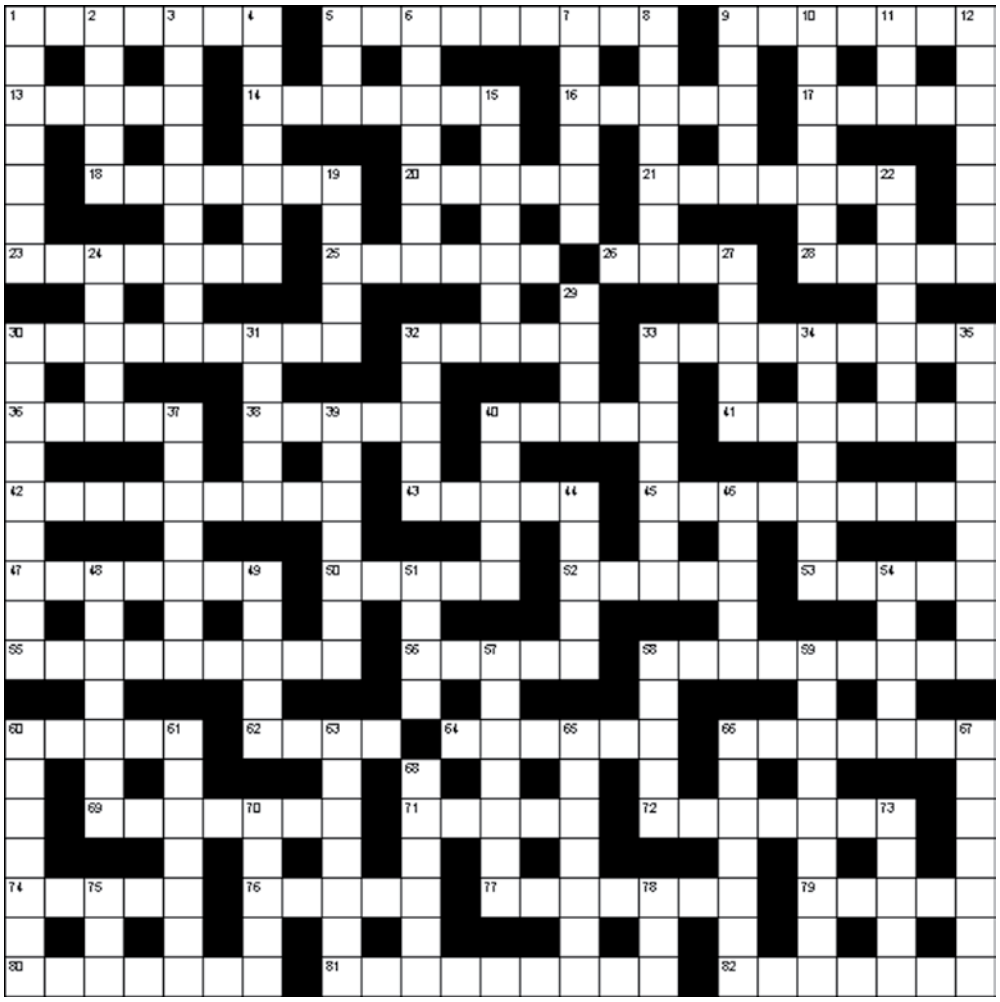
Sometimes your lettuce, cabbage, or other vegetables will wilt before you can use it. Solve this problem by removing the wilted edges from the vegetables and then sprinkle with some cold water. Wrap everything up in a paper towel and refrigerate for at least an hour to return your vegetables to normal.

Burnt Cooking Odours

No one really likes the smell of burnt food, so don't put up with it. All you really need to do to mask or eliminate the odour of burnt food is to burn (yes, burn) three teaspoons of sugar, and two of cinnamon. The sweet smell will mask the other odours, and have people thinking that you have been slaving away all day baking delicious goodies.

**If you would like to share you favourite recipes, cooking tips, or ideas for the home please e-mail:agrizimb@gmail.com

Giant Crossword

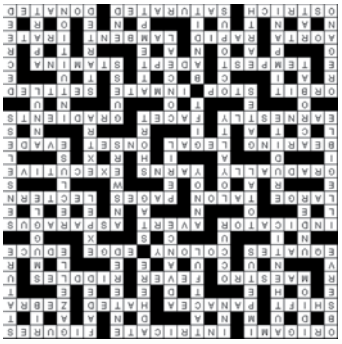


Across

1. Japanese art of paper folding (7)
5. Highly involved (9)
9. Numbers (7)
13. Move from one position to another (5)
14. Cure-all (7)
16. Despised (5)
17. African equine (5)
18. Skilled artist (7)
20. Symptom of infection (5)
21. Conundrums (7)
23. Compares (7)
25. Nest of ants (6)
26. Surface boundary (4)
28. Elicit (5)
30. Pointer (9)
32. Prevent from happening (5)
33. Edible plant shoots (9)
36. Big (5)
38. Claw (5)
40. Found in a book (5)
41. Reading desk (7)
42. Step by step (9)
43. Tales (5)
45. Administrator (9)
47. Navigational heading (7)
50. Lawful (5)
52. Beginning (5)
53. Dodge (5)
55. Sincerely (9)
56. Aspect (5)
58. Slopes (9)
60. Path of an object around another (5)
62. Halt (4)
64. Convict (6)
66. Resolved (7)
69. Storm (7)
71. Skilful (5)
72. Enduring strength and energy (7)
74. Main artery (5)
76. Quick (5)
77. Softly glowing (7)
79. Angry (5)
80. Flightless bird (7)
81. Soaked (9)
82. Gave (7)

Down

1. See (7)
2. Dialect (5)
3. Veritable (9)
4. Driving force (7)
5. Lodge (3)
6. Diplomatic (7)
7. Stick (6)
8. Went in (7)
9. Waned (5)
10. Antelope (7)
11. Curved bone (3)
12. Height (7)
15. Go forward (7)
19. Happen (5)
22. Transport illegally (7)
24. Below (5)
27. Throw out (5)
29. Male deer (4)
30. Not readable (9)
31. Tally (5)
32. Irritate (5)
33. Replies (7)
34. Hermit (7)
35. Mindless (9)
37. Learned (7)
39. Allegiance (7)
40. Danger (5)
44. Brief (5)
46. Additional (5)
48. Athletic performer (7)
49. Movable barriers (5)
51. Present (4)
54. Cancel (5)
57. Hide (7)
58. Estimate (5)
59. Hunch (9)
60. Aromatic herb (7)
61. Large percussion instrument (7)
63. Aquatic creature (7)
65. Try (7)
66. Began (7)
67. Decided with authority (7)
68. Armed thief (6)
70. Planet (5)
73. Separate (5)
75. Rodent (3)
78. Conclusion (3)



Kids Colour In

Farming Humour

The Farmer And The Government Man

A cocky Ministry of Agriculture representative stopped at a farm and talked with the old farmer, telling him, "I need to inspect your farm."

The old farmer said Ja, okay, but don't go in that field right over there."

The representative went red in the face and lectured, "Sir, I have the authority of the Government behind me. See this ID card? It means I am allowed to go wherever I wish on any agricultural land - no questions asked or answered. Do you understand!?"

The farmer nodded politely and went about his chores. Later, he heard loud screams and saw the representative running for the fence. Close behind was the farmer's huge prize bull. The bull was madder than a nest full of hornets, and was gaining on the government man at every step.

"Help! HELP!" the representative screamed.

The old farmer called out, "Show him your ID card!"

Price of Toilet Paper

A farmer wrote to a giant mail order company and asked for the price of their toilet paper.

The company wrote back and told him to look on page #287.

He wrote another letter back, "If I had your catalog, I wouldn't need your toilet paper."

Dressed Chicken

A salesman is talking to a farmer when he looks over and sees a rooster wearing pants, a shirt, and suspenders.

He says, "What on earth is that all about?"

The farmer says, "We had a fire in the chicken coop two months ago and all his feathers got singed off, so the wife made him some clothes to keep him warm."

"Okay, but that was two months ago. Why does he still wear them?"

The farmer replied, "Ja, well, there's nothing funnier than watching him try to hold down a hen with one foot and get his pants down with the other!"

Artificial Insemination

One morning, before the farmer went out to the field, he said, "Honey, the artificial insemination man is coming over this morning to impregnate one of the cows. I've a hammered nail in above the stall. Please show him where it is."

When the man arrived, Nancy led him down the row of stalls until she saw the nail. She pointed to the stall and the man remarked, "Are you sure?"

"Ja, it's the one with the nail," said Nancy.

"What's the nail for?" inquired the man.

"Well, I guess it's there for you to hang your pants on."

The Perfect Woman

An extraordinarily handsome man decided he had the God-given responsibility to marry the perfect woman, so they could produce children beyond comparison. With that he began his mission to find the perfect woman. After a diligent, but fruitless, search up and down the east coast, he started to head west. Shortly thereafter he met a farmer who had three stunning, gorgeous daughters that positively took his breath away. So he explained his mission to the farmer, asking for permission to marry one of them.

The farmer simply replied, "They're all lookin' to get married, so you came to the right place. Look them over and select the one you want."

The man dated the first daughter.

The next day the farmer asked for the man's opinion.

"Well" said the man, "She's just a weeeeee bit, not that you can hardly notice, pigeon-toed."

The farmer nodded and suggested the man date one of the other girls.

The man went out with the second daughter.

The next day, the farmer again asked how things went. "Well," the man replied, "She's just a weeeee bit, not that you can hardly tell, cross-eyed.

The farmer nodded and suggested he date the third girl to see if things might be better.

The morning after the man dated the third daughter, the man rushed in exclaiming, "She's perfect, just perfect! She's the one I want to marry!"

They were married right away. Months later, the had a baby. When the man visited nursery, he was horrified. The baby was the ugliest, most pathetic human you can imagine. He rushed to his father-in-law asking how such a thing could happen considering the parents.

"Well," explained the farmer, "She was just a weeeee bit, not that you could hardly tell, pregnant, when you met her.

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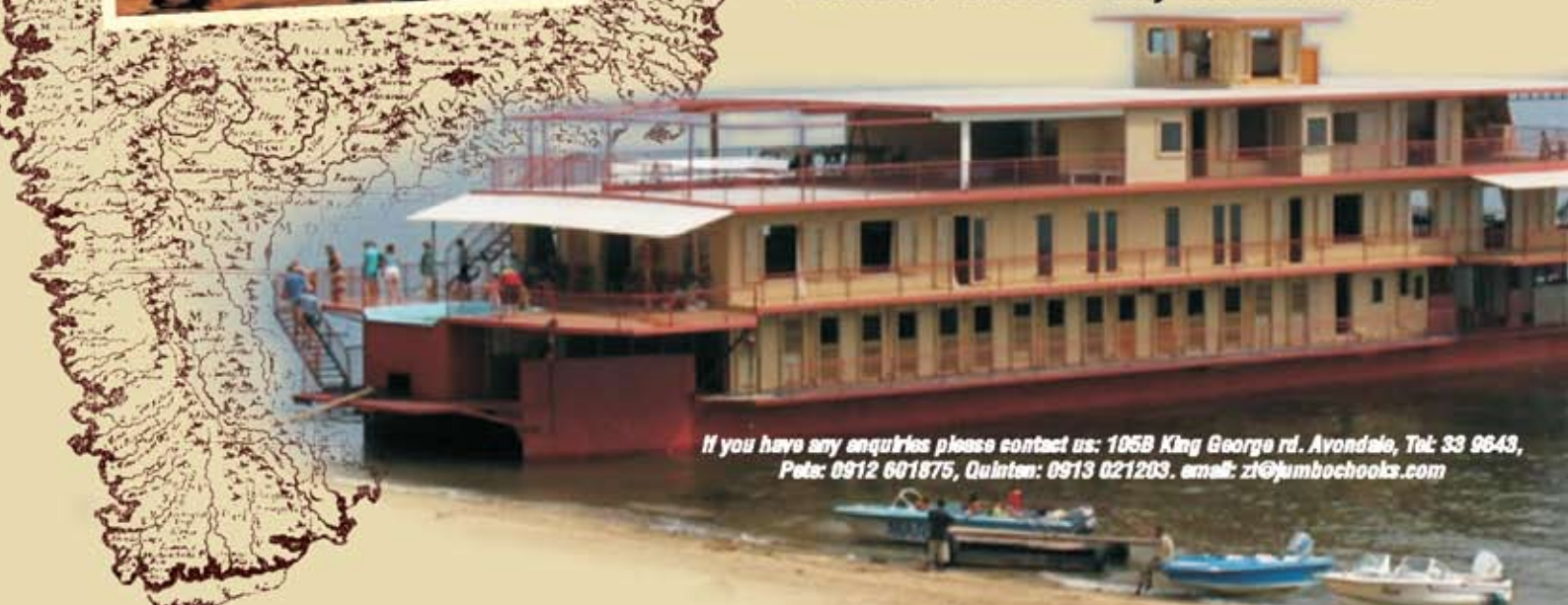

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