

Comments on: Local feed resources and indigenous breeds... by L. Rodriguez J. and T.R. Preston

From: Frands Dolberg <ifad@zamnet.zm>

Comments on local Feed Resources and Indigenous Breeds

Are there more examples of where indigenous breeds are better adapted to local feed resources?

Yes. Perhaps it is not only better feed resources, but a combination of many other factors like disease, management etc.

Examples coming to mind are in the North Western Province of Zambia, where local poultry, goats and cattle have proved to survive much better than exotic species, while introduction of Guinea Fowl is promising as the bird is resistance to classical killers like Newcastle disease.

In ongoing editing of papers presented at a meeting in April of this year, I noticed examples in ducks from the Mekong Delta of Vietnam and goats from Tanzania.

Are there further models of local crop-livestock-energy systems adapted to local conditions?

There are several sites around Ho Chi Minh City and the Mekong Delta where adoption rates have been good, while - subsequently problems developed in the site Rodriguez and Preston report from, which it would good they explain.

Does the approach described constitute progress in research and extension of sustainable systems?

Certainly. In the parallel Farming Systems Conference, there is today a comment by Janet Riley in which she quotes results of a survey she has conducted. Of 370 scientists interviewed, twice as many reported to work only on-station as primarily with farmers.

It is not "either - or" but getting priorities right that is important. We are into the same discussion in an ongoing evaluation I presently participate in here in Zambia: research does not result in fruitful and applicable results without the on-farm dimension.

While I am at it: Your introductory paper was biased towards natural science to a degree that may not be fruitful. It is OK that farmers in Tanzania use 200 different trees, but have they got access to them to a degree that they can really built their animal production on exploiting them?

The FAO Forest People and Trees Programme earlier this year sponsored a very lively e-conference with more than 400 participants ON CONFLICT MANAGEMENT: Addressing Natural Resource Conflicts Through Community Forestry.

I believe it will be fruitful to invite somebody to review the conclusions of that conference as an input to the present as it will be naive to assume that trees can be used for livestock feeding to a degree that they can really carry improved levels of production just because they are there.

A dimension that needs to be addressed in this conference is the institutional dimension. Few farmers have the elements that are required to do "integrated farming" and exchanges take place via the labour market in barter, etc. And some are just landless to a degree that they have to procure all resources one way or another from outside the unit of production. These dimensions need to be included in our discussion.

Finally, I have suggested, that you inform the participants of the parallel farming systems conference, which I hope you will do as we have to be careful not to apply a too narrow view on what is on the agenda in this conference.

Frands Dolberg

**From: "Speedy, Andrew (AGAP)" <Andrew.Speedy@fao.org>
Reply to Comments**

Frands Dolberg:

A good point about resistance of indigenous breeds to disease. But I would stress that we need some more documentation on performance of indigenous breeds. Can you or anyone point to some references?? We are happy to seek them out and distribute abstracts for all the people. We have the FAO library at our disposal.

Can we get access to the information on Vietnamese ducks and Tanzanian goats. Perhaps the authors of the workshop papers would like to contribute here.

Again, you cite examples of local systems in Vietnam. But can we have more data and information?? Our Vietnamese colleagues are connected via the server in HCMC so perhaps they could add some details.

I suspect that much of the work on local systems is not reported but there is a chance to do this here. Janet Riley's survey is worrying. We need to know about environmental interactions, not just about results on one station. Again a plea for more data. I suspect in many on-farm trials, live weight gains are lower and people do not report them but they may be more economic and more sustainable in the local context.

I make no apologies for the bias towards natural science. Systems must first be sustainable in terms of soil fertility and maintenance of biomass. We paid attention to social, economic and market aspects. On the Tanzanian trees: the difference with many of the systems we are concerned with are that they are using feed resources in confinement. Problems in E Africa often arise through extensive use of common resources which leads to overgrazing and removal of the trees. Can ANYONE cite examples of sustainable grazing/browsing systems (where there is high population pressure)??? That is a serious question!

More comments on forage trees later. We have the FAO Workshop on Fodder Trees and will make this available to participants. It is a Windows Help File.

I am not sure I agree with your point about institutional dimensions. Institutions have singularly failed! And farmers often innovate better than

institutions, especially lead farmers. We will have a paper later about Tiberio, an innovative small farmer in Colombia. Let us not get into the jargon which is being used in various e-mail conferences. Let us have results and data !!!

Andrew Speedy, Co-moderator

From Borin Khieu <borin@forum.org.kh>

Comments on Local Feed Resources and Indigenous Breeds

Are there more examples of where indigenous breeds are better adapted to local feed resources?

Yes, I think there are many indigenous animals in the tropics that can better utilize local feed resources and it is very important to include the acceptability of these animals in the local markets than the exotic breeds. As an example in 1993-1994, broiler was the major poultry meat production to meet the requirement of UN peace keeping forces and civil (UNTAC). But after that period, the price of meat (broiler) dropped down drastically. While the local chicken is always maintained.

Regarding to cattle, there are three common breeds in Cambodia (Hariana, Brahman and indigenous cattle). Hariana was introduced into Cambodia from India more than 30 years before, but it is not widely spread over the country it is only concentrated along the Mekong river where green forages are found around the year. The indigenous cows are found in many places in the country. The indigenous cattle is smaller than Hariana and Brahman but it can perform work (ploughing) better than the 2 introduced breeds and is more resistant to diseases and poor local feed quality especially in the dry season when rice straw is the only feed commonly available.

Are there further models of local crop-livestock-energy systems adapted to local conditions?

It is important to point out that the model is adapted successfully in the areas where the density of human population is high such as in the East and Southern parts of Cambodia, the areas around Ho Chi Minh City and

Mekong Delta.

The model crop-livestock-energy (biodigester) systems works best in Cambodia with the farmers for whom most of the daily income comes from vegetable garden, because they give more emphasis on the value of the slurry from the biodigester. The model is modified a little in Cambodia where the human waste (latrine) is included in the systems. The impact of the models is regarding the four components crop-livestock-human waste-energy.

From: Frands Dolberg <ifad@zamnet.zm>

Further comments

1. To add to Borin's arguments. An experienced expatriate - as far as poultry in Africa is concerned - mentioned yesterday cases parallel to Borin's. As long as there was a market, initiatives to improve poultry worked, but all tended to fall back on the traditional system, once the market collapsed. As usual the experience is not written up.
2. To Andrew: Performance of indigenous breeds: Livestock Research for Rural Development Vol 4.3: 65-69 and 5.2: 39-41 with regard to poultry. Also for poultry there is Taddelle Dessie's recent work from Ethiopia (understand we will get a paper from him).

On Vietnamese ducks, I had work by Mr. Xuan Men Bui, Cantho Univ in mind and on goats it was Dr. Georg C. Kifaro c/o:
svsarwatt@hnettan.gn.apc.org

I had in mind. Dr. Poul Henning Petersen of the Danish Agric Univ (php@kvl.dk) is involved in a research project on local goats in East Africa.

"Again, you cite examples of localsystems in Vietnam. But can we have more data and information? Our Vietnamese colleagues are connected via the server in HCMC so perhaps they could add some details."

Mr. Xuan An Bui (an@sarec.ifs.plants@ox.ac.uk) can add some with regard to the biodigester and a Danish student Mette Ide Lauridsen (ide@ps.aau.dk) has just completed a comparative evaluation of different sites in Vietnam. Mr. Xuan An Bui and Lylían Rodriguez have just completed an evaluation of the technology in Bangladesh.

"I am not sure I agree with your point about institutional dimensions. Institutions have singularly failed!"

NGOs are also institutions and so are farmer agreements on regulations of exploitation of trees! Institutions are not only the "modern" ones.

" Let us not get into the jargon which is being used in various e-mdi conferences. Let us have results and data !!!"

I think I understand your point, but not so sure I agree. Too simple and perhaps self-righteous.

Frands Dolberg

**From Rene Sansoucy and Christophe Dalibard
Comments on Indigenous Livestock breeds and Local Feed Resources:**

One of the most striking examples of the relation between these two factors probably comes from Haiti. In the early 80's the whole pig population had to be slaughtered because of an epidemic of African Swine Fever. After some years and with the assistance of some donor countries and of International Organizations, it was decided to reintroduce pigs using exotic "improved" breeds and incentives were provided for feeding them with concentrate feeds.

The problem is that Haitian small farmers were not used to this type of animal and, more importantly, they could not afford to buy the concentrates. Interestingly enough, after a few more years, most of the "improved" pigs had disappeared or had reverted to a type close to the former local pigs (known as "porc planche" because they were very thin).

In the meantime, another type of pig was introduced. It consisted of crossbred Caribbean Creole x French x Chinese breeds which was closer to the former local breed. It was more easily adopted by small farmers who have nothing else to feed their pigs besides the kitchen left-overs.

Alfredo Mena and his Haitian colleagues could *indeed* elaborate on this topic.

Rene Sansoucy Christophe Dalibard

**From Lylian Rodriguez <lylian@sarec.ifs.plants@ox.ac.uk>
Comments on second paper**

1. Regarding Frands Dolberg's comments on the second paper:

"Are there further models of local crop-livestock-energy systems adapted to local conditions? There are several sites around Ho Ch Minh City and the Mekong Delta where adoption rates have been good, while - subsequently problems developed in the site Rodriguez and Preston report from, which it would good they explain"

Thanks Frands for asking us to go into more detail about it. Yes, models of crop-livestock-energy systems - specifically the plastic biodigester - have different impacts in different environmental and socio-economic conditions. But one of the main aspects is how the technology is introduced in an area, and even more important the technicians' attitudes. We have good examples of both successes and failures in Colombia, in Vietnam and in Bangladesh but I won't go into more detail because there will be a specific section in this conference where we'll have the opportunity to go deeply in this subject.

"Does the approach described constitute progress in research and extension of sustainable systems? Certainly. In the parallel Farming Systems Conference, there is today a comment by Janet Riley in which she quotes results of a survey she has conducted. Of 370 scientists interviewed, twice as many reported to work only on-station & primarily with farmers."

On-farm research, or much better the "participatory learning process" (Pretty, 1995b), is the starting point for a clear understanding of the situation and to define research priorities, but it is not that simple and there are many interacting aspects such as:

- Human factors of the outsiders and the target group: culture, communication and attitude are essential factors that can stop or make the process work.
- Environmental factors such as rainfall distribution, temperature, storms and floods will affect the results and lead some scientists to decline undertaking "on-farm" research, but they will then miss the reality.

- Technical aspects such as: communication with other scientists working in the same way, facilities to get relevant information/references and more specific aspects such as laboratory facilities that are a constraint in developing countries. Knowledge of their existence may lead the researchers to allocate them a higher priority than they deserve in order to obtain reliable data. But the other side of the coin is, what is the meaning of reliable data produced out of context?
- Economic resources such as access to adequate credit which is also one of the main constraints because it is not available and the knowledge (Hashemi, 1996) about it is very weak in both outsiders and in the target groups, contributing to the complexity of a solution.
- Feed resources (availability, quality, prices)
- Animals (health conditions, breeds, age)
- Water (quality, availability), for instance for biodigesters water is an important resource.
- Soil (type, fertility)

These aspects interact both positively or negatively in the process. However, experience leads us to conclude that these issues are best addressed within a framework of 'Farmers First' (Chambers) and learning approaches (Dolberg), where the research starts in the villages and the station and the laboratories play referral and consultancy roles.

"Finally, I have suggested, that you inform the participants of the parallel farming systems conference, which I hope you will do as we have to be careful not to apply a too narrow view on what is on the agenda in this conference"

It could be interesting for us to know about this conference.

Lylian Rodriguez

From Jean S. ZOUNDI <zoundi@burkina.coraf.bf>

Comments on Local feed resources and indigenous breeds

(comments sent in French and summarized in English by the Conference Coordinators)

Are there further models of local crop-livestock-energy adapted to local conditions ?

Factors such as population pressure, availability of resources, objective of production and socio-economic conditions are essential considerations when choosing among available technical options for mixed farming systems. In areas with very high population pressure, where soil fertility has decreased a lot, as is the case on the central plateau of Burkina Faso, small livestock such as poultry and small ruminants play a major role as sources of income, for recycling of crop residues and production of manure (the only available fertilizer in these areas), and as agricultural risk insurance. In areas under lower population pressure, livestock are still important, especially cattle.

Are there further examples of participatory development which have led to the development of such systems?

10 years of field research shows that producers' participation is a long term process which requires appropriate mechanisms when initiated and for sustaining it.

Does the approach described constitute progress in research at extension of sustainable systems ?

The approach described is original and very fruitful. According to our experience, the approach should concentrate on the beneficiaries' needs and priorities, the assessment of local opportunities for production and the development of mechanisms (benefiting from farmers' expertise) for identifying solutions that optimize resources locally available.

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References

- Sawadogo L.L., Zoundi S.J., Nianogo A.J., 1994. Quelques caractéristiques du milieu ruminal d'ovins djallonké alimentés sur parcours naturels: Incidence d'une complémentation azotée sur les niveaux de N-NH₃ et le pH. *Revue AISA (Cote d'Ivoire)*
- Zoundi S.J., Sawadogo L.L., Nianogo A.J., 1994. Croissance compensatrice d'ovins alimentés sur parcours naturels: analyse des gains de poids vif et des caractéristiques de la carcasse. *Rev. Res.Amelior.Prod.Agr.Milieu Aride*, 7:179-195.

From Saadullah <saad@drik.bgd.toolnet.org>

Comments on Local Feed Resources and Indigenous Breeds

Where indigenous animals are better adapted?

Yes, I agree that the local animal are better adapted and also are more acceptable to the local market:

To understand these points, first we must realize the value of livestock-keeping in developing countries. For example livestock is valued for one or several of the following traits: capital, credit, traction, milk, meat, hides and skins, fuel and fertilizer. The real need is to understand the basic principles of the livestock production process, to identify the major constraints within the different existing systems and to demonstrate the economic value of appropriate technologies based on the use of local resources.

In fact the farmers possess a large amount of information that can help to increase the productivity without resorting to new technologies and advice from technical experts who have little understanding of local conditions. It has been observed in many cases that the indigenous technology is more sustainable and appropriate to solve the location-specific problems in many developing countries. These adopted technologies are not based on research, but on careful observations and experience from farm family, parents and friends for generation to generation.

The farmer wants an animal that utilizes crop and homestead wastes, improves his farm income and is multi-purpose. For obvious reasons, the local indigenous animal serves these purposes. In Bangladesh, cross breeding (without any definite programme) has continued for more than

three decades. Unfortunately one can hardly find cross-bred or exotic animals in the small farms or in the village cattle market, except in few governmental farms. As regards feeding, they have several indigenous technologies which demand improvement under local conditions. It has also been shown by several workers in Bangladesh that the indigenous animals are more efficient in utilizing local feed resources. I am citing a small table which agrees with the farmer's economic concept to improve his farm income by raising local animals. I think Mr. Frands Dolberg can give more information.

1. Bangladeshi indigenous cattle (Ref: Saadullah 1984)

Diets on dry matter basis

Feed : 92% rice straw

Live weight gain per day (g) : 203

Feed conversion (kg DM/kg LW): 9

Remarks: they are also good for traction, transport, etc.

2. Steers USA (ref : Lesoing et al 1981))

Diet on Dry matter basis: 78% straw

Live weight gain per day (g): 650

Feed conversion (kg DM/kg LW): 15

3. Hereford X Angus (Garret et al 1979)

Diet on Dry matter basis: 72% straw

Daily live weight gain (g): 594

Feed conversion ratio : 18

The results will be judged by the farmers. Feeding systems utilizing crop residues are based on:

i) Socio- economic conditions which determine the level of input for production;

ii) Agro-ecosystem which determines production from natural ecosystems.

It is necessary to analyze the available indigenous (traditional) and new technologies carefully before recommending adoption by the farmers. It is also important to refine or modify them according to the need of the farmers, keeping in view the resources available to them.

Saadullah

From E. R. Orskov <ero@rri.sari.ac.uk>

Comments on indigenous breeds

On the question of indigenous animals being better adapted to prevailing climate and feed resources there is a great deal of information both with chickens, cattle, sheep and goats. Many years ago we observed that the small cattle in Bangladesh (150-200 kg mature weight) could eat almost as much straw as Holstein heifers weighing 400 kg. The gut volume of the cattle in Bangladesh was 30% or more of live weight while it was no more than 20% in the Holstein cattle. So-called exotic cattle are being selected against gut volume as a high killing-out percentage is considered positive in selection indices. No wonder they fail when concentrate is scarce or non existent! Yet they are called "upgraded".

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From Brian Ogle <Brian.Ogle@huv.slu.se>

Comments on indigenous breeds

In response to Andrew's request for hard data on the performance of indigenous breeds under smallholder management and feeding conditions, here are a few examples from SAREC supported studies:

1. Tam Hoang chickens, Tuyen Quang province, North Vietnam

This is an improved "indigenous" (first question - how do you define indigenous ? most "local" breeds were introduced from outside at some point in time, in some cases quite recently) breed introduced to Vietnam recently from neighbouring S.China, and currently being distributed to Women's Union groups by the National Institute of Animal Husbandry, Hanoi, and evaluated (by Do Viet Minh) in improved village level scavenging systems. Some comparisons have been made with a Rhode Island Red cross (Rhode-Ri). Farmers were not interested in supplementing their local birds.

	Annual egg production (hen housed average)	
	Tam Hoang	Rhode-Ri
Scavenging only (SO)	77	81
S + 30g/day soybean meal (SBM)	117	159
S + 30g/day maize meal (MM)	111	83(?)
S + 15g/day MM + 15g/day SBM	144	-
Mortality, %	3.4	5.0

The birds were vaccinated against Newcastle disease, confined at night, and had about 15 sq m /head of scavenging area (they were confined in large gardens). Local birds produce around 40-50 eggs per hen annually (SO). The reason for the lack of data for protein + energy supplementation of the Rhode-Ri breed is that few families were interested in keeping them, in spite of their higher production - reasons given being "they are not so good at scavenging, and need to be given more feed", "the Tam Hoang hatch their own eggs" and not least that "Rhode-Ri eggs sell for only around 800 VDong each, compared to 1200 Dong for a smaller Tam Hoang egg" (!) (1US\$=11,000 Dong). Also male Tam Hoangs command a premium price on slaughter - the meat being considered superior to that of local and exotic breeds. A success story then for a local-ish breed, demonstrably superior to both the unimproved local type and an exotic cross.

Supplementation of indigenous scavenging hens (again with locally produced feeds) in a rather more hostile environment in the central highlands of Ethiopia (work by Tadelle Dessie - I was waiting for some comment from him, but e-mail contact seems to be a problem at the moment) showed similar results - 48 eggs per hen per year with scavenging only, increasing to 78 with supplementation with noug cake, 96 with a maize meal supplement, and 114 eggs with both the protein and energy supplements - indicating that energy rather than protein deficiency is the problem (the opposite was found in Tuyen Quang). All previous attempts to introduce exotic breeds into the area through village cockerel schemes had failed due to their susceptibility to disease and parasites - and not least predators, (eg. white feathered birds are easily spotted by birds of prey, and exotics are less adept at hiding) and their poor ability

to scavenge.

So, in the case of *Gallus domesticus*, where even exotics should be well adapted to tropical climates, indigenous breeds have considerable advantages in scavenger based systems, but their productivity can be improved by supplementation with locally produced feeds, and also by selective breeding (the Tam Hoang has been improved, without apparently losing any of its advantages in village systems). The higher levels of production shown to be possible also require improved management, eg. in the form of provision of water, night shelter and vaccination (when available) - which farmers are prepared to provide, although previously local hens were not considered to be worth the extra investments.

Where other species are concerned the situation is more complicated, and one of the common problems seems to be that cross breeds often perform significantly better than indigenous breeds under village conditions, even with only fairly modest improvements in housing, management and feeding, which reduces the incentives in keeping pure indigenous breeds.

Even though crossbred cows suffer from heat stress in certain environments, this has not been a problem in the cases outlined below.

2. Smallholder dairy confinement systems in Tanzania.

2.1. Stall-fed dairy cows, (HADO project)

Extensive grazing of indigenous goats and cattle (mainly Tanzanian Shorthorn Zebus (TSZ), giving around 0.5L of milk per day but also performing other - eg.socio-economic, functions) have been banned from large areas of semi-arid central Tanzania due to erosion problems. Improved dairy cows kept in confinement systems were introduced, but due to problems in obtaining sufficient numbers of improved animals farmers were allowed to bring in TSZ cows. Under similar conditions of (simple) housing, management and feeding (basal feed of cut grasses and weeds, sugar cane tops, legume tree leaves and pods, maize/sorghum stover and pigeon pea vines and small amounts of locally produced maize bran and sunflower seed cake), mean daily milk yields were (n=25) 8.7 kg for Tanga crosses (50 - 75% Holstein or Ayrshire/Jersey x local TSZ)

and (n =21) 2.5 kg for the TSZ. Lactation lengths were also longer (377 vs 270 days) for the crosses, and mortality of cows and calves over a period of several years virtually zero. Farmers cross their TSZ cows with F1 bulls, and will eventually end up with an animal with around 50% exotic blood (information provided by Tekie Gebregziabher). Although numbers of TSZ cows are high enough at the moment, similar situations in other countries are resulting in the disappearance of indigenous breeds (eg.the Sahiwal in Pakistan).

2.2 Dual purpose improved (crossbred) goats

Poorer farmers in the drier HADO areas either were unable to afford or had insufficient land to support a confined cow. They were also unwilling to keep indigenous goats in confinement, but were persuaded to try stall-fed crossbred (Anglonubian x "blended") dual purpose goats. Mean milk yield on local feeds (cut grass, cane tops, leaves and pods and 0.5 kg /day of a mixture of maize bran and sunflower seed cake), was over 0.6 kg /day, and the male kids could be sold for breeding or meat at very high prices (information from Ezekiel Goromela).

3. Mong Cai pigs

Lylian Rodriguez described some of the admirable characteristics of this breed, but I don't think she mentioned that due to its extremely low mature body weight and high carcass fat it is no longer very attractive as a meat animal, even in most rural markets. However, due to its excellent prolificacy and mothering abilities (and low maintenance requirements, easily met in pregnancy by forage (eg duckweed) based diets) it is normally crossed (using AI) with the Yorkshire or Landrace, the offspring growing well (450g/day) eg on low protein cassava root silage diets under village conditions (data presented by Nguyen Thi Loc) - and producing a reasonably lean carcass. In spite of the advantages of the sow in such crossing programmes the breed has virtually disappeared from South Vietnam (and numbers are falling in the North), as it is obviously not economically attractive to rear pure Mong Cais.

The question then is how to conserve these indigenous breeds and their valuable characteristics in the face of the undoubted (in most (?) cases)

economic advantages of crossbreeds, even under village conditions?

PS. I assume Bui Xuan Men will send in some information on local vs exotic ducks in the Mekong Delta?

Brian Ogle, Dept. of Animal Nutrition and Management, Box 7024 SLU, 750 07, Uppsala.

From Rena Perez <71055.111@compuserve.com>

Comments on local feed resources

In Cuba, as a protein supplement for cane juice-based diets, farmers are beginning to use 8-9 week-old soybean forage. To get around problems associated with the trypsin inhibitor in the whole bean, they simply plant a 7-row plot of soybeans every week! After harvesting plot 8/9, it is simply replanted, which means that in a very small area a source of protein is constantly available. An *in vitro* nitrogen digestibility (pigs) gave 67%, quite unbelievable for most forages. Perhaps, soybean forage, rather than the less user-friendly whole soybean, might provide needed protein for pigs, hens, ducks and rabbits, and in the tropics which is where the authors state the "soybean is not well adapted" ???

Rena Perez

From Robert H. Faust <drfist@ilhawaii.net>

Comments on research

My work is done on my farm and farms of my clients here in Hawaii. I have made some major breakthroughs in terms of reducing fallow for milpa (slash and burn), by planting *Sesbania sesban* at last cultivation of a row crop and then once established, bring in the St. Croix hair sheep. To feed on both the living mulch used for the soil improvement, in my case *Desmodium* sp. in the wet season and slash forage from *S. sesban* in the dry season. The end result is a high quality meat animal. The St. Croix is originally from Africa and was brought over to the Virgin

Islands 400 years ago. We now have more in Hawaii than in St. Croix. See my web page for details about these sheep. At any event I believe that there are many solutions to these problems, I have them, the trick is getting farmers to do it, researchers just want to keep the research going, not really solve our problems. When farmers or applied researchers come up with something, they get no support or respect for actually solving the problems. As a research agronomist, entomologist and agroecologist, I was employed by industry to solve problems, develop products, etc. I am sure these comments will start some discussion. By the way, daily observation makes it clear that here in the sub-tropics, grass, coffee, and a number of other crops do best in shade, this is partially due to ultraviolet saturation in excess of the plants need, shade actually provides better growth and possible nutrition. Look forward to comment.

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From Francisco A. Moog <famoog@globe.com.ph>

Comments on Rena Perez' comments on local feed resources

I am pleased to hear from Rena that soybean forage is being used in Cuba. I believe this would be more relevant than whole soybean in some areas. Apart from the advantages Rena has pointed out, considering the length of time (110 days) to grow the crop for beans there could be at least be 2 cropping cycles for forage soybean. In addition, there will be no crop failure at all, we can obtain forage harvest though lower yields when adverse conditions (like drought) occur. Her comments gave us an idea. I showed it to one of my staff, Felix Valenzuela. We agreed we will try it for pigs. I look forward that Rena will provide us more information to guide us in our future undertakings.

*Francisco A. Moog Bureau of Animal Industry, Queson City, Manil
Philippines*

From A.D. Salman <FAO-IRQ@field.fao.org>

Comments on Indigenous breeds and feeding

I would like to make a comment on the question of indigenous animals being better adapted to prevailing climate and feed resources. During summer in Iraq, Awassi sheep depend mainly on utilization of crop residues (wheat and barley) by stubble grazing which coincide with mating season when ewes come to estrus due to improvement in their body condition. This type of feeding lasted from June-October.

The farmers' practice is that no supplement is given during this time of the year, because they consider that stubble grazing is a natural flushing for their animals.

A.d. Salman, Ipa Agric Research Center, Baghdad, Iraq P.o. Box 39094

Note from the moderators: this is especially the case when stubble grazing is done just after harvest and fallen grain is present on the ground in significant quantities.

From Rena Perez <71055.111@compuserve.com>

Comments on Rodriguez/Preston paper

One argument related to the inefficient use of *Lemna* by pigs in Vietnam was because the breed used in the experimental work was an "exotic" breed, I believe, Large White. Interestingly, Becerra et al (1990) in LRRD showed that *Azolla*, similar but maybe even nutritionally inferior to *Lemna*, could be used to provide fattening pigs some 30% of the protein found in soymeal. The results were: 568 g/d when fed 11 kg cane juice, 350 as opposed to 500 g protein supplement, and 5.2 kg *Azolla* (control 540 g/d). The question is: weren't the Colombia pigs, also, more or less, "exotic" pigs?

The second comment is: when the United States and China re-established diplomatic relations, Chinese sows were taken to the US, via France for several years, for purposes of crossbreeding. The reason was that the Chinese sows produced an average litter size of 18 live piglets. Obviously, there is something in Asian swine genetics other than the "low nutrient density" of the average diet.

From Stephen Swan <swans@wave.co.nz>

Comments on Indigenous breeds of poultry

I was in Bangladesh in July '96 to see how Hans Askov Jensen (with BRAC and the DLS) was getting on with the SLDP Danida/IFAD poultry project. I worked on the same "project subject" from 1980-87 with FAO/UNDP assistance. We both came independently to a conclusion about supplementary feeding of scavenger poultry. This was based on the fact that poultry have an inherent ability to select between protein, energy and CaCO₃-rich ingredients of their nature-supplied diet at any particular time of the year/season /farm harvest cycle. By offering them a choice of each type of concentrate in a clay or wooden bowl, they can optimise their diet for maximum productivity (by their standards). Preferably at the end of a day of scavenging. This reduces the need for analysing the crop contents of a chicken in each season to decide on diet imbalances (if this is a valid basis for such a decision). Hans Askov is keen to try out this "cafeteria" system in his project area.

I was very interested to read about the Tam Hoang chickens of Tuyen Quang province in North Vietnam:

Any more data?

Did they use the V4 or I2 heat tolerant vaccine?

And if so, mixed with what type of feed or by eye-drop?

To comment on Brian Ogle's statement: "common problems seems to be that cross breeds often perform significantly better than indigenous breeds under village conditions". This could be the hybrid vigour effect which increases production and survivability characteristics. I don't mind this as it increases the chance of the "improved" genetic material entering the village gene pool, where the real test of these gene's benefits to the farming system will soon be put under whatever selection pressure the farmer's environment cares to provide. Those genes less supported will leave the pool. This has been going on for years with all the well-meant "improvement" schemes be they cockerel exchange or fertile egg distribution. Unless the management can support the more productive genes, they will fade away.

I can send you more data on the Ethiopia experience if you are interested.