



Research Station
for Cattle, Sheep
and Horse Husbandry

Waiboer-
hoeve

ROC's

Regional
Research
Centres

Applied Research



**PR's Involvement in
International Cooperation**

December 1995

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The research centres



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Preface

In The Netherlands, the Research Station for Cattle, Sheep and Horse Husbandry (in Dutch abbreviated as PR) bridges the gap between more basic and disciplinary research done at universities and research institutes on the one hand and the extension service and the farmers on the other hand. The PR adopted from the beginning a very practical approach. Applied research and technology development geared towards solving farmers' problems are the main tasks. A major characteristic of the research is the integrated approach. Research is done under conditions similar to those on practical farms, while besides technical results also economic evaluations of solutions and new technologies are taken into account.

The PR played an important role in the modernization and intensification process of dairy farming in The Netherlands. Developments in housing, fodder conservation, especially grass silage, slurry application on grassland, feeding according to individual requirements and integrated economic farm models were among those initiated by the PR.

The practical approach of the PR and its experimental farms attracts the interest of farmers, not only in The Netherlands but also from abroad. Farmers from neighbouring countries use research results from PR and adapt them to their own situation. The large number of foreign visitors indicates the interest in the work and organization of the PR. Although the major task of PR is to conduct applied research for and transfer the findings to the Dutch farmers, PR has also provided advice and assistance to the development of the farming industry and agricultural research in several countries in Eastern Europe, Africa, the Middle East and Asia.

Since the seventies, foreign contacts became more frequent and intensive. International contacts and activities of PR have been mainly initiated through bilateral contacts of staff members. Because of the expertise available at PR, experts have been asked regularly for missions to evaluate or prepare dairy projects in Asia, Africa, the Middle East and Eastern Europe as part of activities in the field of development cooperation or improvement of economic relations and/or export. The international activities have also led to joint projects in which PR provided technical backstopping or was the executive agent.

On the occasion of the 25th anniversary of PR as a research organization and the retirement of Mr.

Sije Schukking, PR considered it worthwhile to highlight the international activities in this publication. This publication contains contributions from colleagues from the Ministry of Agriculture, Nature Management and Fisheries describing the role of PR in international activities and a review of the international activities by colleagues from PR. However, above all we appreciate very much the contributions from colleagues from the different countries PR has co-operated and maintained contacts with namely from Poland, Estonia, Czechia, Slovakia, Slovenia, Tanzania and Kenya. Each of them describing the situation regarding the dairy husbandry in their respective countries and the cooperation with The Netherlands and PR in the further development of the dairy industry in their countries.

The driving force behind all these international activities was Mr. Sije Schukking. Like shown in the different contributions, his wide experience and practical knowledge in the field of dairy and livestock farming in general and his personal abilities to cope with different situations and people makes him a much appreciated advisor in many countries. With pleasure I dedicate this publication to Mr. Schukking on the occasion of his official retirement and wish him and his family all the best for the future. However, I know that Mr. Schukking will continue contributing to some of the current projects for some time. So you may see him again in the near future.

Further I would like to thank Mr. Wouters, Mr. Luten and Mr. Snoek of our organization for editing this publication.

The Director,
A. Kuipers



The driving force behind all
those international activities is
mr. Sije Schukking

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International Transfer of Knowledge and Experience by the Research Station for Cattle, Sheep and Horse Husbandry

J.A. van Driel and E. van de Vrugt**, Ministry of Agriculture, Nature Management and Fisheries, The Netherlands*

The Research Station for Cattle, Sheep and Horse Husbandry (abbreviated as PR in Dutch), being part of the research community which is international by nature, maintains many international relations. In these relations knowledge, information, experience and expertise are exchanged, tested and enriched. These relations and contacts become even more valuable, as costs to do research increase and require ever more sophisticated materials and methods, and the problems for which a contribution from research is expected to solve them, multiply, while at the same time budgets - at least public budgets - are under severe strain. International co-operation is therefore of ever more relevance, for the research institutions as well as for the farmers and the government as clientele.

In this contribution to the "liber amicorum" on the occasion of the retirement of Sije Schukking, we will not pursue this theme in general. We rather like to put a number of activities in the limelight, i.e. the transfer of knowledge within the framework of economic relations as well as the provision of expertise in the context of development co-operation and support to countries in Central and Eastern Europe.

Our paper will attempt to assess the international activities of PR as a contribution to economic relations and economic co-operation, indicate how we perceive the quality of the technical assistance by PR in the context of development co-operation and next discuss the role of PR in support to the countries in Central and Eastern Europe. For practical reasons, we will limit ourselves to dairy farming and the dairy sector as the largest sector, while acknowledging that the mandate of PR also includes beef and veal production, sheep raising and horses.

Economic relations and export promotion

Cows constitute an important element of the image of The Netherlands, shared by many foreigners. They fit in together with the green pastures, clogs, windmills, tulips and the dikes. Recently these resources have come in the shade of our libertine fame on moral issues: drugs, prostitution, abortion and euthanasia. But, once the Dutch dairy expert has put his (or her) counterpart at ease on the latter issues, he/she will be recognized as somebody from one of the worlds leading dairy countries. His/her own performance can alter this judgement marginally, either upward or downward. This holds also for the expert of PR once abroad. Which, then are the pillars under this apparently unbeaten Dutch stronghold?

The dairy sector of The Netherlands has three trumps: the Dutch cow, the Dutch farmer and the Dutch dairy tradition and technology. The Dutch cow is a high yielding, efficient animal. Dutch heifers and cows, bulls and semen are in high demand, the world over. This was again illustrated this year when the Queen presented a bull to the Indonesian president on the occasion of her official visit. The Netherlands used to have a dual purpose cow as the model for breeding programmes. Later than in some other leading dairy countries, breeding programmes have been separated for milk type cows and meat type. The impressive achievements that have been realised are clear: the average milk yield of cows in milk recording programmes went up from 4,900 kg in 1975 to 5,559 kg in 1985 and 7,069 kg in 1992. Production levels between 8,000 and 9,000 kg are not rare on farms with the highest management levels. Improvements in management and the quality of roughage and strong selection of cows as a consequence of the milk quota system, have largely contributed to this success of breeding programmes. The Netherlands have in this way regained their position as an exporter of quality cattle.

The Dutch dairy farmer is highly educated, well trained and can draw on a well developed and differentiated support system which provides animal health services, breeding services, information and advice and inputs. Farmers take responsibility themselves for the provision of these services: they founded co-operative dairies, breeding societies and the like and they participate in the governing boards of schools, research institutions, experimental farms and extension services. Dutch dairy farms can be characterized as well balanced and

* Department of Agriculture

** Department of Trade and Industry



Consulting a farming family in Bangla Desh

highly optimized production systems. Here, the core business of PR is present. Apart from the farm level, the position of the dairy sector is determined by the performance of the downstream stages of milk processing, production of dairy specialties and their marketing. Dutch tradition (Gouda cheese) and modern dairy technology constitute a third pillar underpinning the international competitive position of the dairy sector.

The dairy sector succeeds in realizing its potential and is highly export-oriented. Within the European Union, The Netherlands ranks as the fifth producer after Germany, France, United Kingdom and Italy. The latter two, however, are net importers. The Netherlands ranks second only after France, as a net exporter. With Germany, France and Denmark, The Netherlands constitute the "big four" dairy countries in the EU. Outside the EU, New Zealand, Australia and the United States are countries with dairy sectors of world significance. The export-orientation not only means being a net exporter of dairy products. The dairy sector has all the characteristics of a global player: dairy companies operate on a European or even world wide scale, exports comprise cattle, dairy equipment and technology, and even farmers as more than a few Dutch farmers migrated to take up dairy farming abroad, e.g. in Canada, the United States, France and Germany (neue Bundesländer). PR plays a supporting role in many of these activities in providing advice.

Quality assurance and export promotion belong to the domain of public responsibilities, although not exclusively. Setting high quality standards - and

still more important - upholding these standards are crucial for an export-oriented sector. The first task of the government lies in setting quality standards; this is done in close consultation with other governments and put down in international agreements and protocols. Actual monitoring of quality levels and quality management is a responsibility where private-public partnerships and institutions are active; the role of the government is here in providing the legal base and inspection. Quality of course, not only matters in the final product for the consumer. It is to be maintained through the course of the complete production chain and involves cattle feed (concentrate as well as fodder), animal health and use of medicines, hygiene in milking, milk storage and transport. In order to assure the quality of milk delivered to the dairies, milk samples are taken by the milk collectors and tested on factors such as purity, absence of antibiotics, pathogens and growth inhibitors. These quality indicators are reflected in the farm gate price. The organization for sampling and running the test laboratories is a shared responsibility between farmers organizations and the dairies. At the dairy level, special departments are responsible for quality monitoring and control. Government inspection of these laboratories are the basis for the quality guarantees of the government for butter, cheese and milk powder. PR plays a role through its research and advisory work with respect to quality management at the farm level.

A good product is a prerequisite for success in selling and even more so in exportation. But promotion is necessary as well to find, develop and maintain markets. The export promotion strategy of the

Ministry of Agriculture, Nature Management and Fisheries is built on this philosophy. Export promotion is carried through at three levels: General Holland promotion, to let people know what Holland stands for in the case of agriculture, Trade promotion, stimulating im- and export with various countries, and Investment promotion, to attract investors to come to Holland and to stimulate Dutch companies to invest abroad. Instruments for promotion are numerous; knowledge plays a key role in many of these instruments, such as seminars, symposia, and advising and receiving foreign visitors. As an independent and objective source of knowledge, PR plays the role of reliable partner in promoting the Dutch dairy sector in the world and serves as a bridge between theory and practice.

Development co-operation

PR has been involved in development co-operation for about twenty years and has thus seen the various phases and policies with respect to Dutch development co-operation for dairy development in Africa, Asia and Latin America. A report of the Operations Review Unit of the Ministry of Foreign Affairs in 1987 distinguished four phases: delivery of livestock to improve the genetic potential of dairy herds in developing countries (1); assistance to large scale cattle farming (2); emphasis on the development and improvement of indigenous production systems (3) and an integrated approach (4). The first phase reflected the mainstream of thinking about tropical dairy production in the early seventies and tried to force a breakthrough in what was considered the most critical factor: the genetic potential of the dairy herds. Experience in the first phase made clear that in order to realise the genetic potential of the imported cattle, feeding, health care, housing and management had to be improved as well as complementary factors in a packa-

ge. The answer was sought in large scale modern dairy farming.

In the course of the seventies, development co-operation became more and more directed at the great masses of small producers in the rural areas. So, in a third phase, dairy development as well had to put emphasis on improvement of existing small scale production systems. This was a break with the first two phases which had focussed on the animal and its conditions. The farm, particularly the small farm came into the centre of focus. By the end of the seventies and early eighties, the farming systems approach came into fashion. Obviously, the expertise of PR with its tradition in a whole farm approach appeared to be most appropriate. One should add that the approach of PR tends to be tailor made to fit specific situations and problems, rather than following fashion in a top down manner, be it large scale, smallscale or farming systems.

In the mid-eighties, the farming systems approach was developed further and COWS were recognized to have many functions. Functions of cattle are "savings account", draught animal, provider of dung (soil fertility), and social, besides their function to provide milk and meat. Livestock is not only considered in its function to provide nutritious foods, but also in its abilities to sustain livelihood, among other through generating income and capital. The role of women and their position also became an important point of attention, which has great relevance when dealing with animal production. So the analysis and interventions could not be limited any longer to the dairy enterprise on small farms, but should also address other subsystems of the small mixed farms, such as the cropping system, the family household and feed production. In a fifth phase, aspects of sustainability (environmental



Friesians from Dutch origin feel well at home in the Kenyan Highlands

aspects of animal production) and the wider socio-economic environment and economic policies were to come into focus.

All these lessons and experiences were included in a new comprehensive sector policy paper which was presented to the Netherlands Parliament by the Minister for Development Co-operation in 1989 (first version; a more elaborate version was presented in 1990). This policy paper was prepared with substantial involvement of our Ministry and many practical advisers, including those of research institutes. The policy paper worked out strategies for development of various animal production systems (mixed farms, pastoralism and specialized small farms) for various agro-ecological zones (tropical highlands, semi-arid zones and the humid and subhumid tropics).

Researchers, development workers and policy officers invested much in this new comprehensive policy that was agreed upon by all parties. It was qualified by the Minister involved as "a model sector paper" for development co-operation. Despite this, it did not succeed to reverse the downward trend in the level of activities with respect to animal production in Dutch development cooperation.

PR has played a prominent role in development co-operation: by providing technical and logistic backstopping to teams of experts in the field, by assuming responsibility for execution of projects, and countless missions for formulation, monitoring and evaluation of projects in many countries, mainly in Asia and Africa. The expertise and experience of PR proved to be most relevant in regions with moderate tropical conditions, such as the highlands of East Africa (Kenya, Tanzania) and regions in South Asia (among others India and Sri Lanka). The vast experience of Dutch dairy farming was successfully crossed with experience and observations in many locations in developing countries. Sije Schukking has been the pivot of the endeavour of PR in development co-operation. With his gifts of head and heart and his qualities as a researcher, teacher and extension agent, he has become a respected expert in the true sense.

Central and Eastern Europe

Starting in 1989 in Poland and Hungary, dramatic changes have taken place in Central and Eastern Europe. The transformation from a centrally planned economy to a market oriented economy is an unknown and risky process, as the past six years have shown. The animal production sector has been hit more than other agricultural sectors after the downfall of the communist rule. Consumption

of animal products used to be high in Central and Eastern Europe in relation to per capita income; the cuts in consumer subsidies and the general fall in purchasing power hence had a dramatic downward effect in the case of animal products. At the moment, the bottom seems to have been reached and the downward trend starts to level off, leaving behind a sector in disarray.

Since 1989, the Dutch government has reserved additional funds for Central and Eastern European countries, in the order of 135 million USD annually. The money was divided between funds to support Dutch companies in investments in these countries and to finance a programme for technical assistance (TA). A substantial part of the funds for TA is targeted to agriculture and food industries. It is only fair to note that this bilateral programme is of modest size when compared with the budgets of the European Union and the World Bank for this purpose. Although the programme is demand driven, TA can only be given in areas in which The Netherlands has expertise to offer.

In the case of agriculture, a practical approach was chosen: projects rooted in daily life, showing a different approach to the type of farming and food processing the people were used to, based on Dutch experience. Knowledge and expertise are the main factors for success in a practical approach, in which the recipients play a key role being responsible for the implementation of projects. PR has been active in the different stages of project development and has used its expertise to advise on such diverse subjects as grassland and pasture management, fodder production, design and equipment of cow housing, management and training. A good example of the role of PR has been seen in the private Farmer Dairy Development Project in Poland.

In good co-operation with many players in Poland, a dairy project has been set up in Turosl in Northeastern Poland. The aim was to show that modern, specialized dairy farming can be profitable in the chosen region. After six years, the aim has been realized and the initial 13 farmer participants now constitute the nucleus of a project involving 165 farmers in the region. The project was defined and managed by a Dutch consultant, International Dairy Consultants. The overall planning and monitoring of the project was the responsibility of a joint Polish/Dutch steering committee. Sije Schukking of PR was the second chairman. In this capacity, Sije Schukking built bridges between the different parties concerned, drawing on his knowledge and insight as weapons to guide the project into the

right direction. Sometimes, he used the evenings to mellow opponents with his choice of wine, his other specialty. Although the general aim was clear, “hobby horses” and objectives of individual people and institutions often troubled the progress of the project. Sije Schukking succeeded to involve the IMUZ institute and his old friend dr Bohdan Skopiec in the project to monitor the progress and helped them to take the right perspective and develop a practica1 orientation. He also convinced

the consultant of the necessity of this, and in doing so, constructed bridges between research and farming practice and created mutual confidence between farmers and institutions. Looking at the project today, it can be called a success, not only through the hard work of the Polish farmers, but also due to Schukking of PR. As an independent expert with vast experience and his wealth of ideas, he held the project together in a turbulent environment and helped steer it towards success.



The Research Station for Cattle, Sheep and Horse Husbandry and International Cooperation

A.P. Wouters and W. Luten, PR

The year 1970 was a special year. It was the beginning of a new decade in which the modernization process of the dairy farming sector accelerated. Traditional often mixed farms with dairy cattle, pigs and arable crops became modern specialized dairy farms. This transition and the need for specialization, mechanisation and rationalization on these farms called for a research organization which could address the problems these modern dairy farmers faced. Therefore, it was no coincidence that also in 1970 the Research Station for Cattle, Sheep and Horse husbandry (abbreviated as PR in Dutch) was founded. PR was established with the tasks to conduct practical, applied research and to investigate and develop new technologies. This research work is done at the central research facility the Waiboerhoeve, but also on the Regional Research Centres Bosma Zathe, Aver Heino, Zegveld and Cranendonck which take care of the research needs in the different regions and on De Marke, the national research centre for dairy husbandry and the environment. PR is in fact positioned in between universities and research institutes doing more basic and strategic research, on the one hand and the extension agents and farmers on the other hand. Coaching of subject matter specialists of the extension service was for a long time one of the responsibilities of PR. The contact of research officers with the extension agents guaranteed an

interchange of information not only nourishing the extension service but also feeding research with relevant research questions.

Since the beginning of the eighties, Dutch dairy farmers contribute for 50% to the costs of the applied research, while the remaining 50% is borne by the Ministry of Agriculture, Nature Management and Fisheries.

From the beginning, PR adopted a practical, whole farm approach not only taking into account technical results but also economic aspects. Developing whole farm systems on station, nowadays also called "prototyping", often accompanied by on farm research started already in the sixties at the Waiboerhoeve and was a new and unique concept at that time. At the same time applied experimental research like feed intake and milk production studies, fertilizer trials on grassland, grassland utilization and management experiments provide the necessary starting points and data for whole farm simulation models. Technical, economic and environmental consequences of applying certain options can be easily evaluated by model calculations.

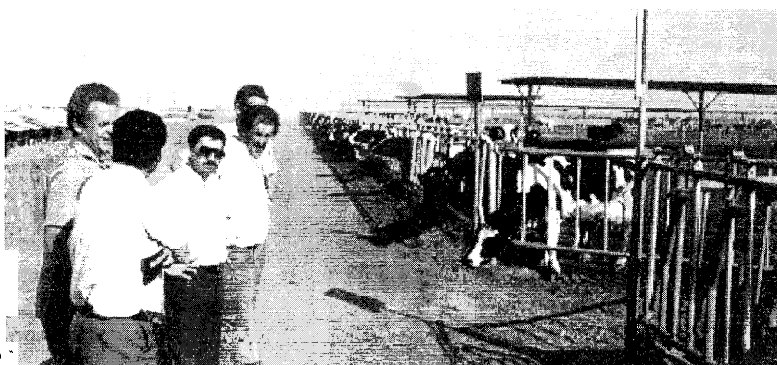
The beginning

The type of research, results obtained and the position of PR as research organization within the agricultural knowledge system in The Netherlands



Testing Dutch fodder varieties in China

*Large scale dairy farms
in the Middle East need
sometimes advice*



attracts many foreigners. Many contacts have been established, not only with sister institutions within Western Europe. Soon after its founding, the PR became also engaged in international activities. Like precisely explained in the paper presented by Van Driel and Van de Vrugt (see page 5), these activities can be grouped in activities related to promoting economic relations and export, activities in the field of development cooperation and more recently also activities to support Eastern Europe.

Promoting economic relations and export

The Ministry of Agriculture, Nature Management and Fisheries is the main initiator of activities related to improvement of economic relations in the field of agriculture and promotion of export of agricultural produce. The Ministry often requests experts from PR to participate in these activities especially when they are related to research in animal husbandry and/or farm management.

An example of such an activity was the involvement of the PR in China. The former Director of PR, Dr. Huisman participated in two trade missions of the Netherlands' Ministry of Agriculture to China. As a result the Netherlands offered assistance in the improvement of the fodder supply for cattle in three areas in China (Mantsjoria, Wuhan and Nantsjang). Introduction and testing of different grass and fodder species and varieties were the main activities within this project which was carried out by the Institute for Export of Grass and Fodder Seeds and the Ministry of Agriculture. In the period 1980-1984 several missions to China under the leadership of Mr. Sije Schukking were undertaken. In this project, export objectives regarding seeds of grasses and fodders did go hand in hand with transfer of the necessary knowledge.

The Dutch experience in agriculture has resulted in special relations with ministries in other countries

e.g. Saudi-Arabia. As part of an agreement between the Ministries of Agriculture in Saudi-Arabia and the Netherlands, Dutch expertise was made available for the improvement of the animal husbandry. In this case, PR participated in the Steering Committee and provided backstopping to Dutch advisors within the Saudi Ministry of Agriculture.

The experience PR has gained with the management of large scale dairy units is known by many officials and investors. Mr. Van Bruggen, the specialist in dairy farm management, provided many advises and designed many plans for large scale dairy and beef farms in the Middle East, Asia and Eastern Europe.

PR plays an important role in promoting the Dutch experience in dairy farming by receiving many foreign visitors who can judge by themselves the technologies applied on the research farms. Sharing knowledge and experiences and providing advice for the modernization of the dairy industry in other countries is a good base to improve the economic relations and export.

Development cooperation

In many developing countries the development of the dairy industry still has a high priority in order to provide more milk to the ever growing population, to improve the human diet and to generate more employment opportunities in the rural areas.

Its widely known tradition in dairy farming was for many developing countries a reason to request for assistance of The Netherlands in this field. Several dairy projects under the umbrella of the Netherlands Ministry of Development Cooperation were initiated.

In the field of development co-operation, PR has for a long time maintained intensive relations with projects and research organizations in Pakistan, Kenya and Tanzania.

In 1974, PR in the person of Mr. Schukking became involved in the establishment of a research farm for animal husbandry as part of the Veterinary Research Institute in Peshawar, Pakistan. This activity was part of a support programme of the Ministry of Development Cooperation. Mr. Schukking visited this project several times, while Pakistani visited The Netherlands.

The first contacts in Kenya were established with the participation of the former Director Mr. M.P. de Jong in a mission to evaluate the Dairy Cattle Research Project in Naivasha in 1978. As a follow-up of this mission, an extension project (National Dairy Development Project) started to improve the dairy husbandry on small scale dairy farms in 1980. PR was from the beginning involved in the backstopping of this project and the coaching of the Dutch research officer. After the reorganization of the agricultural research in Kenya and the founding of the Kenya Agricultural Research Institute (KARI) in 1986, Kenya requested The Netherlands again for assistance in dairy cattle and poultry research. A linkage was established with the National Animal Husbandry Research Centre in Naivasha and PR for the dairy cattle research and with the COVP Spelderholt for the poultry research. From 1990-1994 a joint project to improve the research facilities, the organization of the research and the research capacity by training research officers was executed. PR was responsible for the execution of the dairy project, provided expertise in the persons of Dr. A. Osinga, Mr. P.J.M. Snijders and Mr. J.C.M. Nijssen and backstopping in The Netherlands.

PR was also engaged in dairy development activities in Tanzania, which started with the technical and economic evaluation of a project which supported large scale dairy and beef farms. PR provided for one year expertise in the person of Mr. J. Ovinge for coordination of the different livestock projects. This project ended mid eighties. As a follow up to this activity two other dairy development projects for the small scale dairy farmers were started. For these projects in the Kagera and Tanga regions of Tanzania, PR organized the supply of goods and materials for many years and provided advice at request.

Besides these activities, Mr. Sije Schukking, who has become in the course of time an expert in tropical animal production, did several evaluation or orientation missions among others to India, Bangla Desh and Sri Lanka.

Support to Central and Eastern Europe

Even before the fall of the Berlin Wall in 1989, researchers at PR maintained contacts with colleagues in Central and Eastern Europe. Contacts which were established by visits or via congresses or conferences. One such a contact was the contact Mr. Sije Schukking maintained with Mr. V. Tumpej in Slovenia which was then part of the former Yugoslavia. He and other research officers at PR provided advice to the extension agents and farmers in Slovenia in transforming traditional farms into modern intensive dairy farms. A cooperation with few material and financial inputs but with a high impact.

After 1989, the situation in many Eastern European



On the Waiboerhoeve much can be shown to visitors from abroad

countries changed drastically. The change towards a market oriented economy resulted in privatization of farms and lower prices.

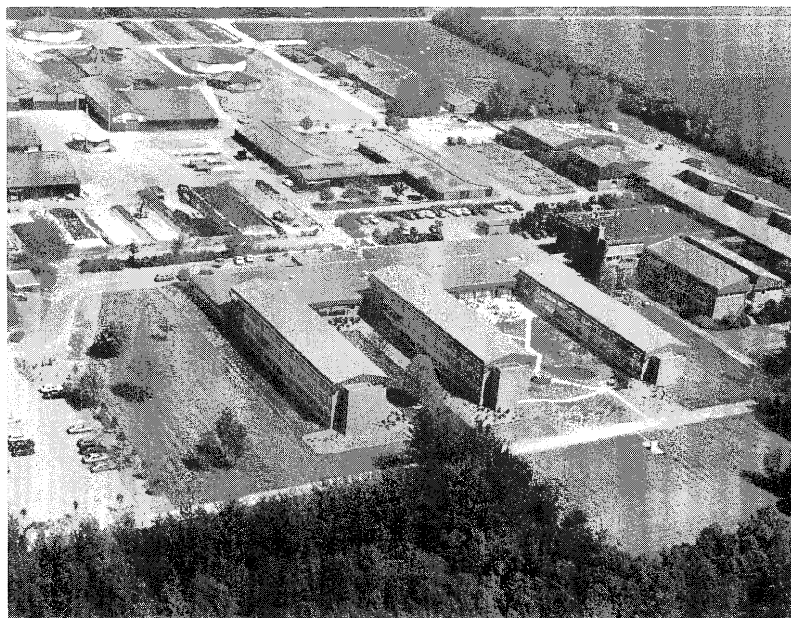
In a number of countries family farming still existed like in Poland or was stimulated again like in Estonia. PR became involved in projects to improve the dairy husbandry on private farms in Turosl, Poland. In this project, the concept of modern dairy farming was demonstrated on initially a small number of farms. PR was represented by Mr. Schukking in the joint Polish/Dutch Steering Committee which was responsible for the overall planning and monitoring of the project. In the meantime many farmers have adopted the concept of modern dairy farming. Another more or less similar type of project was initiated in Estonia in 1992. Farmers who started dairy farming after independence often lacked the practical knowledge about modern dairy farming techniques. By demonstration and monitoring results on pilot farms, adapting Dutch experiences to the local conditions, exchange of information, PR in the person of Mr. Sije Schukking plays an important role in the transformation process of the dairy industry in Estonia. Besides these activities carried out in Poland and nowadays in Estonia, the PR maintains contacts and provides advice to other countries in Eastern Europe like Slovakia and Czechia.

Relations in future

It is expected that improvement of economic relations and export promotion will remain an important area. In the interest of the farmers concerned but also the Dutch farmers, PR will need to play a role

in promoting modern dairy farming practices and knowledge in other countries. Export of technology or cattle without providing the necessary advice will leave many customers disappointed.

Dairy development in developing countries is not considered any more as an isolated activity but is nowadays often incorporated in rural development projects. Particularly, the PR experience in practical, applied research carried out on station and on farm and its experience in the area of research-extension-farmer linkages could be valuable in many developing countries. This applies also partly to Eastern and Central Europe. The technical know-how available at PR is more applicable in the Eastern European countries than in tropical countries. However, also the experiences with the organization of the agricultural knowledge system and the methodologies used in applied research and extension will be valuable. Also in future PR has a task and hopes to play a role in the promotion of the Dutch dairy cow, the dairy farming system and its technologies, the provision of technical know-how and advice on the organization of applied research and extension to sister organizations. Therefore, within PR a special section dealing with International Cooperation will be maintained. In the field of international activities, PR cooperates also with other institutions in the Netherlands. PR participates in Holland Cattle Services (HCS), a joint venture of several institutions in the field of dairy husbandry which provides advice on request. It is expected that also more international activities will be carried out together with Dutch extension and education institutions.



The Research Station
for Cattle, Sheep and
Horse Husbandry
in Lelystad,
The Netherlands

Cooperation with PR in the Development of Dairy Farming in Slovenia

V. Tumpej, Obdravski Zavod ZA Veterinarstvo, Zivinorejo Ptuj, Slovenia

Slovenia is a small country, independent since June the 25th 1995, with a total area of 866,000 ha agricultural land and 1,016,000 ha of forests and a population of 2,000,000. 560,000 ha or 64.4% of the total agricultural land is under grass, so livestock farming is the most important branch of Slovenian agriculture. Slovenia has a total number of 484,000 heads of cattle, and there are 237,000 cows. Milk and meat production are the main sources of income for Slovenian farmers. In Slovenia three breeds of cattle are present, the most numerous breed is the Simmental breed with a total number of 135,000. It is a dual purpose breed, suitable for both meat and milk production. The second breed is the Brown Swiss with a total number of 70,000. This breed is more suitable for milk production. It is present in western, northern and southern parts of Slovenia. On the farms specialised for milk production, black and white cattle prevails, in total there are 30,000. The average Slovenian farm has an area of 3-4 ha, only 15.6% of the farmers owns between 5-10 ha of agricultural land. The average herd size in Slovenia is 3 to 4 cows. In addition the average milk production per cow is only 2500 kg of milk. Besides small private farms there are also large state farms, with 500-1000 cows per farm. The former government mainly stimulated the large state farms, but later on, because of inefficiency since 1970, the government decided also to stimulate small, individual,

family farms. Cattle is very important for Slovenian farmers, because 70% of their income comes from milk and meat production. Most small farmers are part-time farmers, the majority of them are employed in industry and in the nearby towns. Farmers with more than 7-8 ha or more of agricultural land are full-time farmers and their income results solely from agricultural activities. However, in the mountainous area it also results from forestry. The farms in the mountainous area are much larger than the farms in the flat area. As mentioned above, approximately 60% of the Slovenian agricultural area is under grass, but in general it is managed very extensively, only small amounts of mineral fertilisers are applied. There is a deficiency in nitrogen especially. The first cut is taken at the end of May in a late growth stage, so the nutritional value of the forage is very low (2-4% CP/kg DM, 30-35% CF/kg DM). In some areas, most of the grass is still dried on the ground or ventilated in barns. Due to small-scale farms and extensive management it is nearly impossible to provide the farming family with sufficient income for an acceptable living standard, so the extension service in Slovenia has been confronted with the very delicate problem of how to provide sufficient income on our small-scale farms. Solving this problem has been possible only by establishing farms with labour intensive production which provides a good income for the farmer. At the beginning of the



Building a cubicle cow shed according to the Dutch model in Slovenia

transformation of our extensively managed smallholdings, we first aimed at combined milk and meat production. At the same time we started to build tower silos for ensiling maize because making silage at that time was unknown to our farmers. Beef production at that time was very lucrative and the farmers paid most attention to maize production. At that time grassland management still remained very extensive and consequently so did milk production.

Relationship between PR and Slovenia

In the year 1975 I had the opportunity of joining the International Dairy Husbandry Course at the IAC in Wageningen. As The Netherlands is known as the country with the most efficient agricultural industry in Europe, especially concerning grassland management, forage conservation and milk production I promised myself that the participation on the dairy husbandry course would be a good opportunity to get familiar with the Dutch intensive cattle production system especially, with grassland fertilisation, exploitation and conservation. On the course we received lectures from prominent Dutch experts such as prof.ir. J.G.P. Dirven, prof.ir. S. Iwema, prof.dr. Politiek and others, but we also went on numerous excursions throughout The Netherlands, and so I acquainted myself with PR and Waiboerhoeve in Lelystad and the practical training centre at Oenkerk in Friesland. After visiting PR and Waiboerhoeve I saw a good chance of familiarising myself with Dutch farming systems. I was especially impressed with grassland management, farm buildings, milking systems etc. On this occasion I met Mr. Ir. Schukking. During his lecture at the IAC, he introduced us to the Dutch forage production system, and during the optional days we together visited the PR and the Waiboerhoeve. On this occasion, I acquainted myself with the Dutch cattle management system which seemed to me to be very efficient and also suitable for some of our Slovenian circumstances, owing to its simplicity and efficiency when applied on practical farms.

Since that time we decided to cooperate and this meeting resulted in a visit of Mr. Ir. S. Schukking to Slovenia two weeks after our first encounter. During this visit in Slovenia we first inspected some of our progressive farmers and we discussed the possibilities of introducing the Dutch management system on the farms in Slovenia. On that occasion we discussed intensive fertilisation of grassland with nitrogen, defoliation of grass at a young stage of growth, production of high dry matter silage in a clamp silo. These methods are very efficient and

simple, they do not require high investments in silos and other equipment, which is very important for small farms with a limited income. We also discussed cattle housing and after that we introduced freestall barns on our farms for 20-30 cows. We designed very cheap stalls with simple milking parlours and more and more farmers opted for this efficient dairy cattle management system. After our first contacts the cooperation became very intensive, every year we visited each other and discussed the problems arising. Mr. Ir. S. Schukking provided us with all the numerous publications from PR, IMAG, Nederlandse Meststoffen Industrie (Stikstof), IKC, etc. Also many Dutch experts visited our country such as Dr. Ir. A. Kuipers, Ir. Luten, Ing. van Bruggen, Ir. A.B. Meijer, Ir. R.G.M. Meijer, Ir. Tineke van der Haven, Ing. H. Oosterhuis from IKC, and others. At his encouragement we organised lectures for agricultural experts from all parts of Slovenia and also from nearby Croatia. So many Slovenian experts and farmers know "the Dutchman Schukking", and all farmers were happy when Mr. Ir. S. Schukking and other Dutchmen visited their farms. During the visit of Ms. Ir. Tineke van der Haven, we organised practical cheese-making courses on our farms and many farmers' wives started to make Gouda-like cheese on their farms, some of them with a great success. In this way we created, in cooperation with Mr. Ir. S. Schukking and PR in Lelystad, very efficient dairy farms with intensive grassland management, high stocking rate, high milk production of 150,000-200,000 kg of milk, on farms with 10-15 ha agricultural land, along with providing a good income. All these farms are completely equipped with machinery for grassland and maize production, milking equipment and manure handling facilities. Average herd production ranges between 6000 and 8000 kg of milk per cow per year. During the relatively short time of intensive management the "Dutch way" most farmers have renewed or built new houses, so their living standard has grown enormously in comparison to the farmers with extensive management.

During the period of 20 years of cooperation we organised an excursion of Slovenian students and farmers to The Netherlands each year. During this time more than 600 Slovenian students and farmers visited the Waiboerhoeve, the practical school at Oenkerk in Friesland and many family farms, as for example the farm of the family Dijkstra and Zonderland near Lelystad, Van der Werf in Friesland and many others. These excursions encouraged many of our farmers to intensify milk production on their farms. During these years

we also exchanged some young experts who learnt practical skills on the Waiboerhoeve and on other Dutch farms, but some Dutch students also worked in our country, and here again Mr. Ir. S. Schukking played the main role.

How to continue the cooperation in the future?

We hope that the good relations we have built up in the past will be continued and supported by the successor of Mr. Ir. S. Schukking. In the following period new problems will arise in cattle husbandry, especially in intensive production. We are convinced that the researchers of PR will be able to solve all these problems especially ecological ones. We will continue to be confronted with the same problems as well and we hope to find a solution for arising problems in cooperation with PR. The research activities of PR are practically oriented and useful for the farmer. Until now we have regularly received all publications from PR, and we also hope to receive them in the future. In the past years representatives from Slovenia visited many Dutch agricultural experts. During these visits we visited many farms and discussed new problems arising concerning dairy cattle husbandry. Furthermore we are interested in sending our young experts to PR, in order to learn theoretical

and practical skill. Of course we will be very happy if some of your experts from PR will be our guests. The best way to promote a good model of a dairy farm is to show it to the farmers in operation. Therefore, we have organised many excursions of our farmers to The Netherlands where they could find examples for their own farms. Mr. Ir. S. Schukking was always ready to help us organise excursions. In addition the staff of Waiboerhoeve, especially Mr. Ing. C. van Bruggen and Mr. Piet Verschure, were always very kind to our people and we always found the door open at Waiboerhoeve. We hope that this relationship will also continue in the future.

We are convinced that Mr. Ir. S. Schukking will be able to continue to be a real ambassador for The Netherlands in Slovenia despite his well-earned retirement. All his Slovenian friends wish him a long, healthy and enjoyable retirement spent with his family and friends. Looking back on this time, it was a very successful one for all of us. We provided a good living standard and a secure existence for many farming families, but we also had a good time because Slovenia is a nice country with excellent wine-growing areas, we always tried the good wine and enjoyed in it.



Dairy Farming in Poland

B. Skopiec, IMUZ, Falenty, Poland

In Poland, the production of milk is currently concentrated on private farms and takes place on only very few state farms. There are 2.2 million farms in Poland; of these, 59% are involved in cattle breeding and for them milk is a major part of their saleable produce.

However, the number of farms specialising in milk production is minimal. Owing to the uncertain nature of market trends, cattle breeding on the majority of farms is only undertaken to supplement arable farming and pig breeding.

The basic feed supply for cattle derives from pastures and hay (95%) produced on permanent grassland. It is estimated that production from grassland farming, taking into account yields and their value, is only 40% of its potential value. It should also be pointed out that currently organic fertilisers are the basic fertilisers used on arable lands. This is because the average dosage of mineral fertilisers NPK used over the last year was only 76 kg/ha.

Last year the number of dairy cows was 3,860,000 which is 78% of the number of cattle in the 1980's. The average milk yield per cow is 3092 litres which indicates that milk yields are rising. On average 630 kg of milk are produced per ha. of farm land, and 310 kg per capita.

The current situation among dairy farmers has arisen from the purchase price of milk. This is resulting in poverty and a lack of interest in the development and modernisation of dairy farming. An illustration of this is the price of other resources used for milk production expressed in kg of milk.

The average price of milk is only half the price of

which is of good quality. In some cases milk has to be bought from as far away as 200 km. As a result, dairies have begun to provide innovative dairy farmers with modern equipment for milking and cooling on a leasing basis.

Cooperation with The Netherlands

The EEC and individual European countries along with Canada have implemented several aid programmes whose objective it is to publicise modern methods of milk production and milk processing. Each of the sponsoring countries has taken into account its achievements in its own home market. The earliest of these programmes, begun in 1989 and having a high level of success, is the Dutch-Polish "Private Farmer Dairy Development Project". This has been implemented in the Turosl Commune. Mrs. S. Schukking and C. Van Bruggen of PR-Lelystad are investors and co-organisers of the Project. In addition Mr. S. Schukking plays a leading role on the Steering Committee responsible for the project.

Practical realisation of the project began in 1990, and encompassed 13 farms which had decided they wanted to specialise in milk production based on pastures and grassland farming. In 1992, due to the results achieved and an increasing interest on the part of the farmers in this specialisation, a decision was taken to implement Stage II of the project, which encompassed a further 50 farms. In addition, the pace set for achieving its aims was slowed down.

Currently it has been decided that Stage III of the project will be implemented. This will encompass a

Table 1. Price of inputs expressed in the value of... kg of milk

	1992	Poland 1993	1994
Tractor 28 kW	32 054	38 128	50 381
1 ha agr. land			10 000
1 kg N (mineral fertilizer)	2,8	2,6	2,6
1 litre of diesel oil	2,6	3,1	3,2

the high quality milk produced by farmers who specialise in dairy farming. The milk industry which is undergoing a process of reorganisation to produce modern products has difficulty obtaining raw milk

further 200 farms in the north-eastern part of Poland.

These facts and the continually increasing interest of the farmers in this type of production, and the

Table 2 Land use, number of cattle and milk production on farms encompassed by Stage I of the Private Dairy Development Project

Description	Year				Changes	
	1989	1991	1993	1994	1989-1994	(%)
Agricultural land (ha)		22.8	25.8	30.6	+	34%
Ploughing land (ha) average		6.6	3.5	3.1	-	53%
Grassland (ha) average		16.2	22.3	27.5	+	70%
Dairy cows average		23.1	23.3	26.1	+	13%
Young cattle average		9.5	13.3	13.4	+	41%
Milk yield (kg/cow/annum)	2650	3432	4096	3988	+	50%
Milk production (ton/year/farm)	25.0	79.2	95.6	104.0	+	316%

duplication of this project in other regions of the country within the framework of FAPA projects, indicate the aptness of the decisions taken by the Turosl pioneer project.

Table 2 shows the changes which have come into being in land use, cattle and milk production on farms encompassed by Stage I of the project.

The main achievements of the above-mentioned project are:

- the effects on the farms taking part in the project. It has enabled them to pay back loans and to further develop their farms;
- it has provided a functioning demonstration of modern farms specializing in dairy farming based on the use of pastures and grassland farming;
- the varied modernisation and equipping of traditional byres have been particularly useful as examples to the Polish farmer, as have production techniques and feeding of cattle from silage made from grass;

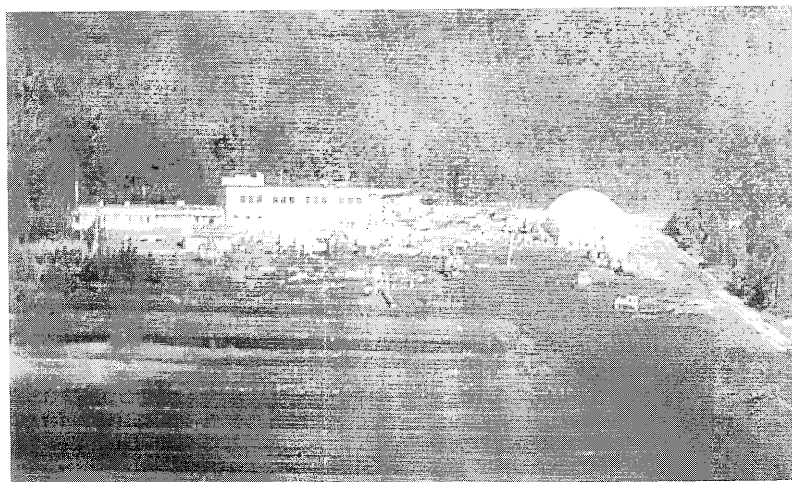
- the Dutch party have shown IMUZ the methodology used in developing and organising this type of project; IMUZ, who plays a role in the Steering Committee for the Project, acts as consultant and gives technical aid to farmers and organisers of the project. The Steering Committee monitors the development of farms and their influence on the chemical composition of plants, soils and water.

- this Dutch-Polish project has provided a good example of how agricultural policy in the country should be organised.

In establishing agricultural policy it was assumed that among the developing farms, which guarantee the country's needs in agricultural products, 250,000 farms (c. 30%) would specialise in dairy farming. The number of cattle bred for meat is estimated at being around 1,000,000. Grassland farming will increase from 21% to 30% in the structure of arable farming.



Grass ensiled in the Dutch way in Poland



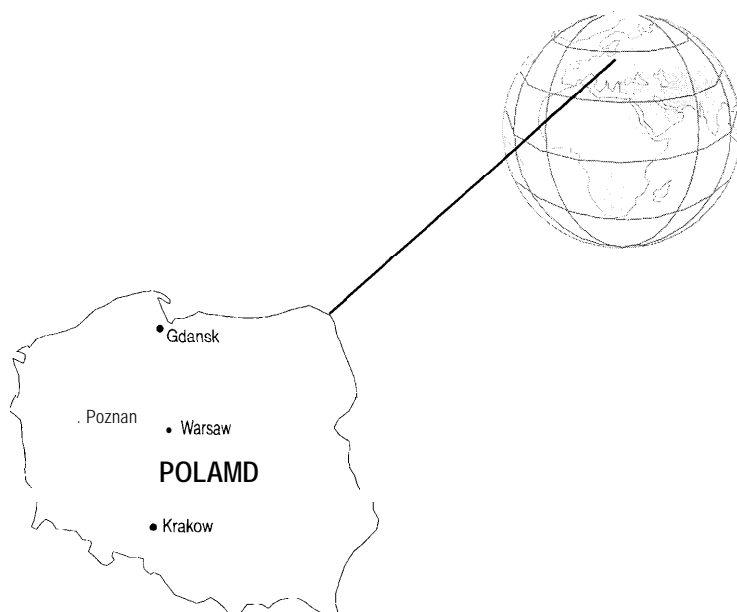
Farm in Eastern Europe

The process of restructuring farms will be state-aided in the form of cheap preferential loans being granted for modernisation of farms.

To date, cooperation between IMUZ-PR has resulted in three training visits which have been organised by the Dutch for three Polish scientists. There have been meetings and discussions in Poland on

problems which have arisen during the Turosl Project, and also conferences have been organised by the Poles on this subject.

It seems that there is much to benefit from cooperating in matters concerning the influence on the environment of milk production and to work out ways of reducing this influence.



Developments in the Dairy Industry in the Czech Republic

Z. Linhati and V. Brabenec, Czech University of Agriculture, Faculty of Economics and Management Prague, Czech Republic

Czech agriculture has undergone radical changes since 1990. These changes have resulted in a decrease in the consumption of milk and, of course, other dairy products. This lower consumption has resulted in a decrease in the number of dairy cattle and a change in the purpose for which cattle are kept. The majority of these cattle have been dual-purpose until now. In the lowland districts they are now being bred for milk while in the highlands which cover most of the Czech Republic they are being bred for beef. From the beginning of the year 1990 till March 1995 the number of cows decreased by 37.9 % to 768,000 cows and 2,030,000 heads of cattle in total.

Changes in the Czech economy and agriculture

The transition from a planned to a strongly liberal market economy inevitably changed the majority of ownerships and prices. State and cooperative enterprises were changed into private companies of different types. The price liberalisation (1 January 1991) resulted in the following changes:

- subsidies for food products to retailers were removed (subsidies for dairy products were the highest);
- the purchasing power of consumers declined by 30%;
- the supply of food products significantly exceeded the demand; in the case of dairy products till the end of 1994;
- the prices of agricultural inputs increased several times more than the prices of agricultural products;
- the total amount of subsidies for agriculture decreased by 70%.

All the above-mentioned changes resulted in losses on all of farms which have already lasted for four years. The amount of the losses is 40 billion Czech korunas (more than 2,3 billion DM). The losses on dairy farms were the most serious.

Production and consumption of milk in the Czech Republic

The farm gate price for milk increased by 30% on average in the period from 1990 till the end of 1994. The consumer price in retail stores increased by 239%. Prices of other food products increased in the same period by 122% and prices of all goods and services increased by 154%. The purchasing power in 1994 was 1516% lower than in 1990.

These changes resulted in a low price of dairy products which were judged as being luxury goods by many consumers (table 1). Dairy farmers were running at a loss of more than 10% in 1994.



Ensiling maize on a large scale in Eastern Europe

Table 1 Production and consumption of milk in million litres per year in de periode 1989-1994

item	1989	1990	1991	1992	1993	1994	1995
Reserve (estimate)			53	53	50	108	53
Production	4900	4800	4100	3724	3443	3179	3007
Processing	4473	4380	3518	3218	2906	2686	2530
import			25	50	83	84	80
Export	1393	1298	901	892	923	774	580
Consumption	3080	3082	2642	2379	2008	2050	2020
- (l) milk p.i. (1)	260	256	243	214	190	195	192
- (kg) butter p.i.	9.4	8.7	6.1	5.5	5.3	5.2	5.2
Number of cows	1247	1236	1195	1036	932	830	768
Yield of milk p.c.	3982	3949	3712	3790	3832	3964	4050

Note: p.i. - per inhabitant p.c. - per cow (l) (1) - without butter

The decline in the number of cows will stop in 1995 according to a statement from the Ministry of Agriculture. Milk consumption is stabilising. The price of milk at the farm gate is slowly increasing. Milk yield is expected to increase sharply because of the increasing number of dairy cows. Herds in the mountainous areas will stop milk production. From 1996 milk production should be profitable in the Czech Republic.

Responsibility of Czech dairy farms for the losses

Besides the above-mentioned reasons which are outside the farmers' control, we can identify some mistakes made on the dairy farms, such as:

- labour productivity in tied-up barns, which are most common, is very low because of low milk yields and because of difficult working conditions. One worker manages only 18-20 cows;
- fodder production is expensive because the zero grazing system is mostly applied;
- overhead costs are high because of expensive buildings (barns and silos) and a replacement rate in the herds of 30% per year; usually cows are replaced because of health reasons.

Profitability of dairy farms can, first of all, result from modernisation by building free housing systems and by introducing dairy breeds. We can already find good examples of this kind of farms today.

Results of the dairy farm of Mr. Horak

The size of the most successful farm is over 200 ha. This farm is owned by the former manager of a cooperative farm who graduated from the Faculty of Economics and Management of the Czech Uni-

versity of Agriculture, Prague. The farmer, Mr. Horak, rents 830 ha. of agriculture land and grows crops and keeps 370 Holstein Friesian cows in a free housing system with a fish bone milking parlour. Milk sales together with the sale of breeding heifers makes the dairy farm, as part of the total farm, profitable. Cows are fed a mono-diet composed of maize silage and concentrate, the whole year round. Besides cattle, there are 200 breeding sows and related pigs which grow at an average rate of 0.863 kg liveweight per day. In addition, crop yields are above average. The yield of rapeseed was 4t per ha in 1995. Thousand visitors accepted Mr. Horak's invitation to visit his farm on June 6, 1995.

The role of Dutch dairy husbandry in the Czech Republic

The Kolin Dairy Project was set up and financed within the framework of the Dutch PSO Programme (Project Support East European Countries) of the Department of Industry and Trade of the Dutch Ministry of Agriculture, Nature Management and Fisheries in The Netherlands. The project was scheduled for 4 years with a total budget of 600,000 Dutch guilders provided by the Dutch. The main objectives were to furnish insight and knowledge in the process of privatisation of state agricultural enterprises and to give support to the development of the family farming system regarding dairy husbandry. The prevailing conditions at farm level have always formed the basis of the project as well as farmers' participation and the introduction of new technology easy to adopt by non-project farmers. The methods used in the project were: technical assistance and advice, supply

of equipment and farm-inputs, financial subsidies for the adoption of new technology, financial contributions to farm investments serving the project's objectives, human resource development by training and excursions to The Netherlands and open door demonstrations.

The results were as follows: the example of the project farm was followed by 8 satellite farms. On the 8 satellite farms the ensilage of prewilted alfalfa, using plastic foil, was successfully introduced. This innovation resulted in an increase in milk yield per cow of 3-4 kg per day compared to the previous system of making silage, and an important decrease in fodder losses. In the project farm a free housing system for dairy cows, and also for heifers, was introduced. In addition a milking parlour was installed, resulting in a reduction in labour demand in the cowshed by 50%, although the herd expanded by 35 cows. Milk quality improved. The milk yield per cow at the project farms has increased on average by 1000 kg in the past one and a half years. An increase of another 1000 kg of milk is to be expected within the next two years, thanks to better fodder production, feed rations and general farm management.

The investment of thousands of Czech Korunas (and thousands of DFL) in the reconstruction of the cowshed was very low in comparison with similar reconstructions of tied-up barns:

Milking parlour 2x3 tandem Miele	924 (DFL 61,6)
Installation of milking parlour	394 (DFL 26,3)
Reconstruction of the cowshed	750 (DFL 50)
Tractor	136 (DFL 9)
TOTAL	2204 (DFL 147)

In June and November 1994 over 800 visitors in total attended the "Open Door" demonstration days at the Central Pilot Farm in Kozojedy showing the growing interest of farmers in the Czech Republic for proven technological innovations recommended by the project. The establishment of a farmers' network and farmers' study groups has been encouraged.

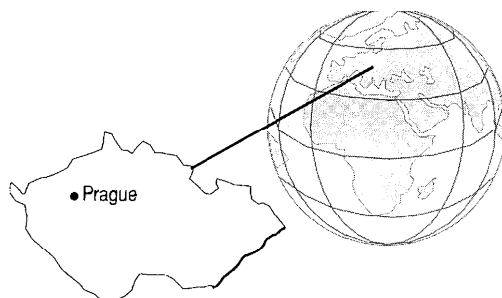
Further development of the Czech-Dutch dairy project

The further development of the Czech-Dutch dairy project is not certain. It is necessary to take into account all the above-mentioned factors: market development (prices), historical experience (see the example of Mr. Horak) and the experience of The Netherlands (see the example of the introduction of a family dairy farm).

The development of the market could be strongly influenced by the Czech Republic joining the European Union which could have a similar effect on dairy farms as the above-mentioned price liberalisation. Dairy farms will go broke in the case of Czechs being able to buy imported dairy products. The productivity on Czech dairy farms is still one third of that on Dutch ones. We should remember the experience of Portugal who was a net exporter of agricultural products before joining the EU and at present is importing 70 food products. Dutch dairy products could be part of imports besides products of Danone. Dutch Nutricia is already operating in the northern Moravian region producing IMF (baby) food and pushing farmers to produce milk of the required quality which will be separately collected and processed.

The creatively-applied historical experience of Czech farmers can be combined with a substantial influence from Dutch know-how as we can see from the example of Mr. Horak's farm. But the Czech market for dairy products must be stable (isolated) for some time to compensate for the losses of the last four years.

The farmer who applies the Dutch experience of family farming could probably survive the situation of the Czech Republic joining the European Union, and another fall in prices of dairy products by 30% of the import tax. Workers from Mr. Horak's farm will leave like every second agricultural worker did after the price liberalisation. In contradiction to workers of Mr. Horak's farm, private farmers will remain on their farm even if Czech import tax has to be removed under GATT/WTO pressure and before the export subsidies within the EU have to diminish. Speculations such as the above are not official of course. We can see that our farmers need to learn from the experience of Dutch dairy farmers. Such help from the Dutch side would be really suitable for a new project. But the above-mentioned project of Kozojedy farm finished because the Czech government did not request its continuation.



Czech Republic

Dairy Farming in Slovakia and the Relation with The Netherlands

O. Debrecéni, J. Bulla, University of Agriculture Nitra, Slovakia

Cattle husbandry has been extremely important for Slovakia throughout its history. However, there are six times less cattle on an area of about 44,000 km² than in Holland. The highlands and mountainous regions which cover around 62% of the agricultural land of Slovakia are the most important. Cattle, sheep, potatoes as well as wood are significant sources of livelihood. Since 1950, large-scale technology for about 600-2,000 dairy cows has been implemented in cattle husbandry. Unfortunately, production in such enterprises has been less intensive. In 1989, average milk production was about 3,700 kg per cow. The total number of dairy cows was about 537,000.

As a result of political and economic immaturity, the number of livestock decreased sharply during the period 1990-92 (see table 1). In addition, during this initial stage efficient and productive animals were slaughtered. Average milk production per cow decreased to less than 3,000 kg per milking cow. The production of beef and milk became less efficient. In 1994-95, cattle husbandry improved with the support of Dutch experts as well as experts from other countries of the EU.

Dutch participation in the transformation process of cattle husbandry in Slovakia

The Slovak republic has maintained professional ties with The Netherlands with respect to cattle breeding at a commercial level since approximately 1961. Slovakia has bought dairy processing and housing equipment along with genetic material. There were impressive imports of Dutch genetic material in the 70's, required to form the so-called Slovak black & white dairy breed. A new stage in the relationship between the

Netherlands and Slovakia has been established mainly after 1990, when a project with assistance of The Netherlands' Support Programme Eastern Europe (SPO) was set up. This project for building a pilot dairy farm in the locality of Nitra was approved in 1991. The demonstration and training farm was established in October 1992. Slovakia as a participant of the project was responsible for the construction while the Dutch partner equipped the farm with Dutch technology and breeding stock. The Netherlands offered one expert for 12 months to assist with managing the new farm. Dutch participation in this project was realised via the consultancy firm Farmco Holland.

The aim of the project was:

- a)) to demonstrate the possibilities for highly effective and high quality milk production under Slovak production conditions to farmers and people interested in dairy farming on private farms.
- b)) to set up facilities for the practical education of university students and for advice to those interested in dairy farming on private farms.

Table 1 Size of cattle population and milk production in Slovakia (1991-1994)

Year	Number of cows	Average per cow	
		Milk yield/lactation (kg)	Fat (%)
1989	536 568	3652	3,72
1990	524 644	3544	3,70
1991	464 993	2879	3,73
1992	396 794	2840	3,71
1993	343 222	2937	3,70
1994	367 321	3290	3,71



Judging grass silage in Eastern Europe

c) to demonstrate the possibilities and the applicability of Dutch breeding stock and equipment for milk production under Slovak conditions.

After the farm has been running for three years, it can be stated that all aims of the project have been met to a large extent.

- The private dairy farmer has learnt to cope with the management, the technology and with the biological aspects of milk production of the family farm. This has taken place under the guidance of the Dutch instructor, with the help of a training course at the Dairy Training Centre Oenkerk and with the assistance of consultants from the Agricultural University in Nitra. The farmer has produced fodder and maintained the animals according to standards on similar farms in The Netherlands.
- Heifers imported from The Netherlands have adapted very well to Slovak conditions. The milk records of the first lactation attest to this fact:
 - average milk production was 6961 kg per cow which was about 37 kg more than the average milk production of their dams in The Netherlands,
 - average butter fat content was similar to that of their dams,
 - average protein content (3.18%) was lower than their dams.
- With regard to productivity and economic efficiency, the dairy farmer has obtained extraordinary results under Slovak conditions:
 - the total milk production per man per year has been 350,000 kg, which is seven times the average in Slovakia,
 - he has obtained an income of 1 SK per 1 kg of milk, which represents a profit of about 115%,
 - only three milk cows were culled due to reproductive failure.
- The second lactation was even more successful than the first:
 - the average milk production was 8115 kg per 305 days lactation, with a protein content of 3.14% and a butter fat content of 4.75%. The best milking cows produced more than 10,000 kg of milk per lactation. By comparison: the average milk production in Slovakia in 1994 was about 3,200 kg per milk cow. The profit in the second production year increased to 2 SK per 1 kg of milk, which represents a profit of 128.5%.
- Cows from the family farm became champions and obtained first or second prices in the categories of milking cows or heifers at the International Trade Fair Agrocomplex Nitra in 1994 and 1995.
- Cows from the pilot farm were among the best under the milk recording scheme in Slovakia during 1994 and 1995.
- Agricultural professionals have shown great interest in the dairy farm. Therefore, the Agricultural University in Nitra in cooperation with Farmco Holland and the Slovak University of Agriculture started to organise professional courses and excursions to our farm in 1993. Besides this, four practical lectures for private cattle breeders have been organized.
- About 350 university students have taken part in the practical training sessions on the farm every year, as part of their course.

- Cooperation with PR in Lelystad, specifically with Mr. Sije Schukking, who has made a valuable contribution to the new SPO-project for 1995/96, has meant an improvement in the quality of Dutch-Slovak cooperation in this field.

The aim of the project in 1995/96 is to make the pilot farm suitable for the requirements of education and consultancy as well as for practical training. A practical school for dairy farmers based on practical education and consultancy for all Slovakia has been established.

Mr. Schukking as a professional supervisor has organized the training of three of our specialists in PR Lelystad for the purpose of education. They have been trained in preparing fodder resources, fodder conservation and feeding milking cows with a high production potential.

In cooperation with prominent experts of the PR Research Station and other institutes for applied research in The Netherlands, there is an additional plan for the publication of several advisory handbooks for Slovakia in 1995 and 1996. The first two - Lucerne and Maize - have just been completed.

Perspectives for the ongoing relationship between The Netherlands and Slovakia

Slovakia has a great interest in continuing and

extending the cooperation between The Netherlands and our country in the field of dairy husbandry. I, myself, see the greatest perspectives in our cooperation as:

- a) linking breeding programmes of Holstein Friesian cattle in Slovakia with Dutch breeding programmes.
- b) setting up a system of consultancy for agriculture, mainly as a branch of dairy husbandry in Slovakia; cooperation of PR, The Slovak Ministry of Agriculture and Practical School in setting up the PHARE project consultancy in agriculture for 1996-97.
- c) cooperation of PR with the Agricultural University Nitra in solving the problems of agricultural production in Slovakia.

To conclude I would like to thank the managers and staff of PR, on my behalf and also on behalf of the Agricultural University in Nitra for the existing cooperation and their assistance with our dairy husbandry. It gives me great pleasure to congratulate Mr. Schukking and PR on both being honoured, and wish them a lot of success and recognition in Holland and all over the world.

Moreover, I would like to wish Mr. Schukking good health, great creative power and good luck in his personal life.



Development of Private Dairy Farms in Estonia and the Role of PR

H. Older, Projectleader Dairy Husbandry, Estonia

The Estonian climatic conditions are favourable for growing grass, which has enabled cattle breeding to develop together with dairy husbandry, for more than 200 years. At the end of the 40's there were 420,000 cows, in the 80's 315,000 and in 1995, 207,000. The Estonian black and white, and the Estonian red are the most important breeds.

During the "Russian time" large-scale farmers used many imported concentrated feeds for balancing feed rations. Nowadays, private farmers and cooperative livestock companies feed animals mostly on the basis of home-grown feeds but the composition and nutritional value of this forage does not correspond to the production potential of the cows. There is a shortage of protein in the feeds and the feed rations are nutritionally unbalanced. Due to this, the average milk yield last year was 3300-3500 kg per cow per year. By increasing the amount and feed quality of the forage it is possible to raise the milk yield per cow to 6000 kg per year, a fact which has been confirmed recently by the results from pilot dairy farms and the best dairy herds.

The feeding of dairy cows is mainly based on grass. The sown grassland area is 353,500 ha, which forms 44.6% of agricultural land, among this there are 135,100 ha (25.2%) clover-grass mixtures, and 10,800 ha (2.0%) lucerne-grass mixtures. The area of natural grasslands is 135,900 ha. Approximately 80% of grasslands are weedy, sparsely-sown and have a low yielding ability; they are in need of re-establishment. The reseeded of grass-

lands is restricted due to the shortage of seeds and the relevance of land, as the land reform process has currently stopped. Last year there were 10,700 ha of newly-sown grassland. The fertilised area of forage crops comprised 37%.

In winter time the main component of feed rations is still hay, harvested in a late growing stage. During summer time over-mature grass with a low palatability and digestibility is grazed by COWS. In 1994 only 26% of all the silage from private and large-scale farms met the nutritional requirements of high-yielding dairy cows.

Nevertheless the importance of dairy husbandry in the Estonian agricultural economy is high. Despite the complicated situation, Estonia has managed to export mainly skimmed milk powder, and to a certain extent, butter and cheese. Among the export articles, milk products have retained their leading position.

The relationship between The Netherlands and Estonia

The Netherlands has had a business relationship with Estonia for 8 years. Especially the activities of



Milkproduction data are studied carefully at the Cattle Experimental Station in Estonia



Discussing grassland management with the family Podersoo, pilot dairy farmers in Estonia

Schukking have been very fruitful in connection with the Dutch-Estonian project. On the Dutch side he has been leader for the last three years. He and his colleagues have forwarded important information to Estonian scientists, advisers and farmers about Dutch grasslands, the species grown and their varieties, the technologies of reseeding grasslands and silage making, fertilisation, the nutrition of dairy cows, composition principles of feed rations, methods of feed value evaluation etc.

Naturally, it is not possible to apply the technologies used in The Netherlands directly under Estonian conditions. Therefore, adapting technologies is needed. This was the main subject of the cooperation. For instance, there is a need to test grass varieties bred in western countries for winter-hardiness, and to test the suitability of Estonian grass varieties for ensilage using different methods: direct cutting, pre-wilting, drying, use of biological and chemical silage additives.

When comparing grassland management used in The Netherlands and Estonia, it seems that the largest difference exists in the cutting and grazing frequency, in which Estonia is backward. Although we have knowledge of grassland establishment, utilisation, fertilisation, seed production, technologies and local grass varieties, however a shortage of good machinery still exists along with a lack of skills and knowledge among farmers, acquiring of which is restricted by existing traditions and beliefs.

Pilot farms

As we know, the best places for information exchange and for checking and refining different technologies, are pilot farms, the first one was established 6 years ago.

During the last 3 years Mr. S. Schukking has been included in this process. On these farms, many different things were explained to pilot farmers and others: early cutting of legume-grass and grass mixtures for forage quality and obtaining a high cow productivity; advice for fertilisation and feeding plans, for chemical forage analyses in laboratories and for interpreting the results under practical conditions; improving ensilage technologies; establishing housing cattle in cold, cheap cow sheds in Estonia; introducing new methods of book-keeping and economic calculations.

The Dutch side has supported the Estonian pilot farms with materials like plastics for silage clamps, with some chemicals for cleaning of milking machines and for weed control.

This year, the PR will support the buying of a wilted silage harvester (Taarup) to establish a special long term experiment on Juuliku experimental cattle farm.

Mr. S. Schukking himself has supported and organised special training sessions for Estonian farmers, advisors and scientists in The Netherlands. Important benefits have been obtained from this

experience when reorganising the economy under private property conditions.

Further development

From next year we are planning together further collaboration on the development of dairy farms in Estonia.

It is very important to develop an extension service namely: to teach and train advisors under practical conditions and to establish pilot dairy farms.

We are planning to carry out the following joint activities:

- improving wilted silage technology and finding out its effectiveness on the Juuliku experimental cattle farm and on a few private dairy farms;
- testing new grass varieties for reseeding grass-

land and legume-grass mixtures for combined use (cutting alternated with grazing), attention being paid primarily to winter-hardiness;

- comparing estimation methods to evaluate forage quality and analyzing them thoroughly;
- establishing book-keeping and economic calculation systems on the pilot farms;
- organising short-term training courses for advisors, pilot farmers, applied research scientists and students in The Netherlands.

To conclude, we value highly the Dutch contribution, especially that of Mr. Schukking, to the reorganisation and development of the dairy husbandry in Estonia and support his presentation for the award.



Dairy Development in the Kagera Region in Tanzania

O. S. J. Swai, *Project manager KALIDEP, Tanzania*

Despite its large indigenous cattle base, estimated at 14 million, Tanzania, with an estimated population of about 25 million people has not been able to produce sufficient milk for its population. This is mainly because of the low productivity of its indigenous cattle and a cattle distribution pattern which is not proportional to the population distribution. Several past attempts to increase milk production in the country have not been as successful as expected.

Before and immediately after independence, dairy farming in Tanzania was an enterprise undertaken mainly by White Settlers. Modern farming was unknown to local people. Besides, it required capital, expertise and experience, all of which were lacking among the indigenous population.

After independence, the majority of the White Settler farmers left the country, thus curtailing the development of large-scale, private farms. This situation gave rise to the formation of parastatal large-scale dairy farms. To augment this effort, a number of countries provided technical assistance in the form of import support on veterinary drugs, laboratory equipment and reagents, farm machinery, minerals and training fellowships. Notable examples were the governments of The Netherlands, Italy, United Kingdom, Japan, Canada, Nordic countries, Ireland and International agencies such as the World Food Programme (WFP), United Nations Development Programme (UNDP), Food

and Agricultural Organisation (FAO), European Economic Community (EEC) and United States Aid agency (USAID).

Large-scale dairy farms

The government's strategy for dairy development on parastatal dairy farms was, in the short term, aimed at stimulating production to substitute for imported milk and milk products. In the long term, the aim was to develop village dairy units throughout the country in order to provide milk to rural areas with the aim of improving people's nutrition. To achieve this goal, the government, through parastatal dairy farms and later the heifer breeding units engaged in the production of upgraded dairy cattle that would be required to develop a dairy industry at village level.

Previous attempts to alleviate a shortage of milk, particularly in the urban areas, by developing large-scale farms, have not been very successful. Milk production figures and other technical parameters of most dairy farms which were started under this arrangement have either been stagnant or declining. Farm utilisation capacity has also been declining. This suggests that the country can not solve a significant proportion of its milk requirements by relying on large scale dairy farming.



Feeding is an important factor in intensive dairy farming in Tanzania

Smallholder dairy development

After encountering impediments in the course of developing the dairy industry through large-scale support services, the emphasis has now shifted to smallholder dairy development support as was stipulated in the livestock policy of Tanzania (1993). Kagera Livestock Development Programme (KALIDEP) is one of the smallholder dairy development programmes in the country.

Dairy development under KALIDEP

Historical background

The Kagera region lies in the northwest of Tanzania, with a population of approximately 1.3 million. Over 80% of the people depend on agriculture for their livelihood. Average holding size is 1.08 ha.

Development of dairy farming in the Kagera region goes back to 1976. This was a result of both local (the government of Tanzania) and foreign (the Dutch government) intervention.

The initial efforts started with the development of the Kikulula Heifer Breeding Unit (HBU) in 1976 and were followed by the initiation of the Smallholder Dairy Extension Project (KSHDEP) in 1982. In 1984, the Kikulula Farmers Training Centre (FTC) was established.

Due to the success in the dairy sector, a different project, the Kagera Indigenous Livestock Development Project (KILIP) was initiated in 1988 with the primary objective of improving the indigenous animals kept by about 23,000 households within the region. The secondary objective of this project was to create a conducive environment for dairy development, an activity which was already showing much potential for expansion.

In order to strengthen integration and coordination, it was recommended by the 1989 joint evaluation mission that the four projects be merged to form the Kagera Livestock Development Programme (KALIDEP), in existence since 1990. In 1993, it was recommended that KALIDEP phase II should continue for another period of five years, commencing in January 1995. Phase II (1995 - 1999) is therefore a continuation of the on-going activities in the field of livestock services in the region.

Long term objectives of KALIDEP

KALIDEP has the following long term objectives:

- To increase the availability of foodstuffs with a high nutritional value (milk, meat, eggs);

To increase the distribution of livestock (dairy cows, poultry and dairy goats) over a larger number of households;

To increase the income of the population of Kagera with special attention to the rural poor and female-headed households;

To improve the traditional livestock sector through controlling major diseases and uncontrolled movements;

To generate rural and urban employment through increased primary livestock production as well as through increased processing of livestock products.

Activities of the KAGERA livestock development programme

Kikulula Heifer Breeding Unit (KHBU)

This is a nucleus for dairy development in the region. Production of F_1 heifers is carried out by crossbreeding our local Boran animals (females) with exotic Friesian bulls. The farm practices mainly artificial insemination. 95% of the heifers produced at this farm are bought and distributed to farmers in Kagera by the smallholder extension project (KSHDEP).

Training at Kikulula Farmers Training Centre

Dairy farming is a new venture in this area. Arrangements have been made to enable all the aspiring dairy farmers to participate in one-week courses on improved dairy farming. The centre is also used for in-service training of extension staff. Recently, training of farmers in livestock-oriented cooperative activities was started. The centre also offers facilities for conducting various tailor-made courses.

Dairy extension under KSHDEP

Farmers who want to participate in the Kagera Smallholder Dairy Extension Project, must comply with the following conditions. Firstly they should participate in a one-week training course at Kikulula FTC. Secondly, they should plant at least 1/2 an acre of good quality fodder. Thirdly, they should construct a cow shed according to a plan provided by the project. Lastly, they must be able to purchase the pregnant F_1 heifer either with cash or through the 'heifer-in-trust credit scheme'.

A small number of farmers who come from outside the region with their dairy cattle can join the project

Long horned Ankole cattle look quite dangerous indeed!



after ensuring that both animals and management are of reasonable standards.

2659 (per 01/07/95) dairy farmers are being assisted by a network of 77 livestock extension workers. The latter combine extension work for dairy farmers with basic veterinary services, dipping activities as well as routine duties of the livestock department (meat inspection etc.) for all livestock categories in their area. The extension workers are being supervised by the District Livestock Officers (DL0s) and by regional staff.

Per 01/07/95, the project counted 6906 dairy animals, of which 5237 were female animals and of them 2661 adult cows. Annual output of 4.37 million litres of milk was realised within the last financial year (1994/95).

Relationship of PR with KALIDEP

KALIDEP, being one of the Dutch-funded livestock development programmes focussing on livestock development, obtained the services of the PR research station right from the beginning.

The name of Mr. Schukking is widely known within KALIDEP. He has served as a coordinator for this project for quite a number of years. He is among the few Dutch people who have been in the region more than once and he is indeed invited to come back again. When he came here he always had valuable contributions especially in the field of animal nutrition. As a son of a Friesian farmer, he always likes good horns on his cows. So while visiting the region he appreciated the breeding policy

very much (of cross-breeding long-horn Ankole cows with Friesian bulls). One day, he was nearly taken by the horns of a big Ankole bull, with horns of almost 2 metres, which he wrongly approached while taking a photograph.

Despite his age he always managed to cope with difficult conditions in rural areas of this part of the world. In some incidences he had to go through a door or sleep on a bed far below his size. However in every case, he managed to adjust well to the conditions although we are sure that a few times he experienced minor discomforts such as diarrhoea, mosquito bites etc.

As a coordinator, Mr. Schukking advised the project management and assisted in the procurement of various project goods starting with laboratory reagents/chemicals, veterinary equipment, breeding materials, computers, cars, milk processing equipment, slaughter house equipment etc. This was a tiring job which involved going through different agents, collecting quotations, making consultations etc, and finally making decisions. Despite hampered communication between Bukoba (Kagera), Holland and sometimes Japan or India, the job was still done perfectly.

Apart from organizing these training courses, in some cases Mr. Schukking participated as a course facilitator. Project staff remember him also as an instructor in various institutions within Holland. While in Holland, several project staff remember Mr. Schukking as a guardian. In some incidences, he offered his own warm jackets to dress project staff arriving unprepared for the first time at Schiphol Airport. This always gave them a warm

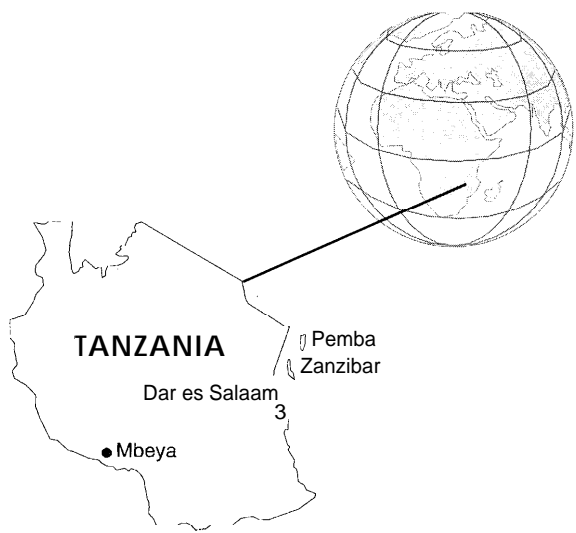
welcome and it is always remembered. He always assisted those with problems even in personal matters and facilitated smooth training and an enjoyable life in Holland. On several occasions he invited groups to his house giving them a chance to mix with his family. He still maintains friendly contacts with most of us.

The KALIDEP project owes its success to the good services offered by PR.

The team of experts which evaluated the project in

1993, were convinced of the achievements attained and recommended continuing for another period of 5 years. During KALIDEP II, activities started in the first phase will be strengthened and expanded.

The PR station has a team of experienced experts with extensive knowledge. Our local conditions are already known to you. The project management will continue making consultations on various fields relevant to our situation.



Dairy Cattle Research and Development in Kenya

A. N. Abate, Assistant-Director Animal Production KARI, Kenya

Kenya has a long tradition in dairy farming. Prior to 1920, milk production was mainly from the indigenous cattle (Zebu). Commercial dairying in Kenya, therefore, dates back to the turn of the century when pure bred dairy cattle were imported from Europe mainly by settler farmers. The industry was then characterized by large-scale farming. However, at around Kenya's independence in the 60's, dairy development was expanded to smallholder farms. The bulk of Kenya's dairy herd (about 80%) is currently found on small scale farm units whose average area is approximately two hectares.

Population and distribution of dairy cattle in Kenya

The population of dairy cattle in Kenya is approximately 3.2 million. The national dairy herd is found in the high rainfall, high altitude to medium altitude areas of the country where it is integrated with crop production in mixed farming systems. The high potential areas constitute nearly 20% of the total land area where subdivision of farms into small holdings is still going on mainly due to increase in human population. It is estimated that about 75% of the marketed milk is produced on smallholder farms under intensive and semi-intensive production systems.

Ranking of dairy research and development in Kenya

Dairying contributed significantly to food security, employment (48% of total labour employed in agricultural production), income generation and to sustainability of crop production through use of

manure and in some instances draft power. Owing to this contribution towards household level food security and to the national economy, research in dairy cattle was ranked at the top of 53 commodity research programmes within KARI in 1991. In a recent workshop held in July this year, to reconfirm KARI's priorities, dairy cattle research was still considered among the top three national priorities.

Relationship between Kenya and The Netherlands in dairy cattle research and development

Relations between The Netherlands and Kenya in the area of dairy cattle development started more than three decades ago. The first dairy cattle research project supported by The Netherlands was initiated in 1969 at the National Animal Husbandry Research Centre at Naivasha. This project saw the introduction of the Friesian herd at the centre. The start of this research project was at a time when dairy farming was experiencing rapid

Dutch assistance to small scale intensive dairy farming in the Kenyan Highlands



transformation from large scale extensive systems to smallholder intensive and semi-intensive systems. Research agenda in dairying had to be re-oriented to be relevant to the prevailing farming systems.

Farmer oriented research in dairy

At the end of the first project it was realized that technology developed for small scale farmers was not adequately disseminated. An extension project, the National Dairy Development Project (NDDP) was started in 1979 and charged with the responsibility of development and transfer of relevant technology to smallholders, mainly zero-grazing, farmers. Shortly after initiation, NDDP acquired a research component to respond to farmers constraints in specific regions. The PR played a major role in backstopping activities for NDDP at these initial stages.

Dairy cattle research under National Agricultural Research Project (NARP)

The first phase of NARP started in 1988. Kenya Agricultural Research Institute, the implementing body for this project requested the Royal Netherlands Government to support dairy cattle research among other programmes. This support came in September 1990, two years after the start of NARP I. The PR was contracted by the Netherlands' government as the management and backstopping institution. The project was based at Naivasha, a major livestock research centre. A Project Liaison Unit (PLU) led by Mr. Schukking and involving other scientists at the PR was then constituted.

Objectives of dairy cattle research project

The project document formulated jointly between KARI and the PR had the following objectives:

- To contribute through applied and adaptive research to increased production of milk in order to adequately meet the rapidly growing demand for this commodity.
- Develop research technology and systems for dairy production which are economically feasible and sustainable through proper use of local resources.
- To contribute to income generation of farmers and hence development of rural areas of Kenya.
- To enhance institutional research capacity through training of research and support staff and improvement of research facilities.
- To establish and maintain linkages between dairy research and extension personnel and farmers and enhance collaboration of the project with other relevant local and international institutions.

The project, initially planned for a period of five years, went on for four years. In spite of the shortened duration and other constraints such as shortages in research staff in specific areas, the project executed research in forage production and utilization, livestock management and economics.

Achievements

Under the following broad research areas KARI and PR recorded notable achievements.

Forage production and utilization

Extensive studies have been carried out in this area. Studies involved improvement of soil fertility for better fodder production through the use of organic and inorganic fertilizers. The use of legu-



Zero-grazing practised at the research centre in Naivasha, Kenya

minous crops was also studied. Agronomic trials regarding heights and frequencies of harvesting napier grass and legumes such as desmodium and lucern were also undertaken. Results from growing and producing dairy cows fed on fresh and conserved fodder have been published jointly by PR and Naivasha researchers.

Livestock management

The main thrust in this area was associated with cow fertility at the smallholder farm level. Smallholder farmers in areas around the research centre experience losses in milk production due to what was suspected to be low fertility of cows. Studies in the last four years revealed several interacting factors such as poor nutrition. Poor heat detection by farmers was noted to be a major contributing factor.

Economics

This section carried out research on costs of milk production under zero-grazing. This initial study indicated that farmers were spending much more money to produce a litre of milk than the milk co-operative was paying for the commodity. These results were used by policy makers to liberalize the price of milk in the country. The socio economics unit in the dairy project has also carried out economic and livestock management oriented research, developed farm models as well as provided support to other research programmes.

Research facilities

In addition to research activities outlined above collaboration between PR and KARI has contributed to research capacity building in terms of:

- establishing and refurbishment of dairy research facilities that have made it possible for scientists to carry out individual animal feeding trials with up to 60 animals, while milking and feed mixing as well as milking, cooling and storage facilities were put in place.
- several technical and extension publications.
- training of four officers to MSc. level, five technical officers have been trained to diploma level and three officers started their split doctorate studies at Wageningen Agricultural University.
- training of researchers and technical support staff in computer word and data processing and programming.
- formulation of eight regional clusters that have involved researchers, extension workers and farmers in identification of dairy problems and plan-

ning an adaptive research agenda to address those problems.

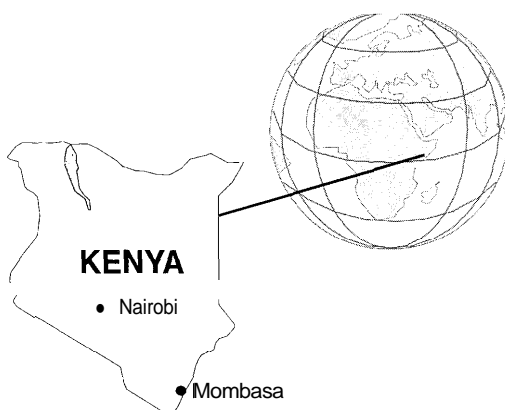
Future relationships between KARI and PR

During the linkage in the period of NARP I (1990-1994) KARI has recognized the potential that PR has, to collaborate in the area of development of sound and relevant research in dairy cattle as well as dissemination of the technology developed to farmers.

The fact that PR is partly farmer supported is of interest to KARI. Agricultural research in Kenya has been mainly publicly funded. It has increasingly become apparent that this is no longer sustainable and there is reason to rely more on effective cost sharing with the beneficiaries of our research technologies. The experience that PR has gained over the years in this area would form a welcome collaborative area.

Development of on-farm animal research methodology is currently a crucial area as most of our researchers have had little exposure to these methodologies. This is yet another area we need to improve in order to enhance generation and transfer of relevant technology. In the client driven research that PR has been involved, methodologies have been developed which the institutes could share in the process of strengthening collaborative activities.

Finally, the PR in conjunction with Wageningen Agricultural University has experience in developing linkages between basic, strategic and applied agricultural research and development agenda that is aimed at increasing and sustaining high levels of agricultural production. KARI would be willing to share experience of PR in this area as well as sourcing of research support for these different but complementary thrusts of agricultural research. Valuable personal contacts that have been made during NARP I should be exploited for the good of the two institutions.



Review of International Activities of PR 1970 - 1995

1974:

Pakistan:

Cooperation with the Peshawar Veterinary Research Institute regarding the planning of an experimental farm for animal husbandry. Schukking

1975:

Pakistan:

Mission to prepare a project proposal for development animal husbandry in the North-West Frontier Province. Schukking

1976:

Slovenia:

Private contacts with an agricultural extension officer on setting up grassland experiments and ensiling forage maize and making of wilted grass silage. Schukking

Bulgaria:

Development of plans for two farms with approx. 200 cowseach. Huisman, Van Bruggen and Rompelberg

Bulgaria: Demonstration of the covering of clamp silos. Rompelberg

1977:

Pakistan:

Support to the Peshawar Veterinary Research Institute in establishing an experimental farm for animal husbandry. Schukking

1978:

Kenya:

Evaluation of the bilateral Dairy Cattle Research Project which was executed in Naivasha from 1969 to 1976. De Jong

China: Member of an agricultural mission to the People's Republic of China. Huisman

Syria: Advice on the management of a pilot dairy farm. Van Bruggen

1979:

Syria: Mission to study the possibilities for land use and livestock development. Oostendorp

Syria:

Evaluation of the establishment of a livestock station and consultations with the Dutch manager. Van Bruggen (2x)

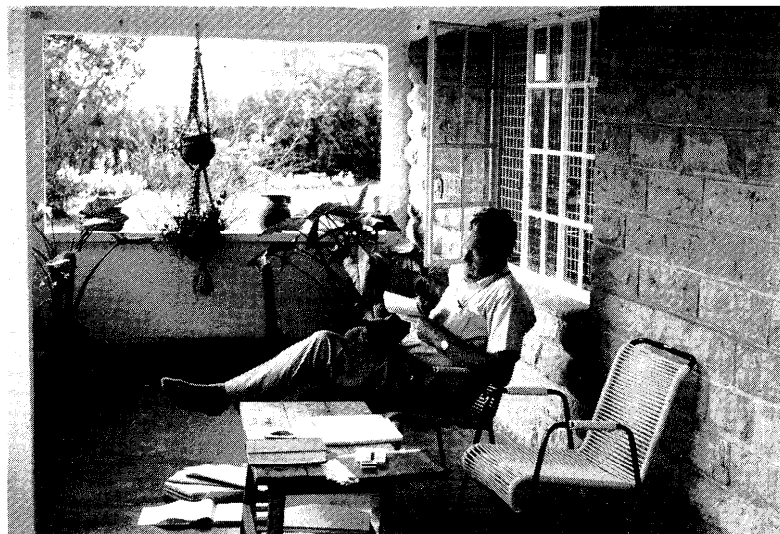
Mexico:

Feasibility study for improvement of cattle farming in a region where arable farming is predominant. Luten

Slovenia: Support to dairy farming as regards grassland use and fodder production. Schukking

1980:

China: Chairman of a livestock farming mission. Huisman



Backstopping in a relaxed atmosphere

Pakistan:
Advice on various aspects regarding the establishment of an experimental farm. Schukking

1981:
Poland:
Advice on fodder conservation techniques with respect to grass and forage maize. Schukking

Yugoslavia: Advice on raising the productivity of dairy farming. Van Bruggen

Pakistan:
Evaluation of the joint bilateral project with the Peshawar Veterinary Research Institute, inventory of the possibilities to develop livestock farming in a frontier province, and study of the possibilities for cattle export and the supply of artificial insemination equipment. Schukking

China: Assistance in the improvement of fodder production. Schukking (3x)

1982:
Kenya: Evaluation mission Dairy Development Project. Osinga and Schukking

Tanzania: Technical and economic evaluation of large scale dairy farm project. Ovinge

Pakistan: Planning of feed supply on two experimental farms. Schukking

China: Evaluation of grassland improvement. Schukking

1983:
Kenya:
Backstopping mission to support and evaluate the research Dairy Development Project. Schukking

1984:
South Korea and Taiwan:
Orientating visit as regards livestock farming and presentation of lectures. Schukking

Egypt: Visit of bilateral livestock farming projects. Osinga and Schukking

Saudi Arabia: Technical advice for a large dairy farm. Van Bruggen

Pakistan: Review mission of a livestock farming project. Schukking

Egypt: Feasibility study for the expansion of dairy farming. Van Bruggen

Saudi Arabia: Developing plans for a beef farm. Van Bruggen

Burundi: Developing a plan for a large-scale dairy farm. Osinga and Schukking

Kenya: Backstopping mission to support research Dairy Development Project. Schukking

Spain: Assessment of a plan for a major cooperative livestock farm. Schukking

1985:
Saudi Arabia:
Study of dairy husbandry with recommendations for Netherlands support. Van Bruggen and Osinga.

China: Presentation of Dutch livestock sector. Osinga

Belorussia: Advice on the establishment of two dairy farms. Schukking

Tanzania: Livestock Development Advisor and coordinator of livestock projects for one year. Ovinge

India: Study of dairy farming and of the feasibility for livestock improvement using artificial insemination. Schukking

Turkey: Analysis of development plans for dairy farming. Van Bruggen

China: Feasibility study for a dairy farm. Schukking

China: Assessment of the possibilities for grassland improvement. Schukking

1986:
Pakistan: Study of the livestock development in the North-Western Province. Boonman

Bangladesh: FAO team to design the organizational layout and work plan for Bangladesh Livestock Research Institute. Schukking (2x)

Saudi Arabia: Committee for cooperation. Osinga

North Yemen:
Advice on plan for a private dairy farm and investigation of the possibilities for export. Van Bruggen

Kenya:

Discussion of present and future research programme of Dairy Development Project. Schukking
Kenya: Evaluation of Dairy Development Project. Bootsma

China: Feasibility study possibilities dairy farming in Tibet. Schukking

1987:

India and Sri Lanka: Study tour on the developments of small-scale livestock farming. Ovinge

1988:

Mauritania: Organization of a course on extension methods. Snoek

Saudi Arabia: Evaluation of a bilateral dairy farming project. Osinga

Poland: Assessment of private livestock farming. Van Bruggen

1989:

Saudi Arabia: Participation in project support committee. Osinga

Russia (incl. Estonia): Transfer of knowledge on dairy farming in The Netherlands. Schukking

Sri Lanka: Mission to evaluate two livestock development projects. Schukking

Poland:

Mission to study possibilities for the development of private dairy farming. Osinga and Van Bruggen

1990:

Iran: Evaluation of the management on farms supplied with Dutch heifers. Van Bruggen

Russia: Assessment of proposals to privatize several cooperative farms. Schukking

1991:

Kenya:

First year of Dairy Cattle Research Project at the National Animal Husbandry Research Centre, Naivasha. Production of fodder crops, feed, models and economics. Osinga, Snijders and Nijssen.

Tanzania: Support to dairy development projects. Schukking

Poland:

Dairy farming project in Turosl. Support as regards

grassland use, new cubicle houses, administration, accountancy and project evaluation. Schukking and Van Bruggen

Saudi Arabia: Support to dairy project, drafting of agreement and work plan. Boonman

1992:

Slovenia:

Lectures on the Dutch livestock sector, within the framework of the bilateral contacts since 1976. Schukking, A. Meijer and Van Bruggen.

Kenya:

Visit of "Farmersday" of the National Animal Husbandry Research Centre, Naivasha, and orientation within the framework of the existing cooperation with PR. Blokland and Kuipers

1993:

Estonia:

Orientation into the possibilities for cooperation to support the development of privatized smallscale dairy farms. Schukking and Luten

Hungary and Slovakia:

Evaluation of several agricultural demonstration projects according to the Dutch model. Van Bruggen

Slovenia: Visit of breeding and extension institution. Schukking and Kuipers

Kenya: Consultations on current and planned research activities. Snijders

1994:

Poland: Participation in symposium on the Dutch livestock farming project in Turosl. Schukking

Bangladesh: Recommendations for setting up a pilot dairy farm. Van Bruggen

Slovenia:

Advice on rations for dairy cattle on farms linked to the livestock improvement institute of Ptuj. Schukking and R. Meijer

Slovakia: Feasibility study for cooperation with Nitra agricultural university. Schukking

Poland:

Participation in symposium of Bydgoszcz Agricultural University on efficiency on dairy farming and assessment of grassland management in Turosl. Schukking

Curriculum vitae Sije Schukking

Born in 1930 as a son of a dairy farmer in the "dairy province" of Friesland, he studied dairy technology at the Agricultural University of Wageningen. The special subjects he choose in that study namely microbiology, organic chemistry and dairy technology made him very suitable for the job he obtained at the Research Institute for Processing of Agriculture Produce. In the eleven years he worked there, it was not cheese and butter he processed but grass and maize. In that period he did basic and applied research on silage making of grass and maize, with a good feeling for the needs of the practica1 dairy farmers.

When PR was founded in 1970, he joined it and brought his knowledge and experience with silage making in this new organisation. The task of PR to conduct applied research of which the results can be applied directly by the farmer agreed well with his ideas and research approach. His interest for the practical problems of dairy farming was a stimulating force in setting up new experimental farm systems on the Waiboerhoeve. He was requested many times to give lectures to the extension service but also to practica1 far-

mers. In the European scientific world he is considered as a specialist in silage making. However, it lasted nearly fout-ty years before the English farmers are also convinced of the advantages of his pre-wilted silage. Working on the Waiboerhoeve near Kleve in Germany he was a personal friend of his colleagues at the Grassland Institute and the experimental farm Haus Riswick.

It was not more than logic that in 1975 Sije Schukking became involved in international activities besides his research and advisory work for Dutch farmers. With his interest for dairy farming under various conditions and his ability to adapt to different situations he was asked for many missions. From 1983 till now he is engaged full time in international cooperation. Planning, backstopping and evaluation of livestock or dairy development projects has become a daily routine.

His hospitality is well known among visitors from abroad. He receives them at home in his spare time, introduces them to the Dutch culture and organises special sight seeing tours.

So, his work is his life

Some statistics:

Working years at PR	25
Missions to foreign countries	40
Number of publications	60
Lectures (only officially registered ones)	62
Glasses of wine (one glass every evening)	14.600
Number of kilometers:	
- to his office 20 years Wageningen - Lelystad vice versa	500.000
- missions to foreign countries (40 times)	600.000
(in total about 27 times around the world)	