5th Meeting - Milano, 2nd September 1994

CONCLUSIONS AND RECOMMENDATIONS

The Club of Bologna met on September 2, 1994 in Milan, on the occasion of the XII C.I.G.R. World Congress and AgEng '94 Conference on Agricultural Engineering, with the participation of 50 experts from 23 countries, and discussed the following topics:

i) multifarm use of mechanization in Egypt;

ii) new agricultural machinery design concepts to meet the technical and economic requirements of agriculture;

reaching the following general

Conclusions and Recommendations

1. Current issues and critical view on Egyptian farm mechanization multifarm use

(Keynote speaker; M.A. El Hossary - Egypt)

The paper concerned the use of contractors in agriculture, discussed during the 4th meeting held in 1992. The analysis essentially confirms the conclusions reached in said meeting. More specifically, the following recommendations are shared by many developing countries:

- agricultural co-operatives have an extremely important role to play in the development of agricultural mechanization. This role should be clearly defined, and future strategy should seek to keep co-operatives within the boundaries of that definition and prevent them from hindering agricultural mechanization in other sectors. Co-operative mechanization should continue to be aimed at the farming communities to encourage equality of mechanization. Hire rates for co-operative machinery should reflect actual costs, and the quality of their operations should be carefully monitored;

- village councils must appoint agricultural engineers directly concerned with the on-farm use of machinery with regard to the establishment of contract hire rates and, most importantly, the establishment and control of minimum quality standards for farm machinery operation;
in contract service work, all the farmers in a given area must organize their operations so that the same type of work is performed during the same period, before the machinery is moved to another area. A standing order can be applied so that machinery will not be moved excessive distances to serve small areas;

farm machinery dealers should be encouraged to establish contract services at the village level to perform the following tasks:

- demonstrate to farmers the benefits of using farm machinery properly and how the machines should be operated and managed. This will promote dealer sales;
- provide on-the-spot spare parts and maintenance service to farmers and contractors;

when hire holding companies are properly managed, this will generate individual machine ownership and other types of multifarm use alongside the hire service, which to some extent can replace each other and also be complementary to each other. This form of privately owned hire service facilities should continue on a larger scale.

2. New agricultural machinery design concepts to meet the technical and economic requirements of agriculture

The subject was divided into four topics, each examined separately. During their discussions, the participants reached the following conclusions:

2.1 Component flexibility and co-operation as strategic objectives in tractor development

(Keynote speaker: L. Fisher - Germany)

Acknowledging that the world-wide tractor market is relatively small, and that there is a growing need to offer tractors capable of coping with farmers' increased technical and economic requirements, the participants were agreed in recognizing that:

- component flexibility can help in coping with rapidly changing conditions in the world-wide supplier environment;
- as it is very difficult to translate tractor specifications into real customer income values, component flexibility helps to react to market trends driven by customer expectations caused by political constraints, weather conditions and competitive pressures;
- component flexibility gives engineers the room for constant technical and technological improvements;
- component flexibility makes it possible to fill the last market niche, in an effort to keep production volumes above the trend line of shrinking markets.

One of the most important options for ensuring production flexibility is to shift to modular, frame-type tractor design.

The application of this concept could produce the following benefits: inventory reduction (up to 30%); materials handling reduction (up to 60%); lead time reduction (up to 75%); warranty reduction (up to 50%); floor space reduction (up to 40%).

This could help expand the market and meet farmers' expectations, although this concept is only one important part of the total process.

To achieve this goal, co-operation must be increased among competitors, with suppliers and with university research institutions. These institutions must go a step further in defining the real technical and economic requirements of the various agricultural patterns.
2.2 Component flexibility and co-operation as strategic objectives in farm machinery development

(Keynote speaker: W. von Allworden - Germany)

The participants acknowledged that one of the current trends - at least in farming in the developed countries - is the replacement of tractor-towed implements with specialized self-propelled machines. The purpose is to permit farmers to utilize the technical and economic benefits of modern high technology.

More specifically, this has long been a factor in the area of big balers, while it is beginning to affect the areas of moving, tedding, turning over and swathing of forages.

From the industrial standpoint, the participants agree on the fact that these trends make it necessary to favour:

− maximum component standardization;
− manufacturing concentration on fewer machine models;
− co-operation with outside firms specialized in assembling the machinery and producing simpler parts especially suited to local requirements.

The participants therefore recommend an effort, including political strategies, to promote this broad industrial transformation to benefit the development of the industry itself, maintain employment levels and reduce the costs of agricultural production. This could play an increasingly important role on the diffusion of contracting services as well as for multifarm mechanization use.

2.3 Component flexibility and co-operation from the standpoint of a component supplier

(Keynote speaker: P. Röttgen - Germany)

The development of self-propelled farm machinery can only cover a portion of the numerous farm operations. The problem, therefore, is to improve the production of components for tractor-towed farm machinery and, more specifically, the drive and coupling system. This can be achieved through intense standardization and automation and monitoring how the various operations are performed.

Some examples in this regard were provided concerning drive line systems and transferable modular design concepts.

The participants recommended that a widespread application of this concepts would be consistent with appropriate innovations and standardization of farm machinery manufacturing and intense forms of international co-operation among machinery manufacturers and component suppliers to optimize the various mechanization chains would be developed.

The need to reduce costs is strong enough to favour those new industrial prospects which farmers must bear in mind in order to verify whether those standardized solutions are sufficient to meet the specific requirements (technical and economic) of the various agricultural productions and areas.
2.4 Problems affecting the quality of new food production demand

(Keynote speaker: B. Cheze - France)

In general terms, there is a growing demand to:

- improve the quality of farm products;
- reduce production costs;
- increase value-added at the farm level.

This is due to the growing tendency to view the agro-industrial system (from farm production to transformed end product) as an increasingly interconnected whole, hence the need to supply agricultural raw materials particularly suited to subsequent processing operations.

As a result, the various field operations must be performed on a more timely basis, product damage and loss must be reduced and quality must be improved.

Consequently, the design of farm machinery must be revised, conceived within specific "itineraries of techniques" in which information technology, modelling, the use of sensors and high-tech in general are destined to play a growing role.

Studies in this field are still at the initial stages, but the participants unanimously recommend that every effort be made to develop them rapidly in order to better meet the requirements of agriculture.