

Club of Bologna November 16-17, 2003

Conclusions and Recommendations

Sixty six experts from 33 countries and representatives of FAO, CIGR, AIT and UNIDO took part in the XIV Club of Bologna meeting, held on 16 and 17 November 2003 on the occasion of the XXXIV EIMA show, under the aegis of CIGR and with the sponsorship of UNACOMA. There were three topics under discussion, all to a certain extent interrelated, of which the first was **"Reducing the manufacturing costs and management costs of tractors and agricultural equipment"**, with contributions by three Club members representing major equipment manufacturers: J. Deere (USA); Kverneland (Norway) and Yanmar (Japan) as well as the University of Braunschweig (Germany) – Institute of Agricultural Machinery and Hydraulic Power. The second topic was **"Strategies for the development of agricultural mechanisation in African countries: role of governments and the private sector"**, with a keynote paper by L.J. Clarke, representative of FAO. Finally, the third topic was **"Progress made and activities completed in relation to traceability"**, with an introductory presentation by Y. Sarig (Israel), on behalf of a working group comprising H. Auernhammer (Germany), L. Bodria (Italy), H. Cetrangolo (Argentina), I. De Alencar Nääs (Brazil), J. De Baerdemaeker (Belgium) and Ph. Marchal (France).

Conclusions

1. **Reducing the manufacturing and operating costs of tractors and agricultural machinery.**

The first of the three introductory papers setting forth the perspective of industry was given by **J. Reid** (USA) in collaboration with **W. Norris** (USA) and **J. Schueller** (USA); the second by **E. Niemeijer** (Holland) and the third by **T. Kobayashi** (Japan). All three presentations focused on the industrial side of the problem, underlining that production costs can be effectively reduced through the application of specific modern management methods. In particular, significant advantages may be obtained from: a more rational internal organisation of factories; standardisation of machines and their components; modularisation; increased interchangeability of components, so as to also reduce the cost of after-sales service and spare parts. One particular area of increasing interest, according to *Reid*, is the use of electronics and mechatronics to accomplish more appropriate and cost-effective agricultural management. In addition, *Reid*, *Norris* and *Schueller* noted the necessity of differentiating the design approaches for the industrialised and emerging countries. *Niemeijer* pointed out the importance of improving internal organisation to reduce R&D costs, and taking greater care in the selection of dealers, who must have the most modern and appropriate equipment for answering the needs of purchasers. *Kobayashi* then emphasised the importance of modularity, and the deployment of electronics and IT as means of reducing costs at both the industrial and agricultural level. **H.-H. Harms** (Germany) finally reasserted the need to shorten the development cycle of innovative products, and to this end described the "S.E. Simultaneous Engineering" method, under which the various phases of production are carried forward concurrently by interdisciplinary teams working in collaboration. The greatest advantage afforded by the S.E. method is a faster development cycle for new products which must be extensively tested in the field. This field work --coupled with the involvement of dealers --becomes more and more important as the complexity of machines increases.

2. Strategies for developing agricultural mechanisation in the African countries: role of governments and the private sector.

The presentation by **L.J. Clarke** began by recalling FAO's contribution to the definition of guidelines on the proper role of mechanisation in agricultural development, based upon observations in various developing countries, where farmers have had real difficulty accessing mechanisation and related services. Hence there is a need for the private sector to play its part, by taking into consideration the needs of farmers, dealers, manufacturers and importers. This with the ultimate aim of determining the most appropriate forms of mechanisation as a function of: the specific organisational and economic situation of the farms, the possible forms of credit, the role of contractors and agricultural machinery user groups, the available level of technical service, and the existence of local support organisations. The collaboration of agricultural machinery importers, manufacturers, distributors and dealers is of course a necessity.

Governments, on their part, should be putting in place policies for promoting more rational development of local industry and agriculture, as well as addressing infrastructure and employment issues, and providing assistance for research, development, testing and technical training.

3. Progress made and activities completed in relation to traceability.

The presentation by **Y. Sarig** was the logical continuation of the discussion undertaken on this subject during the two Chicago and Bologna sessions in 2002. Taking into account that traceability is now incorporated into both the ISO regulations and those of various nations including the USA, EU and Japan, the report was subdivided into the following sections: definition of traceability, reasons why it is needed, and means by which it can be achieved; practical aspects of its application, including the innovative electronic and IT systems, sensors and computerised field logs that must be installed on the various agricultural machines, in order to implement traceability at both the production and post-harvest stages. There followed a discussion of the role that the Club of Bologna should play, also with regard to strengthening the links between producers and consumers for the purpose of assuring food safety. An essential prerequisite for the validation of the various traceability systems is the definition and adoption of innovative technologies developed specifically for that purpose.

Following an extensive and in-depth discussion of all three topics, the *participants* formulated the following:

Recommendations

Topic 1

- **Having noted** that the representatives of industry limited their analysis to the manufacturing-related aspects, and did not mention the problems of optimisation at the farm level, which would need to be implemented through choices geared to the specific local conditions of different agricultural systems;
- **Acknowledge** that standardisation and modularisation of components is one of the primary routes for reducing costs; that a fundamental contribution in this respect can be made by novel CAD and CAM solutions--an area in which much still remains to be done; that considerable attention should be devoted to the application of "Simultaneous Engineering" systems for the concurrent development of new products by interdisciplinary teams, with the dealer networks also involved in the process from the outset;
- **Concur** on the importance of localised approaches geared to the mechanisation needs of developing countries, especially with regard to the ease of use of machines. Whereas in the industrialised countries standardisation of components should be pursued as a route toward simplifying maintenance.

- **Confirm** that: in all cases: it is necessary to shorten the development cycle of new products, as well as improve the marketing of spare parts and the training of dealers and sales staff;
- **Recommend** the introduction of "teleservice" remote technical support as a means of reducing costs;
- **Underline** the need to: upgrade the quality level of dealers, by providing them with improved and up-to-date technologies; give maximum importance to feedback received from end consumers (farmers and contractors); develop machines able to meet the needs of precision farming; encourage technology transfer towards countries with lower labour costs; foster wider-ranging collaboration between manufacturers, farmers and research and development institutions.

Topic 2

- **Having recognised** the need to define precise guidelines that can enable governments of African countries to facilitate access to mechanisation that is appropriate, simple and low cost;
- **Underline** the importance of acquiring sufficiently detailed information about the agricultural systems of the various countries, the available forms of financing and credit, and the utilisation of labour by both the private and public sector;
- **Reassert** the overarching need to: provide the various countries with efficacious irrigation systems, means for transporting farm inputs and crops, appropriate product storage technologies and simple manual or animal-drawn tools, while at the same time promoting the establishment of machinery sharing centres (cooperatives, etc.) that can directly aid farmers.
- **Recommend** that the Club of Bologna make a contribution through the provision of assistance to developing countries, in particular by promoting technical meetings and field demonstrations, as well as training workshops on the maintenance and repair of the most appropriate machines, and through the establishment of local dealer networks;
- **Underline** the fact that such actions must be capable of delivering tangible benefits to the economies of both emerging and industrialised countries, by helping to define the most appropriate technical-economic solutions for the transfer of specific technologies.

Topic 3

- **Having recognised** the need to promote further research and development on the instruments that must be installed on tractors and agricultural machines, and in particular the sensors, I.T., electronics, and computerised field logs necessary for the traceability of plant and animal productions;
- **Recall** the fact that traceability is now a requirement under the ISO regulations, as well as those of the USA, the EU, Japan and other major countries;
- **Recommend** that the Club of Bologna set up working groups of its members charged with:
 - **helping** to establish--in collaboration with chemists and biologists--the physical, chemical and biological parameters to which each product must conform;
 - **defining** the requirements of international standardisation aimed at the assurance of food safety;
- **Emphasize** the importance of close collaboration between industry and research for the practical implementation of product traceability, and of keeping farmers, contractors and processing factories fully informed of the decisions taken concerning the appropriate use of these new, essential technologies.