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# INTERNATIONAL FORUM ON APPROPRIATE INDUSTRIAL TECHNOLOGY

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.....  
**WORKING GROUP No.7**

**APPROPRIATE TECHNOLOGY  
FOR THE PRODUCTION OF AGRICULTURAL  
MACHINERY AND IMPLEMENTS**

.....  
APPROPRIATE TECHNOLOGY APPLICATION IN THE  
AGRICULTURAL MACHINERY AND IMPLEMENTS INDUSTRY IN YUGOSLAVIA  
Background Paper

APPROPRIATE TECHNOLOGY APPLICATION  
IN THE AGRICULTURAL MACHINERY AND IMPLEMENTS INDUSTRY  
IN YUGOSLAVIA

by

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FOREWORD

The United Nations Industrial Development Organization (UNIDO) in Co-operation with Government of India are organising the International Forum on Appropriate Industrial Technology in November 1978 in India.

The Author is requested to prepare and present a paper on personal experience about Agricultural Machinery Industry in S.F. R. Yugoslavia for discussion at the Forum.

This paper gives brief information of swift and dynamic industrial development in Yugoslavia on the ground of Agricultural Development and suitable technologies in the machinebuilding Industry.

Anyhow, shortage of time could not allow to present all technologies applied in production, but it is understandable, that every make and model of machines has its own technologies in production.

The information and datas are adequate to the paper and therefore any missing information understandable.

Development of programmes and business orientation of domestic tractor agricultural machinery and equipment industry is projected in Yugoslavia today on principles of selfmanaging socialistic pattern of Society and conditions of economical activity.

Such development presents orientation of agricultural machinebuilding firstly for provision of requirements on the domestic market realized today with suppliers of raw materials and services as well as users of their finished products by respective practices ruling in foreign trade exchange.

Taking into consideration the development of Yugoslav agricultural machinery and equipment industry in the past and until the Second World War, it could be said, that it was developed on the level of artisan workshops and smaller

industrial units dispersed at larger and smaller towns and larger agricultural villages with high concentration of agricultural activities according to the then existing requirements and market demand.

Agricultural machinery and equipment industries were developed in concordance with the policy in the country, based on the principle of administrative guidance by the Government. In that period of development, the Agriculture bore the greatest burden in renewal and construction of the country. Similarly, the agricultural machinery industry has not received adequate attention.

After some time, it advanced forward with organization of existing capacities and construction of new ones exclusively for the requirement of organized production belonging to the society.

New constructed capacities produced agricultural machinery on the ground of existing industrial technologies which were available in Yugoslavia.

With commencement of planned development and organization of particular economic branches conceived the modern tractor, agricultural machinery and equipment industry on the basis of purchase of licences and technologies for the production of tractors and agricultural machinery indispensable for the organization of modern agricultural production.



Swift and dynamic development of the Yugoslav Economy have not encircled sufficiently, directed and coordinated all economic branches. In that period, the Agriculture had the lowest rate of growth. From the exporting country before the Second World War of agricultural products, Yugoslavia became a large importer of food.

By the Economic Reform and acceptance of principles of market economy, more attention to the Agriculture was given. Respectively to that and economic branches providing technical working means and raw material for the agricultural production have not been in position to satisfy new technology in the Agriculture which has started to import modern technical working means.

Disproportion within the timing of development directed and initiated by the society through the programme known under popular name "Green Plan" and Industry for Mechanisation of Agriculture forced domestic manufacturers to reconstruct the existing and construct new large scale modern capacities for production of equipment indispensable for organization of modern and high productive agricultural production.

Due to such changes in the agricultural production, existing artisan production units specialized in the area of agricultural regions and tractor service stations have been organized at several points and are used for repair of different mechanisation imported from abroad and training

of operators for mechanisation. Five year plans include development of machinebuilding towards large and individual farmers, so that today nucleus of large scale industrial production is located in the vicinity of bigger towns and existing medium and small industries are dispersed throughout the country.

Clear and consistent rural development policies of Society had deciding influence on speed and size of mechanisation development process on Agriculture. This practice is confirming, that by advance known instruments without often changes in attitude towards Agriculture and villages as the whole and towards individual producers particularly, who as owners approx. 80% of total cultivated surfaces in Yugoslavia, cultivated by them directly or in collaboration with producer organizations in socialized sector particularly, economic policy had deciding factor on the activity as well as to technical technological development of these economic activities.

Rural politics in which particular place is given to the association of individual agricultural producers and which, by the way, is based on economic reasons, it is directing and expanding conditions for development of exploitation characteristics of machinery and equipment production both in respect of machinebuilding as well as in respect to organization of production technology of this equipment.

Impulses for the industrial development and realistic market space for assortment and quantity of their products,

it is formed under influence of several factors. Factors having influence are:

1. The consistency of rural policies,
2. The quality and assortment of offers,
3. The following pattern and impulses of directive development,
4. The level and relation prices,
5. The offer flexibility on relation to the market demand,
6. The following pattern of technological progress and exact timing of transfer in Agriculture,
7. Construction and improvement in service chain for swifter and complex intervention to secure normal exploitation of machinery and equipment.
8. Regulated means of social finance for sale and production.

This conceptual attitude against power and possible effect of internal demand should be understood respectively. Namely, domestic machinebuilding will not and could not be stopped on the installed capacities as well as the whole import could not be substituted with domestic production.

From those points arising out the Yugoslav tractor, agricultural machinery and equipment industry should be oriented parallel and simultaneously on the international Division of Labour: how to capture markets abroad, as well

for cession of optimal part of National Market to Foreign Competition.

Process of further coordination of programmes against requirements of Internal and Foreign Markets represents one of the more important levers of orientation and connection in horizontal and vertical way with the Yugoslav system of economy through Chamber of Economy of SFR Yugoslavia, Republic Chambers and Business Associations.

The constitution of SFR Yugoslavia and Law of Associated Labor had given basic foundations for interlinkage through selfmanaging Agreements among interested organizations of Associated Labour in all spheres of production and obliged membership in the Chamber of Economy of SFR Yugoslavia.

In the System of reproductive whole the Applied Industry and all other Suppliers of goods which interlink the process of product production is included in machinebuilding of tractors, agricultural machinery and equipment.

The size of reproductive whole depends of the scale of production of final product. By Selfmanaging Agreement on planning and business cooperation mutual relations are developed. Business Board is staying in front of Agreement realisation and Board decisions.

The partnership of means and labour is realized through programme of production and sale.

Predominantly every reproductive whole contains in it, the institutional organization of specialised units dealing with design, repair and services of machinery and Internal Bank.

In connection with large burden of big cities in respect to housing accomodations and other facilities, the future development and increase of capacities of certain products predominantly will be realized in the country, the increase of existing capacities and opening of new capacities in new locations follows.

With regard to the swift development of technology in agriculture and necessity for mechanization of work, machinebuilding of tractors, agricultural machinery and equipment has priority status by the side of Society and all facilities which are required for realization of Green Plan. Associated manufacturers in the social sector, Cooperatives and individual agricultural producers have their production plans and requirement for mechanisation - Selfmanaging agreement among machine builders, trade and end-users have regularised yearly requirement of production, prices, supply and service of machinery according to request of users. This plan and business collaboration is made by direct connection of users through trading organisations or direct connection with manufacturers. Those efforts in the Agriculture brought increase of yield which are visible from the table:

Table 1: Surface and cereal production

| Year | Bread cereals <sup>1)</sup> |                        | Maize          |                       | Rice                   |                |      |    |    |
|------|-----------------------------|------------------------|----------------|-----------------------|------------------------|----------------|------|----|----|
|      | Reaped area in 000 ha       | Production in 000 tons | Yield per ha/q | Reaped area in 000 ha | Production in 000 tons | Yield per ha/q |      |    |    |
| 1947 | 2021                        | 1848                   | 9,1            | 2430                  | 4206                   | 17,3           | 2219 | 8  | 35 |
| 1957 | 2220                        | 3380                   | 15,2           | 2590                  | 5660                   | 21,9           | 5380 | 22 | 40 |
| 1967 | 2040                        | 5020                   | 24,60          | 2510                  | 7200                   | 28,7           | 4350 | 20 | 46 |
| 1977 | 1678                        | 5620                   | 33,60          | 2321                  | 9870                   | 43,7           | 8302 | 36 | 44 |

1) wheat, ruy

The mechanization tempo in Agriculture registered last years, reflected positively in the total production and yields. Future requirements of tractors agricultural machinery and equipment will be discovered by further marketing of machinery in what has surely the main role in selfmanaging Agreement between manufacturers, trade and end-users in dependence of the plan of agricultural production in Yugoslavia and production technology. Anyhow the large concern is devoted to the production of spare parts for maintenance and repair of existing mechanization. Also introduced are industrial reconditioning of engines and whole tractors to expedite service of machines for better utilisation of mechanization. Results of above mentioned swift and dynamic development of the Yugoslav Agriculture had a visible reflection to the tempo of development and scale of domestic industries for agricultural techniques. In relation to the condition of only 10 years before the number of manufacturers of implements and equipment is trippled, and their number is increased in some Republics, for example in Slovenia even for five times.

Dynamic increase in production scale of agricultural technique could be forecasted easily by statistical datas of production scale of tractors and selfmoving single axle machinery during past 10 years, as basic energetic machines utilised in modern agricultural production.

Table 2: Production scale of tractors and selfmoving sigle axle machinery in SFRY 1968-1977.

| Years | Tractors |        | Single axle selfmovers |       |
|-------|----------|--------|------------------------|-------|
|       | Quantity | Index  | Quantity               | Index |
| 1968  | 10.929   | 100    | -                      | -     |
| 1970  | 12.047   | 110,2  | 393                    | -     |
| 1972  | 17.994   | 164,6  | 2.812                  | -     |
| 1973  | 19.985   | 182,9  | 3.147                  | 100   |
| 1974  | 23.899   | 218,7  | 4.506                  | 143,2 |
| 1976  | 33.447   | 306,00 | 16.885                 | 536,5 |
| 1977  | 43.360   | 396,74 | 23.000                 | 780,8 |

We can notice, that the scale of tractor production in this period has increased approx four times. Swift increase of production scale in the past two years is realised by construction of new, modern equiped capacities using latest technology.

Selfmoving single axle machinery after their one year introduction period have registered upto 1973 very characteristic trend, which is expressed distingtly in the last three years, in the period which new capacities were put into operation by three manufacturers.

Within the frame of mentioned production scale of heavy machinery, there are 7 tractor manufacturers producing for domestic requirements and export 27 different models of wheel tractor and caterpillar in the range of 18-220 HP but 5 manu-



facturers of selfmoving single axle energetic machines producing 16 different models of cultivators, rotovators, grassmowers and single axle tractors in the range of 2.8 - 15 H.P.

Further to this, they are producing selfmoving harvesting combines for wheat, with adequate implements for maize, rice and other cereals. Passing capacity for cereals in 5 models allows a range of 4-9 kg/sec and engine capacity from 65 and 165 H.P.

Numerous manufacturers of adequate implements and machinery, over 50 in member have directed their efforts in securing more qualitative technical-exploational solutions which will satisfy requests of modern agrotechnique how in production by large social estates as well in small individual farms with average sizes today approx 2.5 hectares. Their available capacities do not secure domestic production of tractors completely with adequate implements, but they are able to secure required quantities of them for extensive their demand in the world market.

For End-user requirements in the country and abroad today, they are producing over 60 different types of adequate machines and machinery for mechanisation of plant production. Numerous models and types securing their utilisation in different soil, climate and organisation conditions of production of the large number agricultural plants which are cultivated in Yugoslavia and in the world.

In relation to the application of machinery that are developed within the frame of below mentioned assortment groups. We are mentioning only basic groups of machines as:

- Attached implements for basic soil treatment: mounted, semi-mounted and drawbar mould and board disc ploughs, for all kind and deepness of ploughing, subsoiler, and rotavators - 5 producers.
- Mounted and drawbar machines of capacity 0,3-3 tons for fertiliser spreading and drawbar machines for spreading of stable dung and liquid capacities 3-8 tons - 7 producers.
- Seeders, mounted and drawbar for wheat, maize sugar beat and all other corn cereals, working width upto 4 m consequently 12 rows, as well as planters for plant and potato, working width 2,4 and 6 rows - 4 producers.
- Interrow cultivators for different cultivated plants working width from 2-12 rows with arrangements for deposit of fertiliser and protection of plant discases and insects - 4 producers.
- Stationery, mobile and selfmoving equipment of small, medium and large capacities for watering and artificial rain sprayer of low and high agricultural plants - 4 producers.

- Plant protection machines for agricultural plants (cereals, maize and rice) orchards, vineyards and other many year plantations from plant diseases and pests. Mobile, mounted and drawbar sprayers, atomisers and dusters with own engines or tractor drive - 3 producers.
- Agricultural aeroplanes of capacity 1,2 tons of freight - 1 producer.
- Implements and machines for loose cattle food preparation for all types of light and medium tractors. Side and rear mower and hay machines. Selfloading trailer volume upto 30 m<sup>3</sup>. Silocombines mounted and drawbar - 5 producers.
- One row and two row drawbar maize pickers of mercantile and seed maize with and without cutter for chopping staples - 2 producers.
- Multirow disc-lifter, as complete 6 row drawbar line of machines for sugar beat harvest - leaf & head cutter (defoilator), lifter, loader, as well mobile combine for sugar beat harvesting - 3 producers.
- Choppers of plant remains of corresponding agricultural plants working width 2-4 m - 2 producers.
- Agricultural trailers, single and double axles standard and tipping type, with side and rear unloading capacities 3-15 tons - 11 producers.

- Dryers for all kind granular products, tabac, fruits vegetable and other agricultural products with direct and indirect air heating - 3 producers.
- Dehydrators and dryers for clovers and grasses - 2 producers.
- Separators, dehydrators and other equipment for waste water - 1 producer.
- Cleaning and selecting equipment of agricultural products - 3 producers.
- Animal drawbar ploughs, spike tooth harrow, seeders, multirow cultivators, rakes, trailers etc. - 7 producers.
- Complete plants for silo and manipulation equipment in storehouses of all capacities - 4 producers.
- Installation and equipment in stables for cattle growing, pigs, sheeps and fowls growing - 4 producers.
- Milking equipment, refrigerators and milk manipulation - 2 producers.
- Factories and smaller plants for industrial production cattle fodder of all cattle categories - 3 producers.

Beside mentioned machines and equipment, produced are many other not mentioned machines, plants and equipment for specific applications indispensable for organization of high

productivity and economical agricultural production in particular branches.

On the ground of existing data on planning of implement and machine production at 50 largest producers technical level of tractor equipping with implements could be estimated. Sale of implements in relation to the total sale of tractor in the Yugoslav Agriculture was:

Table 3: Sale estimate of implement volume and structure per one tractor SFRY 1977

| Rumunig number        | Type of implements   | per one tractor | Structure of implements % |
|-----------------------|--|-----------------|---------------------------|
| 1                     | All kind of ploughs  | 0,98            | 30,60                     |
| 2                     | Disc harrows, cultivators and other implements for additional tillage and proseedng soil preparation | 0,74            | 23,1                      |
| 3                     | Implements for fertiliser spreading  | 0,11            | 3,4                       |
| 4                     | Seeders and planters   | 0,12            | 3,7                       |
| 5                     | Multirow cultivators   | 0,08            | 2,5                       |
| 6                     | Plant protection machines  | 0,15            | 4,7                       |
| 7                     | Hay preparation implements   | 0,31            | 9,7                       |
| 8                     | Mounted and drawbar machines for maize, beat, sillage and other plant collection                     | 0,09            | 2,8                       |
| 9                     | Agricultural trailers  | 0,53            | 16,3                      |
| 10                    | Miscellaneous  | 0,10            | 3,2                       |
| Total per one tractor |  | 3,20            | 100                       |

Relatively small volume in production of some implements are conditioned by low agro-technical level of individual producers, as well by influence of other factors limiting swift equipping and modern organization of agricultural production on their lands which engage today 82,4% of available arable surfaces.

It is estimated, that the value of mentioned volume of tractor production, implements and machines as well as the equipment for mechanisation of corresponding working processes in agricultural production in year 1977 was approx 468,45 million US \$.

With this value of production the Industry of tractor, agricultural machinery and equipment for agricultural mechanisation participated with 7,78% of total value of Metal Industry Production of Yugoslavia, finding itself behind the Automobile Industry which today is placed immediately at first place.

Technical equipage of Yugoslav tractor agricultural machinery and equipment industry and tractor industry particularly and other energetic machines after putting into operation of new constructed capacities finds itself at the level of industrially developed countries in this production sphere out of which leading unit realising 35.000 units per year.

Further development plan of the Yugoslav Agriculture envisages to reach by 1980 the level of technical equipage and energetic sufficiency of countries with the most

intensified Agriculture in the World and at individual producers at the level of country with intensification of Agriculture over European average.

This goal should be realised by 1980 under energetic supply of particular categories of estates by the following number of tractors:

|                        |                      |
|------------------------|----------------------|
| social estates .....   | 27.000 units         |
| individual farms ..... | <u>423.000 units</u> |
| Total                  | 450.000 units        |

By such energetic supplies of Yugoslav Agriculture and expected relation in structure ownership of tilled respectively arable surface per 1 tractor should be following:

Table 4: Expected coverage of one tractor per tilled and arable surface S.F.R.Y, 1980

|                         | S.F.R.Y. belonging to    |                |                      | ha per 1 tractor |                |                      |
|-------------------------|--------------------------|----------------|----------------------|------------------|----------------|----------------------|
|                         | S.F.R.Y. total<br>ooo ha | social estates | individual producers | S.F.R.Y. total   | Social estates | Individual producers |
| Tilled surface          | 9.870                    | 1.850          | 8.020                | 21,9             | 61,7           | 19,1                 |
| arable land and gardens | 7.240                    | 1.570          | 5.670                | 16,1             | 52,3           | 13,5                 |
| Structure               | 100,0                    | 21,7           | 79,3                 | -                | -              | -                    |
| Index                   | -                        | -              | -                    | 100-             | 324,8          | 83,8                 |

Taking into consideration the Plan of Agricultural Development, domestic tractor producers are also commencing reconstruction and expansion of existing as well construction of new capacities for tractor production.

Nevertheless, it is expected, that the Yugoslav tractor industry with planned expansion already installed capacities in 1985 will produce the following quantities of below mentioned tractor categories:

Table 5: Production volume estimate of double axle tractors  
S.F.R.Y years 1977-1985

| Tractor category | 1977   | 1980   | 1983   | 1985   |
|------------------|--------|--------|--------|--------|
| till 45 HP       | 37.850 | 48.000 | 54.000 | 60.300 |
| 46-90 HP         | 10.080 | 13.500 | 12.000 | 10.000 |
| 91-160 HP        | 55     | 1.500  | 3.500  | 4.000  |
| 161-250 HP       | 15     | 300    | 490    | 600    |
| over 250 HP      | -      | -      | 10     | 100    |
| Total            | 48.000 | 63.800 | 70.000 | 75.000 |

Annual depreciation rate of available tractors in average could be calculated 7-8% considering that their larger part of the total quantity produced in 1980 will be utilised further, at small individual farms for replacement approx 35.000 tractors.



It is expected, that their growth after 1980 will not be so intensive as today and it will not cross the sum of approx 15.000 number of tractor per year. Respectively to this from quantity produced totally by 1980 at domestic market will be sold approx 50.000 tractors or 80% while the balance approx 20% respectively 13.000 should be exported.

On the ground of available information from previous years, the volume of implement and equipment production for mechanisation of Agriculture should be approx 90.000 tons per year.

Following the volume increase of tractor production in next period, it is expected to be approximately 140.000 tons per year by 1985.

One of very important measure for smooth utilisation of machines and equipment is organisation of service and spare parts supply. Through trade organisations the supply of spare parts is arranged. Through repair workshops and services stations are arranged repairs within guaranted period and after guaranted period expires.

Purchase of agricultural machinery only is not solving the policy realisation of Agricultural Green Plan, in as much the training and buyer consultation are made how machine could be managed for realisation of their mechanisation of agricultural technology and adequate machine maintenance and supply of spare parts, fuel, lubrication and protection.

The user of mechanisation should be trained adequately with machine and technology of agricultural production. Due to this and production volume increase and sales certain producers are constructing their own centres for sale, training of cadre, service and reconditioning of their products.

Developing countries brought forward the decision on Action Plan of their development and mutual co-operation, policy supported and helped by the Government of S.F.R. Yugoslavia through the Chamber of Economy of S.F.R. Yugoslavia. Anyhow, it is necessary to emphasize the possibility of co-operation among developing countries within area of Agricultural development, agricultural machinebuilding, chemicals etc. as per the programme "STRUGGLE FOR FOOD".

Every developing country has its own social economic goal and historical development, and accordingly that volume and size of cooperation is possible cooperation of accepted programme (earning system, prices, customs, economic power etc.)

From the development in Agriculture and Policy of each country against malnutrition depends also the degree of its mechanisation as well as the possibility of level and volume of co-operation.

The easier co-operation among developing countries arises the question of standardisation of machine production in the World and among developing countries.

The unquestionable fact for success in co-operation among developing countries, depend primarily from mutual exchange of goods, training and specialisation of personnel, the development of co-operation grounds (standardisation, price policy, customs, documentation, technology etc.), development of agricultural technology based on mechanisation, organization of mutual agricultural machinery production, service stations and their organizations etc.

Due to complexity of problems in agricultural production, the system of mechanization is complicated and should be solved adequately.

Recommendations for suggestion:

1. Opening of mutual centres for agricultural mechanisation technology application.
2. Within UNIDO establish Centre of mutual standardization of machines and equipment.
3. Establishment of Centres for instructors for training of end users in application of modern technical means of work in Agriculture.
4. Expert exchange through UNIDO for organisation of industrial production and development of agricultural machinery in developing countries.
5. Preparation of feasibility studies.
6. Exchange of industrial information through UNIDO.

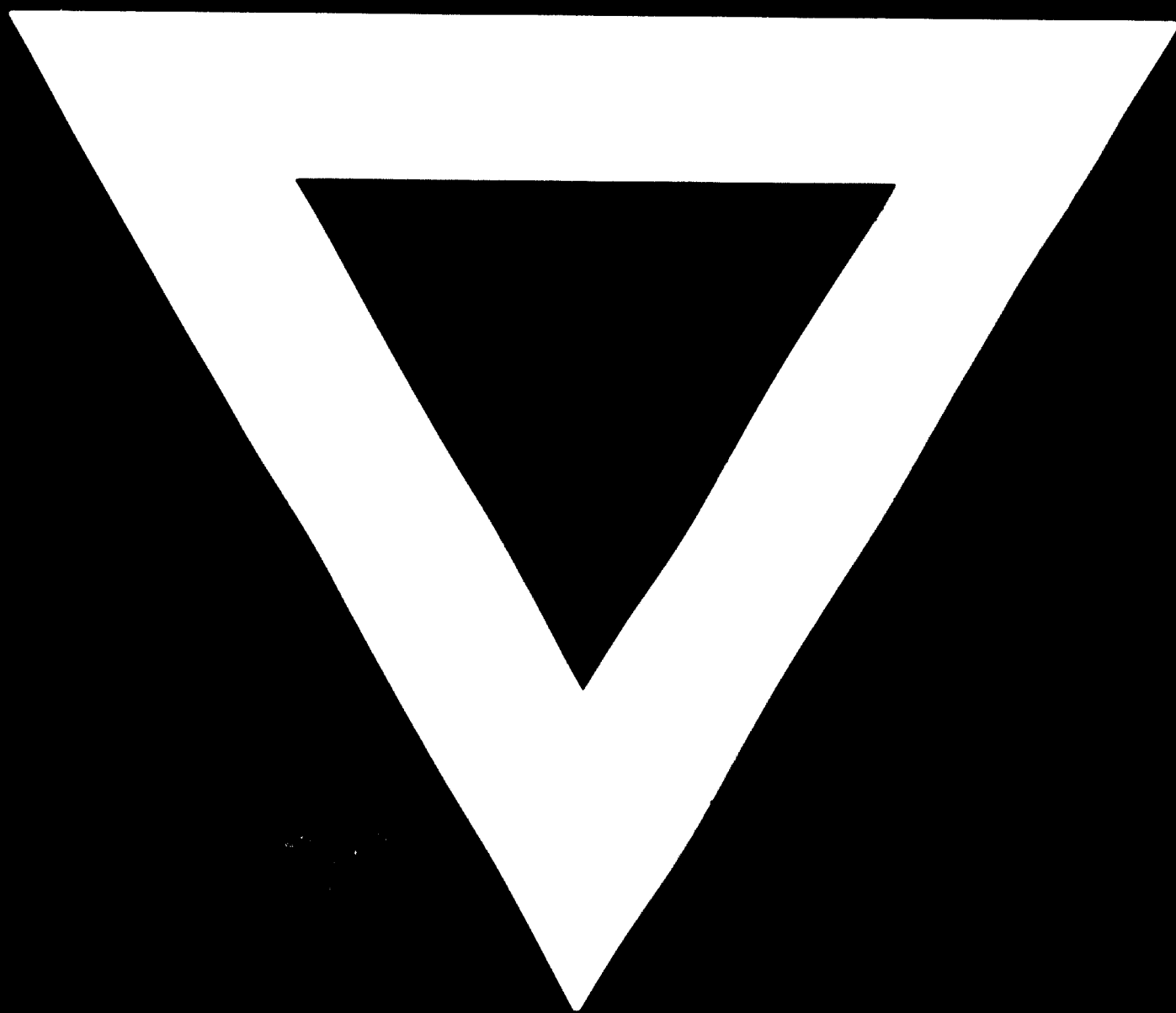
7. In system of rural youth education, introduction of courses based on possibility foundation of modern organization of agricultural production.
8. Organization of specialized courses for education of technical personnel for development of design and production of agricultural technique adjusted to production requirement in respective regions.

## Bibliography:

1. Federal statistic Institute of S.F.R.Y -  
Annual statistic of S.F.R. Yugoslavia year 1978
2. Foreign Trade Institute, Belgrade  
Agricultural mechanisation market year 1977
3. Business Association of Agricultural Machinery  
Industry, Belgrade  
Development and Production possibilities of  
Yugoslav tractors and Agricultural Machinery  
industry as well as supply of equipment  
for agricultural mechanisation, year 1976
4. Business Association of Agricultural Machinery  
Industry, Belgrade  
Information bulletin, years 1975-1978



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