

The technology of post-harvest processing, which must be adapted to the requirements of the market, is one of the most important elements in the development of agriculture. The most important elements in the development of agriculture are the development of the technology of post-harvest processing, which must be adapted to the requirements of the market, is one of the most important elements in the development of agriculture. The most important elements in the development of agriculture are the development of the technology of post-harvest processing, which must be adapted to the requirements of the market, is one of the most important elements in the development of agriculture.

**THE STATIC AND DYNAMIC GROUND PRESSURE OF CASE IN QUADTRAC RUBBER BELT TYPE TRACTOR**  
 L. J. Jón - S. Farkas - Gy. Kéryny - M. Szendrői - Z. Árnóczy  
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 Hungarian Institute of Agricultural Engineering (Gépjelöl)  
 Hungarian Tractor Production System (KTR, Budapest)

The development of rubber belt track was reported several times in the past. In Hungary, in the last decade we have had a changing rubber belt type tractor. The first rubber belt tractor with a rubber belt track was developed by the Hungarian Tractor Production System. The aim of this work was to investigate the static and dynamic ground pressure of the rubber belt track. The results of the static and dynamic ground pressure measurements are presented in this paper.

## PART I.

**COMPARISON OF BARE WRAITH AND MATHEW'S**  
 A. G. G. G.

The ground reaction of agricultural tractors is one of the most important elements in the development of agriculture. The most important elements in the development of agriculture are the development of the technology of post-harvest processing, which must be adapted to the requirements of the market, is one of the most important elements in the development of agriculture.

# ABSTRACT OF SELECTED PAPERS

The most important elements in the development of agriculture are the development of the technology of post-harvest processing, which must be adapted to the requirements of the market, is one of the most important elements in the development of agriculture. The most important elements in the development of agriculture are the development of the technology of post-harvest processing, which must be adapted to the requirements of the market, is one of the most important elements in the development of agriculture.

**INFLUENCE OF THE TRACTOR TO THE TRACTOR**  
 L. J. Jón - S. Farkas - Gy. Kéryny - M. Szendrői - Z. Árnóczy  
 Hungarian Institute of Agricultural Engineering (Gépjelöl)

The influence of the tractor on the tractor is one of the most important elements in the development of agriculture. The most important elements in the development of agriculture are the development of the technology of post-harvest processing, which must be adapted to the requirements of the market, is one of the most important elements in the development of agriculture. The most important elements in the development of agriculture are the development of the technology of post-harvest processing, which must be adapted to the requirements of the market, is one of the most important elements in the development of agriculture.

**ON DETERMINATION OF THE HIGH CONDUCTIVITY OF CERAMIC MATERIALS**  
 A. G. G. G.

The determination of the high conductivity of ceramic materials is one of the most important elements in the development of agriculture. The most important elements in the development of agriculture are the development of the technology of post-harvest processing, which must be adapted to the requirements of the market, is one of the most important elements in the development of agriculture. The most important elements in the development of agriculture are the development of the technology of post-harvest processing, which must be adapted to the requirements of the market, is one of the most important elements in the development of agriculture.

**EFFECT OF BIOLOGICAL PRESERVATIVES ON THE QUALITY OF SILAGE PRESERVED IN PLASTIC TUBES OF KALKA TUBE**  
 L. J. Jón - S. Farkas - Gy. Kéryny - M. Szendrői - Z. Árnóczy  
 Hungarian Institute of Agricultural Engineering (Gépjelöl)

The effect of biological preservatives on the quality of silage preserved in plastic tubes of Kalka tube is one of the most important elements in the development of agriculture. The most important elements in the development of agriculture are the development of the technology of post-harvest processing, which must be adapted to the requirements of the market, is one of the most important elements in the development of agriculture. The most important elements in the development of agriculture are the development of the technology of post-harvest processing, which must be adapted to the requirements of the market, is one of the most important elements in the development of agriculture.

**DETECTION OF SMALL SCALE MECHANICAL CHANGES BY ACOUSTIC MEASURING SYSTEM**  
 J. Farkas - A. Farkas  
 BME University Faculty of Food Science, Budapest

The detection of small scale mechanical changes by an acoustic measuring system is one of the most important elements in the development of agriculture. The most important elements in the development of agriculture are the development of the technology of post-harvest processing, which must be adapted to the requirements of the market, is one of the most important elements in the development of agriculture. The most important elements in the development of agriculture are the development of the technology of post-harvest processing, which must be adapted to the requirements of the market, is one of the most important elements in the development of agriculture.

**THE DEVELOPMENT OF DRYING TECHNOLOGIES**  
 M. Szendrői  
 Hungarian Institute of Agricultural Engineering (Gépjelöl)

The development of drying technologies is one of the most important elements in the development of agriculture. The most important elements in the development of agriculture are the development of the technology of post-harvest processing, which must be adapted to the requirements of the market, is one of the most important elements in the development of agriculture. The most important elements in the development of agriculture are the development of the technology of post-harvest processing, which must be adapted to the requirements of the market, is one of the most important elements in the development of agriculture.

## **THE STATIC AND DYNAMIC GROUND PRESSURE OF CASE IH QUADTRAC RUBBER BELT TYPE TRACTOR**

I. J. Jóri<sup>1</sup> – Zs. Farkas<sup>1</sup> – Gy. Kerényi<sup>1</sup> – M. Szente<sup>2</sup> – G. Antos<sup>3</sup>

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The development of rubber belt track was reported several time from the first appearance in Hungary. In the last decade we tested all Challenger rubber belt type tractors. The first rubber belt tractor with articulated steering system was developed by Case company. Very few result and experience are available from this system, so our aim was to investigate the tractive performance and static and dynamic ground pressure of CASE IH 9370 Quadtrac tractor.

Based on the result and experience of field test we can stated that the tractive efficiency is extremely good, the ground pressure values are better than the wheel type tractor's, but the rigid system of intermediate rollers and the articulated steering can cause some problems.

## **INFLUENCE OF THE FRONT AXLE SPRINGING TO THE TRACTOR DRAWING PARAMETERS**

M. Szente – Zs. Kassai

Non-profit Co. of HIAE for QT., Gödöllő

The last year we tested the JOHN DEERE 6920S MFWD tractor by proxy the KITE Co. We made the drawbar tests with connected and disconnected front axle springing the next to different front axle loading. Our investments we determined the self-traction power requirement of the tractor on the road and the traction power requirement and front axle springing requirement on field. Determine the effects of weight (mass) distribution and travel speed on the followings in four wheel drive, rear and front wheel drive operation system (mode): self traction power requirement, the "wheel power" on drive shaft to front axle and on rear wheel hubs and rate of them, the traction characteristics of the tractor: drawbar pull, drawbar power, traction efficiency.

## **EFFECT OF BIOLOGICAL PRESERVATIVES ON THE QUALITY OF SILAGE PRESERVED IN PLASTIC TUBE (OTKA T 030031)**

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Besides the natural ability to fermentation, the quality of silage is especially determined by the technical circumstances of the preserving procedure. The most important is the storage place, which has to meet a lot of conditions to produce and store silage and haylage of good quality with low loss. Among these conditions, the stimulation and sustain of anaerobic circumstances have to be mentioned as determinants. Further important condition is the quick fill of the silo with less live-labour. Moreover, the possibility of the mechanical loading and feeding the animals with silage is also considerable factor. Next important parameters are the size and the location of the silo, which must be meet the number and place of the animals. Finally, the cost of the silo also has to be taken into consideration.

## **THE DEVELOPMENT OF DRYING TECHNOLOGIES**

M. Herdovics

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Corn is the decisive fodder plant in Hungarian agriculture, primarily used as cereal.

The technology of post-harvest processing, whose most important elements are seed drying and storage are closely connected to the technology of producing corn.

Corn is grown on 1.2-1.3 million hectares in Hungary. The content of moisture at harvest time is 22-25 %.

Given the Hungarian climatic conditions, the grain – apart from a few exceptional years and one or two special species – must be dried.

The cost of drying might be decisive from the point of view of the efficiency of production. Its extent – depending on the content of moisture, the species and the applied technology of drying (performance, energetic features and utilization) – may reach 25-40 % of the full production cost.

The cost of drying is fundamentally influenced by the content of moisture of the grain, other parameters of the drying technology and the speed of moisture loss, etc.

## **COMPARISON OF BALE WRAPPING MACHINES**

Z. Bellus

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In the last years, as a result of the improvement in the quality of the agricultural production and farming, special machines developed for ensilage in Western European practice, appeared in Hungary.

The nutrient content and fermentation characteristics of fermented forage are important parameters in feeding of ruminants, as the demand of animals must be continuously cover both in winter (dairy cows and heifers) and in summer (beef).

The authors compared the bale wrapping methods of forage with low and high moisture content among technologies, based on the packing and pressing methods, which are regarded as the most modern preserving-storing technologies for forage at present. These up-to-date technologies give new aspects the feedstuff management and supply.

## **ON DETERMINATION OF THE HEAT CONDUCTIVITY OF CEREALS AND AGRICULTURAL GRIST MATERIALS**

E. Judák – G. Kovács – L. Fogarasi – P. Korzenszky  
Szent István University, Gödöllő

An instrument measuring the thermal conductivity values of different materials is shown in this article. The principle of measuring method is the determination of the heat flow in stationary state. The unknown heat conductivity of the material tested is measured by comparing it to the known heat conductivity value of a reference (so called standard) material. A precise data base of the thermal conductivity values of those materials used in the food industry has not been completed yet so the data that could be got from these measurements would be very important in the design of industrial equipment and the food processing practice as well. At the same time the knowledge of the real thermal conductivity values of the components, additives and products could be useful for the quality determination and control, too. In this paper, the basic functioning principle of the equipment setup and the basic functions of the software operating the measurement are discussed.

## **DETECTION OF SMALL SCALE MECHANICAL CHANGES BY ACOUSTIC MEASURING SYSTEM**

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On the field of the theoretical and applied research of mechanical properties of horticultural produces there is a need for methods to detect and evaluate the small scale (1-2 %) firmness changes caused by different types of load. The effect

of dropping, pushing, hitting the produces – e.g. during the harvest, transport or processing – or the effect of the turgor loss due to a surface injury cannot be measured by traditional (compressive) methods because of their destructive nature and/or the relatively poor repeatability. The acoustic firmness measuring method can be suitable for the mentioned purpose due to its very high reproducibility and non-destructive nature. The high-resolution acoustic measuring system (with automatic repeating feature) developed at the Physics-Control Department was tested for different produces. E.g. testing the turgor loss of carrot sample 0.1% change in firmness was detected significantly. The system was found to be suitable to determine other micro-changes of the produces as well.

### **SOME PROPERTIES OF PARSLEY LEAVES DRYING**

J. Beke

Szent István University, Gödöllő

In this study a comparative dehydration process analysis of parsley leaves is reported on the basis of experiments within convective and microwave energy transport conditions. The carried out experiments proved, that the results coming from the industrial microwave drying experiences cannot be applied automatically, because the parsley leaves are living organisms and they react to microwave treatments differently than dead industrial materials. It was turned out that the stalk and the leaf proved different dehydration properties during drying. And also, the water removing process was depended on the applied energy transport method. The experiments showed more intensive drying process for the leaf in the convective conditions, while the drying rate of the stalk was higher in microwave field. The reason for this later phenomenon could be found in the effect mechanism of the microwave energy. Thus, applying a pertinent combination of convective and microwave energy a well efficient drying technology can be developed.

### **APPRECIATION OF AN COMPLEX ULTRASOUND SYSTEM ACCORDING TO THE SURVIVAL CELL COUNT**

A. Lőrincz – M. Neményi

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The decreasing of micro-organism cell count the most important task of the food industry. The killing of microbe no too difficult thing rather the preserve of essential food components is the heavy work. The modern microbe destructor technologies its effects goals only the pointed objects and don't acts the other essential food components. Our experimental work goals this philosophy with ultrasound. We examined the surviving cell count of *Saccharomyces cerevisiae* suspension. This cell suspension was of an closed liquid circuit system streaming with peristaltic pump. The cell count with manual and automatic detection system was examined and the experimental method based on vital staining with methylene blue and on the cell counting. The results gives a good possibility any cell phase analytical and continuous cell recreation system developing. This work is fundamental research.

### **PHISICAL PROPERTIES OF SEEDS OF VEGETABLES**

N. I. Polyák - Z. Csizmazia

Centre of Agricultural Sciences University of Debrecen

The physical characteristics of seeds can strongly influence their movements in the seeding machine as well as in the air, it is essential to study them when constructing seeding machines. In this respect the size, size distribution, shape, mass, bulk density, real density, coefficient of friction and aerodynamic resistance

of grains are of great importance. Due to their irregular shape, determining the size of grains is a troublesome process. A precise description of grains has to include several sizes (length, width, thickness) and can be obtained from the screen size, roundness and sphericity of the grains. Many physical properties of grains are relevant during their movements in the seeding machines and in the air but coefficient of friction and aerodynamic resistance coefficient are the most important.

### **THE ENERGY BALANCE METHOD OF CHARACTERIZING SPRAYS FROM HYDRAULIC NOZZLES**

I. Sztachó-Pekári

College of Kecskemét

It is not to discuss about the significance of technological, environmental protection and economical point of view of the precious spraying. It is necessary to know the process of the atomization, to know its exact mathematical description. Various theories have been proposed to explain the fundamental principle of the disintegration of a liquid sheet into drops compared with the pressure, the spray angle and the characteristics of the liquid: the surface tension, the viscosity, and the density.

The atomization equations have the next limitations: they are empirical in nature; they are defined to predict an average droplet size in a spray; and the nature average drop size is ambiguous.

### **ALTERNATIVES OF THE DOMESTIC AGRICULTURAL MACHINERY MARKET**

J. Hajdú – L. Magó

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In order to meet the requirements of the ecology and the market, the Hungarian agriculture needs technical and technological renewal. This requires a smooth and balanced agricultural machinery market, which takes the needs of both the farmers' and farms' needs into consideration extensively. The Hungarian agriculture's coverage with engine power is 1.8 kW/hectare. The density of tractors and combine harvesters is low. 48.8 hectares of land has to be cropped by 1 tractor, 1 combine harvester has to cover the area of 276 hectares. Compared on an international level, these figures indicate a very low level of coverage; they need to be increased.

The tasks of developing the mechanisation of Hungarian agriculture are dual:

- The improvement of coverage of agricultural machinery, and the increase of their density. The establishment of such machinery output which is capable of meeting the demands of the new structures of technology and property. This makes the increase of machine coverage essential, especially in the family-owned farms.
- The replacement of amortised and overused machines with new ones. The meeting of the demands of the technological modernisation.

The supply of the market of agricultural machinery must facilitate the realisation of these development objectives in such a way that it offers a both technically and financially suitable range for the farms willing to invest.

### **CHANGES IN SOME INDICES OF CAPITAL EFFICIENCY OF FARMS, SPECIALITY OF REGIONS**

I. Takács

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The satisfactory efficiency of farm assets is very necessary for profitable production. Products with low gross margin are only

able to finance farm assets on a low level. Farm management theories have given adequate answers to this issue, but the farm practice is often unwilling to accept that. Based on the data of the Farm Accountancy Data Network of the Research and Information Institute for Agricultural Economics, some indicators of the efficiency of assets are examined in this paper, according to the form of farms and the different Hungarian regions. Statistical analyses of farm data can provide an opportunity to examine the necessary capital fixed in assets as well. (The research was supported by the T037519 theme of the Hungarian Scientific Research Fund)

## WASTE MANAGEMENT IN THE WOOD PRODUCT INDUSTRY

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Exploitation and utilization of natural resources result in a tremendous quantity of waste materials. Their owners are very much keen on getting rid of these materials as fast as possible. That way certain materials are regarded to be waste materials or their owners -adopting a very comfortable attitude - label them as waste materials.

Disposal of waste materials, their placement, their storage always seems to be a very controversial issue. This particular issue resulted in being a very significant hardship even for the wood product industrial companies. The growing quantity of the industrial wood residue accompanied by the increasing risks from hazardous substances have progressively been endangering both our social and natural environment.

This particular situation required the clarification of significant issues of waste management.

Behavioral attitudes, norms, sophisticated systems, adoption of international principles, waste management issues, priorities, specific legal considerations and technological regulations need to be introduced. Meanwhile meeting these demands nowadays in Hungary requires more waste management policy awareness. The legal framework of conditions and requirements were laid down in XLIII.Act.2000. and relevant departmental orders such as 16/200 KöM. (Ministry of Environment and 98/2001 governmental order) are to be realized.

## EXAMINATION OF FALSE HEARTWOOD FORMING IN BEECH TREE IN THE WOODS OF SEFAG RT.

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Beech is one of the most valuable native, hard broadleaved tree species in the woods of Hungary. It takes only 6.3% of the forest land area of the country, but its growing stock takes almost 12 %. Because of its great yield, beech is also a top ranking wood in quality wood production. **20 %** of the value of all the Hungarian woods comes from the **beech forests**. It has many-sided, valuable traits, so it can **fully comply with the threefold objective of woods**.

Within national cultivation circumstances it breeds in the most fully developed ecosystems, which best utilize the potentials of the sites. Beech wood has many good traits, so its wood varieties can produce as good returns from sales as the varieties of oak and conifers. Beech trees typically **do not produce heartwood stain**. The inner part of the trunk however often forms false heartwood. False heartwood can be **sound or diseased**.

False heartwood forming is the most important structural and color anomaly of the living beech. False heartwood significantly reduces the value of tree stand (23–27 % of yield class), thus greatly affecting the **economical character of beech production**.

## APPLICATION OF PRISMS FOR SOLAR COLLECTORS

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One of the most important questions is the level of collected energy concentration in the direct solar applications. There are some well-known optical devices to concentrate the solar energy (mirrors, lens, parabolic mirrors etc.). As a theoretically new possibility, we tested special prisms made of optical materials with different geometry for the same function. If the geometry of prisms is well constructed, the solar energy is focusable in a relatively wide range of angle of incidence. The main task is to determine the relations between the geometrical parameters and the level of concentration. The results of the study apply to a two-dimension model but can be applied to any different prism geometry as well.

## COMPARATIVE ENGINE TESTS AND ENVIRONMENTAL EFFECT ANALYSIS OF FUELS MADE OF ANIMAL FAT AND VARIOUS KINDS OF PLANT OILS

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Many organizations have been dealing in Europe with renewable energy sources based on biomass with growing activity since 1988. We can say that all of the EU member states are committed using alternative fuels [1, 2]. Production and application of biological fuels is free opportunity on the market, and their use serves several purposes at the same time. For example it is a source for supporting agriculture, it reduces Europe's dependence on other countries concerning energy supply, it has a favourable effect on the environment, upgrades the CO<sub>2</sub> management of the atmosphere etc.

Although remarkable steps have not been done in this topic in Hungary during the past decade, there is a need to deal with the production and use, because after Hungary joins the EU, the same regulations will be valid as for the present member states. On this field we have a quite big lag, comparing Hungary even to the other countries which will join the EU together with us.

## RENEWABLE ENERGY FROM HAZARDOUS ORGANIC WASTE

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Effective treatment of agricultural and organic waste from various sources is a task of European dimension. The leakage of organic waste into the environment and into the ground water supply represents a public health concern. Anaerobic digestion (AD) offers an environmentally and economically feasible solution to the waste treatment problems. Biogas is produced concomitantly, which contributes to the economic feasibility of the system. Several technologies have been developed and applied for AD worldwide. The current energy supply system ignores the potential of exploiting renewable energy sources.

The general goal of this project is to develop and demonstrate the technical and economic benefits of a complex utilization of renewable energy sources in a predominantly agricultural region. The final product will be a network of small power plants that supply energy from diversified renewable sources via AD.

## DOMESTIC EXPERIENCES OF OPERATING WIND GENERATORS

L. Tóth – G. Horváth – G. Tóth – N. Schrempf –  
L. Fogarasi  
Szent István University, Gödöllő

The possibility of the wind energy utilization in power station system can be proved with the help of the examples realized already in Hungary as well. The most characteristic equipment is the wind power station of 600 kW established in Kulcs. At the same time, wind generators are working in Inota (established with power of 250 kW) and another station of 2×600 kW nominal power in Mosonszolnok established at present time. There was experience got during the operation of circa 26 months carried out in Kulcs with the wind generator and in Inota – of 32 months. The foregoing results proved that they have operated according to the trends determined by the researchers and produced energy.

## ENERGETIC MODELLING OF WHEAT KERNEL HARDNESS

A. Véha – E. Gyimes  
Szeged University

The authors (VÉHA, 1996) have been working on determining the kernel hardness of different wheat varieties by means of an objective physical unit of measurement. The previously used vitreosity percentage proved to be rather subjective, vague and fluctuating, although kernel hardness is of great importance when the qualities and milling technologies of different varieties are evaluated (VÉHA–GYIMES, 1999). Kernel hardness affects flour quality, batter production and baking to a great extent (MATUZ et al. 1999). Nowadays more researcher trying an experiment to determine of the grinding energy demand in case of wheat breaking (CAMPBELL – WEBB, 2001 as well as PASIKATAN et al, 2001).

Determining the physical hardness of wheat kernel has been made possible by introducing the notion of "grinding resistance" (VÉHA–GYIMES–BÖLÖNI, 1998), which has been identified as specific surface grinding energy demand (e.g. kWh cm<sup>-2</sup> and kJ cm<sup>-2</sup>). This has been done by making use of the results of other investigations into grinding cereals (BÖLÖNI, 1962). For practical purposes it has been determined with the help of a laboratory hammer mill, by measuring power capacity demand, grits mass flow and the specific surface increase of grits. Specific grinding energy demand ed (kWh t<sup>-1</sup> or kJ t<sup>-1</sup>), which we have referred to the mass unit of grits, can be calculated from this (VÉHA–GYIMES, 2000).

## INFLUENCE OF LOAD ON THE FRICTION COEFFICIENT BETWEEN STEEL AND POLYAMIDE ROLLING COUPLES

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Taking the a great number of scientists working on to replace the steel materials with non-metallic materials into account, this paper presents new experimental results regarding the variation of the friction coefficient values in rolling couples, with steel and several polyamidic material contact.

## THE APPLICATION OF THE BENCHMARKING METHODS FOR RATIONALISING THE LOGISTICAL COSTS OF THE AGRICULTURAL MACHINERY

A. Tátrai  
Business College of Budapest

Knowing logistical costs can help at saving them. Nevertheless, statement of logistical costs is very difficult in field of

utilization of agricultural machinery, too. To solve this problem, it seems to be practical, to take results of foreign experts in this field, into consideration. Use of benchmarking, as a method, the foreign results can help the Hungarian specialists in their efforts, to economise costs.

## THE POTENTIALS AND LIMITATIONS OF JUST IN TIME (JIT)

J. Benkő  
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An important aim of the material and stock management is to satisfy continuously the material needs according to the pace of production. Knowing the production plan, the material norms and the supply sources, it is possible to plan with precision the amount of material needed for the production of a given period. Nevertheless, problems can arise in the process of acquisition and provision of material. On the one hand, such problems can occur due to unforeseen and unplanned changes in the production plan and due to uncontrollable factors of the supply sources on the other.

## OPERATION FEATURES OF PNEUMATICALLY CONTROLLED LINEAR CYLINDER IN THE VIEW OF ENERGY SAVING

Zs. Bartus – L. Jánosi  
Szent István University, Gödöllő

To work with pneumatic energy is not a cheap way of solution but it is indispensable to use nowadays and it will be the same in the future. We will apply pneumatic systems in the field of industry, agriculture etc. so it is our main and further task to look for energy-saving solutions. This paper proves that we can find device which can offer an appropriate solution in the field of air consumption reduction. The laboratory tests approve that with an inside-controlled valve we can adjust the pressure stepless which will be the most favourable for the cylinder in both directions in the view of energy-saving. In addition to this the laboratory tests were able to show us the operation features of pneumatically controlled linear cylinder. In this way we were able to see that the inside-controlled valve had a favourable influence on the whole of the operation of pneumatically controlled linear cylinder.

Key words: Pneumatic cylinder, Pneumatic energy, Energy-saving, Inside-controlled valve, Operation feature, Power loss

## STUDIES ON THE DINAMICS OF TRUNK SHAKERS

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Earlier investigation always assumed that the tree is clamped in the soil. As a consequence, in the governing differential equation only the mass of the tree trunk was taken into account using different, mainly rough estimation methods. However, our measurements have shown that the soil-root systems an important part of the vibration system and, therefore, it cannot be neglected. Using the measurement results, a new calculation method was developed to determine the effective mass reduced to the attachment point. A new tree model is also developed allowing different kinds of motion (elastic, tilting and lateral displacements). The equilibrium of horizontal forces was newly formulated.

The experimental and theoretical results contribute to a better understanding of the dynamic behavior of tree shakers.

## INCREASING THE RAW MATERIAL BASIS OF BIO-BRIQUETTE PRODUCTION BY USING NEW MATERIALS

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Recently the Hungarian biobriquette production using only sawdust and shavings from the secondary wood industry is not significant. There is an increasing interest in biobriquette as an environmentally-friendly fuel. As taking into consideration the limited amount of wooden residuals – which can be the bottleneck of the production – we have established a pilot briquetting plant. We made experiments with different lignocelluloses (energy grass, miscanthus, wooden material from energy plantations, energy hemp, seed-coat, etc.) and produced briquette partly from pure test materials partly from the mixture of these materials and conventional wooden raw materials.

Researchers report on the results from the experiments, experiences and problems on the briquetting process of new raw materials and the qualitative parameters.

## QFD METHOD ADOPTION TO SELECT SOIL TILLAGE SYSTEMS

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The requirements in soil tillage have any differences under eras, likewise the ways to perform the goals. In this paper soil tillage systems are evaluated by the simplified, two-stepped QFD analysis according to fulfilling of the requirements. In the 1<sup>st</sup> stage 7 tillage systems are examined with four principal factors – yield assurance, cost saving, environment conservation and surface aesthetics – and systems are ranked on the basis of their conformity. The alternatives of the most conform system are to

evaluate in the 2<sup>nd</sup> stage with supplementary factors – tillage faults, less costs, moisture loss, production risk, mulching – to raise the most suitable variant. The QFD method is a fairly impartial analysis. It helps to select the most suitable tillage system in a given arable site and economical circumstances. It gives data to the producing and trading firms about the tillage trends to determine the improvement of the direction line. Work is the first step to adopt QFD method in soil tillage relation. This paper presents results of the research programs supported by OTKA-34.274 and FVM 15.031/2002.

## A NEW CHALLENGE IN ENVIRONMENTAL POLLUTION: ELECTROSMOG

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Electrosmog is a rapidly spreading, new kind of electromagnetic environmental pollution in our age. It poses a new challenge in the on-going history of direct human action on the actual ecosystem. While this is the sort of environmental pollution, which is imperceptible to biological systems, these interactions are still capable of disrupting those systems' inner orders and coherent, metabolic processes. The entire phenomenon underlies solely the electromagnetic interactions in every biological systems, and so in the plants. Electrosmog could effect on both the advantageous-beneficial and harmful-damaging kind on the bio-systems, organisms. In our present work we would like to present some of the effects and its presence in agricultural practice. After discussing some basic effects, we are more emphasizing the benefits and usage of the phenomenon than their risks. This research has been supported by OTKA (Hungarian Scientific Research Found) T-043385 and by "Modelling of Processed Plant Structures" research group of Hungarian Academy of Sciences.