

**THE FIFTH SESSION OF THE TECHNICAL COMMITTEE (TC) OF UNAPCAEM**

**14-15 October 2009**

**Los Banos, the Philippines**

# **SOME ACHIEVEMENTS ON AGRICULTURAL MECHANIZATION IN VIETNAM**

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# **I. INTRODUCTION**



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### I. INTRODUCTION (1)

- Vietnam's success in achieving rapid agricultural growth since the implementation of policy reforms in the late 1980s is now well documented (World Bank 2004). Agricultural growth was fueled mainly by growth in rice productivity following the rapid adoption of modern varieties, increased fertilizer use, applying mechanization and increased cropping intensity.
- Rice production grew at more than 5% per annum during the early 1990s and Vietnam rapidly achieved the status of a major exporting country





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### I. INTRODUCTION (2)

- Nowadays, many agro-products are exported at the top ranking of the world, like rice, coffee, black pepper, cashew nuts, etc.
- The world community has been giving high assessment on the application of scientific and technical achievements on agricultural production of Vietnam, since they have been contributing to free labor force and increase productivity. Advanced machinery is increasingly used to bring higher effectiveness of agricultural production



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# **II. VIETNAM'S AGRICULTURAL ECONOMY**



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### II. VIETNAM'S AGRICULTURAL ECONOMY (1)

- Agriculture plays an extremely important role in Vietnam's economy. This sector contributes 24% to national GDP, accounts for nearly 30% of total export value, and employs over 60% of the country's economically active population.
- High and sustained agricultural growth, with benefits for many rural people as well as for the urban population from the production of food crops (notably rice, maize), industrial crops (coffee, rubber, tea, cashew, sugarcane, pepper, peanut, soybean), fruits (litchi, longan, orange, rambutan, lemon, and several others), vegetables, livestock (pigs, poultry, beef and dairy cattle, buffalo), as well as forest products



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### II. VIETNAM'S AGRICULTURAL ECONOMY (2)

- Output values of agriculture, forestry and fishery in 2008 at 1994 constant prices were estimated increasing by 5.6% against 2007; of which agriculture rose by 5.4%; forestry by 2.2% and fishery by 6.7%.
- In 2008, the rice output was estimated at 38.6 million tons, rose by 2.7 million tons (equivalent to 7.5%) against 2007. If 4.5 million tons of maize were included, the gross cereal was 43.2 million tons, grew by 7.5% year-on-year.





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### II. VIETNAM'S AGRICULTURAL ECONOMY (3)

- The production of industrial perennials continued to develop toward the direction of producing goods for domestic consumption and for export: output of coffee, rubber, tea and pepper was 996.3 (rose by 3.6%), 662.9 (8.7%), 759.8 (7.5%) and 104.5 (17%) thousand tons, respectively.
- Animal husbandry activities were gradually recovering after losses caused by natural calamity and diseases, but the rate was still slow.



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### II. VIETNAM'S AGRICULTURAL ECONOMY (4)

- The total fishery production was estimated at 4582.9 thousand tons, increasing by 9.2% over last year, of which farmed production gained 2448.9 thousand tons and rose by 15.3%; catching: 2134 thousand tons, rose by 2.9% (sea catching: 1938 thousand tons rose by 3.3%).



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### II. VIETNAM'S AGRICULTURAL ECONOMY (5)

- An increased market orientation in agricultural production, recognition of the farm household as the basic unit of agricultural production and marketing decision-making, and reorganisation of the State-owned enterprise system to raise efficiency under market competition.
- Improved income and living standards for many people, and remarkable successes in poverty reduction.
- Improved rural infrastructure, beginning to give Vietnam's rural areas a new face.



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### II. VIETNAM'S AGRICULTURAL ECONOMY (6)

- Achievements in the protection and recovery of forests, water resources and bio-diversity. The total area of concentrated forestation in 2008 was 210.8 thousand ha, rising by 6.6% year-on-year; replanted area: 944.4 thousand ha fell by 0.8%; forest area under care: 486.2 thousand ha fell by 1.2%; woodcut production: 3562.3 thousand cubic meters rose by 2.9%. The phenomena of burnt forest and illegal cutting wood decreased much in 2008 compared to 2007. Total damaged area was 3919.7 hectares fell by 39.5%, of which burnt forest area was 1677.3 ha fell by 67.3%.





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## **III. RECENT ACHIEVEMENTS IN RESEARCH AND DEVELOPMENT ON AGRICULTURAL MECHANIZATION IN VIETNAM**



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### **3.1. Mechanization in order to improve yield and quality for main crops**



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### a. **Comprehensive mechanization for Rice production (1)**

- Research and develop on all kinds of machinery and facilities with high capacity and good quality for land preparation of rice as well as other crops





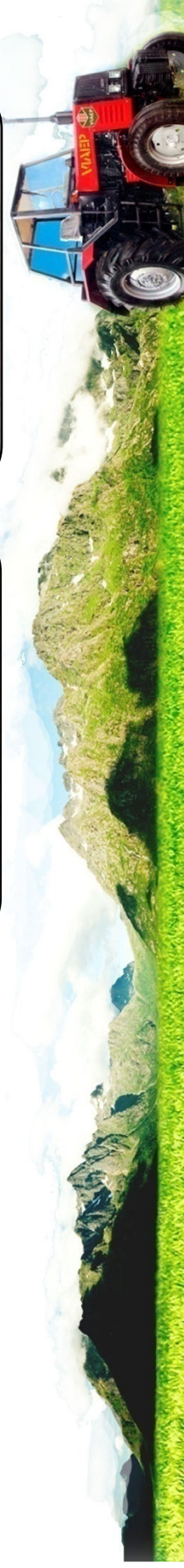
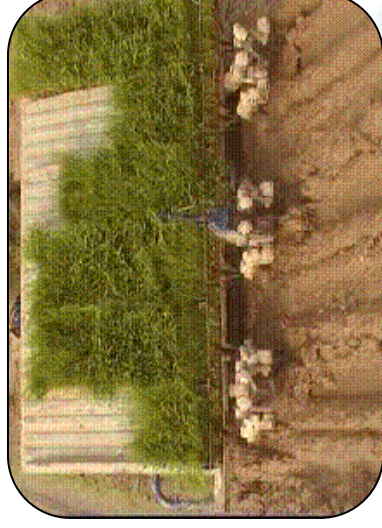
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### a. Comprehensive mechanization for Rice production (2)

- Complete design and manufacture transplanters, machines for producing mat-type paddy seedling, applied in rice intensified regions: Transplanters model MC-6, MC-8 and comprehensive equipment for producing mat-type paddy seedling.





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### a. Comprehensive mechanization for Rice production (3)

- Development on threshers and combine harvesters with various capacities used for household and farm.



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## **b. Mechanization in drainage and irrigation**

- Set up model of systems of sprinkling, dropping type, absorbing irrigation have been widely applied for different areas of lowland, highland, mountains, etc
- Set up model of systems of water pumps: axial-flow, vertical-flow, centrifugal pumps.



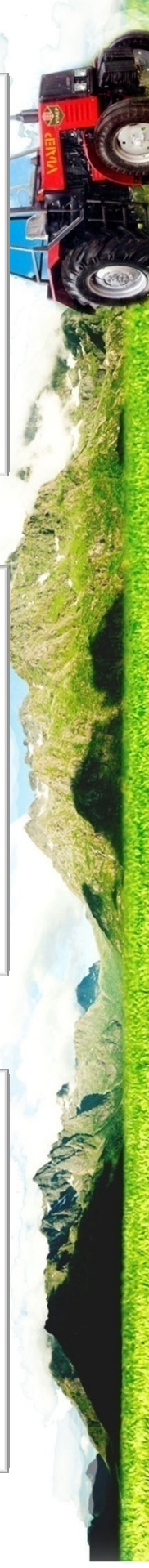


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## c. Development of greenhouse system and devices to create micro-climate area



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### **d. Comprehensive mechanization for Sugar-cane production (1)**

- Research and develop on machinery and facilities system to reduce labor and increase quality for land preparation as small tractor, furrower, rotavator, pesticide spreader in row; leaf rotary chopper, deep chisel...





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### d. Comprehensive mechanization for Sugar-cane production (2)

- Set up models of cutter, combine harvester: SHC-0.2; windrower: CMRH-0.18;



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### e. Mechanization for corn and legums (1)

- Designed and transferred corn shellers for seed and commercial grains with very low rates of unshelled corn and kernel damage; specific lower energy consumption.



Maize ocrea peeler and sheller  
BBTH 2,5



Maize Sheller TN 4



Hand maize Sheller





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### e. Mechanization for corn and legums (2)

- Set up model of decorticator for groundnut pods to take out kernels with high rate recover for export and food processing at farm households as BVL-100, BVL-400
- Development on facilities for threshing and cleaning soyabean with high performance and appropriate to house hold, farm and industrial scale



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## 3.2. Improvement of post-harvest technology for loss reduce, quality assurance and food safety





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### a. **Technology and equipment for rice seed processing**

- Development on seed processing line with semi-automatrical control system, including technology and equipment at industrial level, ensuring high germination rate and seed security in Vietnam.
- Also, applied for other seed as corn, legumes, etc.



**Line for rice seed processing**



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### b. Drying technology and equipment for agro-products (1)

- Carried out successfully the work on research, design, manufacture and development of various kinds of dryers such as batch bed, vertical-type, rotary drum-type, tower-type, recirculation-type, bulk dryers...



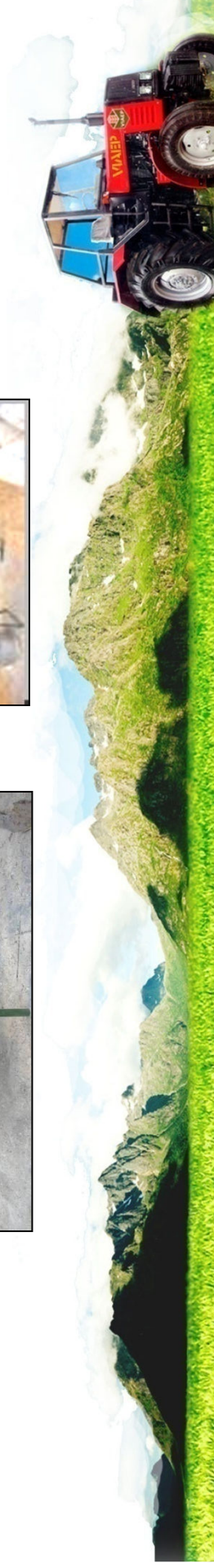
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### **b. Drying technology and equipment for agro-products (2)**

- Development on grain dryers, especially paddy dryer for MRD with low cost local materials, contributed to loss reduce and quality assurance, particularly, in autumn-summer crop or rainy season crop.





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### **c. Technology and equipment for diversification of Agro-products**

- Complete technology and equipment for traditional processing food in order to improve quality, extend storage life and ensuring food safety in localities. As some types of cakes, fermented rice noodle, fruit dehydration, fruit and vegetable fermenting, salting ...
- Development on new products from agro-products as many kinds of non-alcohol, soft drink, fast food, cut-fresh food for life in cities and industrial zones.
- From by-product in processing and storage for food and animal feed in order to increase high efficiency in manufacture and good waste management





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### **d. Technology and equipment for pre-processing, storage, and transportation (1)**

- Research, design, manufacture and transfer to production comprehensive lines of pre-processing and storage vegetable and fruits at the scale of 1-2 tons, serving gathering markets and exporting bases with the products of good quality, hygiene and safety



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### **d. Technology and equipment for pre-processing, storage, and transportation (2)**

- Manufacture specialized containers for far-away transportation of fresh vegetable and fruits
- Transfer to production models of cold stores at different scales, for fresh vegetable and fruits and aqua-products preservation



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### e. **Agro-product preservation to reduce losses (1)**

- Research and development on technology and equipment of grain, fruits and vegetables drying in household and industry scale of 0.1-40 tons per batch)
- Research and development on Cooling and Frozen technology by Individual Quickly frozen (IQF) of fruits and vegetables at industry

scale





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### **e. Agro-product preservation to reduce losses (2)**

- Research and development on preservation and processing technology and equipments of multi year crop, including tea, coffee, cashew nut and cashew apple in house hold and industry scale
- Research and development on horticulture crop preservation technology, including Modified Atmosphere Packaging (MAP) in order to exportation at National level





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### 3.3. Mechanization on feed processing for animal and aquatic species (1)

- a) Mechanization on breeding facilities and animal slaughter:  
Mechanization in supply of feed and drinking water, in sanitation and modification of micro-climate state for the breeding facilities.  
Slaughtering line of poultry and pig with capacity up to 500 and 50 heads per hour, respectively, were designed and manufactured.  
This has ensured good good hygiene and safety.



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### 3.3. Mechanization on feed processing for animal and aquatic species (2)

- b) Mechanization on feed processing for animals and aquatic species: complete feed processing lines for animals with capacity of 15 tonnes per hour with advanced technology and equipment were designed and manufactured. These processing lines have brought high benefits for animal feed processing units.



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### **3.4. Agro-residue upgrading and agro-environmental control**





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### Agro-residue for energy supply (1)

- The VIAEP has studied, designed and manufactured a dysfunctional generator which can simultaneously produce electricity and heat. Rice husk has been used as fuel for this generator – dryer with capacity of 500 kg/h.





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### Agro-residue for energy supply (2)

- A rice husk gasified combustor has been developed at small scale serving for paddy rice dryers located in MRD. The dryer proved better performance such as blame is more stable and cleaner, burning coefficient of rice husk is higher (80-90%) and there dryer life has been extended.



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## **IV. MAJOR REASONS FOR THE ABOVE ACHIEVEMENTS**



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### IV. MAJOR REASONS FOR THE ABOVE ACHIEVEMENTS (1)

- The Government has always paid attention to agricultural and rural sector, and issued many new policies to conform to the reality and the people's desires.
- in addition to the unit-level initiatives and determination to overcome difficulties as well as enormous efforts from farmers all over the country.





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### IV. MAJOR REASONS FOR THE ABOVE ACHIEVEMENTS (2)

- Many advanced techniques and technologies have been applied.
- more than 90% of rice growing area, 80% of maize area, 60% of sugarcane area, cotton, fruit trees, etc. have used new varieties. In animal husbandry, new breeds have also been used and helped to increase significantly the productivity and quality of meat, eggs and milk products.
- Mechanization, new farming techniques, harvesting/preservation and processing techniques for agro-forestry products has been used widely and extensively, and new side jobs have also been developed



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### IV. MAJOR REASONS FOR THE ABOVE ACHIEVEMENTS (3)

- The concern about sustainable land use has become a worldwide issue, and finding the ways to achieve synchronic increase in food production and preservation of natural resources requires the world common efforts. In this context, conservation farming or conservation agriculture has become the most promising way to maintain agricultural production sustainable.



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## **V. CONCLUSION**





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### CONCLUSION (1)

- In recent years, Vietnamese agricultural production has obtained rapid, steady growth. The agricultural production value achieved an average increase of 5.5% per annum. Thanks to this, Vietnam basically ensured its food security, paved the path for shifting structure of agricultural economy and for developing non-agricultural industries. Several export agro-products of Vietnam have been in the world highest rank such as black pepper, coffee, rice and cashew nut. In the past 10 years, average per-capita income in the rural areas of Vietnam has increased roughly twice.



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### CONCLUSION (2)

- According to the Ministry of Agriculture and Rural Development of Vietnam; however, Vietnamese agricultural economy has achieved great initial results, but process of its development is seen not completely sustainable. The rapid shift of structure of crops and domestic animals makes changes of exploitation mode of resources of land, water and biology in large scale. Moreover, activities of survey, design, control and supervision are still insufficient; therefore, many dangers occur such as ecological imbalance, threat to the competitive ability of agricultural sector.



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### CONCLUSION (3)

- For this reason, simultaneous with application of safer technology to reduce environmental pollution, Vietnam has done its utmost to prevent deforestation, conserve biological diversity, control birth-rate, improve environmental hygiene, create jobs and increase standard of living for the people. To protect the environment, many countries have waged environmentally friendly movements in various names as sustainable agriculture, ecological agriculture, appropriate agriculture, integrated agriculture, etc. with the activities of research and application of production modes oriented to sustainable development in all sectors.





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**THANK YOU FOR ATTENTION**

