



## Development of Power Tiller Operated Zero Till Planter in Bangladesh

Power tillers (two wheels tractor) are usually used for soil tillage and other farm operations in Bangladesh. Given the fragmented land size in Bangladesh and the affordable price, the number Power Tillers operating in Bangladesh reaches 700,000.

The Farm Machinery & Postharvest Process Engineering Division of the Bangladesh Agricultural Research Institute developed a low cost and robust two wheel tractor (12Hp) for zero-till planter, with inclined plate and seed meter assembly.

This is a pull type implement hitched with the power tiller (imported from China) at the drawbar point replacing the regular tilling part. The major components of the seeder are toolbar frame, seed and fertilizer box, inverted "T" furrow opener, press wheel-cum-furrow closer and chain sprocket arrangement for power transmission. The toolbar frame (670mmx1030mm) facilitates fixing different type of seed metering mechanism (inclined plate, flute type, cup feed, star wheel peg type) with furrow openers for maintaining standard agronomic spacing. Furrow opener (50mmx10mm) was made from used car leaf spring. A set of press wheel (275mmx45mm) was attached with toolbar frame for closing the seeding open furrow for better seed soil contact as well as controlling the depth of seeding.

This improved no-till seeder was intensively used in farmer's field for wheat, maize, pulses and rice cultivation. The seeder worked effectively through high density rice and wheat residue (1.6-2.4t/ha) without jam as there was sufficient clearances between toolbar frame and ground surface. The seeder can pull 4 tynes in soft and medium hard soil and 3 tynes for hard soil. The seeder can be used to apply seed and fertilizer in an opening slit of width 30mm and depth 60mm. The planting depth, row spacing and seed rate can be adjusted according to standard practices. Before seeding, herbicide was applied to kill existing weeds. No till condition, wheat was less lodge compare to conventional planted wheat. No-till farmers save fuel 94 lit./ha/yr, planting costs 50-65% less compared to traditional methods.

The seeder is low cost (US\$ 400-450; without power unit), lighter in weight and local manufacturer can fabricate complete set of zero-till seeder within a short period of time.

The effective area coverage and planting cost by the seeder is 0.13ha/hr and Tk.1900.0/ha (US\$ 24.4/ha), respectively. The breakeven point of the seeder is 4.0 ha/year. Fertilizer management, weed control and selection of right crop variety with proper crop rotation are the key issues in adopting this new technology. Farmers in Bangladesh start to use this seeder for wheat, maize, chickpea, lentil and mungbean cultivation.

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Power Tiller operated zero Till planter

# Development Trends

## Drones help farmers in the Philippines preparing for climate disasters

The Government of the Philippines and FAO have started using unmanned aerial drones to assess farmlands in high risk from natural disasters and to quickly evaluate damages after the strikes.

Under a pilot phase of the still-fledgling project funded by the Ministry of Agriculture of the Philippines and the FAO, two drones have already been sent soaring over the Philippines provinces that have been affected by the current El Niño. Some 25 FAO and government technical experts are ready to be deployed across the archipelago to support drone missions. They were recently trained over three weeks on how to fly the drones and learned a range of remote aerial assessment methods.

The drones are equipped with navigation and photogrammetric equipment that can generate detailed and data rich maps from aerial photographs including Normalized Difference Vegetation Index or NDVI, a formula used for assessing vegetation and plant health.

Data gathered can be used to evaluate what agricultural systems are at particular high risk from natural disasters and identify ways through which such risks can be countered, for example, through ground contouring, building retaining walls, or planting protective vegetation. These drones are capable of covering up to 600 hectares a day. The drones should significantly accelerate the process of risk analysis, according to Christopher Morales, Director of Field Operations for the Philippines Department of Agriculture.

Source:  
<http://www.fao.org/news/story/en/item/411596/icode/>

## New pesticide guidelines seek faster phase-out of risky toxins

FAO and WHO have released new guidelines aimed at reducing the damage done by pesticides that pose especially high toxic risks to human health and the environment. Products with high acute toxicity account for high numbers of immediate poisoning cases, particularly in developing countries, while products with chronic toxicity effects may cause cancer or developmental disorders among growing children.

Small-scale farmers in developing countries in particular often do not have, or use, the necessary protective gear and mostly use back-pack sprayers that pose high risk of exposure. Restriction on the use of such highly hazardous products often prove hard to enforce, leading to widespread use by untrained persons. High numbers of poisoning cases, contaminated food and environmental damage can be the result.

The Guidelines offer a road map to help countries identify and deal with highly hazardous pesticides. This involves inventory taking, assessing risks and actual needs, and then taking appropriate risk mitigation measures. In many cases, this will be phasing out of the product, but in cases where there are no good alternatives, other risk mitigation actions may be considered. The local conditions of use and feasibility of control measures should be an important factor in decision taking.

FAO has also launched a Pesticide Registration Toolkit to assist governments in conducting hazard and risk assessments as part of their national pesticide approval process. This toolkit can also be used to re-assess products that have been approved in the past, but are now identified as highly hazardous.

Governments are encouraged to use the new guidelines and the toolkit to review their existing lists of approved pesticides in order to identify HHPs and take the necessary measures to reduce the risks to users, consumers and the environment. This also implies the strengthening of IPM as a recognized pillar in the design of sustainable crop protection systems.

Source:  
<http://www.fao.org/news/story/en/item/413715/icode/>

## Asia-Pacific Analysis: How to outsmart El Niño

A global food crisis now looms because of El Niño and climate change, and the threat needs to be addressed before it is too late.

While oceanic and atmospheric indicators suggest that the 2015 - 2016 El Niño has peaked and conditions are expected to return to normal by the end of second quarter of 2016, the year-long warm weather phenomenon has already affected rice production in the Asia-Pacific.

People may soon see a repeat of the 2007 to 2008 rice price crisis when the price of the staple shot up during the El Niño event in those two years, stated Samarendu Mohanty, a social scientist at the International Rice Research Institute (IRRI).

The drought now hitting the region could cut rice stocks among the world's top exporters to levels not seen since 2008, and fuel a price crisis like what happened in 2007 to 2008.

Rice stocks of top rice exporters — India, Thailand, Vietnam, Pakistan and the United States — are likely to drop drastically by the second half of 2016, from a peak of nearly 41 million tonnes in 2013, which could result in panic buying.

The scientist also encouraged that joint action is needed among countries, especially the ASEAN+3 and India, in recognition of shared responsibility as well as shared investments and a regional trade outlook. The ASEAN+3 includes the ten ASEAN member countries plus China, Japan and South Korea. For the long term, the scientist suggested that the ASEAN+3 and India invest in the ASEAN Rice Breeding Initiative (ARBI) and the Agriculture Innovations and R&D Fund (AIRDF).

ARBI is a region-wide programme of scientific work and capacity-building that will enable the entire region to "build a new generation of ASEAN rice scientists".

Source: <http://www.scidev.net/asia-pacific/climate-change/analysis-blog/asia-pacific-analysis-how-to-outsmart-el-ni-o.html>

## Member Countries Snapshot

### Agricultural Engineering Research Institute (AERI) of Thailand



The Agricultural Engineering Research Institute (AERI) in Bangkok, Thailand, is a body under leadership of the Department of Agriculture and the Ministry of Agriculture and Cooperatives. Its mandate is to conduct research on agricultural machinery and agricultural processes as well as to provide technical support to other agencies. Furthermore, AERI is one of the testing agencies to test and evaluate agricultural machinery in accordance to the corresponding standards set by the Thai Industrial Standard Institute (TISI). It also promotes local manufacturing of agricultural machinery, especially in terms of transferring research results to designs. In addition, AERI provides mechanical drawings of prototypes, technical assistance and evaluates the performance tests of the corresponding machines.

AERI consists of four sections, three research groups and three research centers for agricultural engineering. The four sections consist of the Administrative Section, the Repair and Maintenance Section, the Fabrication and Production Section, and the Agricultural Land Development Section. The Fabrication and Production Section is responsible for the fabrications and modifications of prototypes according to the drawings handed down by the research groups. It also manufactures parts, equipment, and machines as requested by the research agencies of the Department of Agriculture and other institutes. The Agricultural Land Development Section has the duty to improve the drainage system, water utilization, and flood control system of the agencies of the Department of Agriculture. Other services by this section include cost estimations and detailed drawings of office buildings, land leveling, construction of farm roads and flood control systems, as well as land consolidation activities for planting areas.

The three research groups consist of the Research Project Administrative group and the Crop Production Engineering Research Group and the Postharvest Engineering Research Group. The Crop Production Engineering Research Group conducts research concerning agricultural machinery involved in the pre harvest and harvesting operations; and is also responsible for the testing and evaluating of pre-harvest and harvesting machinery according to requirements set by national standards. The Postharvest Engineering Research Group conducts research on postharvest machinery and processing technologies. It also tests and evaluates this machinery according to national standards. Furthermore, there are three local agricultural engineering research centers, in Chinag Mai, Khon Kaen and Chanthaburi, which are conducting research on agricultural machinery.

For more information, please visit: <http://www.doa.go.th/aeri/>

# Meeting New People

## Dr. Katinka Weinberger (CSAM Officer in Charge a.i)

Dr. Katinka Weinberger, Chief of Environment and Development Policy Section, Environment and Development Division, UNESCAP since July 2015 and Officer-in-Charge, a.i. of the Centre for Sustainable Agricultural Mechanization (CSAM) since April 2016.

Previous work experience includes Head of Centre for Alleviation of Poverty for Sustainable Agriculture (CAPSA) (2010-2015), and scientist positions with CIFOR, AVRDC and the Centre for Development Research.

A Socioeconomist by training, professional interests include sustainable development, rural development, sustainable food systems, evaluation and impact assessment. Twenty years' experience in research for development, planning, supervision and monitoring of research strategies and change management. Empirical field research in collaboration with national and international partners with diverse professional and cultural backgrounds, more than 70 publications.



## Mr. Jin Xiaoxi (Intern)

Mr. Jin joined CSAM on the 3rd of May, 2016 as an intern. He holds two bachelor degrees. The first one is in Journalism from Huazhong University of Science and Technology and the second one is in Economics from Wuhan University in Wuhan, China. He is now a graduate student of Social Work and Social Administration at the University of Hong Kong. His work focuses on poverty alleviation policies and social enterprises.



## Mr. Zorikto Gomboin (Intern)

Mr. Gomboin joined CSAM on 1st of June 2016. He graduated from Moscow University with a degree in Asian and African Studies (Chinese History). He is now completing his graduate studies in International Relations at Fudan University in Shanghai. His research interests include international institutions, development studies and theories of international cooperation.



# CSAM Activities in Focus

## Inception Workshop on the Regional Database of Agricultural Mechanization in Asia and the Pacific



The Inception Workshop on the Regional Database of Agricultural Mechanization in Asia and the Pacific was held in Putrajaya, Malaysia on 29 March, 2016 in collaboration with the Malaysian Agricultural Research and Development Institute (MARDI), followed by a half-day's field trip in the morning of 30 March, 2016. A total number of 31 representatives from 19 member States and 4 international organizations attended the workshop.

The objective of the Inception Workshop was to facilitate mutual understanding on the project, seek engagement from member countries and identify opportunities for technical cooperation.

The proposed regional database aims at complementing and strengthening existing national databases. The project is expected to enhance the effectiveness of regional and national strategies on promoting sustainable agricultural mechanization. By improving the quality and quantity of data, the database will assist member countries in assessing the level of agricultural mechanization; facilitate technology innovation and trade of agricultural machinery. The guidelines of the regional database are expected to be prepared and agreed upon by mid-2017. The first data collection and pilot operation of the regional database are estimated to be achieved by end of 2018. Meanwhile, throughout 2016 to 2018, a series of capacity building activities and policy dialogues will be organized in pilot member countries.

## Workshop on Business Management of Custom Hiring of Agricultural Machinery in the Dry Zone of Myanmar



The workshop on Business Management of Custom Hiring of Agricultural Machinery in the Dry Zone of Myanmar was held on 3 to 4 May, 2016 in Mandalay, Myanmar. 31 participants from line Ministries, regional government offices, NGOs and civil society organizations, farmers' associations, private sectors and machinery suppliers attended the workshop. The workshop was conducted as a capacity development activity under the project titled 'An Integrated Rural Economic and Social Development Programme for Livelihoods Improvement in the Dry Zone of Myanmar', funded through the Livelihoods and Food Security Trust Fund (LIFT), led by the Center for Alleviation of Poverty through Sustainable Agriculture (CAPSA-ESCAP) in partnership with the Asian and Pacific Center for Transfer of Technologies (APCTT), the Center for Sustainable Agricultural Mechanization (CSAM) and the Network

Activities Groups (NAG). The Department of Rural Development of the Ministry of Agriculture, Livestock and Irrigation of Myanmar (DRD) is the national focal government agency to collaborate in the implementation of the Project.

The project aims to support integrated socioeconomic development in Myanmar's dry zone in the context of inclusive and sustainable development with special emphasis on livelihoods improvement and food security.

# CSAM Activities in Focus

## The 2nd Technical Working Groups (TWGs) Meeting of ANTAM



The 2nd Technical Working Groups (TWGs) Meeting of ANTAM was held from May 10 to 13, 2016 in Bangkok, Thailand at the United Nations Conference Centre. Representatives from 14 member states (i.e. Bangladesh; Cambodia; China; France; India; Indonesia; Pakistan; Philippines; Republic of Korea; Russian Federation; Sri Lanka; Thailand; Turkey; Vietnam) worked on the second version of ANTAM Codes for testing of agricultural machinery.

The updated ANTAM Codes enhanced safety standards and emissions control. Dr. Weinberger, CSAM Officer in Charge a.i delivered the welcoming remarks. Dr. Waraporn Prompoj, Deputy Director General of the Department of Agriculture of Thailand and Mr. Clarence-Smith, Head and Regional Director of UNIDO also delivered opening remarks. Members from ANTAM Advisory Panel (ENAMA, FAO, OECD, UNIDO) presented global perspectives on testing and discussed next steps with ANTAM technicians.

## Multi-Stakeholder Dialogue on ‘Strengthening Local Capacities for Climate-Resilient Agriculture in Myanmar’s Dry Zone’



The Multi-stakeholder Dialogue on ‘Strengthening Local Capacities for Climate-resilient Agriculture in Myanmar’s Dry Zone’ held on May 30-31, 2016 in Nay Pyi Taw, Myanmar was organized by three regional institutions of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)- the Centre for Alleviation of Poverty through Sustainable Agriculture (CAPSA), the Asian and Pacific Centre for Transfer of Technology (APCTT) and the Centre for Sustainable Agricultural Mechanization (CSAM), in collaboration with the Network Activities Group (NAG) and the Department of Rural Development of the Ministry of Agriculture, Livestock and Irrigation (DRD) .

The overall objective of the Multi-stakeholder Dialogue was to promote efforts to strengthen the human, financial, technological and institutional capacities of local farming communities in Myanmar’s Dry Zone to adopt climate-resilient agricultural practices as one of the policy dialogues under the project titled ‘An Integrated Rural Economic and Social Development Programme for Livelihoods Improvement in the Dry Zone of Myanmar’ supported by the Livelihoods and Food Security Trust Fund (LIFT). A large number of senior-level participants from national and regional government, multilateral and bilateral organizations, academia, international NGOs, local civil society organizations (CSOs), private sector, and farmer groups participated in the workshop.

# CSAM Activities in Focus

## Meeting with Japanese Delegation on the Asian and Pacific Network for Testing of Agricultural Machinery (ANTAM)



ANTAM Secretariat received a Japanese delegation at the United Nations Economic and Social Commission for Asia and the Pacific- Centre for Sustainable Agricultural Mechanization (UNESCAP-CSAM) office on May 23rd 2016 in Beijing, China.

The delegation was composed of two representatives from the Ministry of Agriculture, Forestry and Fisheries, Mr. Toshio Kurakazu and Mr. Kinya Uchida; two representatives from the National Agriculture and Food Research Organization, Institute of Agricultural Machinery, Department of Testing and Evaluation, Mr. Shimizu Kazufumi and Mr. Kawase Yoshiyuki; and one representative from the Japanese Embassy in Beijing, Mr. Yusuke Yamamoto. Dr. Katinka Weinberger, CSAM Officer in Charge a.i. joined the meeting via teleconference from Bangkok, Thailand. Ms. Ai Yuxin, CSAM Project Officer, briefed the delegation on ANTAM structure and working mechanisms.

The Japanese delegation showed interest in collaborating with the ANTAM Project. In particular, to appoint an official focal point and nominate experts to participate in ANTAM Technical Working Groups. The Japanese delegation agreed to come back to Beijing once the focal point is nominated to further enhance their collaboration with ANTAM and CSAM.

## Establishment of ANTAM Technical Working Group on Transplanters

By initiative of ANTAM Focal Point in Sri Lanka echoed by several ANTAM participating countries, in May 2016 the Secretariat has established a Technical Working Group (TWG) on Transplanters.

The TWG on Transplanters is composed of experts from: China, India, Malaysia, Philippines, Sri Lanka, Thailand and Vietnam. Selected experts are:

1. China, Mr. Zhang Xiaochen, Vice Director, 3rd Testing Division, ; China Agricultural Machinery Test Center (CAMTC)
2. India, Mr. Jagjevan Ram Narware, Director, Central Farm Machinery Training & Testing Institute, Tractor Nagar, Budni (MP)
3. Malaysia, Mr Mohd Shahril Shah bin Mohamad Ghazali, Research Officer, Malaysian Agricultural Research and Development Institute (MARDI)
4. Philippines, Engr. Romulo Esteban Eusebio, Engineer III, Agricultural Machinery Testing and Evaluation Center (AMTEC)
5. Sri Lanka, Mr. Anuradha Wijethunga, G.A.M, Agricultural Engineer, Farm Mechanization Research Center, Department of Agriculture
6. Thailand, Dr. Isara Chaorakam, Director, National Agricultural Machinery Center, Kasetsart University.
7. Vietnam, Mr. Ngo Van Phuong, Head, Testing Department No.1, Machinery Testing Center (MTC), Vietnam Institute of Agricultural Engineering and Postharvest Technology (VIEAP)

# Future Events

## Asian and Pacific Workshop on Whole-Process Mechanization of Potato Production



CSAM



The Asian and Pacific Workshop on Whole-Process Mechanization of Potato Production is co-organized by Centre for Sustainable Agricultural Mechanization of the Economic and Social Commission

for Asia and the Pacific with the Agricultural Mechanization Chapter of China Society for Agricultural Machinery and the Agricultural Trade Promotion Centre of the Ministry of Agriculture of China. The event will be held on 27-28 June, 2016 in Kunming, China, in parallel with the China International Potato Expo 2016. The participants will have chance to attend the Potato Industry Development Forum and visit China International Potato Expo and potato processing enterprises.

The Asian and Pacific Workshop on Whole-Process Mechanization of Potato Production is expected to share knowledge and good practices; establish network and linkages; and facilitate cooperation among various stakeholders in the field of whole-process mechanization of potato production in the participating countries and organizations.

Twenty-two participants from 14 countries will attend the Workshop including government officials, researchers and academics, extension service managers and representatives of private sector and other international and regional organizations in the field of potato production mechanization.

## Regional Council of Agricultural Machinery Association in Asia and the Pacific (ReCAMA)

**Organized By**  
Agricultural Machinery Manufacturers' Association (AMMA-India)

**Supported by**  
CODISSIA Intec Technology Centre, Coimbatore  
ESCAP CSAM

**AMMM 2016**  
Agricultural Machinery Manufacturers Meet 2015  
(July 16-18, 2016)  
Hotel Le Meridien, Coimbatore

**Concurrent Events**

**TAME 2016**  
Tractor and Agricultural Machinery Exhibition  
(July 15-18, 2016)  
AMMA Pavilion,  
CODISSIA Trade Fair Complex, Coimbatore

**&**

**ReCAMA Annual Meet 2016**  
(July 16-18, 2016)  
Hotel Le Meridien, Coimbatore

**CONFERENCE THEME**  
Exhibit, Establish & Link with National & International Agri Machinery Manufacturers, Traders, Associations, Buying Houses, Governments, NGOs and Farmers

The Regional Council of Agricultural Machinery Associations (ReCAMA) was established by CSAM in 2014, with the objective of promoting sustainable agricultural mechanization in Asia and the Pacific through strengthening the capacity of national agricultural machinery associations, facilitating exchange of knowledge and information, and enhancing collaboration among national associations and their members.

The 2nd Member Meeting of ReCAMA will be held on 16-18 July, 2016 in Coimbatore, India, in parallel with the Indian Agricultural Machinery Manufacturers' Meet (AMMM – 2016) in collaboration with the India Agricultural Machinery Manufacturers' Association (AMMA-India). The 2nd Member Meeting will review and admit members and observers, discuss and endorse the work report and work plan of the Council.



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The Centre for Sustainable Agricultural Mechanization (CSAM) is a regional institution of the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), based in Beijing, China. Built on the achievements of the Regional Network for Agricultural Machinery (RNAM) and the United Nations Asian and Pacific Centre for Agricultural Engineering and Machinery (UNAPCAEM) CSAM started operations in 2012.

CSAM serves the 62 members and associate members of UNESCAP. It is guided by the 2030 Agenda for Sustainable Development and other internationally agreed development goals, as well as, the resolutions and mandates adopted by UNESCAP.

The vision of CSAM is to achieve production gains, improved rural livelihood and poverty alleviation through sustainable agricultural mechanization for a more resilient, inclusive and sustainable Asia and the Pacific.

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