Dear Readers,

Welcome back to CSAM's quarterly newsletter. Starting from this issue, the newsletter has adopted a new look and revamped contents. Traditional content, such as CSAM past and future activities, is followed by a new section on 'Policy, Strategies and Innovations', in which we'll introduce innovative technologies and policies developed by our member countries.

The change to our newsletter coincides with the recent adoption by UN member countries of the Sustainable Development Goals (SDGs). The SDGs are characterized by a comprehensive approach to development and a strong attention to environmental issues. The majority of them are directly relevant to the work of CSAM, particularly, SDG1: End poverty in all its forms everywhere; and SDG2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture. In addition, our on-going and future projects fall perfectly within SDG17: Revitalize the global partnership for sustainable development. The section 'Development Trends', along with news in the area of agricultural cooperation, will introduce the 17 SDGs.

It is our hope that CSAM newsletter will increasingly serve as an informative and sharing platform for activities and innovations on agricultural mechanization in the Asia Pacific region. As the new cycle of development calls for renovating partnerships, we would like to invite all of you to join our efforts toward development of sustainable agriculture for a more sustainable and resilient world.

ZHAO Bing
Head
Centre for Sustainable Agricultural Mechanization
United Nations Economic and Social Commission for Asia and the Pacific
Draft ANTAM Codes

The draft ANTAM Codes for testing of power tillers and powered knapsack misters-cum-dusters are finalized and available for stakeholder consultation. The Codes along with the test reports will be presented at the 2nd annual meeting of ANTAM to be held from December 3-5 in New Delhi, India for possible adoption. Each test Code is accompanied by a training manual. The manuals have been carefully compiled to guide engineers in every step of the testing procedures. The manuals include a complete list of testing equipment and specifications of needed facilities along with a step-by-step explanation of testing practices.

**Powered Knapsack Mistiders-Cum-Dusters**

ANTAM Codes for testing of powered knapsack misters-cum-dusters were formulated by referring to ISO standards and FAO guidelines. Moreover, relevant national standards of China and India were merged to reflect the unique local conditions. The list of ANTAM Codes for testing of powered knapsack misters-cum-dusters includes:

- Speciﬁcation Check
- Engine Test
- Joints, Tank, Straps, Hose and Controls Test
- Blower Test
- Discharge Rate Test
- Misting / Dusting Range and Width Test
- Noise Test
- Endurance Test

**Power Tillers**

ANTAM Codes for testing of power tillers were formulated by referring to relevant ISO and OECD standards. Moreover, relevant national standards of China, India, Indonesia, Philippines, and Thailand were included to repect the unique local conditions. The list of ANTAM Codes for testing of power tillers includes:

- Checking of Speciﬁcations
- Engine Performance Test
- Drawbar Performance Test
- Turning Ability
- Parking Brake Test
- Noise Level Measurement
The Livelihood and Food Security Trust Fund (LIFT) Project

The project titled "An Integrated Rural Economic and Social Development Programme for Livelihoods Improvement in the Dry Zone of Myanmar" is funded through the Livelihood and Food Security Trust Fund (LIFT) and led by the Centre for Alleviation of Poverty through Sustainable Agriculture (CAPSA-ESCAP) in partnership with the Asian and Pacific Centre for Transfer of Technology (APCTT-ESCAP), the Centre for Sustainable Agricultural Mechanization (CSAM-ESCAP) and the Network Activities Group (NAG). The Department of Rural Development of the Ministry of Livestock, Fisheries and Rural Development of Myanmar (DRD-MLFRD) has been designated as the focal government agency to collaborate in project implementation.

The project aims to support integrated socioeconomic development in Myanmar's Dry Zone with special emphasis on livelihoods improvement and food security. LIFT has three thematic areas covering technology transfer, sustainable agriculture, and agricultural engineering and farm mechanization.

The project activities include a wide range of interventions including: the establishment of a knowledge resource network; the development of case studies, policy papers and policy briefs; and organization of knowledge-sharing workshops and policy dialogues.

In May 2015, the inception workshop identified "Climate Resilient Agriculture" as the unifying focus for the project activities, within which custom hiring of agricultural machinery was recognized as CSAM’s approach to develop outputs contributing towards strengthening the climate resilience of agriculture in the Dry Zone.

To date, CSAM has contracted experts from region including national consultant from Myanmar, scholars from the Asian Institute of Technology (AIT) and the University of the Philippines Los Banos (UPLB) to conduct field trips and prepare case studies on policies/institutions/processes (PIPs) to support custom hiring and other modalities and practices of sharing agricultural machines in the Dry Zone of Myanmar and mapping exercise. Two training programmes will also be delivered followed by the 1st knowledge-sharing workshop on enabling environment for customary hiring of agricultural machinery in the Dry Zone of Myanmar from 30 November to 1 December 2015 in Mandalay, Myanmar.
The 1st Member Meeting of the Regional Council of Agricultural Machinery Association in Asia and the Pacific (ReCAMA)

The 1st Member Meeting of ReCAMA will be organized on 26-28 October 2015 in Qingdao, China by the Centre for Sustainable Agricultural Mechanization (CSAM) on the side of the China International Agricultural Machinery Exhibition (CIAME). The mission of ReCAMA is to promote sustainable agricultural mechanization in Asia and the Pacific through strengthening the capacity of national agricultural machinery associations, facilitating the exchange of knowledge and information, and forging business connections among national associations and their members.

The Livelihood and Food Security Trust Fund (LIFT) Project: 1st Knowledge-Sharing Workshop

The 1st Knowledge-sharing workshop on enabling environment for custom hiring of agricultural machinery in the Dry Zone of Myanmar is scheduled to take place from 30 November to 1 December 2015, in Mandalay, Myanmar.

The 2nd Annual Meeting of the Asian and Pacific Network for Testing of Agricultural Machinery (ANTAM)

The 2nd annual meeting of ANTAM will be organized on 3-5 December 2015 in New Delhi, India, co-hosted by the Indian Council of Agricultural Research (ICAR). The meeting is also held in parallel with EIMA Agrimach INDIA 2015 and the 4th International Exhibition & Conference on Agri-Machinery & Equipment. At the meeting, the ANTAM Secretariat will present the annual work report of ANTAM for 2014-2015 and work plan and 2015-2016 including the work of the Technical Working Group (TWG). The first two draft sets of ANTAM Codes for testing of powered knapsacks misters-cum-dusters and power tillers will be presented for review and adoption. The meeting will also review the ANTAM Terms of Reference (ToR), along with the ToR for TWG members.

The 3rd Regional Forum on Sustainable Agricultural Mechanization in Asia and the Pacific and 11th Session of the Technical Committee of CSAM

The 3rd Regional Forum on Sustainable Agricultural Mechanization in Asia and the Pacific will be organized in concurrence with the 3rd ASEAN Conference on Agricultural and Biosystems Engineering (ACABE) on 9-11 December 2015 in Manila. The forum focuses on the crucial role of human resource development in the attainment of sustainable agricultural mechanization. Moreover, the forum will serve as a platform to establish linkages among Asia-Pacific countries to exchange information on human resource development strategies. The 11th Session of the Technical Committee of CSAM will be held at the end of Forum on the afternoon of 10 December 2015. This TC will particularly deliberate on ways and means to leverage expertise of the TC to better contribute to the work of CSAM, in reference to ESCAP Resolution 71/1 on restructuring the conference structure of the Commission to be fit for the evolving post-2015 development agenda, adopted in May 2015.
Policy Brief, Issues 6, June 2015:

Agricultural Mechanization in Thailand

Labor shortages along with the necessity to reduce production cost have caused mechanization to play a vital role in the present Thai agricultural production system. This paper presents an overview of agricultural mechanization in Thailand, the status of agricultural machinery industry and related policies. It is contributed by Mr. Viboon Thepent, Senior Agricultural Engineering Specialist of the Agricultural Engineering Research Institute of the Department of Agriculture of Thailand.


Training Manual on ANTAM Codes for Testing of Misters-Cum Dusters

The training manual was prepared by Dr. Chan Chee-Wan and Dr. Jean-Paul David Douzals, consultants contracted by CSAM and the China Agricultural Machinery Testing Centre (CAMTC), for the 1st Training of Trainers Programme on ANTAM Test Codes held in Najing, China from 23 to 27 June 2015. The manual has been carefully compiled to guide testing engineers in every step of the procedures. It includes a complete list of needed equipment, specifications of testing facilities and a step-by-step explanation of testing practices.

http://un-csam.org/publication/Pub_ANTAM_TM_S.htm

Training Manual on ANTAM Codes for Testing of Power Tillers

The training manual was put together by Mr. Chakradhar Chimote of the Central Farm Machinery Training and Testing Institute of India, a consultant contracted by CSAM and the China Agricultural Machinery Testing Centre (CAMTC), for the 1st Training of Trainers Programme on ANTAM Test Codes held in Najing, China from 23 to 27 June 2015. The manual has been carefully compiled to guide testing engineers in every step of the procedures. It includes a complete list of needed equipment, specifications of testing facilities and a step-by-step explanation of testing practices.

http://un-csam.org/publication/Pub_ANTAM_TM_PT.htm
CSAM Focal Point in Indonesia: Indonesian Center for Agricultural Engineering Research and Development (ICAERD)

The Indonesian Center for Agricultural Engineering Research and Development (ICAERD) is part of the research arm of the Indonesian Agency for Agricultural Research and Development (IAAARD), under the Indonesian Ministry of Agriculture. IAAARD oversees the work of 11 research and development centers. Each centre focuses on specific issues such as food crops, horticulture, estate crops, livestock, veterinary, soil and agro-climate, agro-socio economics dynamics, machinery development, post-harvest, biotechnology and agricultural technology assessment.

ICAERD specializes on machinery design. ICAERD work includes a wide range of equipment that covers all agricultural phases from land preparation to post-harvest processing. In addition ICAERD also serves as a testing centre of agricultural machinery for the purposes of standardization, certification and monitoring of equipment use.

The Centre has developed several prototypes, for example:

Â Movable Sprinkler Irrigation Machinery for Green House

This sprinkler irrigation tool has been adjusted to the irrigation system in the green house. The strong construction of the main frame can move back and forth to provide particles of water with the right amount and time in accordance to the plant's need as well as increasing the humidity in the green house. This technology is flexible because the height of it can be adjusted with the plant's height so that the water application for the irrigation can be more efficient. It is specially designed for green house, though it is also possible to be used in an open area.

Â Fertigation Machine for Vegetable Crops

A machine for mixing fertilizer and irrigation (fertigation) for vegetable crops that can be used for micro irrigation network, both in the green house and field. This machine consists of nine main components with special characteristics on the venture pipe that functions to suck thick liquid fertilizer that will be applied with the irrigation water. This technology can mix more than one liquid fertilizer with water irrigation at the same time so that efficiency of the application can be increased. This technology can automatically adjust the pH of the distributed irrigation water. In addition, there is potential to be developed for micro irrigation network both inside (more than 8mx30m) and outside the green house (0.25 ha) with irrigation capacity of 4m3/hour.

Â Fruit Squeezer Machine

The fruit squeezer machine can separate liquid fraction or fruit juice from the solid fraction or waste and seeds. The separation mechanically squeezes the flesh of the fruit that contained seeds which follow by the separation of the liquid and solid fraction. The superiority of this machine is able to produce shorter time and more efficient squeezing process compared to the manual ways using filter cloth or extractor stationary machine that works in batch system. It can be operated continuously. This machine can be used for fruits such as mangosteen, rose apple, passion fruit, etc.

Other prototypes developed by ICAERD include the double-wing plow type power weeder and the unpeeled corn sheller. To see more please visit their website: http://en.litbang.pertanian.go.id/reshighlight/mektan/mesinpemerasbuahbiji
Introduction:
Finger-millet is an important crop in the hills of Nepal. Most of the areas under mid hills belong to maize/millet relay production system. The crop is more important in subsistence farming system of inaccessible area where it is grown without external inputs in marginal land. Because of long duration storability, this crop has paramount significance on the food security of poor people. Thus, finger millet a staple food of poor people has significant role to sustain hill agriculture system. Finger-millet is very rich in iron, calcium, minerals and phosphorus as compared to other cereals. It is a good source of limiting amino acids like lysine and methionine and is rich in vitamins like thiamine, riboflavin, and niacin. The total finger-millet cultivated area in Nepal is 271,183 ha and production 304,105 mt and productivity 1121 Kg/ha. (Statistical Information on Nepalese Agriculture 2013/2014)

Hill farmers play the most vital role in post production stage in agriculture operations. Manual threshing and dehulling finger millets is a tedious and time-consuming job. Manual threshing of millet is practiced in hilly areas although it has low output, higher grain damage and involve more drudgery to the farmers. To address these problems, Agricultural Engineering Division has designed and developed a millet threshing machine which significantly reduce the work load and time for post harvest processing of millets and is ergonomically sound with respect to traditional method of threshing. Currently, this technology to thresh millet is widely accepted by Nepalese farmers, especially in the hills.

Machine description:

Major parts of millet threshing machine:

i) Hopper: where the millet panicles are being fed into the threshing drum. It is made of cast iron material and has a height of 27 cm.

ii) Threshing chamber: where the millet grains are beaten out of the panicles and separated from the bulk of the straw. It is made of cast iron material with a diameter 45 cm. It consists of a rotary drum with beater pegs and a stationary concave grid.

iii) Threshing drum: It is made of cast iron and it is housed inside the threshing chamber. It accommodates the shaft on the concave with a clearance of 3 mm.

iv) Cleaning chamber and grain collector: It is made up of single sieve that undergo to and fro motion and grain is collected in the chamber by gravity.

v) Drive and driven assembly: Pedal operated
Major features of millet threshing machine:

i) Threshing and pearling capacity : 40-60 Kg/hr
ii) Threshing efficiency : 97%
iii) Pearling efficiency : above 98%
iv) Total grain loss : <5%
v) Unthreshed grain: 2%
vi) Shattered grain : 1.5%
vii) Weight of the threshing machine : 50 Kg

Figure: Operation of Pedal Operated Millet Thresher Cum Pearler

A memorandum of understanding (MOU) is signed between Nepal Agricultural Research Council and Local manufacturer (J.B. Workshop, Lalitpur, and Trishul Agri. Tools, Kathmandu, Nepal) for its commercial fabrication.

This piece is contributed by Mr. Ganesh Sah, Chief of Agricultural Engineering Division of the Nepal Agricultural Research Council (NARC).

Ms. Stephanie Gallasch (Intern)

Ms. Gallasch joined CSAM on 1 October 2015. She completed her undergraduate studies in Modern China Studies and Business Administration at Constance University of Applied Sciences and at Shanghai Jiaotong University. After gathering experience in the private sector, she is now in the last year of her graduate studies in the same field at University of Cologne in Germany, where she is especially focusing on cross-strait relations and China’s international role.
Meeting the Sustainable Development Goals

On 25 September, UN member countries adopted a new set of global goals to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda. Each goal has specific targets to be achieved over the next 15 years. Visit the website to learn more about each target: http://www.un.org/sustainabledevelopment/sustainable-development-goals/

China-Afghanistan Bilateral Cooperation on Agricultural Mechanization

On 22 August, China donated to Afghanistan a package of agricultural equipment worth $8.5 million. The package included 300 fully equipped tractors, 200 reaper machines, 100 rice planting machines and 10 fodder pressers. The Afghan Minister of Agriculture, Irrigation and Livestock, Asadullah Zamir, thanked the government of China for the donation and called it significant in mechanization of the country’s agriculture sector. He said the machinery would be deployed to 17 agriculture central stations and to 13 sub-stations. http://www.1tvnews.af/en/news/afghanistan/18288-china-donates-$85-million-agricultural-equipment-to-afghanistan

Association of Southeast Asian Nations (ASEAN) Plus Three Agreed to Further Heighten Cooperation in Agriculture

The 15th ASEAN Ministers on Agriculture and Forestry (AMAF) and the Ministers of Agriculture of China, Japan and South Korea discussed the “significant progress” made in the implementation of cooperation activities and projects under the nine Strategic Thrusts of the ASEAN Plus Three Cooperation Strategy (APTCS) on Food, Agriculture and Forestry 2011-2015. These include strengthening food security; enhancement of capacity-building and human resource development; sustainable forest management; climate change mitigation and adaptation, strengthening of information system and knowledge networking and exchange; and enhancement of productivity, quality and marketability of agriculture and agricultural products.

ASEAN plus three ministers also reaffirmed the promotion of bioenergy towards sustainable agriculture and rural development by adopting the Bioenergy and Food Security Framework 2015-2025 with the objective to assist ASEAN member states in ensuring that sustainable, food-secure and climate-friendly bioenergy contributes to the economic development. The ASEAN Plus Three ministers also cited the need to have preparatory stage to work on the details of ASEAN Food Security Information System (AFSIS) permanent mechanism. http://www.globalpost.com/article/6647290/2015/09/11/asean-plus-three-agree-further-heighten-cooperation-agriculture-forestry
CSAM, Centre for Sustainable Agricultural Mechanization, is a regional institution of the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), based in Beijing, China. CSAM started operations in 2004, built on the achievements of the Regional Network for Agricultural Machinery (RNAM) established in 1977 with support of UNDP, FAO and UNIDO, and the United Nations Asian and Pacific Centre for Agricultural Engineering and Machinery (UNAPCAEM). CSAM serves the 62 members and associate members of 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.

CSAM’s objectives are to enhance technical cooperation among the members and associate members of UNESCAP as well as other interested member States of the United Nations, through extensive exchange of information and sharing of knowledge, and promotion of research and development and agro-business development in the area of sustainable agricultural mechanization and technology transfer for the attainment of the internationally agreed development goals including the Millennium Development Goals in the Asia-Pacific region.

Disclaimer

The designations used and the presentation of the material in this publication do not imply the express opinion on the part of the ESCAP Secretariat concerning the delimitation of its frontiers or boundaries. The views expressed in this publication are those of its authors and do not necessarily reflect the views of ESCAP and CSAM.

Any mention of firm names and commercial products do not imply the endorsement of ESCAP/CSAM.