

An innovative soil improvement agent based on foamed glass showcased in TICAD VI in Nairobi, Kenya

Tottori, Japan – July 19, 2016 - Tottori Resource Recycling, Inc., a foamed glass manufacturer through recycling technology, showcases its water-saving agriculture solution at TICAD VI (Tokyo International Conference of African Development) in Nairobi, Kenya on 25th and 26th August.

TICAD is an international conference on the theme of development of Africa. Since 1993, the Japanese government has taken lead to hold the conference with United Nations (UN), United Nations Development Program (UNDP), African Union Commission (AUC) and World Bank.

In the African continent, the area of arid or semi-arid zone is huge, including the Sahara Desert. Due to climate change, significant drop of precipitation and increased drought have already occurred in various locations. As agriculture accounts 70% of water consumption in general, the water-saving agriculture is one of the serious issues for African development from perspective of food security.

Tottori Resource Recycling showcases, at TICAD VI, its innovative and proven water-saving agriculture solution with “**Porous Alpha**”, a porous material manufactured by foaming used glass bottles. By mixing it into the soil, the pores in “Porous Alpha” increase water retention capacity and improve aeration of soil. The application of “Porous Alpha” for agriculture has been developed with Tottori University, one of the most advanced university and research institution on arid zones. Also this technology is officially registered as transferable environment friendly technology for developing countries by United Nations Industrial Development Organization (UNIDO).



Experimentation of green-beans in Morocco

Tottori Resource Recycling has verified its performance in the farms in Kenya, Mauritania, Senegal and now in Morocco where the verification survey is supported by Japan International Cooperation Agency (JICA). In Morocco, **the 50% water reduction for irrigation, and at the same time, the 20+% yield increase have been achieved.** These results imply that this technology (1) facilitates the recycling of used bottles, (2) drastically saves the irrigation water, (3) provides adaptation measures against low precipitation and drought due to climate change and (4) contributes to “No hunger”, one of in the Sustainable Development Goals (SDGs) voted by UN.

(Please refer to next page, you can catch “Food situation in Africa and Agriculture in arid areas”)

This technology is to be exhibited at side-event held by JICA at TICAD VI as follows

- Place : Sarova Panafric Hotel
- Period of exposition : 25th, 26th Aug, 2016
- ※ Individual meeting can be arranged also on 27th and 28th . Please contact us for details.

Tottori Resource Recycling continues to tackle with these important issues such as waste reduction, water saving for agriculture, increasing yield, and adaptation to climate change all over the world including Africa.

◆Contact

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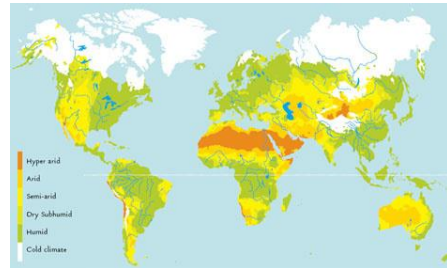


Food situation in Africa and Our Goals in future

◆The importance of saving water in agriculture in Africa

Currently 795 million people are in hunger and suffer from malnutrition all over the world. Hunger rates are especially higher in Sub-Saharan African countries. Based on research by public organizations, one person out of four cannot take enough nutrition.¹ In the African continent, the arid and semi-arid (※) areas have low precipitation, and are thought to have further decreased precipitations due to climate change.

※ Arid areas: United Nations Environment Programme (UNEP) defines that amount of rainfall is less 200mm (Winter rainy season), less 300mm (Summer rainy season) per a year. Nowadays arid areas is about 41% in the land of world, more than 2 billion people live there.²



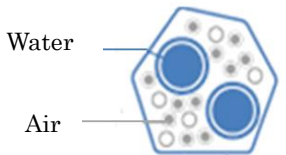
Arid areas distribution map (From UNESCO's Web site)

The limited water availability in arid areas impacts a lot on human life including agriculture. As each crop has minimum required water for cultivation, the lack of water limits varieties of arable crops and yield, even if the area is huge. In addition, a lot of effort is needed to obtain water, and, if groundwater level is deeper, the required energy to pump up the water is increased. Furthermore, during drought which is increasing due to climate change, because of persistent shortage of water resource, including groundwater, the agricultural production is drastically reduced and the human life is severely affected such as difficulties to obtain drinking water.

Tottori Resource Recycling believes that, as 70% of available water is consumed for agriculture in general, the water-saving agriculture and the efficient usage of water in arid areas help to decrease hungers.

◆Our challenges and Goals

The agricultural methodology with technology to save water such as irrigation and water-retention in arid area with extremely limited water availability is called "Water-saving agriculture in arid areas".



Schematic diagram foam glass

"Porous Alpha" comprises water

Tottori Resource Recycling has developed such technologies with Arid Land Research Center of Tottori University. "Porous Alpha", a foamed glass made from used bottles has numerous small pores inside which keep water and air when "Porous Alpha" is mixed with soil. This mechanism can reduce required irrigation water. In addition, if the farmers use "Porous Alpha" with a drip-irrigation system, a proven technology to save water, the yield is increased because the fertilizer solved in irrigation water can be also retained by "Porous Alpha".

We're now carrying out experimentation project with pilot usage by farmers in Morocco. We've achieved 50% water-saving alongside with 20+% yield increase for tomato and green beans. (See [here for details.](#))

It should be noted that "Porous Alpha" is compliant to Japanese soil environmental standard, which means the usage of "Porous Alpha" for agriculture is environmentally safe. As the raw material of "Porous Alpha" is used glass available everywhere, local production is possible in Africa also.



Morocco : Harvest of green-beans in demonstration area of Porous Alpha

We continue to develop our technology with Arid Land Research Center of Tottori University and facilitate the dissemination of the technology in collaboration with aid agencies like JICA, governments and international organizations. Through efficient use of water in arid area, adaptation of agriculture and food production to climate change and realization of the agriculture in arid areas where has been thought to be impossible for agriculture, Tottori Resource Recycling endeavor the achievement of No Hunger in Africa and in the world.

¹ The State of food insecurity in the world (2015) published by FAO, WFP and IFAD

² Millennium ecosystem assessment 2005