



**YANMAR**

News Release

September 27, 2016  
Yanmar Co., Ltd.

**Botanical Research and Development  
at Yanmar's Bio Innovation Center Kurashiki Laboratory**



Bio Innovation Center, Kurashiki Lab.

From August 26, Yanmar put operations into full swing at its research and development facility the Bio Innovation Center Kurashiki Laboratory, to accumulate knowledge and information relating to biology and plant cultivation systems. Yanmar is bringing together its technology and know-how, developed through experience in ag machinery production, with research and development in horticulture, plant breeding, and microbiology to create new solutions.

The research facility is a collaboration between Yanmar Group companies, fusing together agricultural related technologies and products with energy related technologies, as a part of Yanmar's efforts to create new solutions. Examples include the climate control technologies used in the gas heat pump (GHP) systems of Yanmar Energy System Co., Ltd. and the year-round strawberry cultivation testing which is conducted using the strawberry crop rotation apparatus of Yanmar Green System Co., Ltd. Additionally, Yanmar is collaborating with external parties including business ventures, universities and research centers to establish cultivation technology using IoT. There is also a range of research activities in the fields of welfare and medicine in regards to how agriculture contributes to regional economics and its influences on health. By strengthening its research body through open innovation, Yanmar is advancing efforts to deliver new technological developments and realize sustainable food production that circulates our earth's natural resources.

• **About the Bio Innovation Center Kurashiki Laboratory:**

Facility Name: Bio Innovation Center Kurashiki Laboratory

Location: Okayama prefecture, Japan

Site Area: Approx. 2.5ha

Commenced Operation: August 26, 2016

Manager: Atsumi Konishi

• **Main Activities**

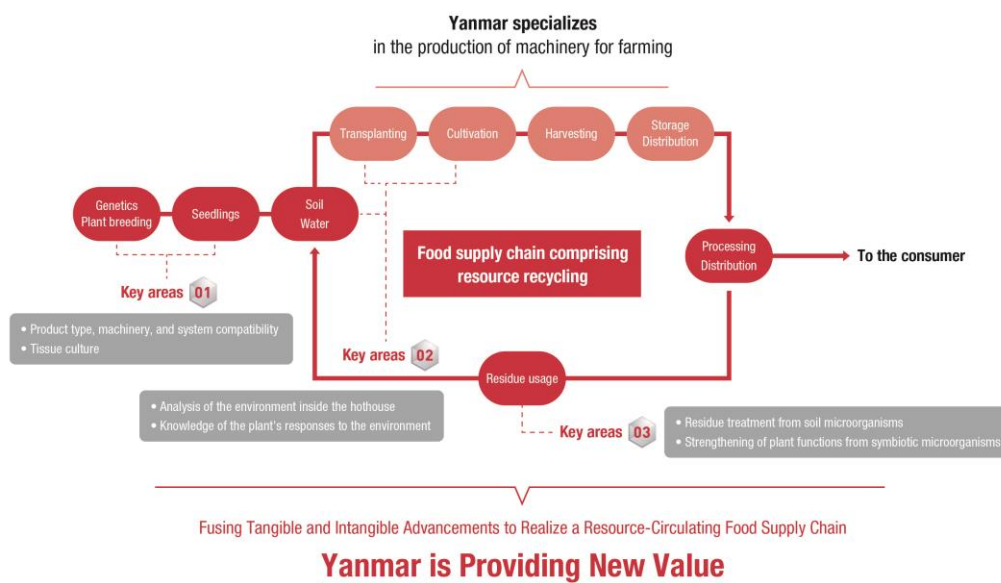
**A Leading Edge Bio Technology Facility:**

At the facility, Yanmar is utilizing greenhouses regulated by natural and LED lighting and scientific analysis of water quality and soils for research related to plants and the environment. As a facility for the research, development and dissemination of biotechnology, the center’s collaborative activities extend beyond the framework of Yanmar Group companies and departments, advancing technological developments for stable food production including technologies to optimize the environment for crop cultivation and plant tissue cultures.

**Establishing a System for Sustainable Food and Energy Production:**

Yanmar is integrating technologies in the fields of agriculture, climate control and energy management, to realize a sustainable society through the creation of a food production system that recycles our earth’s natural resources.

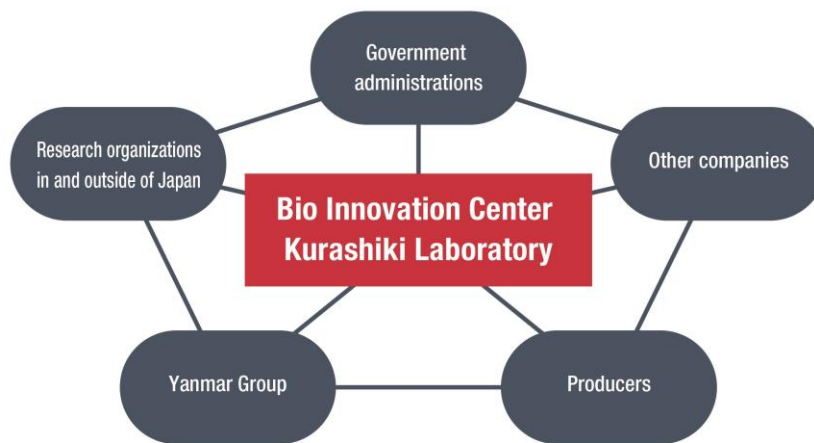
**Conceptual diagram of research field of Bio Innovation Center**



• **A Research Body Based on Open Innovation:**

The research facility has established an “innovation room” for the pursuit of open innovation. Through actively joining forces with business ventures, researchers in Japan and overseas, and other corporations, Yanmar is aiming to bring technological developments onto the global arena. An example of open innovation is the joint project, with Kinki University, Japan, conducting research to provide evidence on the effects of agriculture in terms of its contributions to regional economics and influences on health, as well as efforts to establish new agricultural businesses in the fields of medicine and welfare.

**Research Body Using Open Innovation**



**Year-round strawberry cultivation research conducted with a crop rotation apparatus**

## **About Yanmar**

With beginnings in Osaka, Japan in 1912, Yanmar was the first ever to succeed in making a compact diesel engine of a practical size in 1933. Moving on, with industrial diesel engines as the cornerstone of the enterprise, Yanmar has continued to expand its product range, services, and expertise to deliver total solutions as an industrial equipment manufacturer. As a provider of small and large engines, agricultural machinery and facilities, construction equipment, energy systems, marine, machine tools, and components — Yanmar's global business operations span seven domains.

On land, at sea, and in the city, Yanmar's Mission of "providing sustainable solutions focused on the challenges customers face, in food production and harnessing power, thereby enriching people's lives for all our tomorrows," stands testament to Yanmar's determination to provide us with "A Sustainable Future." For more information, visit Yanmar Co., Ltd. at its global website at <https://www.yanmar.com/global/about/>.

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