日期　2020 年 6 月 18 日

公司，机构名称	JNC 株式会社 英文名：JNC Corporation			
技术，设备名称	自来水,污水设备监控系统			
分类		（１）节能	○	（５）水治理
		（２）新能源	○	（６）土壤污染治理
		（３）大气污染治理		（７）智慧城市
		（４）循环经济	○	（８）其他
特点（宣传亮点）	该栽培系统不使用泥土，而使用杉树树皮和椰糠（废物有效利用），并且仅仅施些树木生长所需的最少量的液肥（水和液肥），有效利用水资源，没有因剩余肥料而引起的土壤污染。另外，不会感染来自土壤的病虫害，农药的使用量也是最少量程度即可（农药减量）。因为栽培不使用特殊薄膜，所以废物也少。			
节能环保效果和经济效益	和露天栽培、水培土耕栽培相比，液肥（水和肥料）的使用量少，无土壤污染。 灌水的使用量和水培土耕相比约三分之一，农药的使用量为二分之一到三分之一，而且由于栽培床与土壤隔离，所以不会流出。			
技术设备概要和原理				
业绩	2010 年在日本熊本县、2016 年在日本大分县开始栽培和销售。			

在华联系方式	联系人：松田 悦郎 捷恩智（上海）企業管理有限公司 上海市長寧区延安西路 500 号嘉寧国際大厦 2402 室 TEL：021-6466-1919 HP：　150-2647-8584
在日本的联系方式	联系人：青野　年治 TEL：+81-3-3243-6330 E-mail：t.aono@jnc-corp.co.jp 〒100-8105 東京都千代田区大手町 2-2-1、新大手町大厦 9 楼
网址	https://www.jnc-corp.co.jp/

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JNC's Agriculture Business

Development of Soilless Cultivation System

April 5, 2019

Corporate Research and Development Division
JNC CORPORATION

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Milestones in JNC's Soilless Cultivation System Development

2010 - Started research and development of Soilless Cultivation System at Minamata Research Center
(Experimental greenhouse: 4a=400m^2)

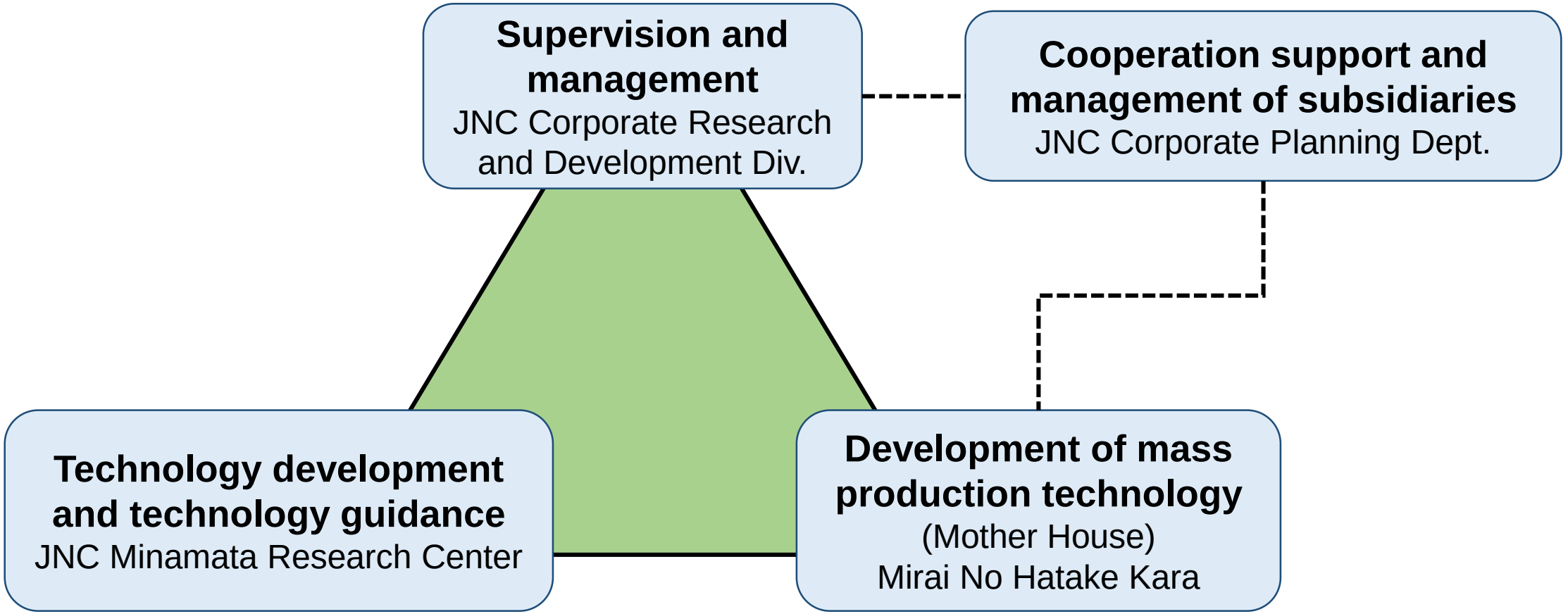
2012 - Started cultivation of tomatoes with high sugar content in a small-scale greenhouse of 12a (1,200m^2) and conducted test marketing

2015 - Studied scaling-up of Soilless Cultivation System in a high-wire greenhouse of 30a (3,000m^2) for stable yield and quality

2016 - Constructed full-scale cultivation facilities (1ha=10,000m^2) in Kusu town, Oita to verify feasibility of commercialization, and started full-scale cultivation and year-round marketing of tomatoes with high sugar content using Soilless Cultivation System. Currently marketed to high-class vegetable shops, supermarkets, restaurants, etc.

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JNC's Team Organization



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Issues Surrounding Agriculture and Food



Increase in needs for foodstuffs as a result of diversification of diets (taste, visual perception, etc.) (middle/upper-class consumers)



Increase in food security and safety consciousness (middle/upper-class consumers)



Stable supply of foodstuffs not affected by climate change and know-how (tacit knowledge)



Environmental issues (pollution) and shortage of water resources as a result of rapid economic development

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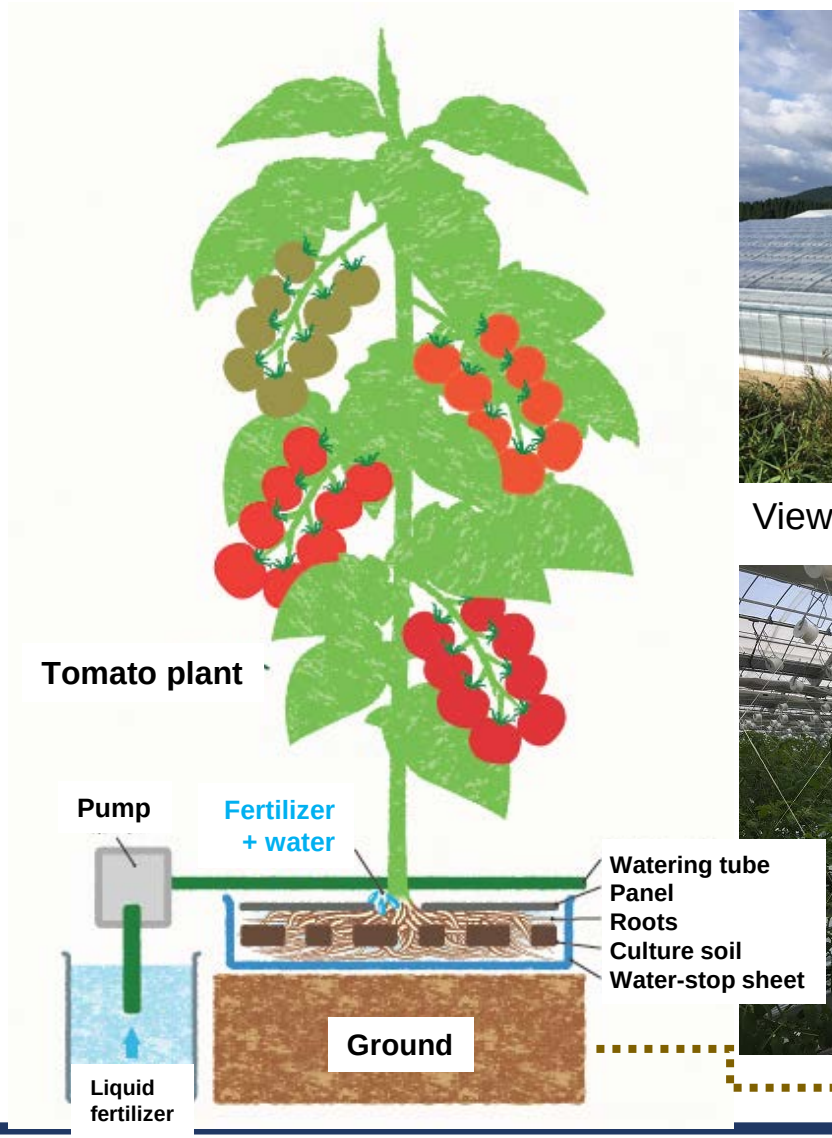
JNC's Approach to Resolving Issues

JNC Soilless Cultivation System is used in solar-powered plant factories (Smart Greenhouses) that use environmental control and manufacturing technology to satisfy customer needs (quality, timing of supply, etc.).

● Stable production	Implementation of environmental control and cultivation management by sensors and IoT
● Security, safety, reduction of environmental load	Management of minimum required cultivation fluid (water and fertilizer) Reduction in use of agrochemicals as a result of soil sterilization being unnecessary
● High (stable) quality (good taste)	Quality management by non-destructive measurement of sugar content and size

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Overview of JNC Soilless Cultivation System

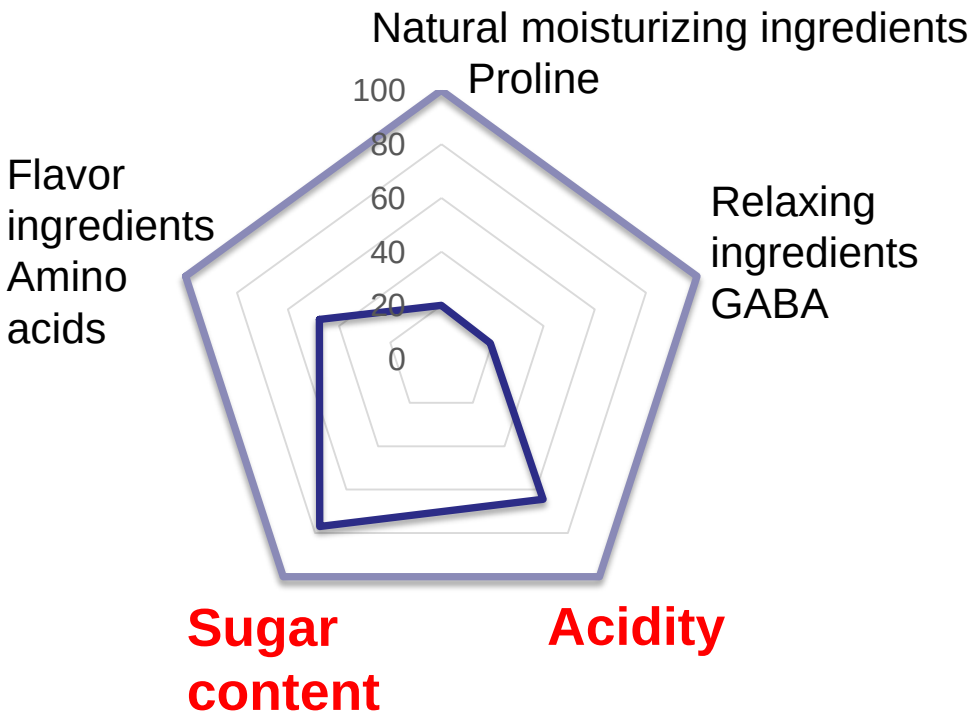




View of full-scale greenhouses in Oita



Cultivation in raised beds in Oita

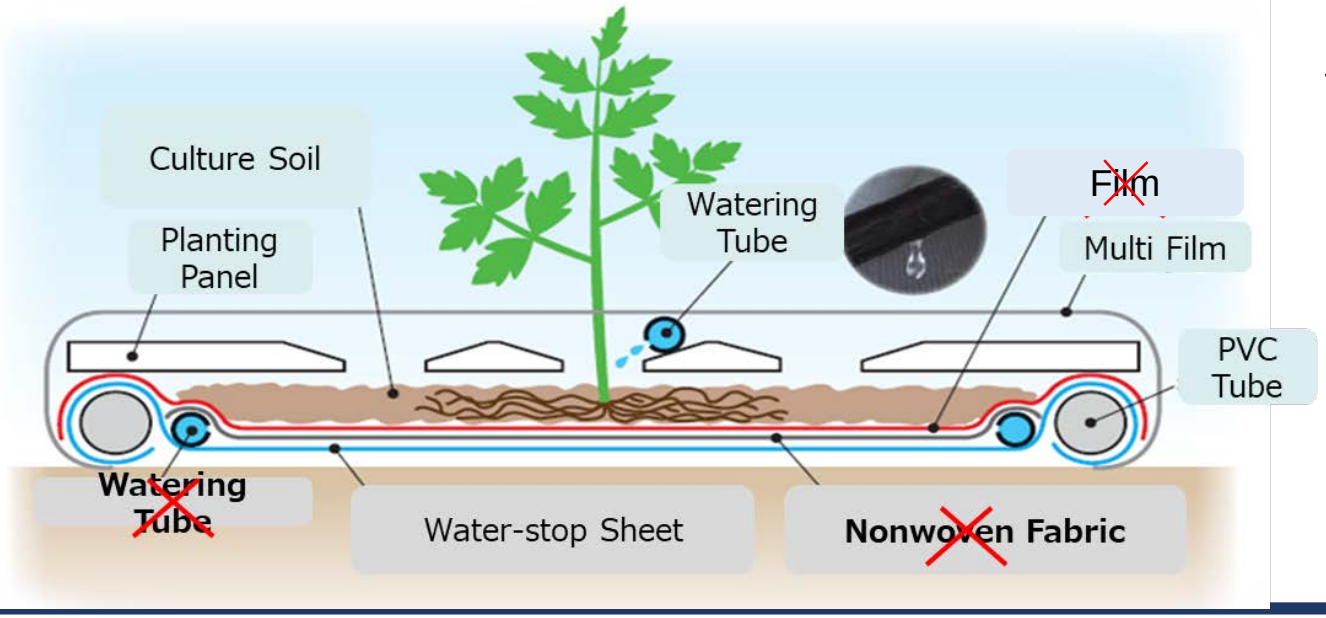


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Comparison with Competing Technologies

Cultivation technologies for tomatoes with high sugar content successful in Japan

	Initial cost	Cultiva-tion cost	Labor cost	Yield	Taste	Weatherp roof	Environ-ment proof	Pest resistance	Profit-ability
JNC soilless	○	○	○	△	◎	○	○	○	○
Soil culture	○	◎	○	○	○	△	×	×	△
Hydroponics	○	○	○	○	○	○	△	○	△
Film culture	△	△	○	△	◎	○	○	○	○



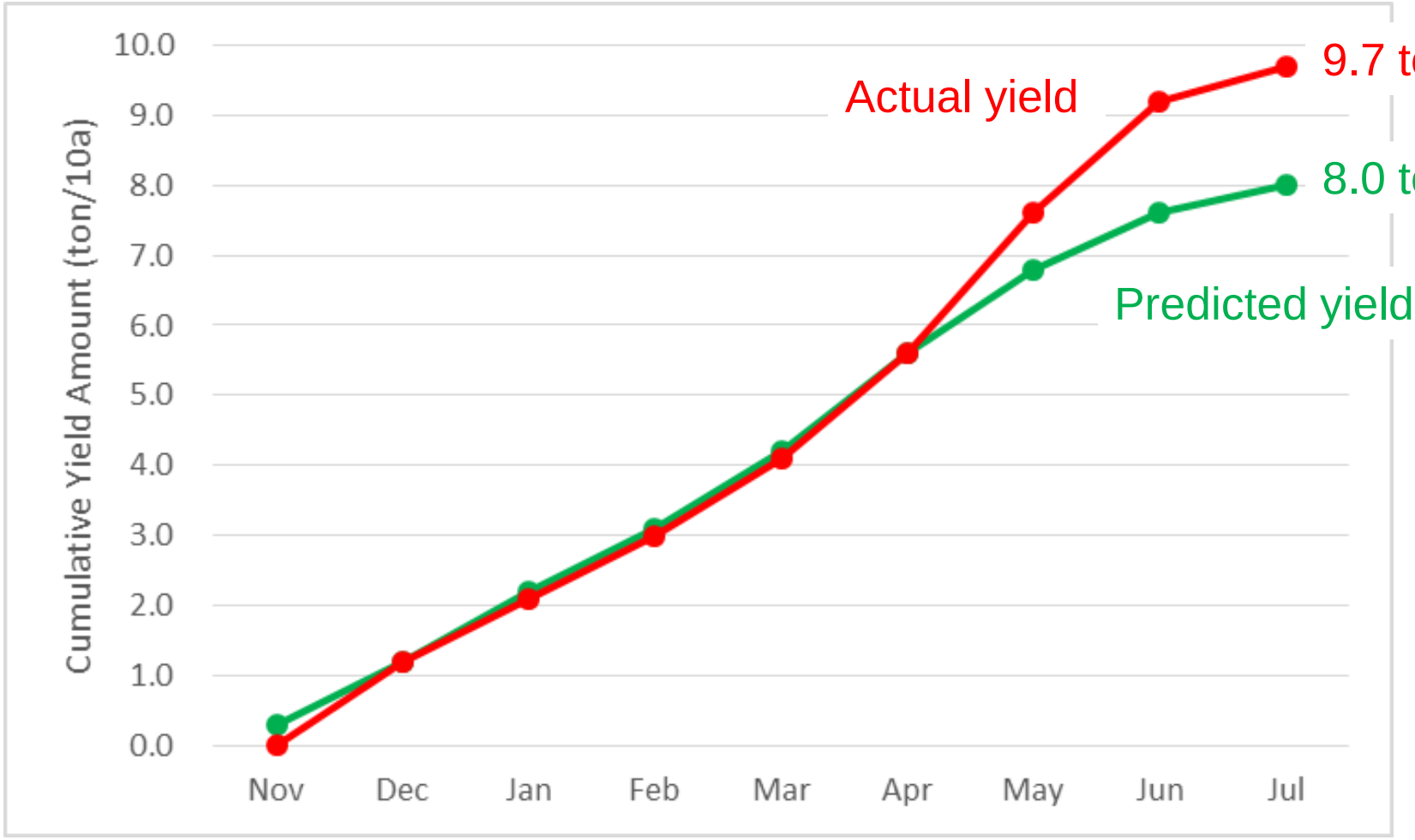
Advantages of Soilless Cultivation System

- Inexpensive initial facility cost compared to hydroponics and film cultivation (1/2~1/4 of hydroponics)
- Simple structure of cultivation beds compared to film system
- Achievement of high sugar content simply by controlling cultivation fluid

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Success of JNC Soilless Cultivation System Technology

Yield per 10a at Minamata in 2016/2017

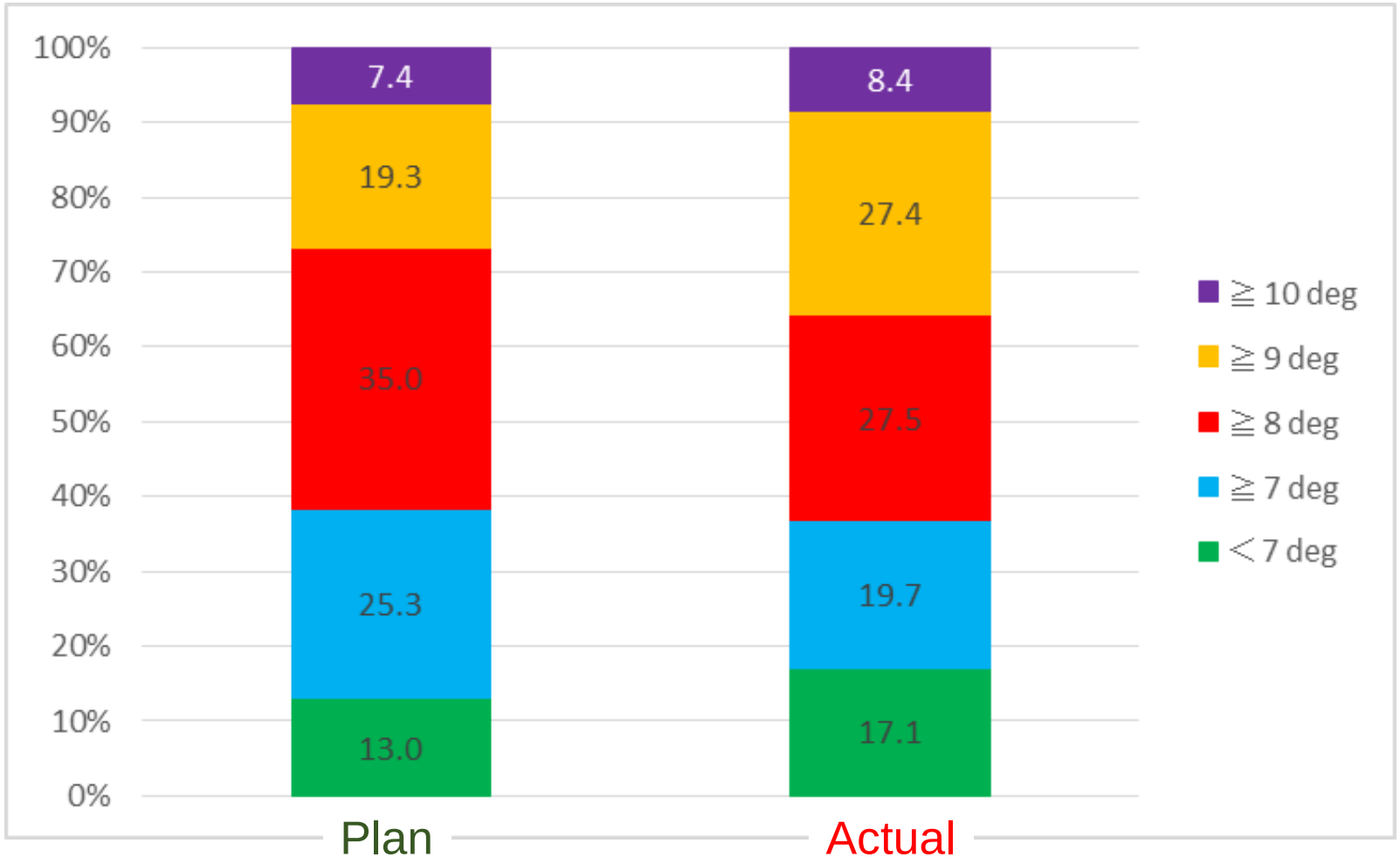


* Actual yield fit the predicted yield, resulting in satisfaction of customer purchase plan

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Success of JNC Soilless Cultivation System Technology

Sugar content distribution at Minamata in 2016/2017



*Ratio of sugar content of 8 degrees Brix or higher was approximately as planned.
The actual average sales unit price exceeded the planned price.

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Sellers of Tomatoes with High Sugar Content

High-class vegetable shops in department stores



High-class restaurants



High-class supermarkets



Roadside rest stops





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Summary 1

JNC aims to realize smart agriculture to provide:

High quality	⇒	“stable” quality
High productivity	⇒	“stable” productivity
High price	⇒	“stable” price

in order to meet the needs of customers (society).