

FY2017 Inter-University Exchange Project CHIBA University

Support for the Formation of Collaborative Programs with Russian and Indian Universities

【Name of project】(Adopted year: FY2017, (TypeA Russia))

FARM (Future Agriculture with Russian Far east Pre-Master to PhD Program)

【Summary of Project】

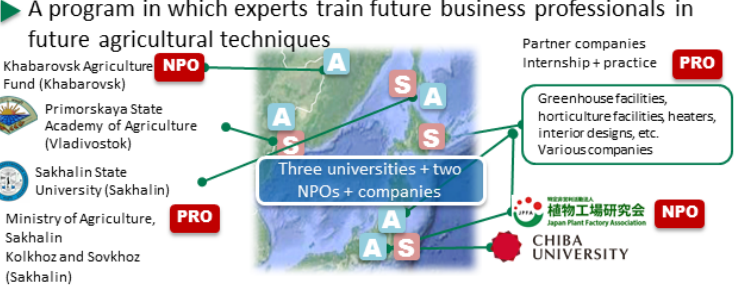
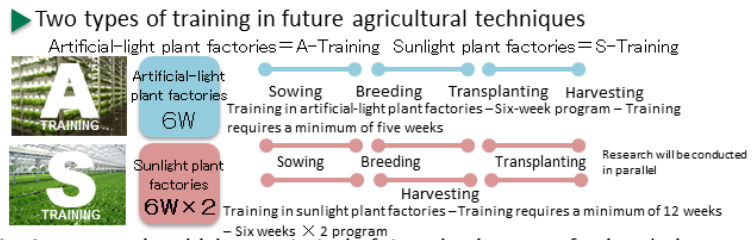
This program trains leaders for future agriculture, which include highly advanced greenhouse horticulture and artificial-light plant factory. Participants learn from diverse fields such as agricultural engineering, food marketing, crop cultivation, and the environmental control. Topics range from food production to distribution and sales businesses. Graduates will possess the skills to contribute to innovations in future agricultural techniques and participate in Russo-Japanese joint enterprises in the Russian Far East. This program is divided into two parts: technological and practical aspects. The first part focuses on the “sunlight plant factories” and “artificial-light plant factories”, because these fields cover the core techniques, including environmental control, cultivation techniques, management, and device development, which will be used in future agriculture. The second part focuses on practical knowledge and necessary skills, including product management, marketing, and life cycle assessments in sunlight and artificial-light plant factories. Throughout the program,

participants are expected to deepen their understanding in engineering, marketing, and fields related to cultivation and environment. These knowledges will contribute to train professionals versed in greenhouse businesses, which is considered to be one pillar of the Russo-Japanese joint enterprise in the Russian Far East.

Future Agriculture with Russian Far East Pre-Master to PhD Program

F A R M

Program to develop business professionals in future agricultural techniques



【Summary of Exchange program】

Interactive students exchanges are promoted throughout the Pre-Masters (sophomore to senior), Masters, and Doctorate programs. The exchange program is composed of two course types: the 6-week A-training on artificial-light plant factories and the 12-week S-training on sunlight plant factories. Both programs are comprised of lectures and exercises related to future agricultural techniques (plant physiology, cultivation management, environmental control, device development, facility management, products management and marketing) as well as internship programs intended for students to acquire skills in cooperation with companies.

【Global Human Resource on the project】

The aim is to train professionals who understand future agricultural techniques, which ranges from food production to distribution and sales, and can contribute to Russo-Japanese joint enterprises in the Russian Far East. As future agricultural techniques, which represents the “next-generation of agricultural diversification (called the senary industry in Japan)” is comprised of the distribution and consumption as well as production processes, global human resources in diverse fields such as horticulture, engineering, management, and marketing are required. In addition, we strive to nurture talent who can promote and manage businesses launched through Japanese and Russian Far East collaborations.

【Feature on the project】

This program has the following four characteristics:

1. Training of specialists in future agricultural techniques in the cold Far East through Russo-Japanese cooperation
2. Development of future agricultural techniques business professionals
3. Training of cutting-edge technologies in artificial-light and sunlight plant factories
4. Two to four opportunities for students to study abroad

【Exchange number】

	2017	2018	2019	2020	2021
Outbound	6	10	14	18	22
Inbound	10	10	10	18	22

1. FY2017 Progress

【Name of project】(Adopted year: FY2017, (Type A, Country Russia)

FARM (Future Agriculture with Russian Far east Pre-Master to PhD Program)

■ Exchange Programs

In FY2017, we participated in three outbound and two inbound short programs within the framework of the short summer (and winter) programs. Through these efforts, we sent ten students to and hosted ten students from Primorskaya State Academy of Agriculture and Sakhalin State University. In addition, we hosted the Japan-Russia Far East Agricultural Business Forum on the Kashiwanoha Campus, Chiba University in March. Both Japanese and Russian personnel from universities and related companies attended the forum, which aimed to extend business relationships and promote public relations about our exchange programs.



Japan-Russia Far East Agricultural Business Forum

Student-Mobility

○ Outbound

In the FY2017 summer (and winter) exchange programs, we conducted two outbound programs. These programs focused on (1) cultivating, harvesting, and using medicinal plants in the Maritime Territory of Siberia (Primorskaya State Academy of Agriculture); and (2) nature and history in Sakhalin (Sakhalin State University). Additionally, we organized another shorter exchange program that emphasized (3) site tours of greenhouse agriculture in the Maritime Territory and an exchange of opinions on plant production using artificial light (Primorskaya State Academy of Agriculture).

○ Inbound

As for the FY2017 exchange programs, we organized two inbound programs: a three-week program for Primorskaya State Academy of Agriculture students and a two-week program for Sakhalin State University students. These inbound programs extended our summer (and winter) programs. Common program contents included site tours as well as training in artificial-light plant factories and sunlight plant factories. The three-week program also incorporated lectures and exercises on topics such as plant physiology, cultivation management, environmental control, and marketing.

	2017	
	Plan	Results
Outbound	6	10
Inbound	10	10

■ Forming the University Network with Quality Assurance

To maximize the students' performance during the program, participants must attend pre-program and post-program sessions at their home universities. Because this was our first time organizing the inbound programs, we asked at least three faculty members from each institution to participate in order to provide feedback on the program contents and advice for future programs. The lectures proposed under these programs were conducted as part of the Plant Environment Designing Program (P-SQUARE), although we considered offering more basic courses for Russian students.

Participating students must give a presentation in the debriefing session. Then Chiba University evaluates the students, award credits, and issue certificates of completion. We are currently discussing whether the two Russian institutions will also issue certificates of completion.

■ Promotion of Student-Mobility Environment

During the inbound program, an academic staff fluent in Russian and at least one faculty member managed the program. These staff members were dedicated to program organization and sharing information to help participating students learn from a carefully developed education and teaching structure. In addition, tutors and teaching assistants (TA) provided support in areas not directly related to the educational content. For example, they helped participants use PCs and prepare for sessions and training. We have prepared a Japanese, English, and Russian lexicon on protected horticulture for both inbound Russian students and outbound Japanese students.

■ Internationalization of the university, Information disclosure and Publication of outcome

Prior to adopting our exchange programs, we presented our project design to 50–60 Russian participants during the Russia-Japan Agricultural Business Forum held in June. We also presented our project to the 100+ people representing Japanese and Russian companies and universities during the Japan-Russia Far East Agricultural Business Forum in March at Chiba University. While exploring the possibility of developing agricultural businesses with the Russian Far East, we asked the forum participants to consider strengthening cooperation, including receiving student interns. Although we created our website, the URL will not be open to the public until the first half of FY 2018.

■ Good Practices

During the six month period of FY 2017, we organized inbound programs with the Primorskaya State Academy of Agriculture and the Sakhalin State University, and ran pilot internship programs. In partnership with both institutions, we hosted the Japan-Russia Far East Agricultural Business Forum at Chiba University in March. During this forum, we had the opportunity to share our project with the 100+ participants.



On-site training and company tours

2. FY2018 Progress

【Name of project】(Adopted year: FY2017, (Type A, Country Russia)

FARM (Future Agriculture with Russian Far east Pre-Master to PhD Program)

Exchange Programs



Symposium on Protected Horticulture

In FY 2018, we organized four outbound and two inbound short-term programs within the framework of the summer (and winter) programs with the Primorskaya State Academy of Agriculture and Sakhalin State University. We dispatched 12 Japanese students and received 10 Russian students. As for the internship program, we welcomed two students from the Primorskaya State Academy of Agriculture. In addition, we held a symposium in Kashiwa City, Chiba Prefecture on Protected Horticulture in February 2019. Around 160 people, including both Japanese and Russian personnel from universities and related companies, participated in lively discussions on the expansion of business relationships of protected horticulture and its challenges, as well as carrying out PR activities on our project.

Student-Mobility

Outbound

As for FY 2018 exchange programs, we organized summer (and winter) outbound programs on (1) timber production, 6th industrialization of agriculture, and beekeeping in Primorsky Krai (Primorskaya State Academy of Agriculture) and (2) nature and history in Sakhalin (Sakhalin State University). Additionally, we organized a shorter exchange program that emphasized (3) 6th industrialization of agriculture, greenhouse agriculture site tours, and an exchange of opinions on the use of small plant factory (Primorskaya State Academy of Agriculture) and showcase-type plant factory (Sakhalin State University).

Inbound

Regarding FY 2018 exchange programs, we organized two inbound programs: a three-week program (for students of Primorskaya State Academy of Agriculture) and an 11-day program (for Sakhalin State University students). These inbound programs extended our summer (and winter) programs. Common program contents included site tours as well as training in artificial light plant factories and sunlight plant factories. The three-week program also incorporated lectures and exercises on topics ranging from plant physiology, cultivation management, and environmental control to marketing. In addition, two students who joined the three-week program also participated in the 12-day internship program.

Forming the University Network with Quality Assurance

To maximize the students' performance during the program, participants must attend pre-program and post-program sessions at their home universities. For the inbound programs, we asked faculty members from each institution to participate in the program to exchange opinions in order to enrich future programs. Participating students were required to give a presentation in the debriefing session. Subsequently, Chiba University evaluates the students, awards credits, and issues certificates of completion. For the outbound programs, besides the credits conferred by Chiba University, the Primorskaya State Academy of Agriculture awards credits and issues certificates of completion. Similarly, Sakhalin State University also issues certificates of completion.

Promotion of Student-Mobility Environment

During the inbound program, an academic staff fluent in Russian and at least one faculty member managed the program. These staff members were, in principle, dedicated to the management of the inbound program. To facilitate learning during the program period, they shared sufficient information with students to ensure attentive education and instruction. In addition, tutors and teaching assistants (TA) provided support in areas not directly related to the educational content. For example, they helped participants use PCs and prepare for sessions and training. To enrich the exchange program, we have been integrating the fields of beekeeping and small fruit cultivation on a trial basis since FY 2018.

Internationalization of the university, Information disclosure and Publication of outcome

During the meeting of Russian Far East Agriculture, Forestry and Fishery Platform hosted by the Ministry of Agriculture, Forestry and Fisheries in May 2018, we gave a brief summary of the Japan-Russia Far East Agricultural Business Forum held in March 2018 and our projects at Chiba University to around 150 participants, who represented both Japanese and Russian stakeholders. In February 2019, we hosted a symposium on Protected Horticulture. Around 160 participants from Japanese and Russian companies and universities attended. In March, we participated in the AgroExpoVostok held in Vladivostok in cooperation with the Primorskaya State Academy of Agriculture and presented our organic certification system in Japan. At the end of the fiscal year, we built and launched our website.

Good Practices

When presenting our programs at Chiba University during the meeting of Russian Far East Agriculture, Forestry and Fishery Platform, Far Eastern State Agrarian University expressed interest in establishing a partnership. After two visits, it was agreed to reach an agreement by the end of FY 2018. In February 2019, we hosted a symposium on Protected Horticulture at Chiba University, and members from Far Eastern State Agrarian University and two partner universities participated. Because about 160 people from Japanese and Russian companies joined this event, we were able to introduce the contents of our programs and the participants were able to build a strong professional network.

	2018	
	Plan	Results
Outbound	10	12
Inbound	10	10



On-site training and company tours

3. FY2019 Progress

【Project Name】(Adopted year: 2017, (Type A, Country Russia)

FARM (Future Agriculture with Russian Far east Pre-Master to PhD Program)

■ Contents of Exchange Programs

In Year 2019, we launched exchange programs with Far East State Agrarian University and Novosibirsk State Agricultural University, through which we received nine students for a short period in the Summer Program. Also, we conducted four dispatches and two acceptances of students to and from Primorye State Agricultural Academy and Sakhalin State University in the Summer Program and Short-term Internship Program, through which 15 Japanese students visited Russia, and 12 Russian students visited us. As a long-term Internship Program, we hosted two students from Sakhalin State University. On the other hand, the 5th Japan - Russian Far East Agricultural Business Forum, which was scheduled to take place under the themes of apiculture and honey business in Kashiwa City, Chiba, at the end of February, was postponed to next year due to the difficulty of inviting visitors from Russia in the circumstance surrounding the expansion of COVID-19 pandemic.

Student Mobility

○ Outbound

For Year 2019, we had two Summer Programs: (1) forest tree production, the 6th industrialization in agriculture, and apiculture in the Coastal Territory (Primorye State Agricultural Academy); and (2) nature and history of Sakhalin (Sakhalin State University). As a shorter exchange program, we organized (3) the 6th industrialization in agriculture, visit to greenhouse farms, and proposal for the use of showcase plant factory (Sakhalin State University). Also, as (4) an Internship Program (food culture and business), we dispatched two students for three months and one student for two months to Sakhalin State University.

○ Inbound

For Year 2019, we accepted five students each for three weeks (Primorye State Agricultural Academy) and eleven days (Sakhalin State University) respectively, in the Short-term Internship Program. Both programs featured visits and training at plant factories with artificial light and plant factories utilizing sunlight. The three-week program consisted of lectures and exercises on plant physiology, cultivation management, environmental control, marketing, etc. Also, in the Long-term Internship Program, we invited two students each for the three-month program (Primorye State Agricultural Academy) and six-month program (Sakhalin State University), respectively. Furthermore, we accepted five students from the newly affiliated Far East State Agrarian University and four from Novosibirsk State Agricultural University in our Summer Program.

	2019	
	Plan	Results
Outbound	14	15
Inbound	12	23



■ Forming the University Network with Quality Assurance

The program participants engage in preliminary and follow-up study before and after the program at their own universities to ensure the fruitful program experience. The hosting programs invite faculty members from the respective universities to take part in opinion exchanges to improve the program contents. Presentation at a debriefing session is compulsory for the participating students, based on which Chiba University issues Certificate of Completion and then grades and credits the students. In the dispatch program, Chiba University credits the students, while Primorye State Agricultural Academy credits the students and issues the Certificate of Completion, and Sakhalin State University issues the Certificate of Completion.

[Practical works and company visits]

■ Promotion of Student-Mobility Environment

While hosting international students, a staff who can communicate in Russian and at least one lecturer take charge of the program implementation. Throughout the hosting period, these staff members basically commit themselves to the running of the program. We kept the participants informed and closely offered support so that the participants receive attentive education and mentorship. Furthermore, tutors, TA, etc. assisted the participants with matters other than learning, such as the use of PC in the program and preparation for practical works. In an attempt to further improve the exchange program, forestry, organic farming, and cultivation process management were added to the greenhouse, apiculture, and small fruit farming in 2019 on a trial basis.

■ Internationalization of the university, Information disclosure and Publication of outcome

ive faculty members took part in the 4th Japan - Russian Far East Agricultural Business Forum (theme: organic farming) held in Primorye State Agricultural Academy in May and made presentations on the activities of FARM, the organic certification system in Japan, etc. At a meeting of the Platform for Agriculture, Forestry and Fisheries in the Far East and Other Regions in Russia organized by the Ministry of Agriculture, Forestry and Fisheries of Japan, we organized a business forum and made a presentation on FARM activities to approximately 150 participants involved in the bilateral relations of Russia and Japan. We also expanded the contents of the trilingual (Japanese, Russian, and English) website originally created at the end of last year. Presently, we are preparing the Russian translation of an English literature to be used as a teaching aid for a special program on plant factories, which shall launch next year. The translation is scheduled for publication in 2020.

■ Good Practices

At a meeting of the Platform for Agriculture, Forestry and Fisheries in the Far East and Other Regions in Russia in 2018, we introduced these efforts taking place at Chiba University. The presentation led to the conclusion of an agreement with Far East State Agrarian University and Novosibirsk State Agricultural University, based on which the three universities started the examination of joint programs concerning greenhouse horticulture, etc. Upon being granted the approval by the Russian Ministry of Agriculture on the establishment of a joint postgraduate program, we are now preparing for the trial implementation of the program on an online basis and the full launch thereof in or after next year.

4. FY2020 Progress

【Name of project】(Adopted year: FY2017, (Type A, Country Russia)

FARM (Future Agriculture with Far east Russia Pre-Master to PhD Program)

■ Exchange Programs

In FY2020, due to the university's policy to prevent the spread of COVID-19, the overseas dispatch of students was canceled, resulting in the implementation of all outbound programs online. As for inbound programs, on the other hand, we conducted the short-term program online and the long-term program on-site. In the long-term internship program, we accepted a total of five students: two students from Sakhalin State University and one student from each of Primorskaya State Academy of Agriculture, Far Eastern State Agrarian University, and Novosibirsk State Agrarian University. Besides, the "5th Japan-Russia Far East Agricultural Business Forum," which was scheduled to be held in FY2020, has been postponed to FY2021 considering the spread of COVID-19, and we are planning to hold the forum in a hybrid style of online and face-to-face methods.

Student-Mobility

○ Outbound

As the overseas dispatch of students was canceled in FY2020, all outbound programs were conducted online. In the seminar course on land use mapping jointly held by Primorskaya State Academy of Agriculture and Chiba University, 15 Russian students (all of whom received credits), 4 Japanese students (2 of whom received credits), and 9 international students participated. In addition, as the short-term internship program and winter program, an exchange program in which participants receive a certificate of completion was held four times. A total of 20 Japanese students participated in the programs. Besides, an online opinion exchange meeting was held once. 50 Japanese students participated in the crop cultivation and processing training of the long-term internship program (inbound), thereby deepening exchanges with Russian students.

○ Inbound

All the short-term internship programs and winter programs in FY2020 were conducted so that the students were accepted by the online classes offered by the FARM program. In the short-term internship program, a total of six master's students from three Russian universities participated in "Project Management" and "International Environmental Horticulture," and a total of seven master's students and undergraduate students from four universities participated in "Japanese Language Specialized in Environmental Horticulture." Additionally, a total of 10 Russian students joined the winter program. In the long-term internship program, on the other hand, two students from Sakhalin State University visited Japan to attend the cultivation management training, etc., at the plant factory. In comparison, a total of three students – one each from Primorskaya State Academy of Agriculture, Far Eastern State Agrarian University, and Novosibirsk State Agrarian University – came to Japan to attend the face-to-face class, internship, and project work.

	2020	
	Plan	Results
Outbound	20	22
Inbound	20	28



〈Implementation of on-site training, company tours, and online classes〉

■ Forming the University Network with Quality Assurance

Each university conducts study sessions for the participating students before and after the programs to improve the results of the programs. In inbound programs, faculty members from each university participated in the programs to enrich the programs by exchanging opinions. Moreover, we made it mandatory for both Japanese and Russian students who participated in this year's program (outbound and inbound) to present at the reporting session. In addition, Chiba University awarded credits and certificates of completion and to the students who participated in the long-term program. Meanwhile, we awarded only credits to the participants in the short-term internship program (outbound and inbound) and only certificates of completion to those who attended the winter program (outbound and inbound)

■ Promotion of Student-Mobility Environment

During the inbound program, Russian-speaking university staff and at least one faculty member took care of the students to conduct the programs, which allowed the university's faculty members to concentrate on managing the programs. As for the study support during the programs, the faculty members shared information among the faculty and staff members to realize a carefully designed education and teaching system. Besides, the tutors and TAs provided support other than educational content and prepared for PCs and class activities during the program. Furthermore, to improve the exchange programs, food processing training was introduced in FY2020. Additionally, to promote the participation by Japanese students in the programs from 2021 onward, we held an executive committee meeting and research exchange meeting online for the establishment of a joint master's program on horticulture with Novosibirsk State Agrarian University and Far East Agrarian University, and, and paved the way for the conclusion of a memorandum of understanding in FY2021.

■ Internationalization of the university, Information disclosure and Publication of outcome

As in FY2020, we continued to improve our website in three languages (Japanese, Russian, and English) and promote information disclosure to universities and companies in Japan, Russia, and other regions. Moreover, we translated an English book into Russian as the supplementary text for the "Specialized Program on Plant Factory," which is scheduled to be offered from FY2021 onward. The translation book was published at the end of FY2021.

■ Good Practices

We had been working on translating the first edition of "Plant Factory," published by Elsevier, into Russian since FY2019. With the cooperation of Novosibirsk State Agrarian University, we were able to release the Russian translation at the end of FY2020. In FY2021, we plan to distribute the translation book to our partner universities and related institutions and companies in Russia to promote and publicize the FARM program.



〈The published the Russian translation of "Plant Factory."〉

5. FY2021 Progress

[Name of project] (Adopted year: FY2017, (Type A, Country Russia)

FARM (Future Agriculture with Far east Russia Pre-Master to PhD Program)

Exchange Programs

In the academic year 2021, the dispatch program was conducted entirely online, as the University had suspended sending students abroad based on its policy against the COVID-19 pandemic. On the other hand, the acceptance program was conducted face to face until May 12 for students who came to Japan in the academic year 2020. Preparations were underway for the acceptance of students for the academic year 2021 to be started in December, but due to the suspension of all immigration to Japan from abroad, the program was conducted online for both short-term and long-term students.

In the online program, short-term exchange events, participation in classes and workshops were held as part of the dispatch program, and participation in a series of lectures, workshops, and internships were held as part of the acceptance program. The long-term program for students who had been accepted since October had its completion ceremony on March 1, and the exchange program planned thereafter was canceled.

Student-Mobility

Outbound

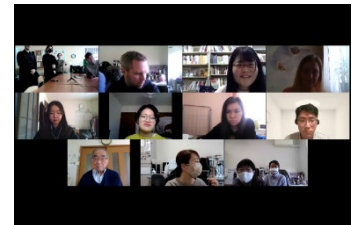
In the academic year 2021, we canceled sending students abroad as in the previous year, so all dispatch programs have been conducted online. Twenty-three Russian students and eight Japanese students earned credits for their participation in the "Carbon Function of Forests" course offered by Primorskaya State Academy of Agriculture, and four international students also participated. Further, twenty-two Russian students and one Japanese student earned credits for their participation in the "Modern Vegetable Cultivation" course offered by Novosibirsk State Agrarian University, and four international students also participated. Fifteen Russian students and eighteen Japanese students participated in the "Workshops on Proposals for Utilization of Small Plant Factories," earning credits, and two international students also participated.

In the Winter Program, four Japanese students participated in one exchange program held by Sakhalin State University to deepen exchanges with fifteen students from three Russian universities, and each participant received a certificate of completion.

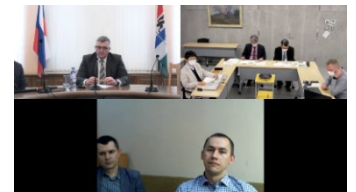
Inbound

In the academic year 2021, the short-term internship program and the winter program were all conducted as online classes at FARM. In the short-term internship program, four master's and undergraduate students from three Russian universities participated in the "Project Management" and "International Environmental Horticulture" courses, and six master's and undergraduate students from four universities participated in the "Specialized Japanese for Environmental Horticulture" course. Moreover, a total of seventeen Russian students participated in the exchange events held as part of the winter program. Meanwhile, under the long-term internship program, five students accepted since the academic year 2020 returned to their home countries in mid-May after participating in cultivation management training at a plant factory company from April. The student acceptance program in the academic year 2021 started online in October, where five students participated in classes, internships, and workshops.

	2021	
	Plan	Results
Outbound	24	31
Inbound	24	37



< Online class implementation >



< Joint Program Online Signing Ceremony >

Forming the University Network with Quality Assurance

For participating students, each university provides guidance through pre- and post-program studies in order to achieve better program results. In the acceptance program, faculty members from each university also participate to exchange opinions in an effort to enhance the program. Further, both Japanese and Russian students who participate in the dispatch and acceptance programs for this academic year are required to give a presentation at the debriefing session.

Moreover, for the long-term acceptance program, Chiba University awarded certificates and credits to students who participated in the program. Meanwhile, for the short-term internship program for dispatch and acceptance, only credits were awarded, and for the winter program for dispatch and acceptance, only certificates were awarded. These credits and certificates were awarded after review by the relevant committee of the Graduate School of Horticulture.

Promotion of Student-Mobility Environment

The program was implemented by a staff member who understands Russian and at least one faculty member, so that the University's faculty and staff were able to concentrate on the program management during the period of the program. In order to establish a detailed education and guidance system for the study support during the program, support was provided based on sufficient information sharing among the faculty and staff.

Tutors and teaching assistants provided support in areas other than educational content, and were responsible for helping students use computers as well as preparing for class exercises during the program. Furthermore, with a view to promoting the participation of Japanese students in the program and the development of professional human resources in Russia, a memorandum of understanding was signed in July between the University, Novosibirsk State Agrarian University, and Far Eastern State Agrarian University on a joint master's degree program in protected horticulture.

Internationalization of the university, Information disclosure and Publication of outcome

Continuing from the academic year 2020, the University's website was enhanced by displaying it in three languages (Japanese, Russian, and English) to actively promote information disclosure to universities and companies in Japan, Russia, and other regions. Also, supplementary materials for the Russian-language version of the "Specialized Program on Plant Factories" published at the end of the academic year 2020 were distributed to relevant organizations in Japan and Russia.

Good Practices

As part of a joint program initiative related to protected horticulture, for which a memorandum of understanding was signed in July of the academic year 2021, an online workshop on "Proposals for the Citywide Use of Small Plant Factories" was conducted with faculty members from Novosibirsk State Agrarian University taking the lead, utilizing supplementary teaching materials. In addition to students from Chiba University and Novosibirsk State Agrarian University, students from two other Russian universities also participated in the workshop, where presentations of proposals and awards were given.

