

**RECORD OF DISCUSSIONS
BETWEEN
Embrapa Cód. 10200.09/0234-3 **JAPAN INTERNATIONAL COOPERATION AGENCY,
THE MINISTRY OF EXTERNAL RELATIONS**
AND
**AUTHORITIES CONCERNED OF THE FEDERATIVE REPUBLIC OF BRAZIL
ON JAPANESE TECHNICAL COOPERATION**
FOR
**“DEVELOPMENT OF GENETIC ENGINEERING TECHNOLOGY OF CROPS WITH
STRESS TOLERANCE AGAINST DEGRADATION OF GLOBAL ENVIRONMENT”****

Japan International Cooperation Agency (hereinafter referred to as “JICA”) through Coordinator for Technical Cooperation of Japan in Brazil, exchanged views and had a series of discussions with the Brazilian concerned authorities with respect to desirable measures to be taken by both Japanese and Brazilian Governments for successful implementation of “Development of genetic engineering technology of crops with stress tolerance against degradation of global environment” (hereinafter referred to as “the Project”).

As a result of the discussions, the Coordinator for the Technical Cooperation of Japan in Brazil and the Brazilian authorities concerned agreed upon the matters referred to in the document attached hereto, in accordance with the provision of the Agreement on Technical Cooperation between the Government of Japan and the Government of the Federative Republic of Brazil signed in Brasilia, Brazil on September 22nd, 1970 (hereinafter referred to as “the Agreement”).

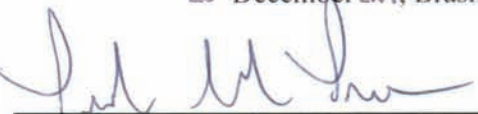
The project was referred to in the Second Meeting of the Joint Committee on Japanese-Brazilian Cooperation in Science and Technology held on May 14th, 2009 in accordance with the Article III of “the Agreement between the Government of Japan and the Government of the Federative Republic of Brazil on Co-operation in the Field of Scientific and Technology” signed on May 25, 1984.

These texts were done in both English and Portuguese, each texts being equally authentic. In case of any divergence of interpretation, the English text shall prevail.


23 December 2009, Brasilia, Brazil



Mr. Katsuhiko Haga
Coordinator for Technical Cooperation
of Japan in Brazil
JICA
Japan



Dr. Pedro Antonio Arraes Pereira
President Director
Brazilian Agricultural Research
Corporation (Embrapa)
Federative Republic of Brazil



Dr. Ademar Seabra da Cruz Junior
Chief of Division of Science and
Technology
Ministry of External Relations (MRE)
Federative Republic of Brazil

THE ATTACHED DOCUMENT

I. COOPERATION BETWEEN JICA AND THE GOVERNMENT OF THE FEDERATIVE REPUBLIC OF BRAZIL

1. The Government of the Federative Republic of Brazil will implement the Project in cooperation with JICA.
2. The Project will be implemented in accordance with the Master Plan and the Plan of Operation which are given in Annex 1 and 2 respectively.

II. MEASURES TO BE TAKEN BY JICA

In accordance with the laws and regulations in force in Japan and the provisions of Article III of the Agreement, JICA, as the executing agency for technical cooperation by the Government of JAPAN, will take, at its own expense, the following measures according to the normal procedures of its technical cooperation scheme.

1. DISPATCH OF JAPANESE EXPERTS

JICA will provide the services of the Japanese experts as listed in Annex 3. The provision of Article IV- (1) of the Agreement will be applied to the above-mentioned experts.

2. PROVISION OF MACHINERY AND EQUIPMENT

JICA will provide such machinery, equipment and other materials (hereinafter referred to as "the Equipment") necessary for the implementation of the Project as listed in Annex 4-1. The provision of Article IX of the Agreement will be applied to the Equipment.

3. TRAINING OF BRAZILIAN PERSONNEL IN JAPAN OR THIRD COUNTRIES

JICA will receive the Brazilian personnel connected with the Project for training in Japan or neighboring countries. The provision of Article III-(1) of the Agreement will be applied to the training

III. MEASURES TO BE TAKEN BY THE GOVERNMENT OF FEDERATIVE REPUBLIC OF BRAZIL

1. The Government of the Federative Republic of Brazil will take necessary measures to ensure that the self-reliant operation of the Project will be sustained during and after the period of Japanese technical cooperation, through full and active involvement in the Project by all related authorities, beneficiary groups and institutions.
2. In accordance with Article IV of the Agreement, the Government of the Federative Republic of Brazil will ensure that the technologies and knowledge acquired by the Brazilian nationals as a result of the



Japanese technical cooperation will contribute to the economic and social development of the Federative Republic of Brazil.

3. In accordance with the provisions of Articles V, VI and VIII of the Agreement, the Government of the Federative Republic of Brazil will grant in Brazilian privileges, exemptions and benefits to the Japanese experts referred to in II-1 above and their families during their stay in the Federative Republic of Brazil.
4. In accordance with the provisions of Article IX of the Agreement, the Government of the Federative Republic of Brazil will take the measures necessary to receive and use the Equipment provided by JICA under II-2 above and equipment, machinery and materials carried in by the Japanese experts referred to in II-1 above.
5. The Government the Federative Republic of Brazil will take necessary measures to ensure that the knowledge and experience acquired by the Brazilian personnel from technical training in Japan will be utilized effectively in the implementation of the Project.
6. In accordance with the provision of Article V-(1)-(i) of the Agreement, the Government of the Federative Republic of Brazil will provide the services of Brazilian counterpart personnel and administrative personnel as listed in Annex 3.
7. In accordance with the provision of Article V-(1)-(ii) of the Agreement, the Government of the Federative Republic of Brazil will provide the buildings and facilities as listed in Annex 5.
8. In accordance with the laws and regulations in force in the Federative Republic of Brazil, the Government of the Federative Republic of Brazil will take necessary measures to supply or replace at its own expense machinery, equipment and instruments listed in Annex4-2, and vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than the Equipment provided by JICA under II-2 above.
9. In accordance with the laws and regulations in force in the Federative Republic of Brazil, the Government of the Federative Republic of Brazil will take necessary measures to meet the running expenses necessary for the implementation of the Project.

IV. IMPLEMENTATION STRUCTURE OF THE PROJECT

For effective implementation of the Project, the Project will organize the Management structure as follows;.

1. Brazilian managing institute will be Embrapa Headquarter.
2. Brazilian implementing institute will be Brazilian Agricultural Research Corporation -National Soybean



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Research Center (hereinafter referred to as “Embrapa Soybean”).

3. Japanese managing and implementing institute will be Japan International Research Center for Agricultural Sciences (hereinafter referred to as “JIRCAS”), and the collaborative research institutes will be RIKEN and The University of Tokyo.
4. The Head General of Embrapa Soybean, as the Project Director, takes full responsibility for the management and implementation of the Project in Brazil.
5. The Project Leader in Brazil will bear responsibilities regarding the implementation of the Project in Brazil. He/She is also responsible for discussing and coordinating the Project with the Project Leader.
6. The Project Leader will bear all responsibilities for the implementation of the Project. He/She is also responsible for discussing and coordinating the Project with the Project Leader in Brazil. In addition he/she coordinates with the collaborative research institutes in Japanese side
7. The Japanese side will assign the person in charge of the collaborative research institutes respectively.
8. Both Japanese and Brazilian parties will assign the responsible person for each research group.
9. Japanese researchers dispatched from Japanese institutes will take a role of doing activities in cooperation with Brazilian researchers.
10. For the effective and successful implementation of the Project, Joint Coordination Committee (hereinafter referred to as “JCC”) will be established and its functions and composition are described in Annex 6.
11. Research Group Unit (hereinafter referred to as “RGU”) will be established and its functions and composition are described in Annex 7.

V. JOINT EVALUATION

Japanese and Brazilian sides will jointly conduct a mid-term evaluation at the middle of the cooperation term and a final evaluation during the last six months of the cooperation term in order to examine the level of achievement and to recommend direction adjustments of the Project activities, if necessary.

VI. CLAIMS AGAINST JAPANESE EXPERTS

In accordance with the provision of Article VII of the Agreement, the Government of the Federative Republic of Brazil undertakes to bear claims, if any arises, against the Japanese experts engaged in technical cooperation for the Project resulting from, occurring in the course of, or otherwise connected with the discharge of their official functions in the Federative Republic of Brazil except for those arising from the willful misconduct or gross negligence of the Japanese experts.

VII. MUTUAL CONSULTATION

There will be mutual consultation between JICA and the Government of the Federative Republic of Brazil on any major issues arising from, or in connection with this Attached Document.



VIII. MEASURES TO PROMOTE UNDERSTANDING OF AND SUPPORT FOR THE PROJECT

For the purpose of promoting support for the Project among the Brazilian people, the Government of the Federative Republic of Brazil will take appropriate measures to make the Project widely known to Brazilian people.

IX. TERM OF COOPERATION

The duration of the technical cooperation for the Project under this Attached Document will be five (5) years from the departure date of the first JICA expert dispatched for the Project.



- Annex 1 Master Plan
- Annex 2 PO
- Annex 3 List of Researchers and Coordinator
- Annex 4 List of the Equipment
- Annex 5 Buildings & Facilities
- Annex 6 Joint Coordination Committee
- Annex 7 Research Group Unit

Annex 1 : Master Plan

Project Purpose (to be achieved by the end of the Project)

Genetic engineering technology of soybean with environmental stress tolerance is developed.

Outputs

- 1) Useful genes related to environmental stress tolerance are identified
- 2) Stress-responsive promoters are isolated and combinations with useful genes are optimized.
- 3) Transgenic soybean lines containing constructs of promoters and useful genes are produced.
- 4) Transgenic soybean lines with environmental stress tolerance are selected.

Activities

- 1-1 Genes involved in regulation of stress tolerance are identified in plants such as soybean.
- 1-2 Genes involved in stress perception are identified in plants such as soybean.
- 1-3 Genes involved in regulation of stress response are identified in plants such as soybean.
- 2-1 Stress-responsive genes are searched in soybean.
- 2-2 Stress-responsive promoters are identified in soybean.
- 2-3 Constructs of useful genes and promoters are optimized.
- 3-1 Genetic engineering technology is established in soybean.
- 3-2 Constructs of useful genes and promoters are introduced in soybean.
- 3-3 T1 seeds of transgenic lines are collected.
- 4-1 Drought-inducible genes are identified and transgenic lines are selected based on gene analysis.
- 4-2 Heat-inducible genes are identified and transgenic lines are selected based on gene analysis.
- 4-3 Gene expression of transgenic plants is analyzed.
- 4-4 Evaluation methods of stress tolerance of soybean are established.
- 4-5 Stress tolerance of transgenic soybean lines is evaluated in greenhouse.
- 4-6 Stress tolerance of transgenic soybean lines is evaluated in field.



LIST OF RESEARCHERS AND COORDINATOR

Both Brazilian and Japanese sides organize the research team as shown below, headed by Dr. Nepomuceno (Brazilian side) and Dr. Yamaguchi-Shinozaki (Japanese side) respectively.

Japanese side

	Name	Institution	Major	Research Group Unit (RGU) in Japanese side				Representative
				1. Identification of useful genes	2. Identification of promoters	3. Construct selection	4. Analysis of transgenic plants	
1	Dr. Kazuko Yamaguchi-Shinozaki	JIRCAS/ The University of Tokyo	Project Leader/ Plant Molecular Biology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	⊙
2	Dr. Kazuo Nakashima	JIRCAS	Plant Molecular Biology	<input type="radio"/>	<input type="radio"/>			
3	Dr. Yasunari Fujita	JIRCAS	Plant Molecular Biology	<input type="radio"/>		<input type="radio"/>		
4	Dr. Kyonoshin Maruyama	JIRCAS	Bioinformatics				<input type="radio"/>	
5	Researcher A	JIRCAS	Plant Molecular Biology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
6	Dr. Yuriko Osakabe	The University of Tokyo	Plant Molecular Biology	<input type="radio"/>		<input type="radio"/>		
7	Researcher B	The University of Tokyo	Bioinformatics	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	
8	Dr. Kazuo Shinozaki	RIKEN	Plant Molecular Biology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	⊙
9	Dr. Taishi Umezawa	RIKEN	Plant Molecular Biology	<input type="radio"/>		<input type="radio"/>		
10	Researcher C	RIKEN	Plant Molecular Biology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
11	Dr. Tetsuya Sakurai	RIKEN	Bioinformatics	<input type="radio"/>	<input type="radio"/>			
	Name	Institution	Major	Research Group Unit (RGU) in Brazilian side				
				1. gene transfer	2. molecular analysis	3. physiological analysis	4. field test	
12	Dr. Norihito Kanamori	JIRCAS	Plant Molecular Biology	<input type="radio"/>	<input type="radio"/>			
13	Dr. Hiroshi Kudo	JICA	the Project Coordinator					

Brazilian side

	Name	Institution	Major	Working Groups (WG)				Remarks
				1. gene transfer	2. molecular analysis	3. physiological analysis	4. field test	
1	Dr. Alexandre Lima Nepomuceno	Embrapa Soybean	Project Leader in Brazil/ Molecular Biology / Plant Physiology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	⊙
2	Dr. Norman Neumaier	Embrapa Soybean	Plant Physiology			<input type="radio"/>	<input type="radio"/>	
3	Dr. José Renato B. Farias	Embrapa Soybean	Agrometeorology			<input type="radio"/>	<input type="radio"/>	
4	Dr. Carlos Alberto Arrabal Arris	Embrapa Soybean	Breeding				<input type="radio"/>	
5	Dr. Antonio Eduardo Pipolo	Embrapa Soybean	Breeding				<input type="radio"/>	
6	Dr. Renata Fuganti	Embrapa Soybean	Transformation	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
7	Dr Ricardo Vilela Abdelnoor	Embrapa Soybean	Molecular Biology		<input type="radio"/>			
8	Dra Francismar Correia Marcelino	Embrapa Soybean	Molecular Biology	<input type="radio"/>	<input type="radio"/>			
9	Dra Maria Cristina Neves de Oliveira	Embrapa Soybean	Statistics			<input type="radio"/>	<input type="radio"/>	
10	Dra Clara Beatriz Hoffman-Campo	Embrapa Soybean	Metabolomics		<input type="radio"/>	<input type="radio"/>		
11	Dr Júlio Franchini dos Santos	Embrapa Soybean	Crop Management				<input type="radio"/>	
12	Dr Henrique Debiasi	Embrapa Soybean	Crop Management				<input type="radio"/>	
13	Dr. Fabiana Rodrigues	Embrapa Soybean	Molecular biology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
14	Adilson Junior	Embrapa Soybean	Soils			<input type="radio"/>	<input type="radio"/>	
15	Amanda Paiva	Embrapa Soybean	Molecular Biology	<input type="radio"/>	<input type="radio"/>			
16	Cesar Augusto Silveira	Embrapa Soybean	Molecular Biology	<input type="radio"/>				
17	Cibelle Engels	Embrapa Soybean	Molecular Biology	<input type="radio"/>	<input type="radio"/>			
18	Larissa Giroto	Embrapa Soybean	Molecular Biology		<input type="radio"/>			
19	Silvana Marin	Embrapa Soybean	Molecular Biology	<input type="radio"/>	<input type="radio"/>			
20	Researcher A	EMBRAPA	Molecular Biology/ Plant Physiology	<input type="radio"/>	<input type="radio"/>			
21	Researcher B	EMBRAPA	Molecular Biology/ Plant Physiology		<input type="radio"/>	<input type="radio"/>		
22	Researcher C	EMBRAPA	Molecular Biology/ Plant Physiology			<input type="radio"/>	<input type="radio"/>	

Annex 4-1

LIST OF THE EQUIPMENT TO BE PROVIDED BY JICA

	Item	Quantity
1	Air conditioner system	4
2	Biometric system to control access	4
3	BOD Incubator	1
4	Centrifugal refrigerated with rotor plate	2
5	Centrifuges	2
6	Fluorescence Scanner	1
7	Freezer	3
8	Horizontal autoclaves	1
9	Horizontal electrophoresis system	2
10	Ice machine	1
11	Incubator with agitation	2
12	Laminar flow	2
13	Magnetic stirrer with heating	3
14	Microcomputer	5
15	NanoDROP	1
16	Oven	1
17	Print laser	2
18	Refrigerated centrifuge for microtube	3
19	Refrigerator	3
20	Rocking shaker	2
21	RT-PCR (7500 Real time PCR system)	1
22	Sample concentrator mod. 5310 centrifugal vacuum concentrator	1
23	Shake master	1
24	Stereomicroscopy with camera	2
25	Thermocycler 96 well gradient Veritti	3
26	Ultrafreezer	1
27	Ultrasonic washing machines(L)	1
28	Ultrasonic washing machines(S)	1
29	Vertical electrophoresis system for 6 plates	2

30	4 wheel Jeep	1
31	Air conditioner system	2
32	Computers (10 pcs + 2 printers)	1
33	Photosynthetic apparatuses (not portable)	2
34	Photosynthetic apparatuses (portable)	1
35	Cold chamber for seed storage	1
36	Monitoring system in the field	1
37	Oximeters	3
38	Psychrometers (100) + Dataloger set (water potential)	1
39	Mini digital thermometers	20
40	Meteorological stations sensors + dataloger	2
41	GPS equipment	2
42	Analytical balance	2
43	Rain Out Shelter	4
44	Seed moisture reader	1
45	Phytotron(Screening Greenhouse/LemnaTec)	1
46	High-Frequency Soil Water Content Data Logger and sensors	2
47	Leaf Porometer	2
48	Water Potential Reader WP4	2
49	Neutrons Probe - Soil Experiments	1
50	GreenSeeker	1
51	Leaf area reader	1
52	Microscope	1
53	Compressor for pressure plate extractor	1
54	pH meter/conductivity meter/multimeter	2
55	Balance to weigh vessels (25kg)	2
56	Palmtops	2
57	Guelph Permeameter	2
58	Hydroponics equipment	5
59	Laptops	2

Note:

The Equipment will become the property of Embrapa on being delivered C. I. F. (cost, insurance and freight) to the Brazilian authorities concerned at the posts and/or airports of disembarkation.

Annex 4-2

LIST OF THE EQUIPMENT TO BE PROVIDED BY BRASILIAN SIDE

	Item	Quantity	US\$
1	Sap flow meter system	1	12,000
2	Bioanalyser	1	35,000
3	Automated DNA extractor	1	220,000
4	Automated PCR preparation system	1	including in No.3
5	Horizontal electrophoresis system	1	7,000
6	Incubator with agitation	1	5,500
7	Laminar flow	1	5,000
8	Microcomputer	1	1,500
9	Print laser	1	800
10	Refrigerator	1	1,000
11	Shake master	1	5,000
12	Stereomicroscopy with camera	1	20,000
13	Thermocycler 96 well gradient Veritti	1	15,000
14	Ultrafreezer	1	30,000
15	Air condition air system	1	3,000
16	Centrifuge	1	20,000
17	Freezer	1	1,300
18	Analytical balance	1	3,500
19	Microscope	1	10,000
20	Hydroponics equipment	1	2,500
21	Laptops	1	1,500

ANNEX 5: BUILDINGS & FACILITIES

1. Buildings and facilities necessary for the implementation of the Project
2. Rooms and space necessary for installation and storage of the Equipment
3. Office space and necessary facilities for the JICA experts and related members
4. Other facilities mutually agreed upon as necessary



Joint Coordination Committee

1. Functions

The Joint Coordination Committee(JCC) will meet at least once a year and whenever the necessity arises, and its functions are as follows;

- (1) To monitor the project activities and its achievements reported from RGU
- (2) To formulate the annual plan of the Project based on the draft annual plan prepared by RGU within the scope of the Master Plan
- (3) To confirm the modification of the research plan if necessary
- (4) To discuss any other issues pertinent to the smooth implementation of the Project

2. Composition

(1) Chairperson: Executive Director, Embrapa

(2) Members

1) Brazilian side

- a. The Head of International Relations Department, Embrapa
- b. The Head General, Embrapa Soybean (Project Director)
- c. Project Leader in Brazil, Embrapa Soybean

2) Japanese side

- a. Coordinator for Technical Cooperation of Japan in Brazil
- b. Project Leader
- c. Representatives of JIRCAS, The University of Tokyo and RIKEN
- d. The Consultation Team from JICA (if necessary)

(3) Observer

- 1) Representative of Embassy of Japan in Brasil
- 2) Representative of Ministry of External Relations (MRE)
- 3) Representative of Ministry of Science and Technology (MCT)
- 4) Representative of Ministry of Agriculture, Livestock and Food Supply (MAPA)
- 5) Others (Researchers from both sides, Project Coordinator)
- 6) Representative of Japan Science and Technology Agency (JST)
- 7) Personnel recommended by the Chairperson



Annex 7

Research Group Unit (RGU)

1. Functions

The Research Group Unit (RGU) will meet at least once in half a year and whenever the necessity arises, and its functions are as follows;

- (1) To review the research activities of the each research group and report the project activities and its achievements to JCC
- (2) To draft the annual plan of the Project within the scope of the Master Plan and report the result to the JCC
- (3) To examine and modify, if necessary, the research plan within the scope of the Master Plan and report the result to JCC
- (4) To submit Mid-Annual reports (every six months), Mid-Term report and Final report to JCC members, JICA and JST
- (5) To discuss any other issues ensuring the smooth implementation of the Project

2. Composition

(1) Chairperson

The Project Leader in Brazil and the Project Leader jointly

(2) Members

- Representatives of researchers in Embrapa Soybean
- Representative of researchers in JIRCAS, The University of Tokyo and RIKEN
- Related researchers from both sides
- Project Coordinator



