

## ANNEX8 Published documents

	Product	Year	Quantity	Remarks
1	Moncada sire catalog	2003	2,000	Catalog
2	Breeding Calendar	2001	4,000	Education
3	Breeding Calendar	2002	2,800	Education
4	Breeding Calendar	2003	6,000	Education
5	Breeding Calendar	2004	3,600	Education
6	Handout "Why Recording is Important?" for farmers	2002	1,000	Education
7	Cattle Pedigree Certificate	2004	100	Education
8	AI Recording Guide Book	2003	1,000	Hand Book
9	Handbook Careful points of Artificial Insemination on cow for AI technicians	2003	500	Hand Book
10	Handbook Heat detection on cow for farmers	2004	9,500	Hand Book
11	Leaflet of Project Introduction	2002	1,500	Leaflet
12	Compost production , theory and practice	2004	60	Manual
13	Farm machinery's maintenance and safety	2004	30	Manual
14	Handout "How to Record AI information for AI technician and Local Officers	2002	100	Manual
15	Manual Strategies to Improve Reproductive Performance in Dairy Cows	2002	200	Manual
16	Manual "How to Use AI equipment"	2002	200	Manual
17	Manual for Bull Management	2004	30	Manual
18	Manual Method of ELISA for Progesterone assay	2002	50	Manual
19	Manual of compost production	2005	100	Manual
20	Manual of grassland and pasture production	2004	30	Manual
21	Manual: What should we do to make cattle pregnant ?	2003	200	Manual
22	Roughage Production Manual	2004	30	Manual
23	Hoa Sua Newsletter (1)	2003	200	Newsletter
24	Hoa Sua Newsletter (2)	2004	200	Newsletter
25	Hoa Sua Newsletter (3)	2004	200	Newsletter
26	Hoa Sua Newsletter (4)	2004	200	Newsletter
27	Hoa Sua Newsletter (5)	2005	200	Newsletter
28	Poster of Artificial Insemination promotion	2005	1,000	Poster
29	Poster of estrus detection	2005	1,000	Poster
30	AI Recording Book	2002	1,000	Recording Materials
31	AI Recording Book	2003	2,500	Recording Materials
32	AI Recording Book	2004	4,000	Recording Materials
33	Farmer's Folder	2002	3,000	Recording Materials

	Product	Year	Quantity	Remarks
34	Achievement and Prospect of the AI project	2004	200	Seminar Text
35	How to apply the new technology of cattle reproduction in developing countries	2004	100	Seminar Text
36	Japan's AI system and its technology	2001	100	Seminar Text
37	LN 2 Tank Cover 2L	2002	130	Tank Cover
38	LN2 Tank Cover 3.7L	2002	90	Tank Cover
39	Application of vagina-suspending type progesterone	2001	50	Training Text
40	Case studies while conducting AI	2002	100	Training Text
41	Classification of reproductive disorder	2004	50	Training Text
42	Detection of Heat sign	2005	50	Training Text
43	Discussing on AI related records and recording	2004	50	Training Text
44	Early fetus death and its prevention	2005	50	Training Text
45	Heat detection as a first step of reproductive management	2005	50	Training Text
46	How to use ultrasonic diagnostic device for cows	2005	50	Training Text
47	Importance of Heat detection in reproductive management	2005	50	Training Text
48	Japan's experience in dairy breed improvement	2002	1	Training Text
49	Manual for Computer Program "Cattle AI Manager"	2002	20	Training Text
50	Method of injection for superovulation treatment	2004	50	Training Text
51	Outline of Embryo Transfer and its related technology	2004	100	Training Text
52	Physiology of sperm	2001	200	Training Text
53	Protocol for ovulation synchronization	2005	50	Training Text
54	Recommendation of Regular Reproductive Check	2004	50	Training Text
55	Regular Reproductive Check	2004	50	Training Text
56	Semen production & Distribution System in Japan	2001	50	Training Text
57	Textbook Artificial Insemination	2004	500	Training Text
58	Veterinarians working for cows in Japan	2002	50	Training Text
59	What we can do from today to improve reproductive conditions of cows	2005	50	Training Text
60	Video: Dairy Cattle Development in Japan (Translation)	2001	50	Video tape
61	Video: Dairy Cattle Development in Japan (Translation)	2002	5	Video tape

## ANNEX9 Progress conditions of the Project activities

PLANS OF OPERATIONS						SITUATION OF ACTIVITIES				
ITEMS	DURATION(YEAR)					RESPONSIBLE	RESULT	PROGRESS	ARCHIVEMENT GOAL	SCORES (%)
	1st	2nd	3rd	4th	5th					
1. AI technicians are trained and their skills are improved.						Mr. Luong				85
1-1. Conduct following surveys when necessity arise.										85
1-1-1. Select the focused areas						Mr. Cuong	The Survey and meetings on AI situation under the field conditions had been carried out	The focus area of 9 provinces were selected	A focus area will be decided	100
1-1-2. Situation of feeding and management of cow at dairy farmers						Mr. Cuong	While training on AI in field, surveys on farmer's conditions had been carried out as well	Some problems and subjects regarding cattle raising were well understood	The project's direction after learning on the situation of farmers will be adjusted	80
1-1-3. The technical level of AI inseminator (implementation number, skill)						Mr. Phong	1) The level of AI techniques of individual technicians had been checked 2) The monitoring activity had been carried out with the participants to the AI re-training courses	When the training participants' technical level and its problems were well learned, the technical handouts for AI technicians and farmers were printed and distributed accordingly	Monitoring activity on AI technicians who participated the AI re-training course will be carried out	90

ITEMS	1st	2nd	3rd	4th	5th	RESPONSIBLE	RESULT	PROGRESS	ARCHIVEMENT GOAL	SCORES (%)
1-1-4. Reproduction performance(Conception rate, Calving interval) on the farm	o	o	o	o	o	Mr. Luu, Mr. Son	Cattle reproductive performance with selected farms had been surveyed	Cattle reproductive performance were surveyed for finding problematic conditions	Farmer's situation and their needs and facing problems will be learned	80
1-1-5. Reproduction performance(Conception rate, Calving interval) on the AI inseminator				o	o	Mr. Phong	The conception rate with selected AI technicians had been surveyed	Conducting the survey on conception rate was become possible	AI technicians' situation and their needs and facing problems will be learned	80
1-1-6. Reproduction performance(Conception rate, Calving interval) on the area					o	Mr. Kiem, Mr. Phong	AI related data had been reported from some of the focus areas	Regional AI situation was become possible to analyze based the reported data	Different regional situation and their needs and facing problems will be learned	80
1-1-7. The cause of low conception rate				o	o	Mr. Khanh, Mr. Kiem	The factors affecting on low conception rate had been surveyed in the focus areas	Some factors affecting on low conception were classified	Some factors preventing the dissemination of AI technology will be classified and analyzed	90
1-2. Counterparts acquire AI related techniques which is adaptable to fields. Reproduction technologies are transfered to C/P to apply the AI training.	o	o	o	o	o	Mr. Cuong				88

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ITEMS	1st	2nd	3rd	4th	5th	RESPONSIBLE	RESULT	PROGRESS	ARCHIVEMENT GOAL	SCORES (%)
1-2-1. Introduce reproduction management method		o	o	o	o	Mr. Kiem, Mr. Phong	On-farm training and practice for C/P and AI technicians had been carried out	After noticing importance of on-farm practice, technical advice and seminar by C/P were started	C/P will be capable of advising on reproductive management for field technicians	85
1-2-2. Introduce Semen evaluation techniques		o	o	o		Mr. Tha	Frozen semen quality with field-distributed samples had been surveyed	After finding on the problematic condition with frozen semen production and distribution, necessary aspects were added in instructing AI technicians	With an acquired semen quality checking method, field technician will be convinced with its importance	90
1-2-3. Introduce AI related Applying techniques of reproduction						Mr. Khanh	A method of applying reproductive technology into the field of animal breeding had been transferred	As a result, an aspect of applying existing technologies for real necessary concerns was discussed	One will be able to discuss over the issue how to make technologies to be applicable in order to develop the related industries	90
1-2-4. Hormone assay and its utilization of techniques						Mr. Kiem	By the established laboratory on reproductive hormone assay, its related aspect had been applied in the field of AI	By holding the clear theme which directs to technical betterment of AI Department(NIAH), it could assist to explain some AI related problems more clearly	One will be able to explain in a training regarding the relation between the results of hormone assay and applied technique in the field	90

ITEMS	1st	2nd	3rd	4th	5th	RESPONSIBLE	RESULT	PROGRESS	ACHIEVEMENT GOAL	SCORES (%)
1-2-5. Feeding and management techniques for cow				o	o	Mr. Cuong	Practical technique on dairy feed and feeding management had been transferred	Lectures of Practical technique on dairy feed and management were given in a training course	Training participants will be applying the acquired knowledge on practical technique on dairy feed and feeding management	90
1-3. Retrain AI technicians for straw type frozen semen and recording.						Mr. Cuong				90
1-3-1. Determine training participants	o					Mr. Luong and Mr. Kiem	Based on understanding of the project concept, eligible participants had been selected	Appropriate participants were selected by the focal offices in the focus areas	The effectiveness of the project will be assured by the proper selection of the training participants	90
1-3-2. Reform the curriculum for adaptation of straw-typed semen	o	o	o			Mr. Cuong	Discussion on making training curriculum had been carried out	The training curriculum was produced	The content of the curriculum will be fit to the needs of training participants	90
1-3-3. Prepare training manuals and materials		o	o			Mr. Luong	A seminar on training method and training materials had been organized and produced respectively	Improved knowledge on training and extension method as well as training materials were prepared	technical manual and training materials of international standard will be produced	80

ITEMS	1st	2nd	3rd	4th	5th	RESPONSIBLE	RESULT	PROGRESS	ACHIEVEMENT GOAL	SCORES (%)
1-3-4. Conduct training courses	o	o	o	o	o	Mr. Luong	The planned trainings were conducted	The method of the conducting training courses under the project was adopted in the National Dairy Development Project	A training course that accommodates the needs at present will be conducted	90
1-3-5. Make training manuals for lecturers		o	o			Mr. Cuong and Mr. Phong	A committee on training/technical manual production had been organized	A training/technical manual for lecturer was produced	A training/technical manual covering all subjects on AI will be produced	100
1-3-6. Evaluate the contents of training courses			o	o	o	Mr. Kiem	Every time, the participants' opinions regarding the courses had been collected using interviews and questionnaires	Necessary amendments and improvements were made on the method of training based on the gathered participants' opinion	Evaluation on the training courses will be conducted	80
1-3-7. Monitor the trained AI technicians and give guidance and advice to them in the field				o	o	Mr. Phong and Mr. Luu	Monitoring on the training participants had been conducted	Some of the aspects to further improve the situation of the participants were clearly understood	The effect and impact of the training will be monitored	90
View for sustainability	Through the activities of organizing AI retraining courses in the project, counterparts(CPs)' capability regarding managing training courses and production of training materials have been upgraded. By the learnt knowledge and gained experiences through these training opportunities, the CPs who are involved in the project are now well equipped, and therefore, it is expected that the capability of self-managed development is high.									

PLANS OF OPERATIONS						SITUATION OF ACTIVITIES				
ITEMS	DURATION(YEAR)					RESPONSIBLE	RESULT	PROGRESS	ARCHIVEMENT GOAL	SCORES (%)
	1st	2nd	3rd	4th	5th					
2. Improvement of distribution method for frozen semen and AI recording management										85
2-1 Conduct surveys when necessity arises	o					Mr.Giao Mr.Luong	The situation of AI recording activity had been surveyed as well during the conduct of the survey and meetings on AI situation under the field conditions	A need of structure to conduct AI recording and reporting in order to evaluate frozen semen quality was recognized	A survey on AI situation under field conditions will be conducted	100
2-2 Produce the recording, collection and evaluation method of AI information in focus areas	o	o	o	o	o	Mr.Giao Mr.Chieu Mr.Phong Mr.Que Mr.Loung				80
2-2-1. Produce AI recording books	o					Mr.Giao Mr.Phong	A trial and revision had been repeated in order to produce AI recording materials which could be adopted well under real conditions	AI recording book(for use of AI technician) and Farm holder (for use of farmer) were produced	AI recording materials will be produced	100
2-2-2. Unify the AI recording system in focused area	o	o				Mr.Luong	Through the unified method of AI recording, general method on the recording in the focus areas had been decided	Unified AI recording method was proposed and accepted	AI recording method will unified	100

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ITEMS	1st	2nd	3rd	4th	5th	RESPONSIBLE	RESULT	PROGRESS	ARCHIVEMENT GOAL	SCORES (%)
SCORES %2-2-3. Train local officers about AI recording		o	o	o		Mr.Luong	Instructions on AI recording method had been given through AI retraining and computer courses	Understanding on AI recording method was deepened	Operators on AI recording management will be trained in the focus areas	80
2-2-4. Put the farmer ID number and cattle ID number		o				Mr.Luong	The coding method for identification had been unified in accordance with National Dairy Development Project	Unified coding for identification was proposed and accepted	Unified coding method for identification will be used	80
2-2-5. Establish the AI data collecting route		o				Mr.Luong	Reporting of AI records from each field AI technicians had been decided to collect through the respective provincial management office and to share with the project office and NIAH	Reporting route that connected local and central offices was organized	AI records reporting system will be managed	80
2-2-6. Make AI data management system in NIAH/MAIC		o	o	o		Dr.Su Mr.Luong	The management of the National Dairy Development Project had been become responsible for AI records' collection and analysis	The system of AI records and reports collection established	Regular collection of AI records will be possible	80

ITEMS	1st	2nd	3rd	4th	5th	RESPONSIBLE	RESULT	PROGRESS	ACHIEVEMENT GOAL	SCORES (%)
2-2-7. Collect insemination records		o	o	o		Mr. Luong	The reports of AI recording results had gradually been collected through identified AI technicians, farmer and cattle	AI recording and reporting were started and its data was being collected	AI reporting with the AI records which are from identified source of data will be put in practice	80
2-2-8. Utilize AI recording information			o	o	o	Mr. Luong Dr. Su	As an application of AI recording method and its system, issuance of pedigree certificate (cattle identification) and conception rate survey method (semen quality) had been conducted	Some examples of application based on AI recording activity was proposed	The importance of AI recording and reporting system will be recognized	80
2-3 Train or consult about storing and distribution method of straw -typed frozen semen			o	o	o	Mr. Tue Mr. Tiem				85
2-3-1. Conduct surveys when necessity arises.			o			Mr. Tiem	A survey on frozen semen quality under field had been conducted in order to check semen distribution conditions	A possible state of deteriorating frozen semen conditions was observed on the route starting from frozen semen production, distribution and keeping under field conditions	A need of improving the system of frozen semen stocking and distribution will be noticed	100

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ITEMS	1st	2nd	3rd	4th	5th	RESPONSIBLE	RESULT	PROGRESS	ACHIEVEMENT GOAL	SCORES (%)
2-3-2. Conduct a survey on the focus area			○	○		Mr.Tiem	Tuson AI center and other regional frozen semen distribution centers, as possible targets, had been survey on frozen semen stocking and distribution conditions in 2003 and 2004 respectively	As survey results, 1) introduction of unified recording format and 2) stock and distribution record management program were found to be effective measures to improve frozen semen distribution management	The targets to improve frozen semen distribution system and concrete measures will be clearly set.	100
2-3-3. Determine training participants			○	○		Mr.Tiem	Tuson AI center had been selected as a target for improving frozen distribution system and necessary efforts had been made	Appropriate target was selected and the proposed contents of improvements were made into more practical shapes	A improvement measures which can be applied to every frozen semen distribution center under VINALICA will be proposed	100
2-3-4. Conduct training courses				○	○	Mr.Tiem	The training on improved method of frozen semen stocking and distribution had been conducted for 6 regional centers' staff under VINALICA	A need of improving frozen semen distribution system as whole VINALICA was well conceived by its staff	The method of frozen semen stocking and distribution will be improved	80

ITEMS	1st	2nd	3rd	4th	5th	RESPONSIBLE	RESULT	PROGRESS	ARCHIVEMENT GOAL	SCORES (%)
2-3-5. Monitor trained participants in the field				o	o	Mr.Tiem Mr.Tuc	Monitoring work over the actual practice using improved measures had been observed	Improved measures was put into practice at the regional distribution centers in order to improve frozen semen stocking and distribution system	Frozen semen stocking and distribution will be practiced using improved method	80
2-4 Promote and strengthen the advantage of using AI, toward farmers and AI technicians		o	o	o	o	Mr.Chieu Mr.Phong Mr.Que				85
2-4-1. Produce more information on sire bull such as improved sire catalogues			o			Mr.Que	MAIC sire bull catalog had been produced and distributed	By distributing the catalogs to AI technicians in the focus areas, their knowledge and interest towards sire bull was raised up	Information on sire bull will be presented in improved manner	100
2-4-2. Make the information for farmers to understand the importance of AI		o	o	o		Mr.Que	Cattle breeding calendar for farmers had been produced and distributed	By distributing the calendars to AI technicians and their target farmers in the focus areas, their interest towards AI and cattle raising was raised up	Information materials which can make farmer's notion towards importance of reproductive recording will be produced	80

ITEMS	1st	2nd	3rd	4th	5th	RESPONSIBLE	RESULT	PROGRESS	ACHIEVEMENT GOAL	SCORES (%)
2-4-3. Set up seminars for AI technicians and farmers	o	o				Mr.Loung Mr.Son	The seminars on the importance of reproductive recording and cattle identification at farmer level had been conducted	Farmers were educated with the importance of reproductive recording and cattle identification	The importance of "recording" in AI technology will be recognized	80
2-4-4. Provide information to media	o					Mr.Chieu	MAIC's function and improved facilities had been introduced through TV programs	Part of the project activities was broadcasted nationwide	The project's information will be sent through media	80
View for sustainability	<p>Vietnam operated "National Dairy Development Project" adopted the AI recording method to be used for monitoring purpose and it also supplies the project introduced form of recording materials continually for the provinces, from where it receives AI related information, therefore there is a good expectation of utilizing the AI recording system not only to collect AI records but also to use as a system to identify farmers and cattle in future.</p> <p>VINALICA that operates MAIC and Tuson AI center considers the improvement in the method of frozen semen stocking and distribution as an important role of itself, therefore, sustainability in this subject is high.</p>									

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PLANS OF OPERATIONS					SITUATION OF ACTIVITIES					
ITEMS	DURATION(YEAR)					RESPONSIBLE	RESULT	PROGRESS	ARCHIVEMENT GOAL	SCORES (%)
	1st	2nd	3rd	4th	5th					
3. Transfer of efficient techniques for production of straw-typed frozen semen.										90
3-1 Conduct surveys when necessity arises	o	o	o			Mr.Chieu Mr.Que				100
3-1-1. Conduct surveys on existing facilities	o	o	o			Mr.Chieu	The survey on the existing facilities of semen processing and , water treatment had been conducted in 2001 and 2002 respectively	General renovation plan was made	A basic renovation plan will be made	100
3-1-2. Conduct a present condition survey as to make a starting point and decided methodology	o					Mr.Chieu	The survey on the detailed semen processing method being practiced at MAIC had been conducted to raise the points of subject	The points of subject to improve semen processing techniques were found out clearly	A concrete action plan to improve semen processing technique will be made	100
3-2 Improve general conditions of frozen semen processing facilities.	o	o	o			Mr.Chieu Mr.Que				95
3-2-1. Make master plans for target facilities	o					Mr.Chieu	Renovation priorities had been given to 1 <sup>st</sup> semen processing facility, 2 <sup>nd</sup> water treatment facility and 3 <sup>rd</sup> electric generator	Renovation plan was made considering degree of importance as priorities	Efficient renovation plan will be made	100

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ITEMS	1st	2nd	3rd	4th	5th	RESPONSIBLE	RESULT	PROGRESS	ARCHIVEMENT GOAL	SCORES (%)
3-2-2. Process professional designs and conduct bidding	o					Mr.Chieu	Original design including renovation concepts and points of improvement had been produced in a basic construction plan	The following points were included in the plan; <input type="checkbox"/> renewal of production line <input type="checkbox"/> temperature and humidity management <input type="checkbox"/> Water purification <input type="checkbox"/> Prevention of power failure	A construction plan including concrete contents of renovation points will be produced	100
3-2-3. Conduct renovation constructions		o	o			Mr.Chieu	Management and supervision of the renovation had been conducted	<input type="checkbox"/> Semen processing facility was renovated <input type="checkbox"/> Water treatment facility was renovated <input type="checkbox"/> Generator was installed	The renovation work will be completed as planned	90
3-3 Provide training on semen processing method.	o	o	o	o		Ms.Hoa Mr.Jin Mr.Hoa(Y)				90
3-3-1. Introduce an improved semen collection method		o				Ms.Hoa Mr.Jin	Semen collection technique had been introduced based on the principle of safety, hygiene and bull identification	The semen collection method a collection technician centered was introduced	Safe and hygienic semen collection will be practiced	80
3-3-2. Introduce a semen evaluation method	o	o				Ms.Hoa Mr.Jin	Semen sample for evaluation had been changed from fresh to diluted one	An accuracy on sperm motility evaluation method was improved	A semen evaluation method of higher accuracy will be introduced	100

ITEMS	1st	2nd	3rd	4th	5th	RESPONSIBLE	RESULT	PROGRESS	ARCHIVEMENT GOAL	SCORES (%)
3-3-3. Introduce an extender formulation method	○	○				Ms.Hoa Mr.Jin	Semen extender had been changed from previous imported one to self-formulated one	Higher flexibility in preparation of extender with lowered cost was made possible	Semen extender method which satisfies quality and cost will be introduced	100
3-3-4. Introduce a step-wise dilution method	○	○				Ms.Hoa Mr.Jin	Semen dilution method had been changed from previous "simultaneous" one to "step-wise one"	Semen dilution method which minimize deterioration of Sperm motility was introduced	Simple but effective method will be introduced	100
3-3-5. Introduce a freezing method	○	○				Ms.Hoa Mr.Jin	Semen freezing method had been changed from previous "rapid" one to "step-wise one" using standard freezing curve	Semen freezing method which minimize freezing shock to Sperm motility was introduced	A freezing method adaptable with semen extender will be introduced	100
3-3-6. Introduce production management method by computer		○	○	○		Ms.Hoa Mr.Jin	production record management method had been changed from using only note book to using a computer as well	Continual production record management was possible using a database program	Production record will also be managed by computer	90
3-3-7. Produce an instruction manual for standard processing method in MAIC for future renovation				○		Ms.Hoa Mr.Jin	Semen processing manual of updated method and procedure had been produced	A manual on semen processing at present was produced	A manual which can be used as a basis for further improvements will be produced	90



ITEMS	1st	2nd	3rd	4th	5th	RESPONSIBLE	RESULT	PROGRESS	ARCHIVEMENT GOAL	SCORES (%)
	3-3-8. Conduct evaluation surveys for monitoring and applying activity results	o	o	o	o					
View for sustainability	Frozen semen production at MAIC have increased dramatically within this 4 years. Especially the straw form of frozen semen has surpassed the pellet form by production in 3rd year. MAIC staffs have also increased their technical capacity as well as semen processing conditions renewed satisfactorily. In addition to these developments, recent high reputation and increasing semen distribution in every year is assuring its high sustainability.									

PLANS OF OPERATIONS					SITUATION OF ACTIVITIES					
ITEMS	DURATION(YEAR)					RESPONSIBLE	RESULT	PROGRESS	ARCHIVEMENT GOAL	SCORES (%)
	1st	2nd	3rd	4th	5th					
4. Feeding and management of sires are improved.										90
4-1. Conduct surveys when necessity arises.						Dr. Cuong & Mr. Que				90
4-1-1. Conduct a water quality analysis						Dr. Cuong Mr. Chieu Ms. Canh	Water quality of MAIC considering seasonal effect had been surveyed 3 times	Water quality was found to be worsened especially during dry season as the water came from both well and pond in MAIC	Water quality conditions will be examined	90
4-1-2. Analyze factors which deteriorate quality of semen and make countermeasures						Mr. Chieu Mr. Que	A survey had been conducted regarding the factors affecting poor semen quality after semen collection paying more attention over feeding and farm environmental conditions	Incomplete heat prevention and concretized floor surface were considered stressful as the bull housing was built in 1970s	Improvement plan will be discussed by analyzing impeding factors on semen quality	90
4-2 Renovate the existing facility for large bulls.						Mr. Que Mr. Chieu				95
4-2-1. Strengthen the fence of the bull pens.						Mr. Que Mr. Canh	Bull fencing had been strengthened together with the bull housing renovation	The fencing in the bull housing were strengthened referencing Japan's facility	Bull fencing will be repaired with stronger ones to secure safety	100

ITEMS	1st	2nd	3rd	4th	5th	RESPONSIBLE	RESULT	PROGRESS	ACHIEVEMENT GOAL	SCORES (%)
4-2-2. Make the sandbox to protect a leg, foot hoof.			o			Mr. Que Mr. Canh	Bull paddock had been renovated together with the bull housing renovation	Previous paddock of concreted surface was changed to sand area	Paddock will be changed to sand area in order to protect legs and hoofs	90
4-2-3. Build treatment stall for large bulls.			o			Mr. Que Mr. Tien	Bull stall at semen collection area had been strengthened together with the bull housing renovation	Strengthened bull stall for controlling large size bull was built	Stalls for large size bull will be built	100
4-2-4. Strengthen evacuation facilities to secure safety in the semen collection.		o				Mr. Canh Mr. Que	Evacuation facilities had been strengthened together with the bull housing renovation	Evacuation facilities around semen collection area was built by strong fencing	Evacuation facilities for securing safety during semen collection will be built	100
4-2-5. Conduct heat stress management			o			Mr. Que Mr. Canh	Heat stress management had been renovated together with the bull housing renovation	Bull housing was installed with sprinklers and wind fans	Facilities for heat stress management will be renovated	90
4-3 Improve the quality of water.		o				Mr. Que Mr. Canh				90
4-3-1. Renovate the water source and water purifier		o				Mr. Que Mr. Canh	Water source and treatment facility had been renovated	Water quality was improved as drinkable quality by renovating water treatment facility	Reexamination of water source and renovation of water treatment facility will be conducted	90

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ITEMS	1st	2nd	3rd	4th	5th	RESPONSIBLE	RESULT	PROGRESS	ARCHIVEMENT GOAL	SCORES (%)
4-4 Feed good quality feeds.						Dr.Cuong Mr.Que Mr.Vihn				90
4-4-1. Conduct a feed material analysis						Mr.Que Mr.Vihn	Nutrition value of present feeds had been analyzed regularly	Nutrition value of roughage was found to be rather high	Nutrition value of feeds will be evaluated	90
4-4-2. Find a suitable feeding standard						Dr.Cuong Mr.Que Mr.Vihn	Individual bull's feeding level had been decided based on the analyzed value of feed stuff	How to calculate feeding amounts using information such as bull body weight was instructed	Feeding amounts for individual bull will be calculated	90
4-4-3. Make feeding program						Dr.Cuong Mr.Que Mr.Vihn	Annual feeding program had been produced based on the analyzed value of feed stuff	How to make an annual feeding plan considering roughage production season was instructed	Annual feeding program will be produced	90
4-4-4. Produce a management manual for standard feeds and feeding method in MAIC						Mr.Que Mr.Vihn	Manuals on roughage production and feeding had been produced	Manuals of roughage production and standard for feeding relevant for MAIC's conditions were produced	Feed production manual and feeding standard will be produced	90

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ITEMS	1st	2nd	3rd	4th	5th	RESPONSIBLE	RESULT	PROGRESS	ACHIEVEMENT GOAL	SCORES (%)
4-4-5. Produce good quality forage				o	o	Mr. Que Mr. Vihn	Good quality feeds had been produced by renewing roughage production method	High quality roughage production system throughout a year was established by improved roughage productivity backed by introduced farm machinery	High quality roughage production system will be established	90
4-5 Improve the individual bull management.		o	o	o	o	Mr. Que Mr. Vihn				90
4-5-1. Acquire management techniques of large bulls		o	o	o		Mr. Que Mr. Vihn	Feed and feeding techniques as general had been instructed to the staffs in charge of bull management	Staffs involved in bull management were given work instructions as well as demonstrations regarding general bull management techniques	MAIC's staffs in charge of bull will learn management techniques on large size bull	90
4-5-2. Introduce bull management techniques such as hoof trimming and dehorning		o				Mr. Que & Mr. Vihn	Hoof trimming and dehorning method had been instructed to the staffs	Staffs were instructed on the method of hoof trimming and dehorning through actual demonstration	Staffs will learn technique of hoof trimming and dehorning	90
4-5-3. Consolidate individual bull records		o	o			Mr. Que Mr. Vihn	Individual bull records on feeding, body weight and semen collection had been managed regularly	How to manage bull records using computer was instructed	Individual bull records will be managed and utilized by making bull record database	90

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ITEMS	1st	2nd	3rd	4th	5th	RESPONSIBLE	RESULT	PROGRESS	ACHIEVEMENT GOAL	SCORES (%)
4-4-4. Analyze individual bull records		o	o			Mr. Que Mr. Vinh	Collected individual bull records had been analyzed regularly	A system of detecting bulls of problematic conditions by monitoring body weight and semen production records was organized	Individual records will be used to feeding management of bull	90
4-5-5. Produce manuals for each technique				o	o	Mr. Que Mr. Vinh	Manual on managing large size bull had been produced	Technical transfer was conducted by making a manual on general bull management	Bull management will be produced	90
4-6 Improve the animal health program.		o	o			Mr. Que Mr. Hoa				90
4-6-1. Introduce disease control program		o				Mr. Que Mr. Hoa	The disease control program to prevent infections from outside had been renewed	The 3 spots of disease control facilities before reaching to the bull housing at MAIC were renewed	New disease control measures will be implemented	90
4-6-2. Introduce regular health check for each sire bull			o			Mr. Que Mr. Hoa	A system of early detection of disease had been established	A system was established, which could detect problem bulls and treat through health check during body weight scaling once a month	Regular health check will be conducted	90
View for sustainability	Bull management technique at MAIC have improved greatly during the project implementation period, thus, a higher productivity in semen production has been observed. As a higher productivity is a lifetime matter to MAIC, and with a good expectation that MAIC can carry out proper feeding management using introduced techniques and gained experience, self-sustainability is considered as high.									

Project Design Matrix for the Improvement of Cattle Artificial Insemination Technology in Viet Nam (version 3)  
 Vietnamese Implementing Agency: NIAH Japanese Implementing Agency: JICA  
 Main Site: NIAH Sub Site: MAIC Term of Cooperation: 2000.10.2 ~ 2005.10.1 Target Area: All over Viet Nam  
 Focused Area: 5 provinces in North Area and 4 provinces in South Area Target Group: AI technicians, officers in local offices 2004.4.20

Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p><b>(Overall Goal)</b> The productivity of milk and beef will be increased by improving cattle artificial insemination techniques.</p>	<p>1. Milk production increases in focused areas. 2. The number of dairy cattle increases in focused areas. 3. Annual milk yield per cow increases in focused areas.</p>	<p>1. Milk production records (farmers, milk processing companies, result of dairy herd performance test) 2. Registration records 1. AI recorded data 2. Frozen semen production records in MAIC 3. AI field survey 4. Distribution records in AI-substations and local offices</p>	<p>1. The Livestock production policy remains unchanged. 2. There is no outbreak of serious infectious diseases that effect productivity of livestock. 1. There is no outbreak of serious disease or disorder for animals in focused areas. 2. There is no important organizational change in related organizations.</p>
<p><b>(Project Purpose)</b> Artificial insemination techniques for cattle will be improved through the use of straw semen.</p>	<p>1. Rate of AI by straw type frozen semen for dairy cattle increases to more than 95% in focused areas. 2. NIAH/MAIC can manage AI information of focused areas (recording, collecting, analyzing, utilizing). 3. The number of inseminated cows per retrained AI technicians increases in focused areas. 4. Reproduction performances of dairy cattle increase in focused areas.</p>	<p>1-1. Training reports(1) 1-2. Manual and teaching materials for training 1-3. Training reports(2) 2-1 Semen motility survey records in fields 2-2. Report of survey for AI pregnancy rate of individual bull and technicians 2-3 Data of frozen semen stock and distribution of VINALICA 2-4 Progress report of the National Dairy Development Program.</p>	<p>1. AI technicians and officers in the local offices understand the objectives of the project and are cooperative with it's activities</p>
<p><b>(Outputs)</b> 1. AI technicians are trained and their skills are improved. 2. Distribution method for frozen semen and AI recording management are improved 3. Production technique of straw typed frozen semen is improved 4. Feeding and management of sires are improved.</p>	<p>1-1. 200 AI technicians in focused areas are retrained. 1-2. Manual and teaching materials are made for AI training. 1-3. Content, methodology and teaching materials of the AI training are applied to the training in the National Dairy Development Project. 2-1. The motility of straw type frozen semen is maintained in the distribution network. 2-2. Using the AI records reported from re-trained AI technicians, the distributed semen quality can be monitored. 2-3. A computer program for frozen semen stock and distribution management is made and put into practice 2-4. The developed materials by the project for AI information recording is are utilized by the National Daily Development Program</p>		

	<p>3-1. 100% of frozen semen for dairy breed is produced in straw form in MAIC.</p> <p>3-2. The rate of straw-typed frozen semen passed the quality examination increase from 75-80% to more than 95% in MAIC.</p> <p>3-3. All the data on production and distribution of semen is managed by using computer in MAIC.</p> <p>4-1. The rate of sire bulls to be used for semen processing increases from the present 50 % to more than 85% in MAIC.</p> <p>4-2. MAIC can manage the sire by using individual animal data.</p> <p>4-3. The feeding program is produced and practiced in MAIC.</p>	<p>3. Frozen semen production records</p> <p>4. Frozen semen production records and Work reports</p>	
<p><b>(Activities)</b></p> <p>1. (Transfer of appropriate technical skills in artificial insemination.)</p> <p>1-1. Conduct following surveys when necessity arises.</p> <p>1-1-1. Select the focused areas</p> <p>1-1-2. Situation of feeding and management of cow at dairy farmers</p> <p>1-1-3. The technical level of AI inseminators(implementation number, skill)</p> <p>1-1-4. Reproduction performance (Conception rate, Calving interval...) on the farm</p> <p>1-1-5. Reproduction performance ( Conception rate , Calving interval) on the technicians</p> <p>1-1-6. Reproduction performance ( Conception rate, Calving interval) on the area</p> <p>1-1-7. The cause of low conception rate</p> <p>1-2. Reproduction techniques are transferred to C/P to apply the AI training</p> <p>1-2-1. Reproduction management method</p> <p>1-2-2. Semen evaluation techniques</p> <p>1-2-3. Applying techniques of reproduction</p> <p>1-2-4. Hormone assay and its utilization techniques</p> <p>1-2-5. Feeding and management techniques for cow</p> <p>1-3. Retrain AI technicians for straw type frozen semen and recording.</p> <p>1-3-1. Determine training participants</p> <p>1-3-2. Reform the curriculum for adaptation of straw typed semen</p> <p>1-3-3. Prepare training manuals and materials</p> <p>1-3-4. Conduct training courses</p> <p>1-3-5. Make training manuals for lectures</p> <p>1-3-6. Evaluate the contents of training courses</p> <p>1-3-7. Monitor the trained AI technicians and give guidance and advices to them in the field</p>	<p><b>(Inputs)</b></p> <p>&lt;Vietnamese side&gt;</p> <ol style="list-style-type: none"> <li>Allocation of personnel</li> <li>Local cost (land, building, facilities, maintenance of equipment, other cost to support activities)</li> </ol> <p>&lt;Japanese side&gt;</p> <ol style="list-style-type: none"> <li>Dispatch of experts       <ol style="list-style-type: none"> <li>Long term experts; Chief Adviser</li> <li>Feeding and management Frozen semen production Artificial Insemination Project Coordinator</li> </ol> </li> <li>Short term experts; When necessity arises</li> </ol> <ol style="list-style-type: none"> <li>Counterpart training in Japan a few per year</li> <li>Equipment</li> <li>Local cost support</li> </ol>	<p>1. Counterparts continue working in NIAH/MAIC.</p> <p>2. Enough amount of LN2 is stably applied.</p> <p>3. There is no serious damage in frozen semen processing machinery.</p> <p><b>(Precondition)</b></p> <p>No objection against the Implementation of the project</p>	



<p>2. Improvement of distribution method for frozen semen and AI recording management.</p> <p>2-1. Conduct surveys when necessity arises.</p> <p>2-2. Produce the recording, collection and evaluation method of AI information in focus areas</p> <p>2-3. Train or consult about storing and distribution method of straw -typed frozen semen</p> <p>2-4. Promote and strengthen the advantage of using AI, toward farmers and AI technicians</p> <p>3. Transfer of efficient techniques for production of straw-typed frozen semen.</p> <p>3-1. Conduct surveys when necessity arises.</p> <p>3-2. Improve general conditions of frozen semen processing facilities.</p> <p>3-3. Provide training on semen processing method.</p> <p>4. (Transfer of appropriate management techniques in feeding of sires.)</p> <p>4-1. Conduct surveys when necessity arises.</p> <p>4-2. Renovate the existing facility for large bulls.</p> <p>4-3. Improve the quality of water.</p> <p>4-4. Feed good quality feeds.</p> <p>4-5. Improve the individual bull management.</p> <p>4-6. Improve animal health programme.</p>		
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プロジェクトの要約	指標	指標データ入手手段	外部条件
上位目標： 人工授精技術の向上により 乳肉生産性が向上する。	1. 選定地域で生産乳量が増加する 2. 選定地域で乳牛飼養頭数が増加する 3. 選定地域で年間1頭あたり乳量が増加する	・牛乳生産記録(農家、牛乳処理施設、牛群検定記録等) ・登録簿	・家畜生産に関わる政策に変更がない ・生産に影響を及ぼすような重大な伝染病が流行しない
プロジェクト目標： ストロロー方式凍結精液の活用により人工授精技術が改善される。	1. 選定地域において乳牛ストロー凍結精液の使用率が95%以上になる 2. NIAH/MAICが選定地域の人工授精情報を管理(記録、収集、分析、活用)できる 3. 選定地域の研修を受けた人工授精師の人工授精頭数が増加する 4. 選定地域の乳牛の繁殖成績が向上する	・人工授精記録 ・MAIC凍結精液生産記録 ・人工授精実態調査 ・AIサブセンター及び地域事務所における配布記録	・選定地域において、家畜疾患の大規模な流行がない ・行政組織に大きな変更がない
成果： 1 人工授精師が訓練され、技術が向上する 2 凍結精液の配布及び人工授精記録の管理方法が改善される 3 ストロロー方式凍結精液の製造技術が向上する	1-1 200名の人工授精師が再研修される 1-2 研修用のマニュアル・指導教材が作成される。 1-3 研修内容、手法及び指導教材が酪農振興地域内で取り入れられる。 2-1 選定地域内の凍結精液配布網において凍結精液の活力レベルが保持される 2-2 研修を受けた人工授精師からの授精記録を用いて凍結精液の品質がモニターできる。 2-3 凍結精液保管、配布管理プログラムを作成し、利用される 2-4 NIAH実施の酪農振興事業においてプロジェクトで開発された人工授精記録管理様式等が利用される。 3-1 MAICで生産される乳牛の凍結精液がストロー方式で100%生産される 3-2 MAICで生産される凍結精液の製造工程における生産性が現在の75-80%から95%に改善される 3-3 MAICが凍結精液の生産・配布等の全記録をコンピュータを用いて維持管理できるようになる	1-1 研修記録(1) 1-2 研修用マニュアル、指導教材 1-3 研修記録(2) 2-1 現場での精液活力検査 2-2 種雄牛の個体別及び人工授精師の受胎調査報告 2-3 VINALICAの在庫・配布管理データ 2-4 酪農振興事業の活動報告 3. MAIC凍結精液生産記録	・人工授精師及び地域事務所職員がプロジェクトの目的を理解し、活動に協力的である

<p>種雄牛の飼養管理の良好 4. 化が図られる</p>	<p>4-1 凍結処理可能な採精牛が開始時の50%から85%以上になる 4-2 MAIC が個体管理記録を用いて種雄牛を管理できる 4-3 MAIC で飼養する種雄牛の飼料給与プログラムを作成し、活用される</p>	<p>凍結精液生産記録、 4. 業務記録</p>	
<p>活動: 1. (適正な人工授精技術の移転) 1-1 必要時に以下の調査を実施する 1-1-1 地域を選定する。 1-1-2 農家の牛の飼養状況 1-1-3 授精師の技術水準(実施回数・技術) 1-1-4 農家での受胎率、分娩間隔  1-1-5 授精師毎の受胎率、分娩間隔 1-1-6 地域毎の受胎率、分娩間隔 1-1-7 低受胎率の原因 1-2 研修に応用できる以下の繁殖関連技術がC/Pに移転される。 1-2-1 繁殖管理技術 1-2-2 精液検査技術</p>	<p>投入: &lt;ヴイエトナム側&gt; 1. 人員の配置 2. ローカルコスト(土地、建物、施設、機材維持管理費、 その他活動に必要な経費)  &lt;日本側&gt; 1. 専門家派遣 1)長期: チーフアドバイザー 飼養管理 凍結精液製造 人工授精 業務調整 2)短期:</p>		<p>• NIAH、MAICのC/P が勤務し続ける • MAICの凍結精液製 造処理機材に重大な • 破損が生じない 液体窒素が安定して 供給される 異常気象が生じない</p>

<p>1-2-3 繁殖応用技術  1-2-4 ホルモン測定及びその活用技術  1-2-5 飼養管理技術</p> <p>1-3 ストローク方式凍結精液及び人工授精記録に関し、人工授精師を再研修する  1-3-1 研修受講者を選定する  1-3-2 ストローク方式凍結精液用カリキュラムを再編成する  1-3-3 研修用教材を作成する  1-3-4 研修を実施する  1-3-5 講師用研修マニュアルを作成する  1-3-6 研修の内容を評価する  1-3-7 研修を受講した人工授精師を現場でモニター及び助言・指導する</p>	<p>必要に応じて派遣  2. 研修員受入  年間数名程度  3. 機材供与  4. ローカルコスト支援</p>		<p>前提条件：  プロジェクトへの反対者がいない</p>
<p>2. (凍結精液の配布方法・AI記録管理方法の改善)  2-1 必要時に調査を実施する  2-2 選定地域において、人工授精情報記録・収集・評価の方法を策定する  2-3 ストローク方式凍結精液の保管管理方法および配布方法について指導する  2-4 人工授精の意義・利点を啓蒙する  3. (ストローク方式凍結精液製造技術の改善)  3-1 必要時に調査を実施する  3-2 凍結精液製造施設を改善する  3-3 凍結精液処理技術に関する研修、実践を行う</p> <p>4. (種雄牛飼養管理技術の移転)  4-1 必要時に調査をする  4-2 種雄牛大型化にむけて施設を改修する  4-3 飲用水の水質を改善する  4-4 飼料給与を改善する  4-5 個体管理技術を改善する  4-6 衛生管理プログラムを改善する</p>			