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FINAL REPORT

FOR THE IMPLEMENTATION OF THE NATIONAL PHASE-OUT OF METHYL BROMIDE-CHINA Phase II-IV

REPORTING PERIOD: March 2008-April 2009

Project No.:TF/CPR/05/004

UNIDO's Contract No.: 16001598

Beijing, China

8th April 2009

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List of Annexes

Annex I

Acronyms:

ExCom: Executive Committee

FECO: Foreign Economic Cooperation Office

MB: Methyl Bromide

MEP: Ministry of Environmental Protection

MLF: Multilateral Funds

ODP: Ozone Depleting Potential

SAG: State Administration of Grain

STMA: State Tobacco Monopoly Administration

TA: Technical Assistance

UNEP: United Nations Environment Programme

UNIDO: United Nations Industrial Development Organization

1. Abstract

The National Methyl Bromide Phase-out Sector Plan- Phase I in China was approved by the 41st Meeting of the Executive Committee of Multilateral Fund, the aim of Phase I is to phase-out 389 ODP tones of Methyl Bromide by December 31st, 2006, which includes 126 ODP tonnes of Methyl Bromide used in the grain storage sector and 263 ODP tonnes of Methyl Bromide in the tobacco seedling sector.

At the 44th Meeting, an additional 10,702,742 US$ were approved for Methyl Bromide Consumption Sector- Phase II, which includes 4 million USD from the Italian contribution, to achieve the complete phase-out of methyl bromide, corresponding to additional 698.8 ODP tones.

The Final report for the implementation of the national phase-out of methyl bromide-China phase II-IV summarizes the activities implemented from March 2008 to 8th April 2009 for the tobacco sector in line with what is required in the contract No.16001598 of Phase II-IV.

2. Methyl bromide phase-out target achieved

In 2008 according to the agreement signed between China and ExCom, of the MLF, 153.2 ODP tones MB have been phased out, to meet the maximum eligible consumption of 570.6 tones. The total consumption of methyl bromide in China, in 2007, is 389.54 ODP tonnes, which is 181.06 tones lower than the eligible consumption limit agree with the ExCom, of the MLF.

Methyl bromide consumption in 2003-2008

Year		2003	2004	2005	2006	2007	2008
Max. allowable consumption approved by Excom (ODP tones)	Commodity	126	126	46	25.2	0	0
	Tobacco	427.8	427.8	300	164.6	124.6	0
	Agriculture	534	534	534	534	446	390
	Total	1087.8	1087.8	880	723.8	570.6	390
Actual consumption (ODP tones)	Commodity	126	52.2	32.1	6.96	0	0
	Tobacco	427.8	227.8	54	21	32.4	0
	Agriculture	534	534	534	282.08	351.72	380
	Total	1087.8	814	620.1	310.04	384.12	380
Phase-out achieved (ODP tones)	Commodity	0	73.8	20.1	25.14	6.96	0
	Tobacco	0	200	173.8	33	-11.4	32.4
	Agriculture	0	0	0	251.92	-69.64	-28.28
	Total	0	273.8	193.9	310.06	-74.08	4.12

Note:

1) Though the control target has been met, the consumption of methyl bromide increased in 2007 compared to 2006 because:

   - In 2006, 300 tonnes of methyl bromide were exported due to the political reasons and, since the methyl bromide production is also controlled under the "Sector plan for methyl bromide production sector in China", the system was unable to compensate timely with extra production, therefore the national market was affected by a shortage of methyl bromide.
   - To increase the farmland area and the crops output, China has adopted several policies to protect the existing farmland and encourage farmers to expand their farmland area, which consequently slightly increased the demand of the methyl bromide in 2007.

According to the National Methyl Bromide Phase-out Sector Plan, the MB should be phase-out completely in tobacco seedling sector since Jan. 1st 2008, so there is no consumption of Methyl bromide consumption in tobacco seedling sector in 2008.

3. Progress in tobacco seedling sector

Since 2004, FECO/MEP and STMA had established a joint working group for phasing out methyl bromide in the tobacco sector. The scheme of the phase-out programme is to establish the floating Nursery Demonstration Centre through greenhouse construction and then spread such technology through out the tobacco planting area of China. The phase-out activities in tobacco seedling sector have been developed in 2 stages according to the sector plan.

3.1 Alternative technology

Methyl Bromide is mainly used for soil fumigation before tobacco planting. Tobacco floating tray technology has been selected as the main alternative technology to substitute methyl bromide by generally avoiding sterilization after implementation of the sector plan. The float bed is a simple hydroponic system that was developed by the tobacco industry for transplant production. It involves germination of seed in substrates such as vermiculite or peat mix in polystyrene plug-trays floating on a shallow bed of nutrient solution. This procedure can avoid the harm of disease, insects and weeds from soil to tobacco seeds.

Due to the special geographical and climatic features, in north of China, such as in Inner Mongolia and Jilin, suspended nursing technology was used and substrate is sterilized by heating.

3.2 Investment

Stage II:

A total of US$4.165 million is allocated in stage II, of which, US$ 3.665 million has

been used for construction of greenhouses and procure equipment for floating tray tobacco seedlings, and of which, US$ 0.5 million partially will be used for technical assistance activities.

3.3 Progress

3.3.1 Stage II:

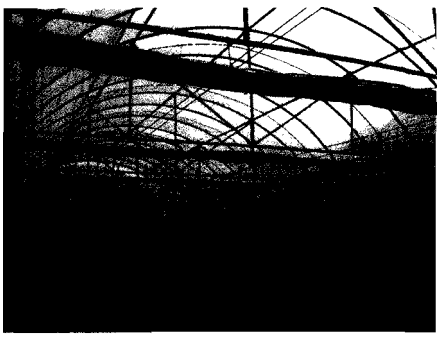
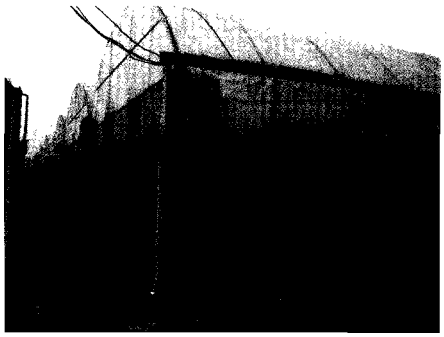
STMA started 17 centres greenhouse construction in Stage II since the contracts for construction of these 17 demonstration centres were signed and the technical specifications of greenhouse for these 17 centres have been approved by UNIDO. Up to April 2009, the construction and installation of all 17 centres has been completed, with promissory area of 261,550 m^2, which is committed in the contract. (See contract information and the installation progress of the stage II, at table No.1, Annex I).

Till now, the equipment procurement and installation for 15 regions of Chifeng, Nanping, Qujing, Baicheng, Sanming, Bijie, Tongren, Baoji, Luoyang, Yichang Shiyan, Rizhao, Weifang, Yongzhou, and Chenzhou, had been completed and put into operation. All these regions' technology transfer centres had been jointly checked and accepted by MEP and UNIDO.

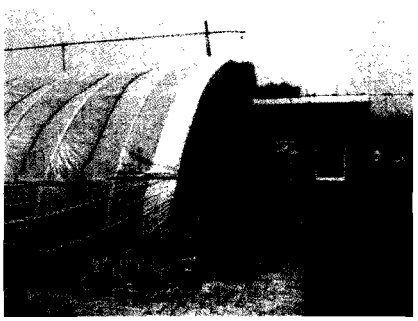
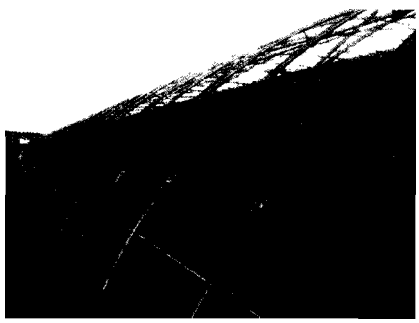
These 15 centres have built 383,494.55 m^2 greenhouses with 4 types, including 10 Type A, 237 Type B, 15 Type D, 7080 removable shift greenhouse and 300 medium-sized removable shift greenhouse, in line with the climate and geography feature of different region. In addition to the US$3.465 million investment granted by MLF to the 15 certres, STMA has invested more than US$ 3.7 million as co-financing to construct affiliated facility and more greenhouses. (See the details at Table No.3, Annex I)

Through verification by MEP and UNIDO, all of the 15 centres have selected the proper sites for greenhouse construction; the facilities have been installed well, with good heat preservation and ventilation system as well as water leakage and pest prevention system. The tobacco seedling also obtains high quality, and low lost percent after transplanting. The disease incidence on seedling has been reduced greatly. In all, the greenhouse operation results can meet the requirement of tobacco seedling. (See the technical assessment of the alternative technology of tobacco sector, at table No.4, Annex I)

It is agreed that the project has played excellent model role in tobacco sector for promoting the concentrating seeding technology. In order to gain more benefits, the local tobacco companies constructed more greenhouses with the same technical specification of the project with their own funding. Under such efforts, this kind of seeding technology disseminates quite well.

Greenhouse in Guizhou Tongren

Greenhouse in Jilin Baicheng

3.4 Technical Assistance activities

3.4.1 Meeting

Training workshops: In order to strengthen management of bidding process of greenhouse centres construction, one training workshops for local tobacco bureaus and companies were held in April 2008, which is focus on the formulation of the Technical Specification and bidding procedures. 40 participants from local tobacco bureaus and companies have been trained.

The training meeting

3.4.2 Study tour and training

21st -31st May, 2008, 15 trainees from tobacco companies, research institutes, STMA, FECO/MEP visited U.S.A., where floating tray system is in largely used and well developed. The technology for pest control, the greenhouse construction, floating seedling and planting have been learnt by the delegation.

3.4.3 Performance Assessment

Through the comparison between the alternative and methyl bromide, it shows that alternatives can satisfy the basic requirement of seedling, and reduce the disease incidence. The economic benefit of alternative is better than before, and the market acceptance is good.

The tobacco sector took advantage of the technology transfer centres, which play important role to disseminate the alternative technologies to the other tobacco plant areas.

3.5 Project financial balance

No.	Project Name	Contract Amount (USD)	Completion Date	Disbursement	Status
1	Greenhouse construction of Phase II	3,665,000	December 2008	2,000,000	Ongoing
2	Meeting	14,017	April 2008	14,017	completed
3	Study tour	78,857	May 2008	78,857	completed
	Total	3,757,874		592,874	

3.6 Conclusion

3.6.1 Experience

a) The floating seedling alternative technology is effective.

b) Chinese government, especially STMA, attached great attention to this project and invested additional fund for greenhouse construction.

c) An effective working mechanism was established, including the joint working group, the regular meetings between MEP and STMA and the close association with local tobacco bureaus/ companies.

3.6.2 Suggestions and proposals

a) To improve the methodology for a more effective utilization and space management of the greenhouse.

b) Develop more cost-effective structure for floating tray system.

4. Policies

For the management of methyl bromide production, consumption and trade in China, the following policies have been issued:

a) Circular on the establishment, expansion or innovation of 1,1,1-Tricholorethane and Methyl Bromide production equipment (Huanfa No. 60 [2003]), July 1st, 2003.

b) Public Notice on Implementing Methyl Bromide Production Licensing and Quota Management (Huanfa No. 155 [2004]), 21st May 2007.

c) Control for the methyl bromide import and export (including QPS): the Licensing Management for import and export of Methyl Bromide (including QPS) became effective since 1st January 2004.

d) Catalogue of Controlled ODS in China's Import & Export (Third batch) (Huanfa No. 25 [2004]), 6th February 2004.

e) Ban of Methyl Bromide in the commodities sector by SGA and MEP (No. 4 [2006]), 26th September 2006.

f) Ban of Methyl Bromide in the Tobacco Seeding Sector by STMA and MEP (No. 1[2008]), 19th November 2008.

(The end)

Annex I

Table No. 1: Progress of greenhouse construction Stage II for tobacco sector

No.	Beneficiary	Contract No.	Grant Amount ($)	Area (m^2)	Date of bidding	Construction started on	Completion date
1	Baicheng, Jilin	F/III/S/07/380	180,000	12,850	Sep.2007	Oct.2007	Completed in Apr-08
2	Baoji, Shanxi	F/III/S/07/384	180,000	12,850	Sep.2007	Jan.2008	Completed in Aug-08
3	Bijie, Guizhou	F/III/S/07/374	230,000	16,400	Oct.2007	Nov.2008	Completed in Jul-08
4	Chenzhou, Hunan	F/III/S/07/378	230,000	16,400	Sep.2007	Oct.2007	Completed in Jan-08
5	Chifeng, Inner Mongolia	F/III/S/07/381	240,000	17,100	Sep.2006	Oct.2006	Completed in Dec-06
6	Liangshan, Sichuan	F/III/S/07/388	230,000	16,400	Nov.2007	Dec.2007	Completed in Jan-08
7	Luoyang, Henan	F/III/S/07/376	220,000	15,650	Sep.2007	Nov.2007	Completed in Jul-08
8	Luzhou, Sichuan	F/III/S/07/385	200,000	14,300	Dec.2007	Jan.2008	Completed in May-08
9	Nanping, Fujian	F/III/S/07/372	260,000	18,600	Oct.2006	Oct.2006	Completed in Dec-06
10	Qujin, Yunnan	F/III/S/07/386	230,000	16,400	Oct.2007	Dec.2007	Completed in Mar-08

No.	Beneficiary	Contract No.	Grant Amount ($)	Area (m^2)	Date of bidding	Construction started on	Completion date
11	Rizhao, Shandong	F/III/S/07/382	125,000	9,000	Sep.2007	Nov.2007	Completed in Apr-08
12	Sanming, Fujian	F/III/S/07/373	230,000	16,400	Sep.2007	Nov.2007	Completed in Mar-08
13	Shiyan, Hubei	F/III/S/07/377	190,000	13,650	Sep.2007	Nov.2007	Completed in Apr-08
14	Tongren, Guizhou	F/III/S/07/375	230,000	16,400	Sep.2007	Dec.2007	Completed in Apr-08
15	Weifang, Shandong	F/III/S/07/383	230,000	16,400	Sep.2007	Nov.2007	Completed in Sep-08
16	Yichang, Hubei	F/III/S/07/387	180,000	12,850	Sep.2007	Nov.2007	Completed in May-08
17	Yongzhou, Hunan	F/III/S/07/379	280,000	19,900	Sep.2007	Oct.2007	Completed in Aug-08
	Total		366,5000	261,550			

Table No.2: Summary of technical assistance projects of tobacco sector

No.	Project	Duration	Expenditure (RMB)	Remark	Status
1	MB study tour to America	2008.5.21-31	552,000	Training floating tray technology	Completed
2	Training for Local tobacco companies for equipment procurement	2007.8.9-10	98,122	Training and compilation of TOR for equipment procurement	Completed
Total			650,122		

Table No. 3: Cost assessment of the alternative technology of Stage II projects, tobacco sector

Beneficiary	Supplier	Type	Construction site	Span* length (m)	Span	No.	Area (m^2)	Unit cost (RMB/ m^2)	Sub-total (RMB)	Total Amount (RMB)
Rizhao area, Shandong Province	Beijing Jingpeng global science and technology Ltd. company	B	Dahe Dong Village, Zhaoxian town, Lv County	60*8	3	2	2880	215.7	621,103.3	1,780,740.95
		B	Ke village, Luohe town, Lv county	60*8	3	2	2880	215.7	621,103.3	
		D	Dahe Dong Village, Zhaoxian town, Lv County	60*11	1	2	1320	163.2	215,413.74	
		D	Ke village, Luohe town, Lv county	60*11	1	3	1980	163.2	323,120.61	
Weifang area, Shandong province	Beijing Jingpeng global science and technology Ltd. company	B	Zhucheng	72*8	3	3	5184	197.26	1,022,598.2	2,992,766.34
		B	Liqu	64*8	3	3	4608	200.93	925,876	

Beneficiary	Supplier	Type	Construction site	Span* length (m)	Span	No.	Area (m^2)	Unit cost (RMB/ m^2)	Sub-total (RMB)	Total Amount (RMB)
		D	Zhucheng	80*11	1	5	4400	140.19	616,855.28	
		D	Linqu	64*11	1	4	2816	151.79	427,436.85	
Chenzhou area, Hunan Province	Kunming Sanxing greenhouse engineering Ltd. company	B	Renyi town Guiyang County	36*8	3	8	6912	97.14	671,431.68	2,078,442.88
				32*8	3	3	2304	99.98	230,353.92	
		B	Zhangshi town Guiyang County	40*8	3	8	7680	94.6	726,528	
		B	Puman village Jiahe County	44*8	3	2	2112	92.63	195,634.56	
				44*8	4	2	2816	88.67	249,694.72	
Yongzhou area, Hunan Province	Changsha Wenhua Yuanyi engineering Ltd. company	B	Xintian County	39*8	3	9	8424	72.9	614,109.6	1,979,064.99
		B	Jiang Yong county	39*8	3	20	18720	72.9	1,364,688	
Tongren area, Guizhou	Guiyang Nongzhou	B	Dejiang City Gaoshan	32*8	3	5	3840	130	499,198.5	2,312,160

Beneficiary	Supplier	Type	Construction site	Span* length (m)	Span	No.	Area (m^2)	Unit cost (RMB/ m^2)	Sub-total (RMB)	Total Amount (RMB)
Province	Agriculture establishment Ltd.		Town Fangjia Village	32*8	1	3	768	183	140,546.1	
		B	Dejiang City Gaoshan Town Gaoqiao Village	32*8	3	3	2304	130	299,584.1	
				32*8	1	1	256	183	46,854.7	
		B	Dejiang City Hexing Town Chayuan Village	32*8	3	6	4608	130	599,058	
				32*8	1	5	1280	183	240,179.1	
		B	Dejiang City Hexing Town Banping Village	32*8	3	3	2304	130	299,584.1	
				32*8	1	4	1024	183	187,398.8	
		B	Shuangshan County Muge Village	40*8	3	4	3840	137.1	526,406	3,158,434

Beneficiary	Supplier	Type	Construction site	Span* length (m)	Span	No.	Area (m^2)	Unit cost (RMB/ m^2)	Sub-total (RMB)	Total Amount (RMB)
Bijie area, Guizhou Province	Yunnan Dafeng Modern Agriculture technology engineering Ltd.	B	Shuangshan County Shuangshan Village	40*8	3	4	3840	137.1	526,406	
		B	Shuangshan County Yaotang Village	40*8	3	4	3840	137.1	526,406	
		B	Honglin County Hongwafang Village	40*8	3	4	3840	137.1	526,406	
		B	Xiehe County Yangliu Village	40*8	3	4	3840	137.1	526,406	
		B	Lvhua County Wanjing Village	40*8	3	4	3840	137.1	526,406	
Baoji area, Shanxi province	Yanglingchenlong Agriculture	B (Solar greenhouses)	Long Town Huozhaozhai County	50*8	1	13	5200	151	785,000	1,824,500

Beneficiary	Supplier	Type	Construction site	Span* length (m)	Span	No.	Area (m^2)	Unit cost (RMB/ m^2)	Sub-total (RMB)	Total Amount (RMB)
	technology engineering Ltd.	B	Huoshaozhai Village	50*8	1	20	8000	130	1,039,450	
Qujing area, Yunnan Province	Yunnan Yuxi Yongda Agriculture establishment engineering Ltd.	Removable shift greenhouse	Yiwei Reshui County	6.95*1.45	1	2500	25193.75	42.47	1,070,000	2,568,000
			Yiwei Delu County			1100	11085.25	42.47	470,800	
			Yiwei Baoshan County			900	9069.3	42.47	385,200	
			Qilin Yuezhou County			1500	15116.25	42.47	642,000	

Beneficiary	Supplier	Type	Construction site	Span* length (m)	Span	No.	Area (m^2)	Unit cost (RMB/ m^2)	Sub-total (RMB)	Total Amount (RMB)
Sanming,Fujian Province	Shanghai Agriculture mechanism Research institute	The medium-sized removable shift greenhouse	Ninghua County	30*6	1	100	18000	37.76	679,680	2,174,722.56
			Yongan County	32*6	1	100	18000	37.76	679,680	
		B	Taining County	8*32	3	1	768	176.67	135,682.56	
		The medium-sized removable shift greenhouse		32*6	1	100	18000	37.76	679,680	
Luoyang area, Henan Province	Jiangsu Agriculture mechanism Research institute	B	Yiyang County Zhaobao village	42*8	4	6	8064	119.97	967,458	2,169,313.66
		B	Ruyang County Liudian village	42*8	4	6	8064	119.97	967,458	

Beneficiary	Supplier	Type	Construction site	Span* length (m)	Span	No.	Area (m^2)	Unit cost (RMB/ m^2)	Sub-total (RMB)	Total Amount (RMB)
Baicheng area, Jilin Province	Jilin Zhenlai Labor construction Ltd.	A	Daan County Honggangzi village	75*7.5	1	5	2812.5	337.31	948,403.13	2,954,590
		B	Zhenlai Dongping village	75*12	1	5	4500	117.47	52,861.5	
		A	Daan County Honggangzi village	75*7.5	1	5	2812.5	337.31	948,403.13	
		B	Zhenlai Dongping village	75*12	1	5	4500	117.47	52,861.5	
Nanping area, Fujian Province	State Donghai mechanism factory	B	Zhaowu Chengjiao	32*8	3	3	2304	135	311,040	2, 721, 222
		B	Wuyishan Nanan	32*8	3	3	2304	135	311,040	
		The removable shift greenhouse	Shaowu	14.25*4	1	540	30780	34.1	1,049,598	
		The removable shift greenhouse	Wuyishan	14.25*4	1	540	30780	34.1	1,049,598	

Beneficiary	Supplier	Type	Construction site	Span* length (m)	Span	No.	Area (m^2)	Unit cost (RMB/ m^2)	Sub-total (RMB)	Total Amount (RMB)
Chifeng area, Inner Mongolia Municipality	Chifeng Tiandetong construction Ltd.	B	Songshan area	75*7.5	1	10	5625	168.14	945,790	2,491,790
	Ningcheng County construction industry Ltd.	B	Ningcheng County	75*7.5	1	13	7312.5	172.44	1,261,000	
	Chifeng Tiandetong construction Ltd.	B	Yuanbaoshan area	75*7.5	1	3	1687.5	168.89	285,000	
Yichang area, Hubei Province	Jiangsu Jiangdu construction Ltd.	B	Banmiao First group, Zhenzi County	32*8	3	3	2304	239.31	551,370.24	3,308,221.44
	Jiangsu Jiangdu construction Ltd.	B	Banmiao Forth group, Zhenzi County	32*8	3	3	2304	239.31	551,370.24	
	Jiangsu	B	Heping village,	32*8	3	6	4608	239.31	1,102,740.48	

	Jiangdu construction Ltd.		Zhenzi County							
	Jiangsu Jiangdu construction Ltd.	B	Xingfu village, Zhenzi County	32*8	3	6	4608	239.31	1,102,740.48	
Shiyan area, Hubei Province	Shiyan Tianxia construction Ltd.	B	HUbeikou, Miaochuan village, Yunxi County	48*8	3	4	4608	302.98	1,396,131.84	1,628,820.48
				48*8	2	1	768	302.98	232,688.64	
	Jiangxi Jinxian Lvjia greenhouse construction Ltd.	B	Xiangbai village, Zhuxi County	48*8	3	4	4608	308.8	1,422,950.4	1,660,108.8
				48*8	2	1	768	308.8	237,158.4	
	Fangxian Chenxin construction Ltd.	B	Shangxiangxiping village, Fang County	44*8	3	3	3168	303.04	960,030.72	960,030.72
Total						7563	307,146.55		28,745,704.66	

Table No.4: Technical Assessment of the alternative technology of Stage II projects, tobacco sector

Area	Seedlings Quality	Healthy seedling produced / m^2	Seedling lost after transplanting	Variation of Seedlings harvesting schedule (early/late)	Disease incidence on seedlings	Market acceptance	Alternative technologies
Chifeng	Good	3,000-3,500 *	2-3%	Little earlier	Reduced	Acceptable	Suspended boxes, overhead irrigation
Nanping	Good	400	1%	No	No	Acceptable	Floating tray
Qujing	Good	642	8%	7~10 days earlier	Reduced	Acceptable	Floating tray
Sanming	Good	300	1%	6~8 days earlier	Reduced	Acceptable	Floating tray
Tongren	Good	1245	3%	20 days earlier	Reduced	Acceptable	Floating tray
Bijie	Good	487.5	1%	10~15 days earlier	Reduced	Acceptable	Floating tray
Baicheng	Good	550	4%	No	Reduced	Acceptable	Suspended boxes, overhead irrigation

Area	Seedlings Quality	Healthy seedling produced / m^2	Seedling lost after transplanting	Variation of Seedlings harvesting schedule (early/late)	Disease incidence on seedlings	Market acceptance	Alternative technologies
Luoyang	Good	600	9%	3 -5 days earlier	Reduced	Acceptable	Floating tray
Baoji	Good	823.7/（4.16 X 198/tray）	1%	15days delay	Reduced	Acceptable	Floating tray
Yichang	Good	820	4%	4 days earlier	Reduced	Acceptable	Floating tray
Shiyan	Good	385	2.9%	4 days earlier	Reduced	Acceptable	Floating tray
Rizhao	Good	368	2%	No	Reduced	Acceptable	Suspended boxes, overhead irrigation, Floating tray
Weifang	Good	368	2%	No	Reduced	Acceptable	Suspended boxes, overhead irrigation
Chenzhou	Good	445	1%	One week earlier	Reduced	Acceptable	Floating tray
Yongzhou	Good	531	5%	One week earlier	Reduced	Acceptable	Floating tray

* Since the alternative technology of Chifeng area is not floating tray but seed directly in soil, so the quantity of seedling is much higher than floating tray seedling overhead irrigation。