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FINAL REPORT

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

REPORTING PERIOD: March 2007 - March 2008

Project No.: TF/CPR/05/004

UNIDO's Contract No.: 16001214

Beijing, China

31st March 2008

INDEX

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

MOA: Ministry of Agriculture

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

Phase II: At the 44th Meeting, an additional 10,702,742 US$ were approved, 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-I summarizes the activities implemented until 31st March 2008.

2. Methyl bromide phase-out target achieved

In 2007, 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. It is estimated that 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. As established by the MLF, the final methyl bromide consumption figure for the year 2007 will be reported to the Ozone Secretariat in September 2008.

Methyl bromide consumption in 2003-2007

Year		2003	2004	2005	2006	2007
Max. allowable consumption approved by Excom (ODP tones)	Commodity	126	126	46	25.2	0
	Tobacco	427.8	427.8	300	164.6	124.6
	Agriculture	534	534	534	534	446
	Total	1087.8	1087.8	880	723.8	570.6
Actual consumption (ODP tones)	Commodity	126	52.2	32.1	6.96	0
	Tobacco	427.8	227.8	54	21	32.4*
	Agriculture	534	534	534	282.08	357.14*
	Total	1087.8	814	620.1	310.04	389.54*
Phase-out achieved (ODP tones)	Commodity	0	73.8	20.1	25.14	6.96*
	Tobacco	0	200	173.8	33	-11.4*
	Agriculture	0	0	0	251.92	-75.06*
	Total	0	273.8	193.9	310.06	-79.5*

Note:

1) "*" estimated figure.

2) 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.

3. Achievement by sub-sector

3.1 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 programme has been developed in 2 stages. A total of US$4.165 million was also allocated in stage II, of which, US$ 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 has been and partially will be used for technical assistance activities.

3.1.1 Alternative technology

Tobacco floating tray technology has been selected to substitute methyl bromide in the tobacco seedling sector.

3.1.2 Investment

a) In Stage II, 17 additional technology transfer centres will be built, the technical specifications have been approved by FECO/MEP and UNIDO. In September 2007, the contracts for construction of these 17 demonstration centres were signed. So far, the construction and installation of six centres have been completed in Chenzhou, Hunan Province, Qujing,Yunnan Province, Liangshan, Sichuan Province, Sanming,Fujing Province, Nanping, Fujian Province and Chifeng, Inner Mongolia. No. 2 centres in Nanping and Chifeng have been verified by MEP/UNIDO (See detailed information and photos about Nanping and Chifeng regions at Annex II and III). For the other 11 demonstration centres, the installation will be completed before the end of August 2008. (See contract information and the installation progress of the stage II, at table No.1, Annex I)

b) STMA has invested more than US$ 55 million as co-funding for greenhouses,

polystyrene trays and other auxiliary equipment for producing tobacco seedling using the floating tray system and so replacing methyl bromide. About 2.39 mil m^2 of different types of greenhouses have been completed and about 400 ODP tons of methyl bromide had been phased out.

3.1.3 Technical Assistance activities

3.1.3.1 Meeting

a) Six coordination meetings have been organized to finalize the phase-out plan, the construction procedure and identify the technology transfer centre sites.

b) Wrap up meeting for Phase I was held in 2006 to summarize experiences and planning for the next stage.

c) Training workshops: two training workshops for local tobacco bureaus and companies were held. One for the formulation of the Technical Specification and the other is for bidding procedures. 302 participants from local tobacco bureaus and companies have been trained (See UNIDO/STMA presentation delivered in the workshop at Annex IV).

3.1.3.2 Study tour and training

a) 1st -16th November, 2004, 8 trainees from tobacco companies, research institutes, STMA, FECO/MEP visited Brazil, where floating tray system is largely used and well developed.

b) 14th – 22nd November, 2006, 13 trainees from tobacco companies, research institutes, STMA, FECO/MEP visited Cuba where floating tray system is largely used and well developed as well as policy and management system.

c) Study tours to USA, Israel and the Netherlands are under preparation.

Study tour to Brazil

Study tour to Cuba

3.1.3.3 Awareness

In March 2007, to promote new technologies to phase-out methyl bromide in the tobacco seedling sector, STMA signed a contract for developing a tobacco sector websites. STMA also proposes to carry out a series of awareness activities in the future. The terms of references are under preparation (See summary of technical assistance programme of tobacco sector at table No.2, Annex I).

3.1.4 Performance Assessment

The cost comparison between floating tray system and methyl bromide shows that the floating tray system technically and economically satisfies the requirement of tobacco seedlings production (See details at table No.3 and No.4, Annex I).

The tobacco sector took advantage of the technology transfer centres, which played important role to promote the alternative technologies to other tobacco production areas.

3.1.5 Project financial balance

No.	Activity	Contract Amount (USD)	Disbursement (USD)	Status
1	Greenhouse construction of Stage II	3,665,000	0	Ongoing
2	Meeting	48,785	48,785	Completed
3	Study tour	48,006	48,006	Completed
4	Expert fee	6,643	6,643	Completed
5	Website for awareness	29,500	8,850	Ongoing
	Total	*3,797,934	112,284	

"*" Notes:

1) US$ 3,665,000 has been used for greenhouse and procurement of equipment as listed in item 1;

2) US$ 112, 284 has been allocated for the technical assistance activities as listed in item 2-5. In addition, another US$ 387,716 will also be allocated for technical assistance.

3.1.6 Conclusion

3.1.6.1 Experience

a) The floating tray system technology is effective.

b) The Chinese government, especially STMA, attached great attention to this project and invested consistent additional fund.

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

3.1.6.2 Problems encountered

a) In some of the project sites, the utilization of the greenhouses needs further optimization.

b) Space management need to be improved.

c) The cost of the greenhouse is relatively high. Common farmers with poor revenue can not afford to build that kind of greenhouses as technology transfer centres.

3.1.6.3 Suggestions and proposals

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

b) To develop more cost-effective structure and mythologies for floating tray system.

3.2 AGRICULTURE SECTOR

3.2.1 Activities in the agriculture sector

a) The Work plan for 2007 was finalized in April 2007.

b) Study Tour to Italy: On 15th-25th April, 2007, 10 trainees visited Italy to be trained on soil fumigation equipment and methyl bromide alternative.

c) The priority areas and model farms for implementing the programme were selected and approved by MEP in Sep. 2007.

d) Study tour to Spain and the Netherlands: from 27th November to 3rd December 2007, the scope was to acquire additional information and technical specification for 1,3D and Chloropicrin application, for grafting technology and monitoring equipment.

e) Since the approval of the 2007 working plan was effective in September 2007, taking into consideration the procurement and installation of the equipments required, the operation of the alternative technology could not catch up with the crop season. Under such circumstance, it was decided to combine the phasing out activity of 2007 and 2008 into one in 2008.

f) At the end of Jan 2008, the 2008's work plan for agriculture sector was finalized and approved by MEP, MOA, UNIDO and the Italian Ministry of Environment (Donor) (See details in Annex V). The priority sectors and areas were selected. Those are: for the cucumber sector, Shandong Province; for the strawberry sector, Hebei Province; for ginger sector, Shandong province.

g) The ToR for various technical assistance programmes, such as training workshops to farmers, awareness activities as well as progress evaluation were approved and initiated.

h) In March 2008, one study tour to Japan was organized to acquire additional information and technical specification for equipments.

i) In March 2008, the technical specification for equipment was finalized and the

procurement process initiated (See details at Annex VI). It is expected that the procurement will be completed in May 2008.

j) FECO/MEP and MOA signed a memorandum in March 2008, to define the responsibilities and the project implementation tasks. In this memorandum, MOA is requested to implement the phase-out of methyl bromide in the agriculture sector based on yearly performance. FECO/MEP will disburse funds to MOA, upon the annul phase-out target is achieved and all the activities are in line with the requirements of UNIDO and national rules on procurement and finance, according to the verification report.

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.

(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	to be completed in Apr-08
2	Baoji, Shanxi	F/III/S/07/384	180,000	12,850	Sep.2007	Jan.2008	to be completed in Jun-08
3	Bijie, Guizhou	F/III/S/07/374	230,000	16,400	Oct.2007	Nov.2008	to be completed in Apr-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	to be completed in Jun-08
8	Luzhou, Sichuan	F/III/S/07/385	200,000	14,300	Dec.2007	Jan.2008	to be completed in Mar-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 Jan-08
11	Rizhao, Shandong	F/III/S/07/382	125,000	9,000	Sep.2007	Nov.2007	to be completed in Apr-08
12	Sanming, Fujian	F/III/S/07/373	230,000	16,400	Sep.2007	Nov.2007	Completed in Dec-07

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

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

No.	Project	Duration	Expenditure (US$)	Remark	Status
1	MB study tour to Brazil	2004.11.1-16	12,343.00	Training floating tray technology	Completed
2	First coordination meeting	2005.6.10-11	4,959.00	Planning the MB phasing out plan of tobacco sector, Phase I	Completed
3	Second coordination meeting	2005.8.4-5	11,123.00	Define the procedure for establishment of demonstration centres, Phase I	Completed
4	Third coordination meeting	2005.10.13-14	8,009.00	Define the procedure for greenhouse construction	Completed
5	MB phase-out (Stage I) wrap-up meeting	2006.4.20-21	3,635.00	Assessment of experience and planning for the next stage	Completed
6	Expert team	2005.11-2006.7	6,643.00	Supervise the construction of greenhouse	Completed
7	MB study tour to Cuba	2006.11.14-22	15,000.00	Training on policies and floating tray technology	Completed
8	Fourth coordination meeting	2006.8.18	8,625.00	Planning the MB phasing out plan of tobacco sector, Phase II	Completed
9	Fifth coordination meeting	2006.9.16	2,188.00	Define the procedure for procedure for establishment of demonstration centres, Phase II	Completed
10	Sixth coordinating meeting	2007.6.21-22	9,467.00	Confine beneficiary areas	Completed
11	Training for Local tobacco companies for equipment procurement	2007.8.9-10	10,867.00	Training and compilation of TOR for equipment procurement	Completed
12	Training for Local tobacco companies for procurement	2007.9.3-5	10,575.00	Training for procurement rule and regulation	Completed
13	Awareness	2007.3.	29,500	Website for tobacco sector	Ongoing
Total			132,934		

Table No. 3: Cost assessment of the alternative technology of 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)
Enshi area, Hubei Province	Jiangxi Jinxian Lvjia greenhouse project Ltd.	A	Cuiba base of Research Institute for Science	9.6*32	1	2	614.40	846.02	519,796.42	2,613,360.58
		B	Enshi City Xintang Town Qianping Village	8*64	3	3	4,608.00	161.50	744,192.00	
		B	Lichuan City Wendou Town Anshan Village	8*64	3	3	4,608.00	161.50	744,192.00	
		B	Hefeng County Zhongying Town Yanwu Village	8*48	3	3	3,456.00	175.11	605,180.16	
Linyi area, Shandong province	Beijing Jingpeng global greenhouse project Ltd.	A	Fei County Xiaoshan Village	12*44	2	1	1,056.00	554.73	585,800.00	2,585,014
		B	Fei County Xiaoshan Village	8*104	8	1	6,656.00	167.23	1,113,075.00	

Beneficiary	Supplier	Type	Construction site	Span* length (m)	Span	No.	Area (m^2)	Unit cost (RMB/ m^2)	Sub-total (RMB)	Total Amount (RMB)
		B	Daotuo Tobacco Station of Yishui County	8*124	3	1	2,976.00	182.38	542,768.00	
		B	Daotuo Tobacco Station of Yishui County	8*32	6	1	1,536.00	223.55	343,371.00	
Nanyang area, Henan province	Beijing Jingpeng global greenhouse project Ltd.	A	Golden leaf Garden of Nanyang	9.6*32	2	1	614.40	823.87	506,186.17	3,419,933.43
		B (single film)	Fangcheng County Guangyang Town	8*40	8	2	5,120.00	222.89	1,141,196.80	
		B (single film)	Sheqi County Miaodian Village	8*40	8	1	2,560.00	222.89	570,598.40	
	Jiangxi Jinxian Lvjia greenhouse project Ltd.	B (double film)	Neixiang County YuguanVillage	8*40	8	2	5,120.00	234.76	1,201,952.06	
Zunyi area, Gui Zhou Province	Jiangsu Agriculture mechanism	A	Zunyi County Dieguan Town Lianxin Village	9.6*32	2	1	629.00	530.21	333,502.30	2,188,671.9

Beneficiary	Supplier	Type	Construction site	Span* length (m)	Span	No.	Area (m^2)	Unit cost (RMB/ m^2)	Sub-total (RMB)	Total Amount (RMB)
	Research institute	B	Meitan County Xima Town Xinchang Village	8*32	3	5	3,840.00	120.78	463,792.40	
		B	Zunyi County Dieguan Town Lianxin Village	8*32	3	5	3,840.00	120.78	463,792.40	
		B	Suiyang County Wangcao Town Xiasi Village	8*33	3	5	3,840.00	120.78	463,792.40	
		B	Tongzi County Jiuba Town Shanbao Village	8*34	3	5	3,840.00	120.78	463,792.40	
Longyan,Fujian	Jiangsu Agriculture mechanism Research institute	A	Longyan Research Institute for Science	9.6*32	1	1	322.00	626.40	201,701.20	1,685,836.88
		B	Changting County Hetian Town Songlin Village	8*32	3	8	6,144.00	120.78	742,067.84	
		B	Shanghang County Lufeng Town	8*33	3	8	6,144.00	120.78	742,067.84	

Beneficiary	Supplier	Type	Construction site	Span* length (m)	Span	No.	Area (m^2)	Unit cost (RMB/ m^2)	Sub-total (RMB)	Total Amount (RMB)
			Fengkang Village							
Dali, Yunnan	Jiangsu Agriculture mechanism Research institute	Upgrading	Xiangyun County of Dali				31,302.00	69.30	2,169,313.66	2,169,313.66

Table No.4: Technical Assessment of the alternative technology of 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
Dali	Good	810	1%	No	No	Acceptable	Floating tray
Enshi	Good	450	5%	No	Reduced	Acceptable	Floating tray
Linyi	Average	500	5%	10 days earlier	Reduced	Acceptable	Floating tray
Longyan	Good	235	None	No	Reduced	Acceptable	Suspended tray, overhead irrigation
Nanping	Good	400	1%	No	No	Acceptable	Floating tray
Nanyang	Good	700	None	No	Decreased by 20%	Acceptable	Floating tray
Zunyi	Better	800	2%	Later	Reduced	Acceptable	Floating tray

Annex II

南平烟区甲基溴熏蒸改育苗示范中心项目

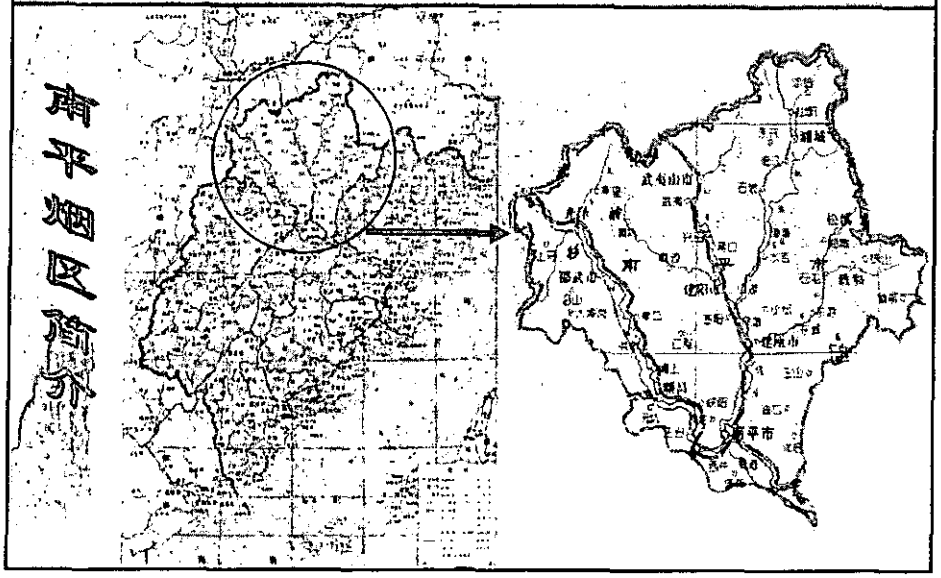
南平烟区简介

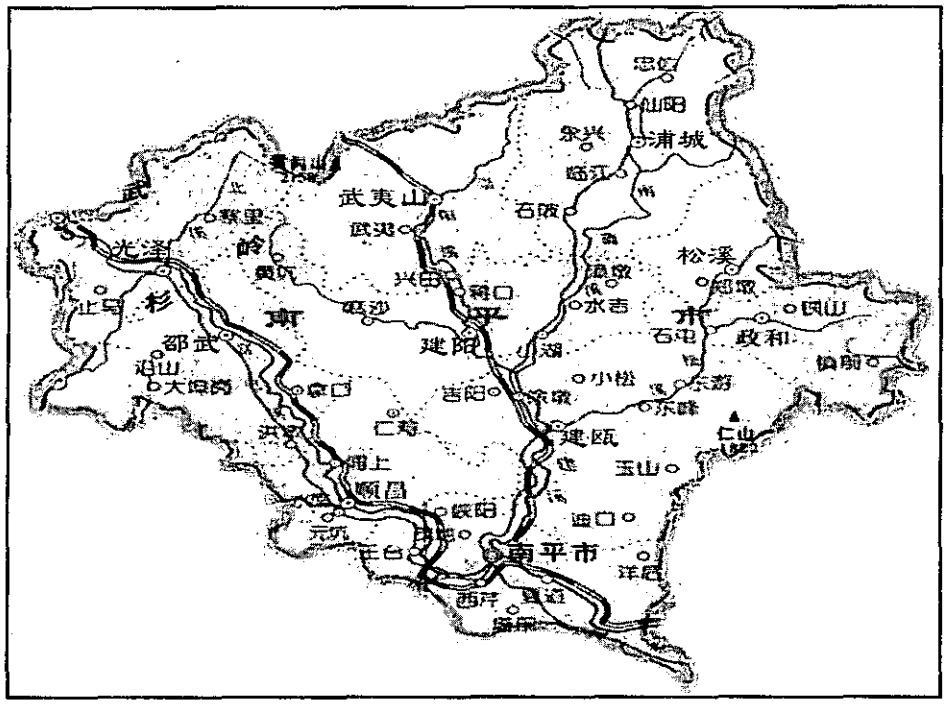
南平市概况

南平市下辖5县4市1区，128个乡镇，土地面积26301平方公里；地处中亚热带，自然条件优越，素有"绿色金库"和"粮仓"之称，是适宜发展优质烤烟的地区。

南平烟区甲基溴熏蒸改育苗示范中心项目

南平烟区简介





南平烟区甲基溴熏蒸育苗示范中心项目

南平烟区简介

生产规模

南平市2006年烟叶种植面积22.2万亩，收购烟叶63.3万担。2007计划种植22.7万亩，收购烟叶66.07万担。

南平烟区甲基溴淘汰育苗示范中心项目

主要内容

一、南平烟区简介

二、项目基本情况介绍

三、项目招投标情况

四、项目示范中心建设情况

五、项目验收

南平烟区甲基溴淘汰育苗示范中心项目

项目来源

烟草行业甲基溴淘汰赠款由执行《关于消耗臭氧层物质的蒙特利尔议定书》多边基金提供，国际执行机构是联合国工业发展组织，国家环保总局外经办负责具体资金理。

南平烟区甲基溴淘汰育苗示范中心项目

项目总体目标

总体建设目标是在2006年底建成南平烟区集约化育苗示范中心，2007年底完全淘汰甲基溴在南平地区烟草上的使用，保证烤烟育苗的安全化生产。

南平烟区甲基溴淘汰育苗示范中心项目

项目管理

1、我市烤烟播种时间为12月10日至25日，因此项目工程必须准时完成，保证育苗不受影响；

2、季清武副经理召开项目启动会议，要求加强管理，细化职责，并成立了项目领导小组、项目办公室、项目物质采购招投标小组和育苗示范中心工作小组；

3、南平市公司下发文件《关于认真做好"甲基溴淘汰集约化育苗示范中心（二期）"建设工作的通知》（南烟司叶[2006]171号）对项目进行管理。

南平烟区甲基溴熏法育苗示范中心项目

项目管理

项目领导小组

组　长：李清武

副组长：徐　茜　杨全忠　占朝琳

成　员：刘雪刚　吕潭斌　王新旺

陈乾锦　唐义忠

项目办公室

主任：徐　茜

成员：刘雪刚　吕潭斌　王新旺

育苗示范中心工作小组

组长：杨全忠　占朝琳

成员：陈乾锦　杨隆飞　李小龙　徐辰生

南平烟区甲基溴熏法育苗示范中心项目

项目建设

序号	时间进度	工作内容
1	2006年8月25日	建设方案申报
2	2006年9月18日	建设方案批准实施
3	2006年9月21日	项目启动会议
4	2006年10月10日	邵武招投标会议
5	2006年10月12日	武夷山招投标会议
6	2006年11月6日	简易棚棚膜招投标会议
7	2006年12月20日	工程竣工
8	2007年3月28日	工程验收结束

南平烟区甲基溴熏法育苗示范中心项目

项目规模

类型	建设地点	规格（米）（长×宽×高）	数量（株）	建设面积（平方米）
A简易棚	邵武、武夷山	14.25×4×2.2	1080	61560
B型棚	邵武、武夷山	32×24×5.2	6	4608

南平烟区甲基溴熏法育苗示范中心项目

项目建设概况

2007年邵武市计划种植5.5万亩，收购16.5万担；武夷山市计划种植2.85万亩，收购8.5万担

项目示范中心育苗量

邵武市和武夷山市示范中心育苗移栽面积均为11610亩，分别占该市总种植面积21.1%和40.7%

主要内容

一、南平烟区简介

二、项目基本情况介绍

三、项目招投标情况

四、项目示范中心建设情况

五、项目验收

南平烟区甲基溴淘汰育苗示范中心项目

项目招投标

- 根据要求,邵武和武夷山分公司项目招投标小组分别进行了招投标工作;
- 项目办公室刘雪刚、王新旺、吕潭斌参加了项目投标会;
- 南平市公司审计科对招标程序及项目合同进行了审定。

南平烟区甲基溴淘汰育苗示范中心项目

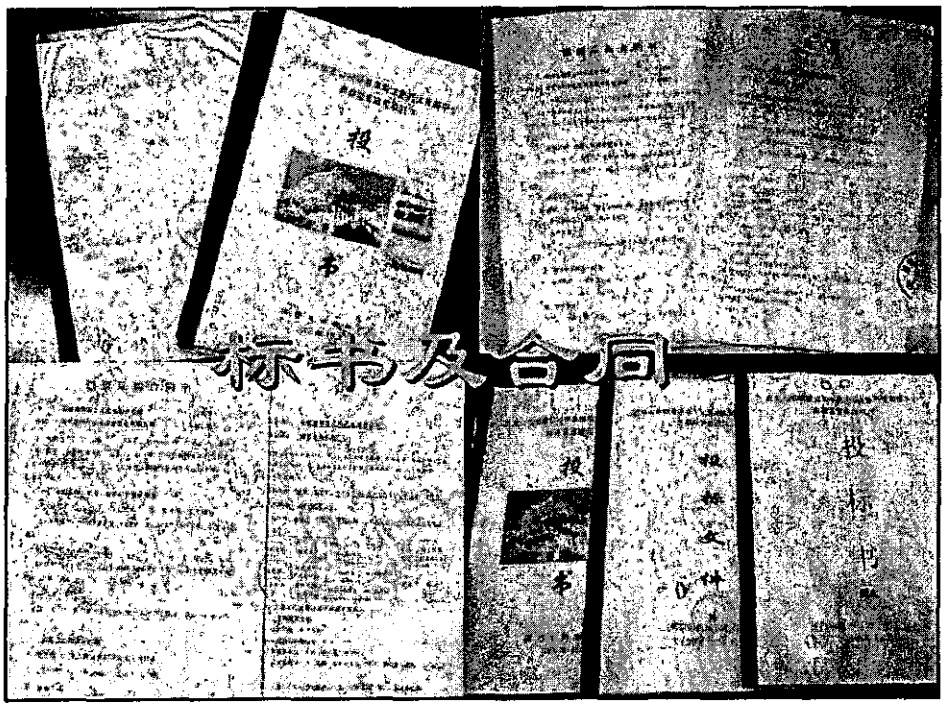
项目招投标情况


南平烟区甲基溴油法育苗示范中心项目
项目招投标情况
武夷山市烟草公司育苗示范中心
育苗温室建设项目招标会


南平烟区甲基溴油法育苗示范中心项目
项目招投标情况
简易棚膜招标会议

项目招投标情况

投标项目	投标单位	单体棚投标金额		中标单位	招标单位
		简易棚	B型棚		
邵武市育苗中心温室主体建设项目	邵武市九禹工贸有限公司	1849.65	272405.76		邵武市烟草公司
	昆山市晨旭园艺温室工程有限公司	1995.00	122880.00		
	四省东海机械厂	1536.15	103680.00	✓	
	吴江振华温室设备有限公司	1704.30	96000.00		
	江西省农业机械研究所	1532.16	86845.44		
武夷山市育苗中心温室主体建设项目	厦门路华环境工程有限公司	2120.40	135168.00		武夷山市烟草公司
	福建省三明晨阳机械制造有限公司	1972.20	126720.00		
	四省东海机械厂	1536.15	103680.00	✓	
简易棚棚膜	南平市科创机电设备设备有限公司	407.50	——	✓	邵武、武夷山市烟草公司
	福建省三明市长晨贸易有限公司	421.95	——		
	福州通宏贸易有限公司	430.68	——		



南平烟区甲基溴熏蒸育苗示范中心项目

一、南平烟区简介

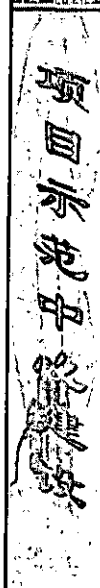
二、项目基本情况介绍

三、项目招投标情况

四、项目示范中心建设情况

五、项目验收

南平烟区甲基溴熏蒸育苗示范中心项目

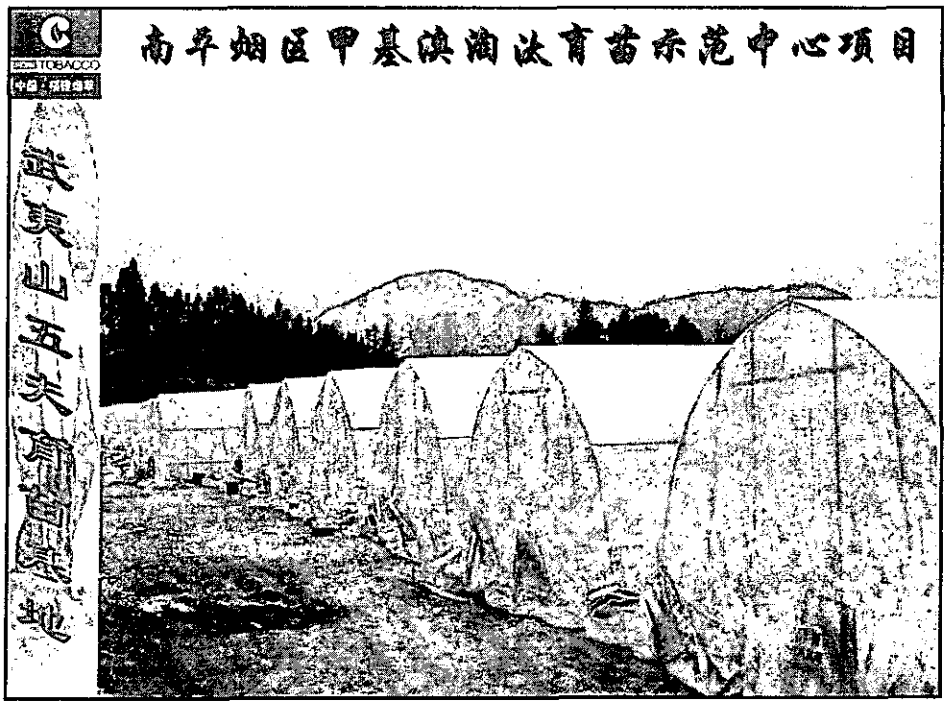


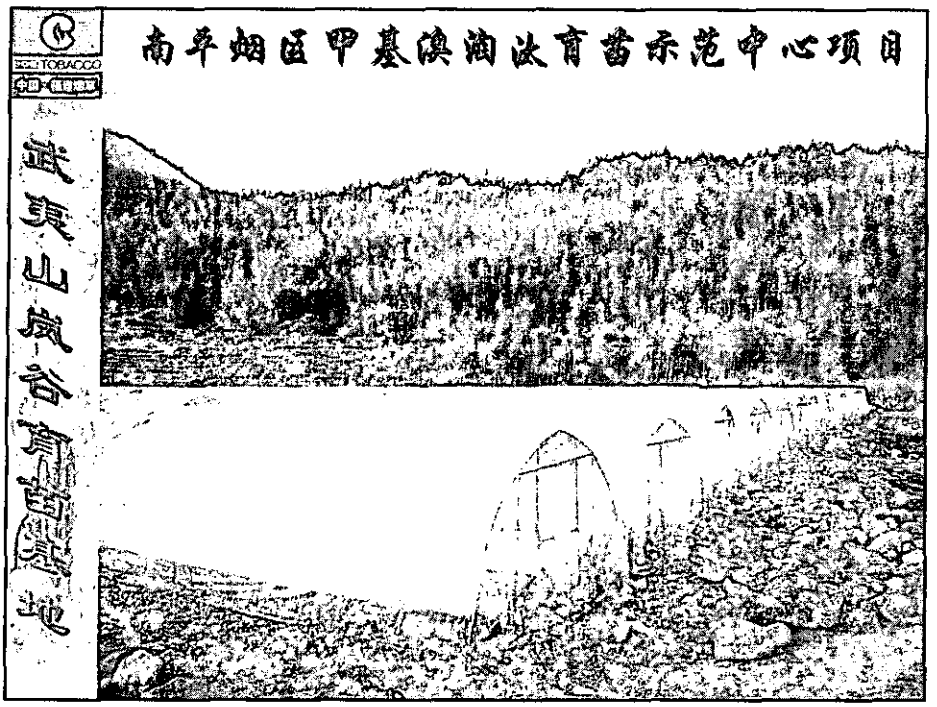
- 武夷山市育苗示范中心介绍
- 邵武市育苗示范中心介绍
- 育苗示范中心管理

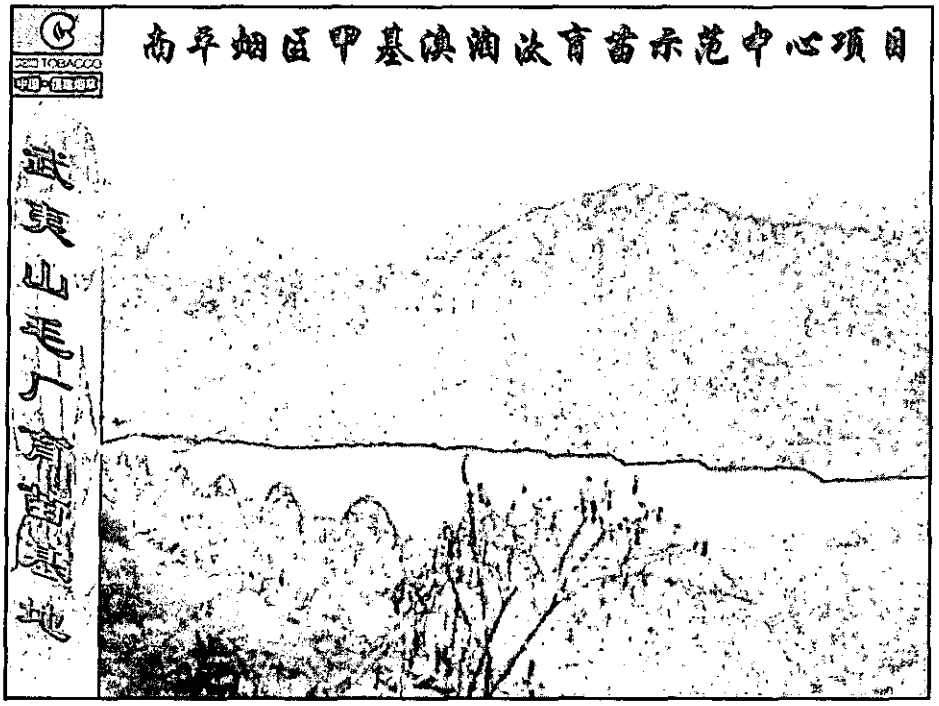
简易棚分布

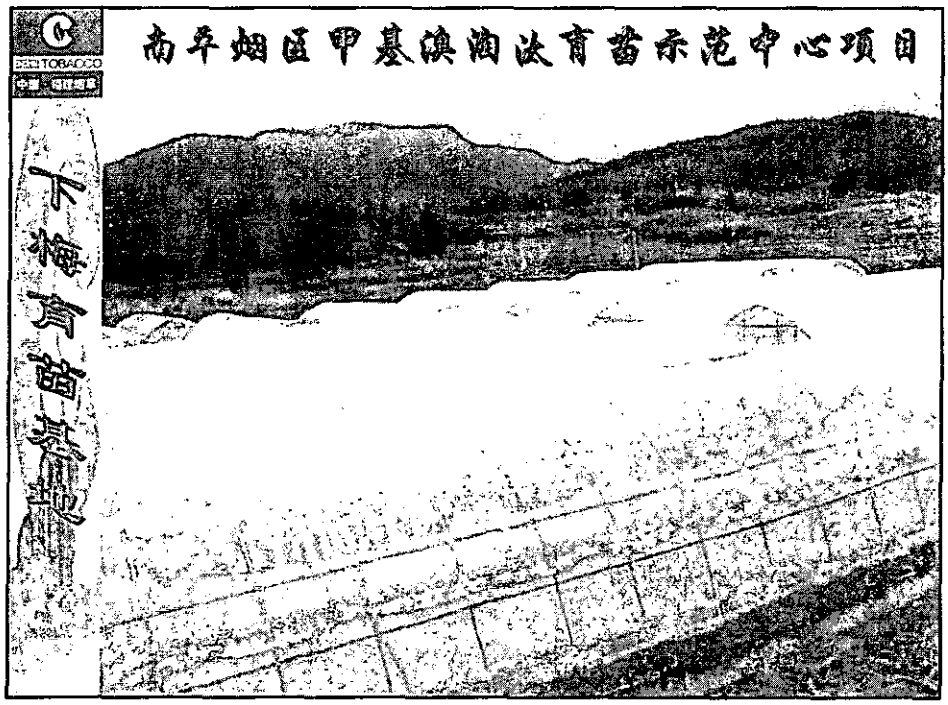
武夷山市分布站点	数量
武夷烟草站	160
岚谷烟草站	52
上梅烟草站	20
兴田烟草站	151
五夫烟草站	99
星村烟草站	58

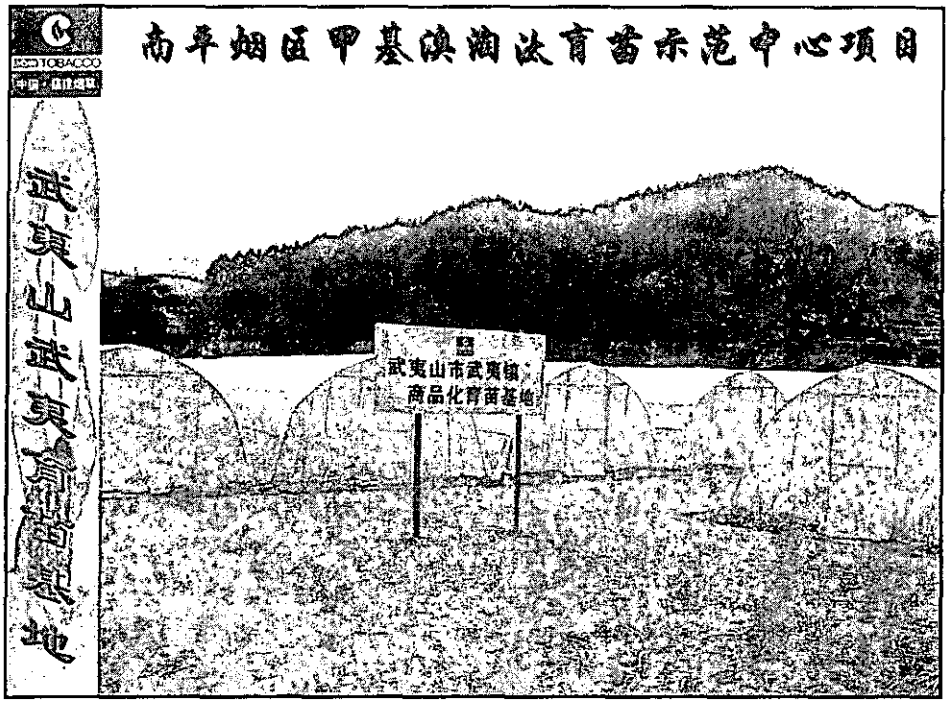
南平烟区甲基溴烟法育苗示范中心项目

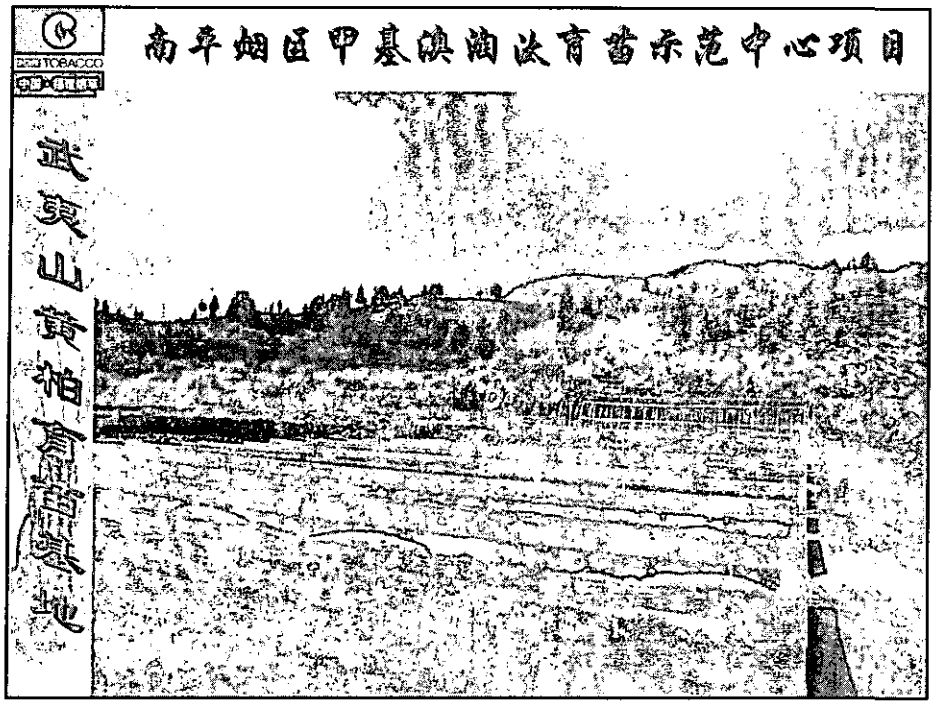


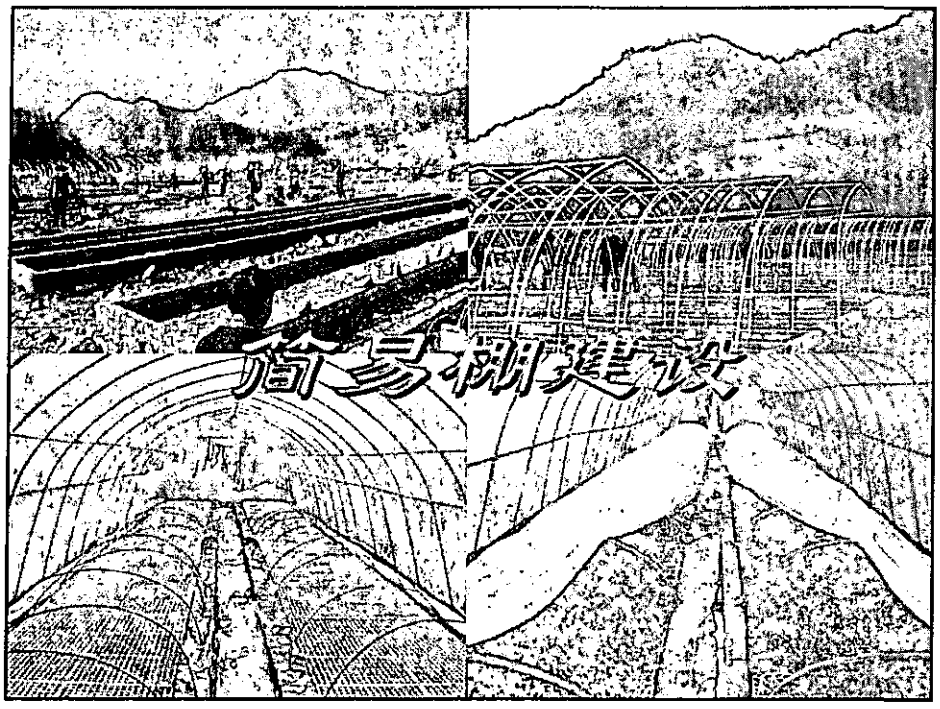

南平烟区甲基溴熏法育苗示范中心项目


南平烟区甲基溴熏法育苗示范中心项目


南平烟区甲基溴油法育苗示范中心项目


南平烟区甲基溴油法育苗示范中心项目
武夷山市武夷镇
商品化育苗基地


南平烟区甲基溴烟丝育苗示范中心项目
武夷山黄柏高海拔基地


简易棚建设

南平烟区甲基溴熏蒸法育苗示范中心项目

武夷山南岸育苗示范中心

南岸育苗示范中心占地面积约20亩，主要建设3个钢架B型棚，建设面积2304平方米，可育苗810亩；50个简易钢架可拆卸大棚，建设面积2850平方米，可育苗1000亩。

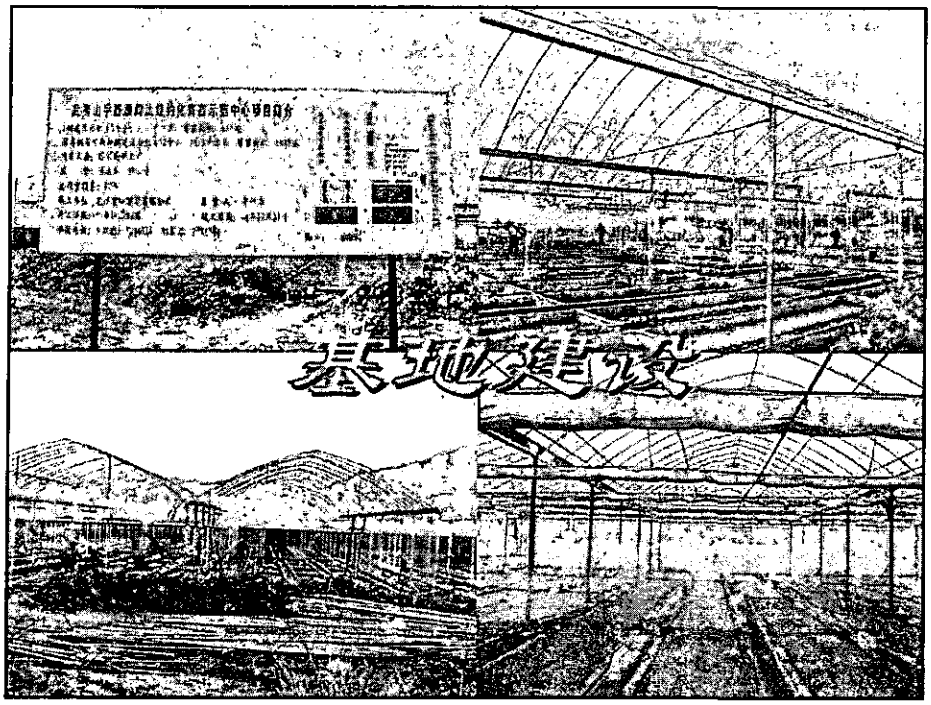
中心同时配备仓库、办公区、播种区和垃圾池等附属设施。中心大棚建设资金40.82万元，基础设施预计50万元。

南平烟区甲基溴熏蒸法育苗示范中心项目

武夷山南岸育苗示范中心

南平烟区武夷山市育苗示范中心

Nanping Tobacco Area Wuyishan City Nursery Demonstration Center



南平烟区甲基溴油法育苗示范中心项目

项目示范中心介绍

- 武夷山市育苗示范中心介绍
- 邵武市育苗示范中心介绍
- 育苗示范中心管理

南平烟区甲基溴熏法育苗示范中心项目

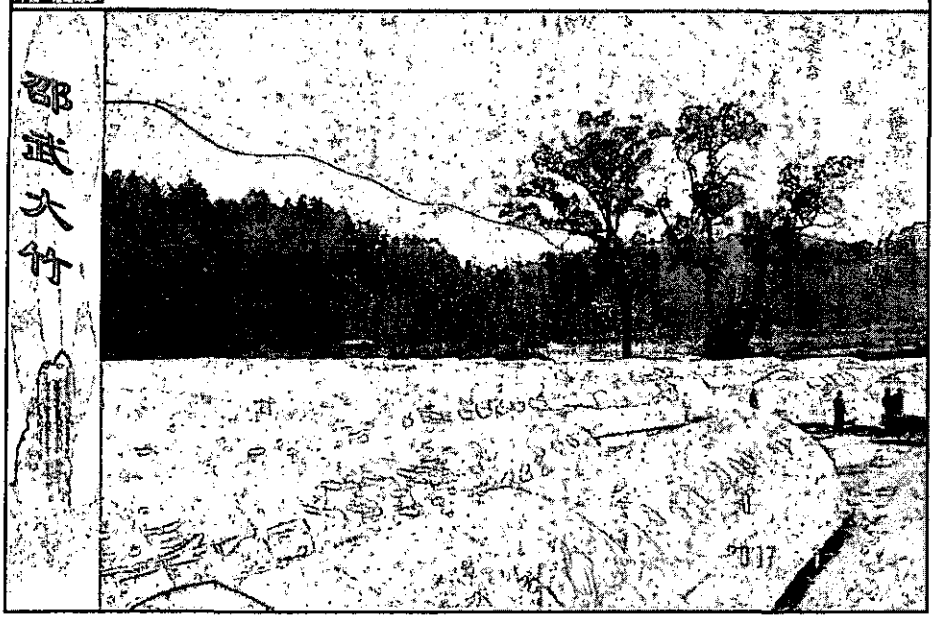
邵武市分布站点

邵武市分布站点	数量
大竹烟草站	183
和平烟草站	95
沿山烟草站	162
金坑烟草站	10
卫闽烟草站	10
肖家坊烟草站	80

南平烟区甲基溴熏法育苗示范中心项目

邵武和平

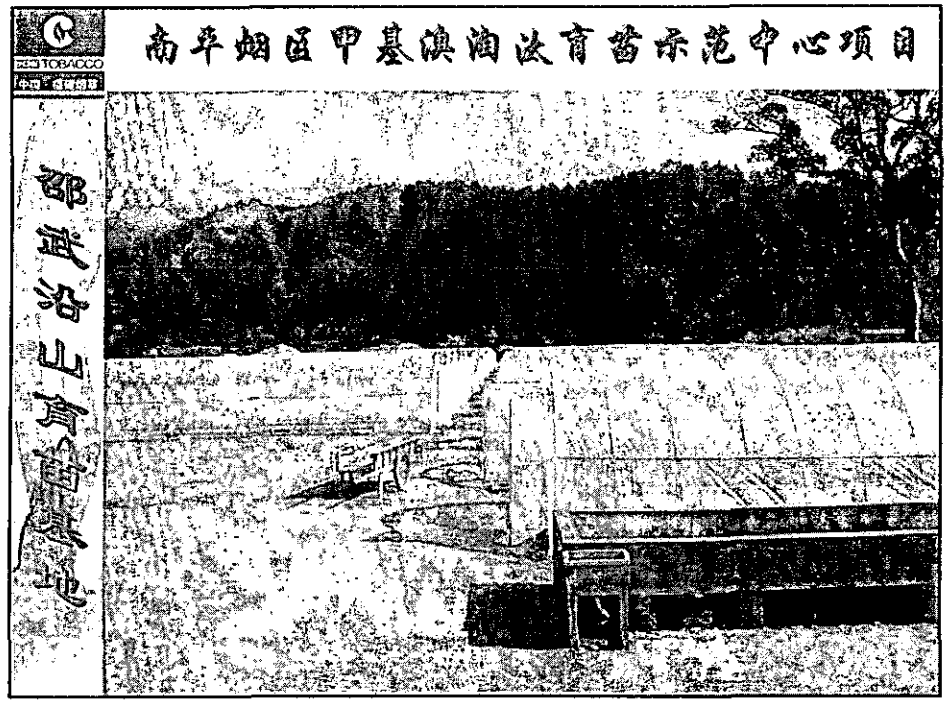
南平烟区甲基溴熏蒸育苗示范中心项目

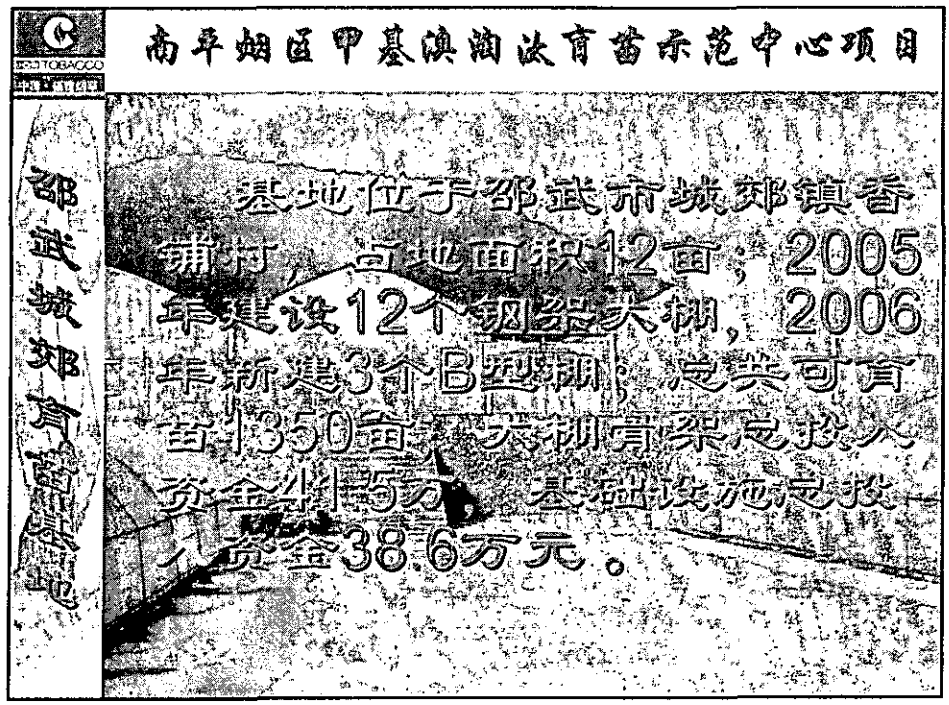


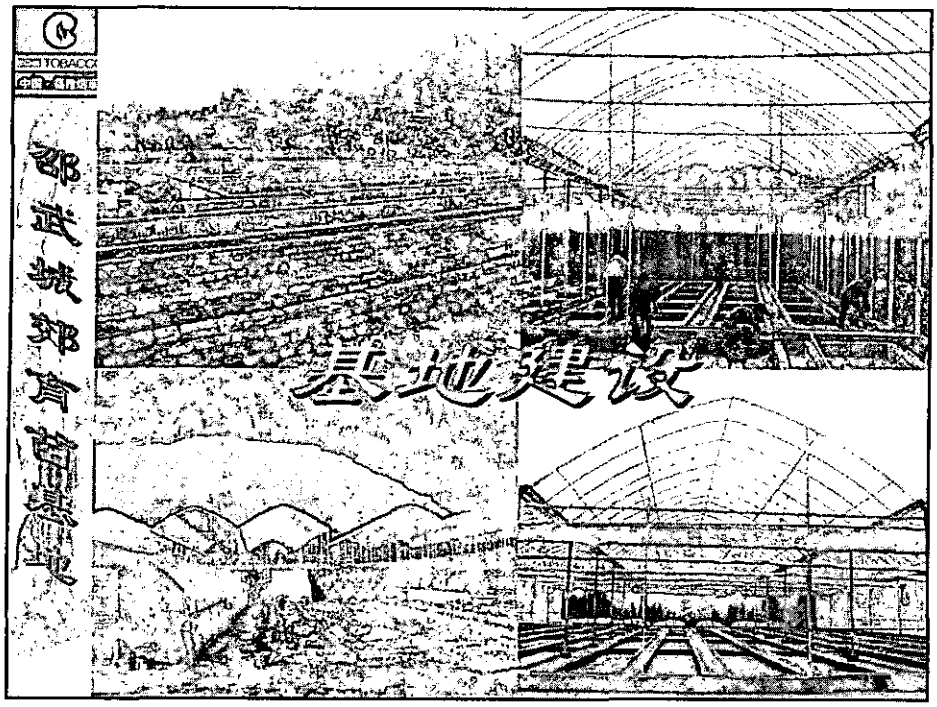
南平烟区甲基溴熏蒸育苗示范中心项目

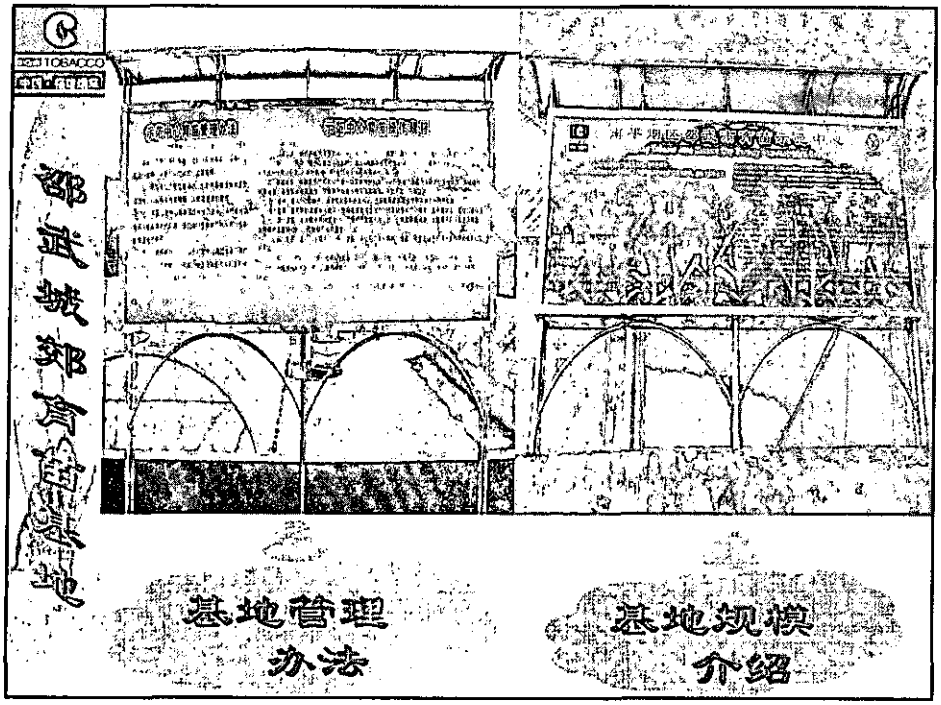
邵武沿山育苗基地

基地位于邵武市沿山镇徐溪村，占地面积15亩，共建设简易可拆卸棚80个，可育苗1600亩，大棚骨架总投入资金16万，基础设施总投入资金6万元。


南平烟区甲基溴油法育苗示范中心项目
邵武沙县育苗基地


南平烟区甲基溴油法育苗示范中心项目
邵武城郊育苗基地
基地位于邵武市城郊镇香
蒲村，占地面积12亩，2005
年建设12个现代大棚，2006
年新建3个B型棚，总共可育
苗1350亩。大棚育苗总投入
资金115万，基础设施已投
入资金38.6万元。


基地建设


基地管理
办法
基地规模
介绍

南平烟区甲基溴油法育苗示范中心项目

项目示范中心建设

- 武夷山市育苗示范中心介绍
- 邵武市育苗示范中心介绍
- 育苗示范中心管理

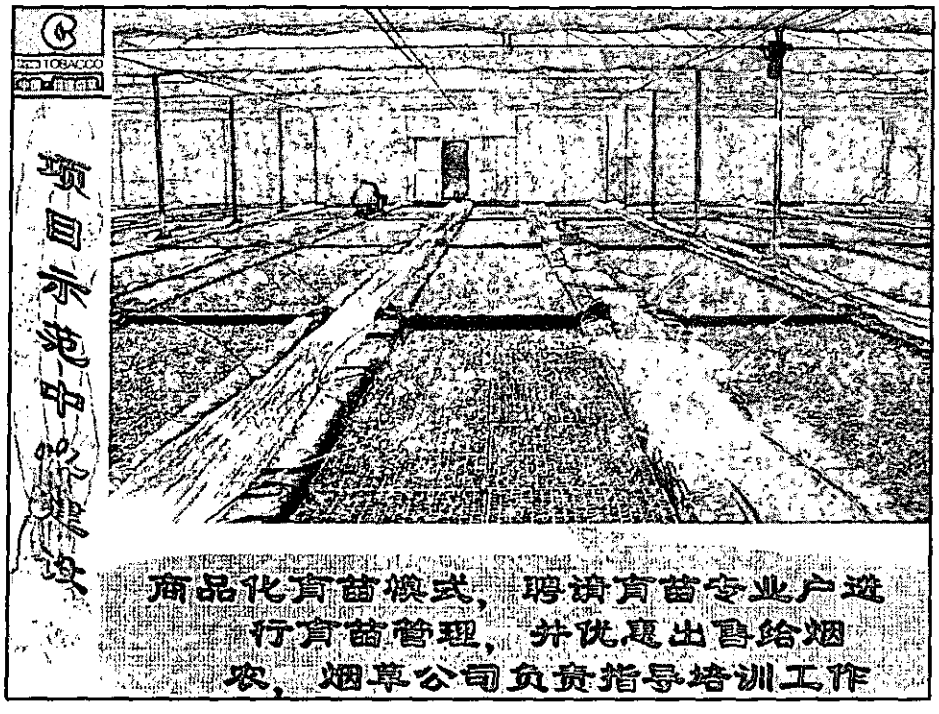
南平烟区甲基溴油法育苗示范中心项目

育苗示范中心管理

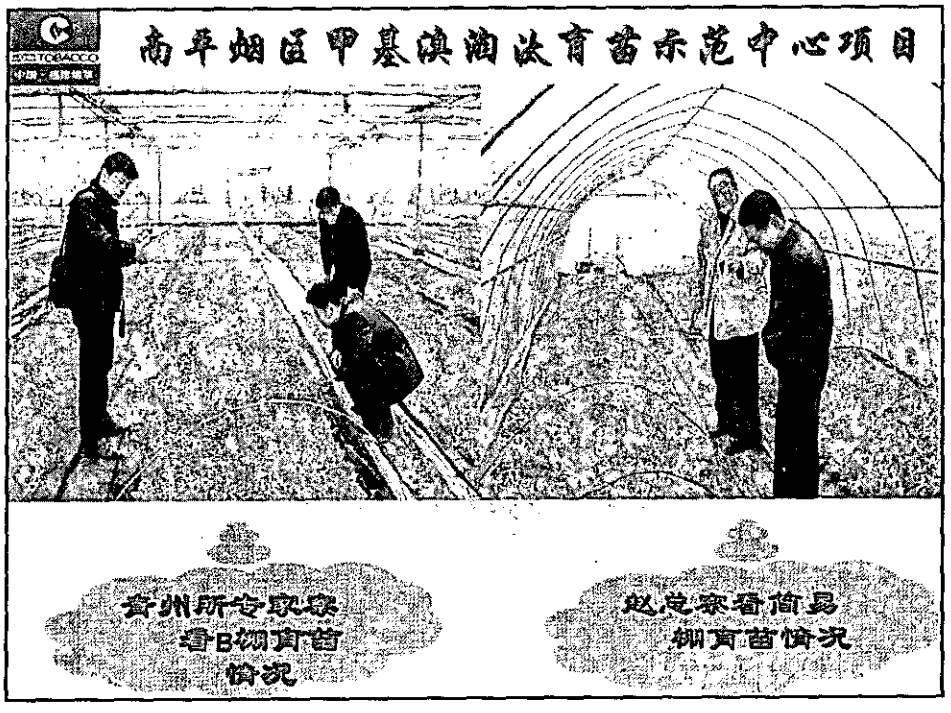
- 简易棚温室相对集中，形成集约化育苗基地　育苗专业户签订合同后拥有使用权,并负责管理，属于小型集约化育苗，就近出售给烟农，操作性强，利于推广；
- 以B型棚为中心，成立现代化商品育苗基地　建立商品化育苗基地，配备仓库、办公区、播种区和垃圾池等附属设施，漂浮育苗操作技术规范化程度高，消毒设施齐全；
- 专业户集中管理，确保育苗质量

烟草公司负责提供所有育苗中心育苗物质，并根据需要对育苗专业户进行育苗培训，加强育苗中心的监督和管理。


安装指导


项目实施中
商品化育苗模式，聘请育苗专业户进
行育苗管理，并优惠出售给烟
农，烟草公司负责指导培训工作


领导视察


南平烟区甲基溴油法育苗示范中心项目
贵州所专职领导
看B棚育苗
情况
赵总察看简易
棚育苗情况

南平烟区甲基溴淘汰育苗示范中心项目

一、南平烟区简介

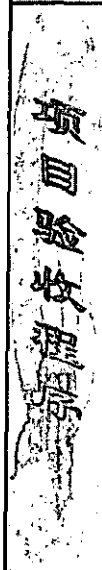
二、项目基本情况介绍

三、项目招投标情况

四、项目示范中心建设情况

五、项目验收

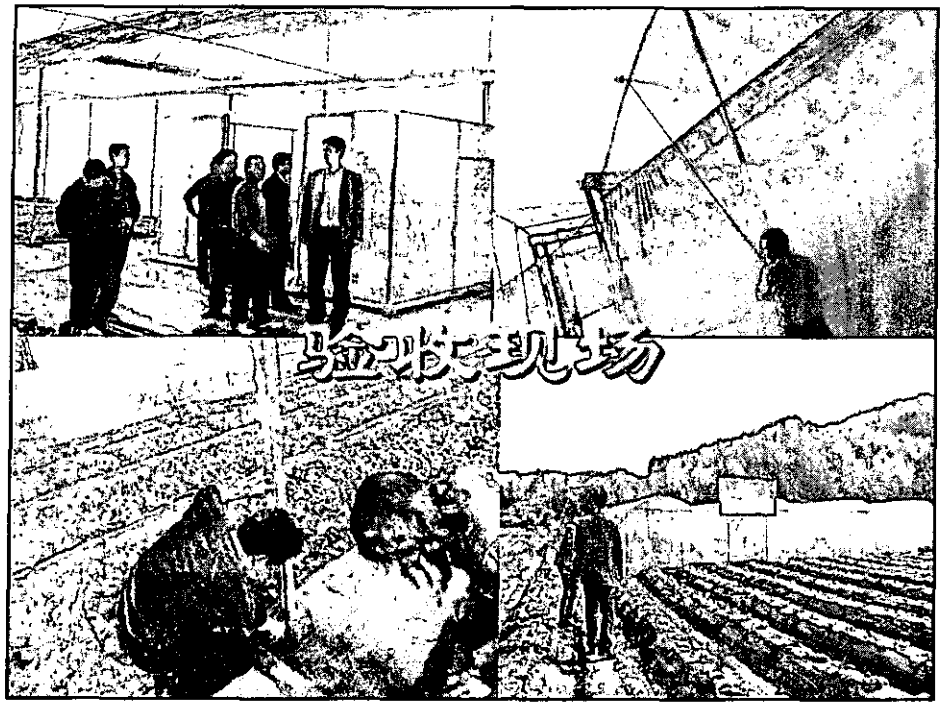
南平烟区甲基溴淘汰育苗示范中心项目



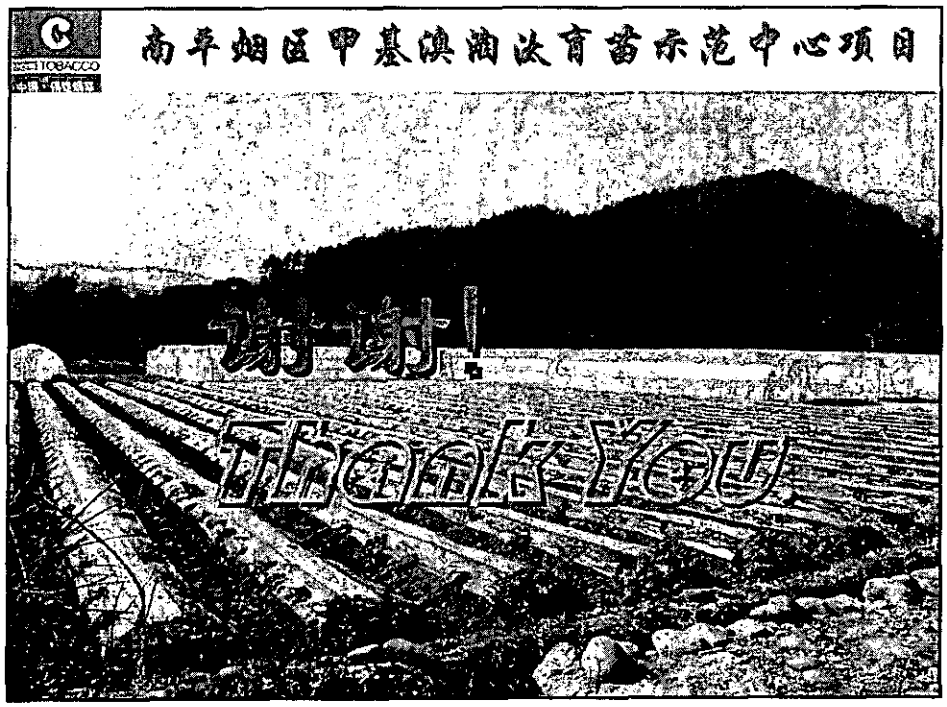
- 南平市公司组织邵武和武夷山分公司审计、监察、综合计划等科室以及项目建设领导小组相关人员成立验收小组对项目进行验收；
- 根据《烟草行业甲基溴淘汰（二期）"甲基溴淘汰集约化育苗示范中心"建设工作实施指南》要求对项目物质采购招投标资料、采购合同以及资金往来发票等进行了审核；
- 召开项目验收会议，听取建设单位及施工单位的建设报告，最后签定《项目验收表》。


南平烟区甲基溴消毒替代育苗示范中心项目
邵武项目验收

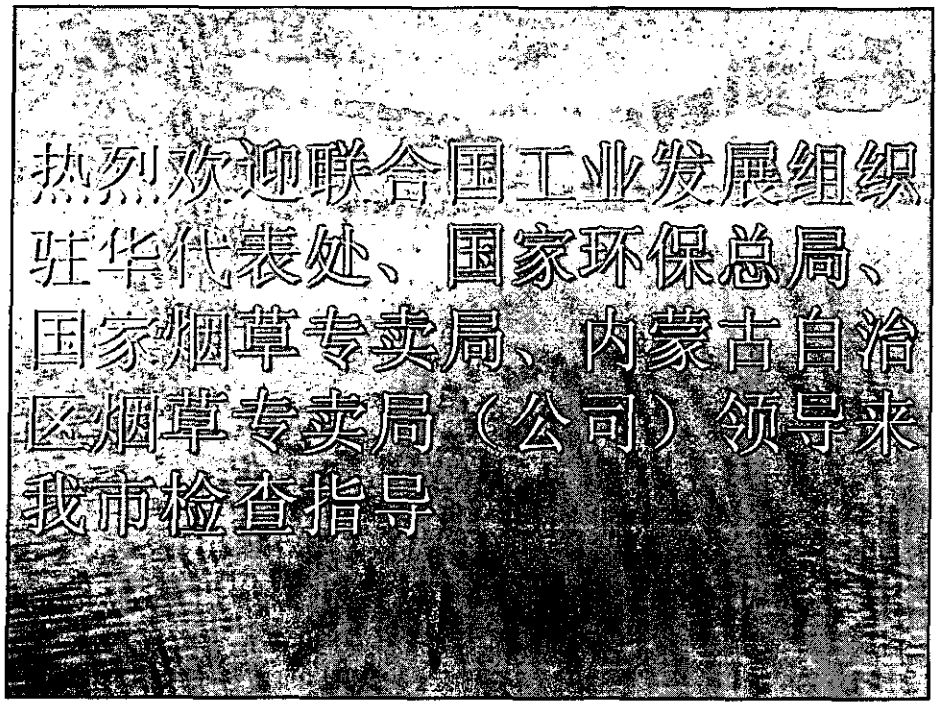

南平烟区甲基溴油汰育苗示范中心项目
武夷山项目验收

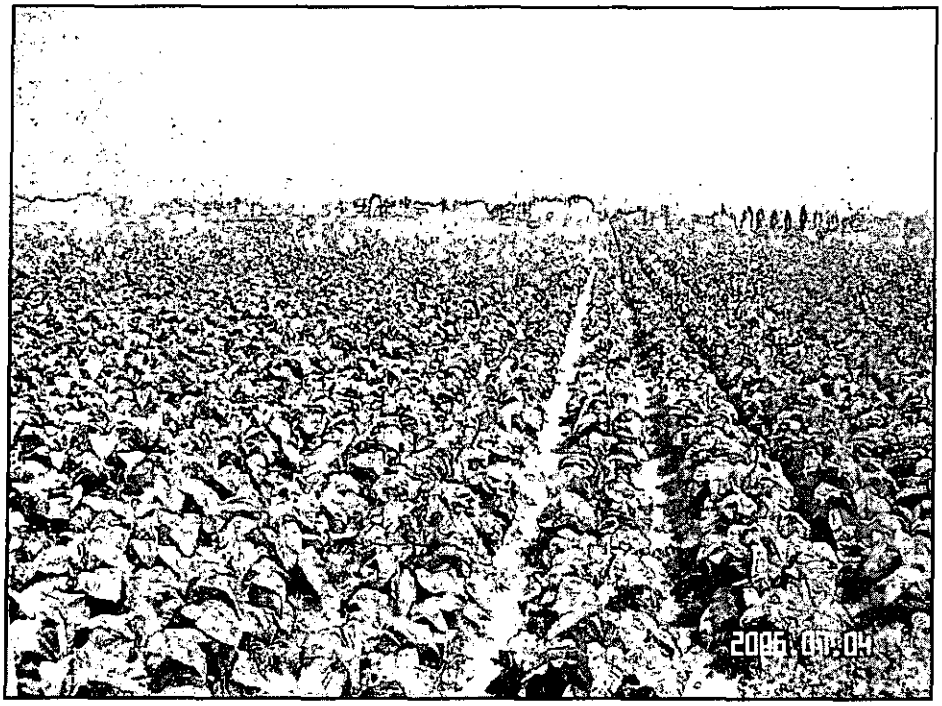

验收现场


南平烟区甲基溴烟床育苗示范中心项目
项目验收
育苗示范中心用户验收报告


南平烟区甲基溴烟床育苗示范中心项目
谢谢!
THANK YOU!

Annex Ⅲ


热烈欢迎联合国工业发展组织
驻华代表处、国家环保总局、
国家烟草专卖局、内蒙古自治
区烟草专卖局（公司）领导来
我市检查指导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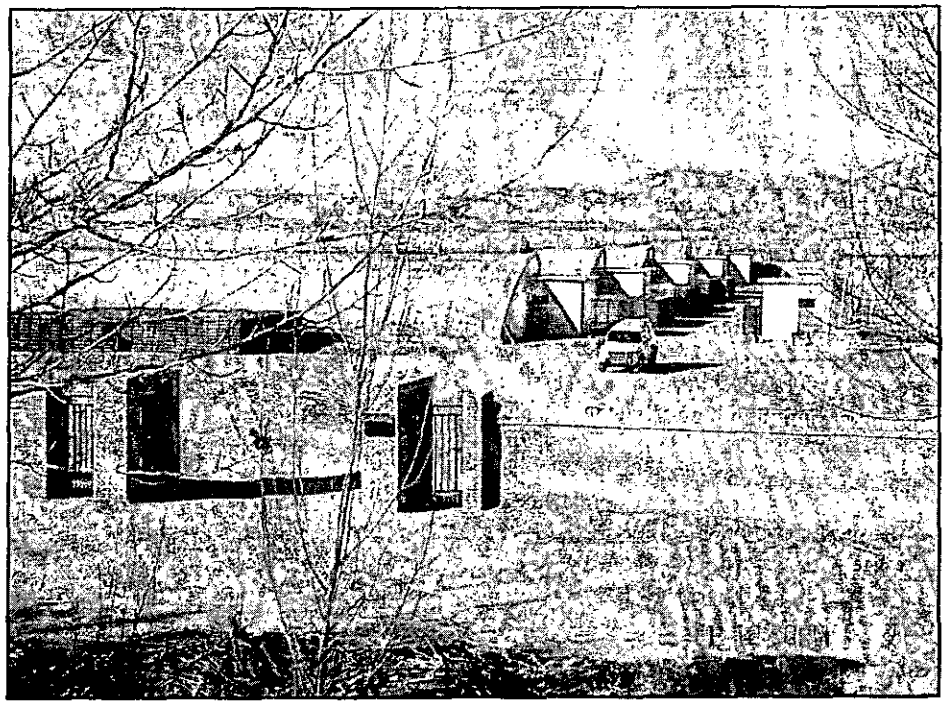

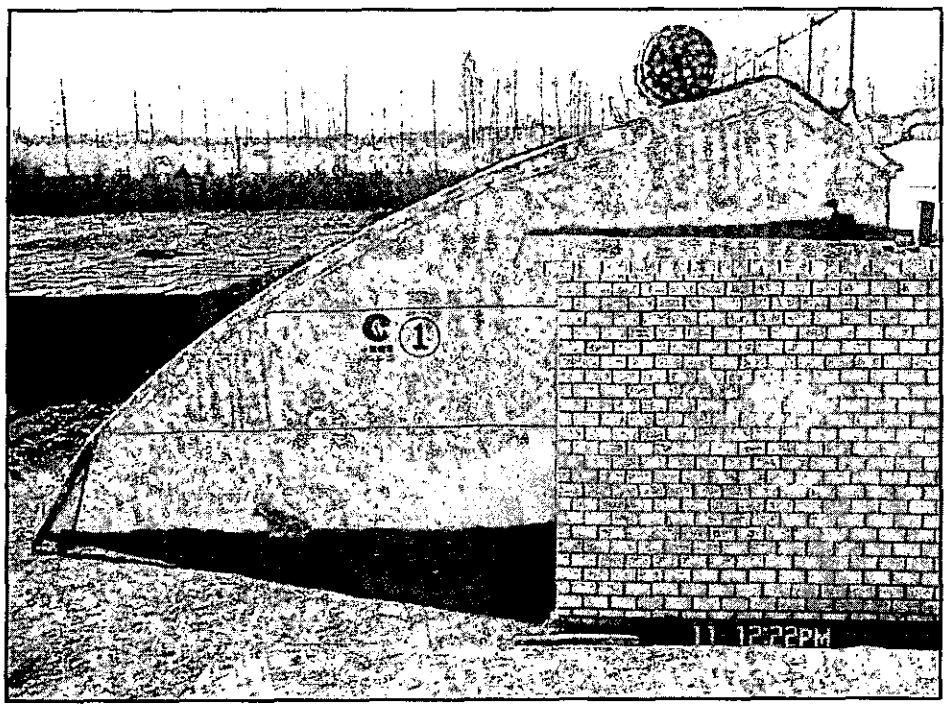
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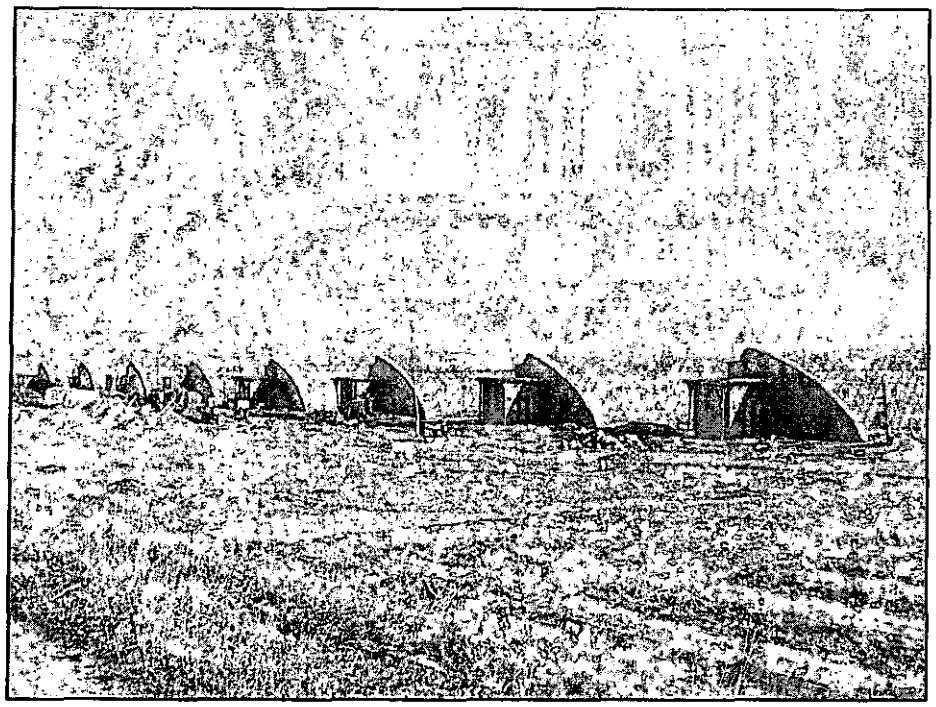
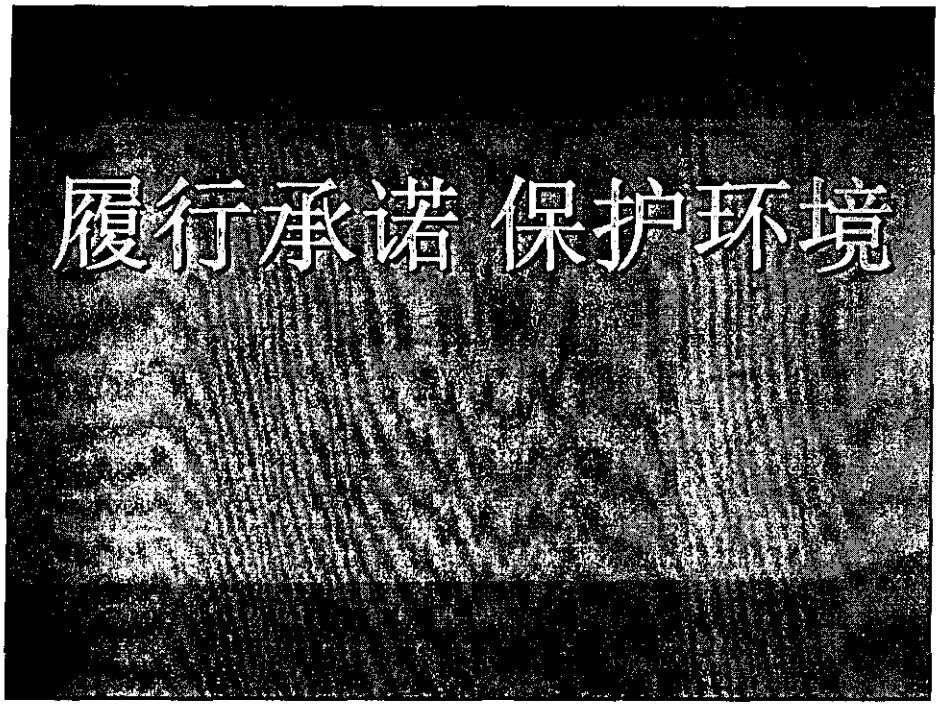
11 12:22PM




履行承诺 保护环境

项目区概况

地理坐标

- 北纬41°17 ' -45 ° 24 '
- 东经116 ° 21 ' -120 ° 59 '

面积人口

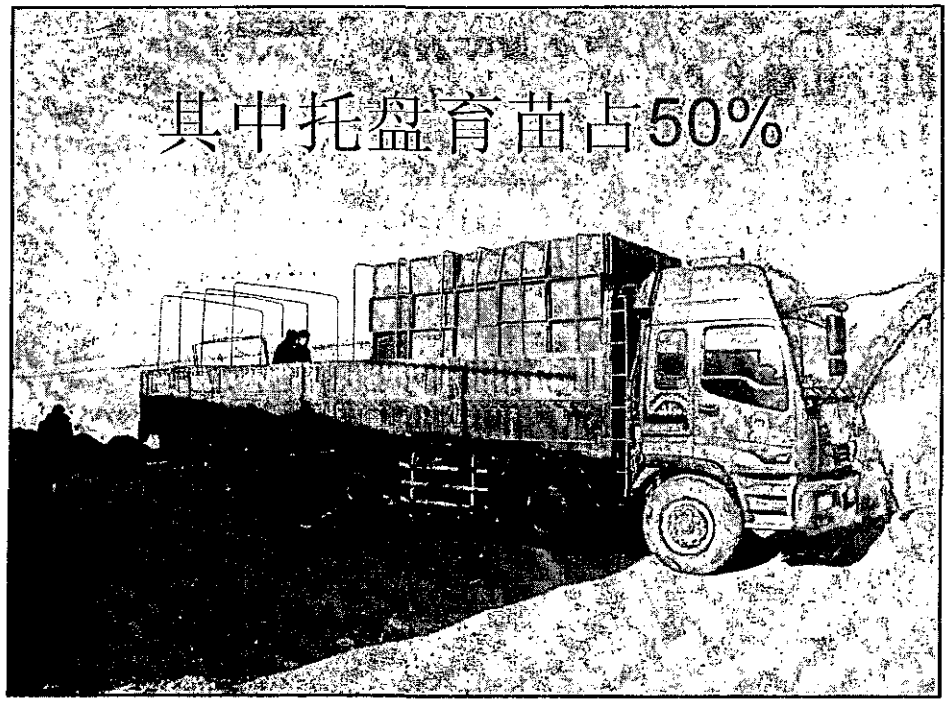
- 总面积90021平方公里
- 总人口459万人

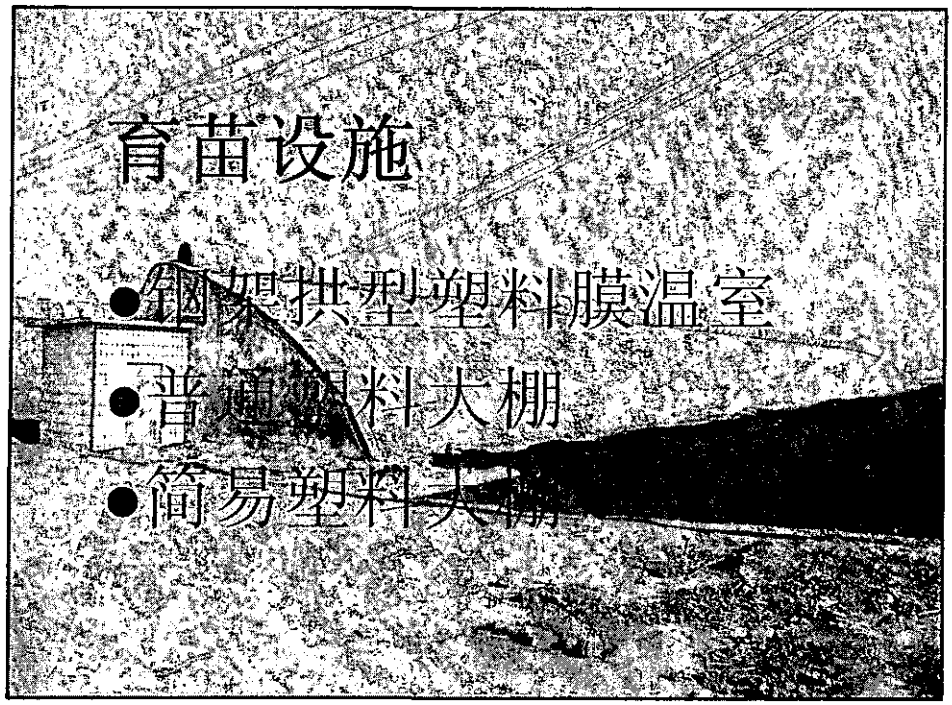
气候环境

- 年降水量400-500mm
- 无霜期135-145天
- ≥10℃有效积温3000℃

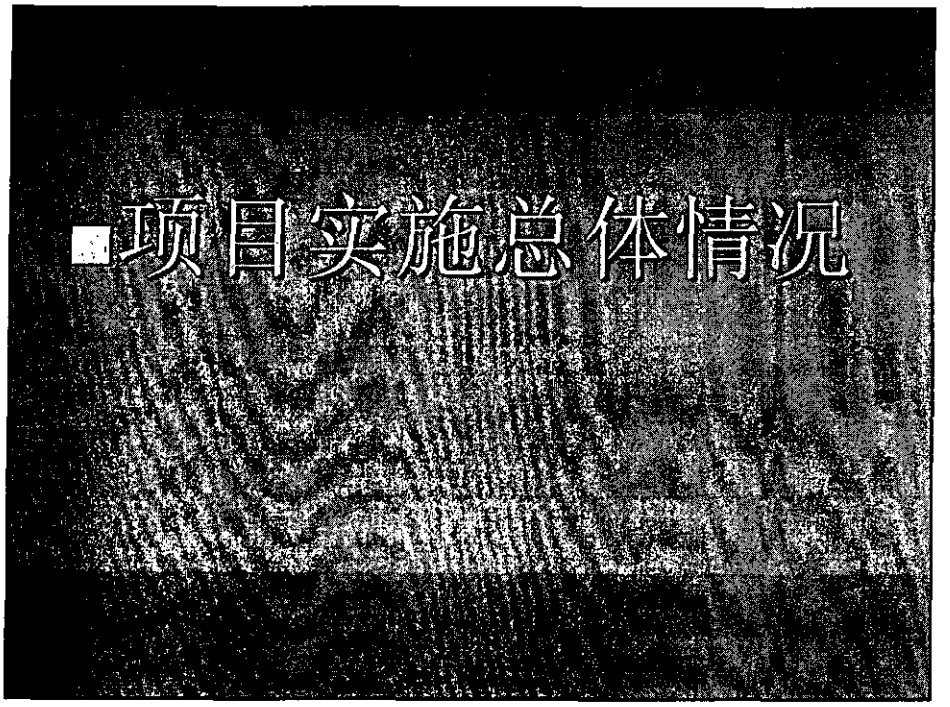
烟叶育苗形式

- 集约化母床阶段大棚育苗
- 以各烟户为单位的“双棚母床悬床假植育苗”


其中托盘育苗占50%

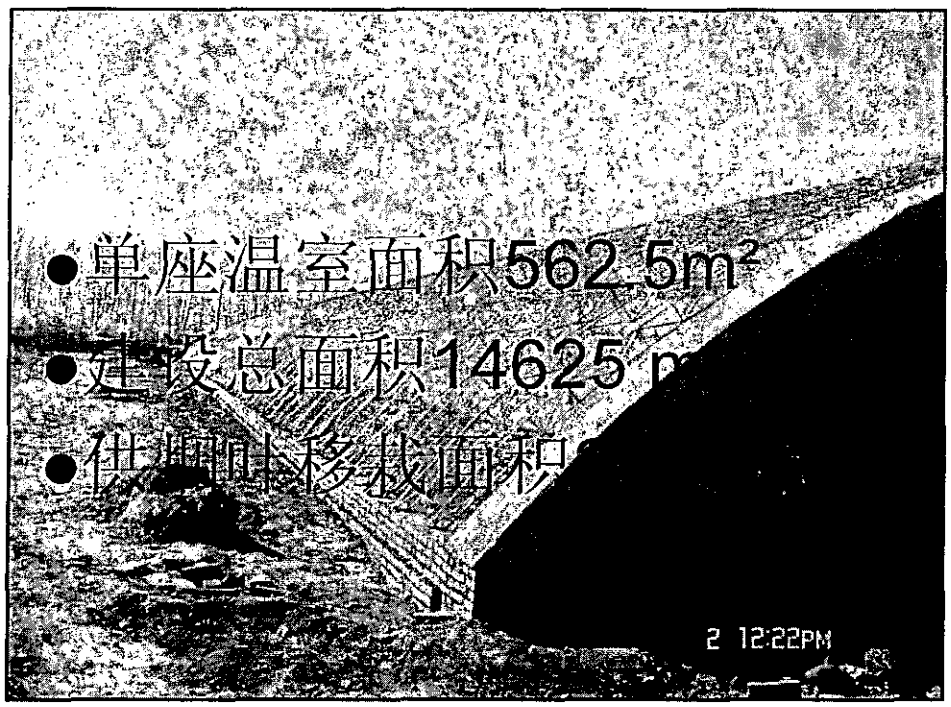

育苗设施
●钢架拱型塑料膜温室
●普通塑料大棚
●简易塑料大棚


烟叶育苗


项目实施总体情况

甲基溴淘汰温室建设分布

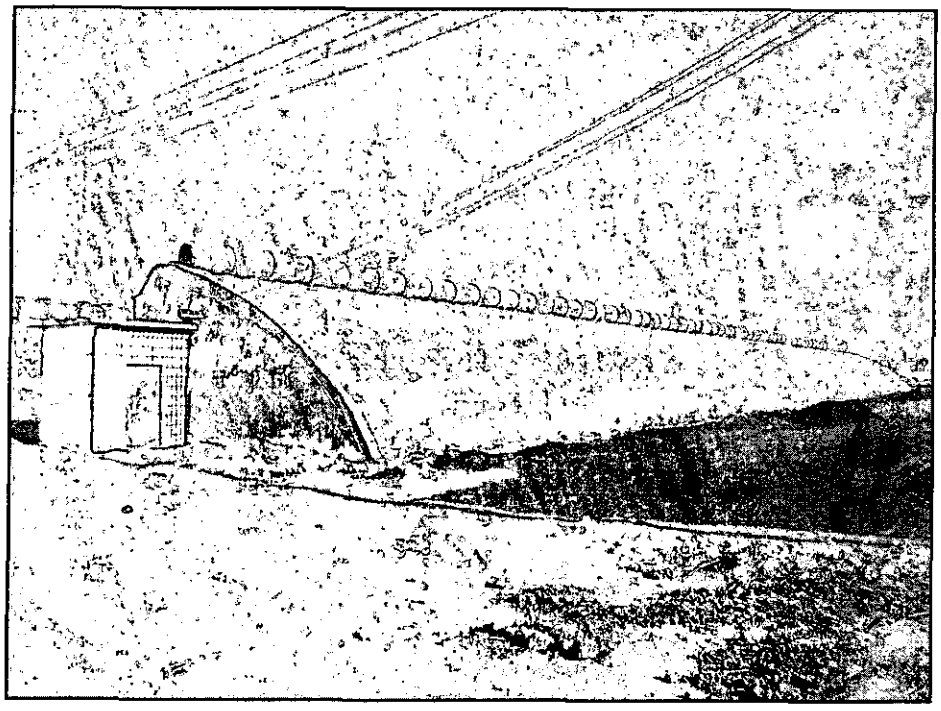
- 松　山　区：10座
- 元宝山区：　3座
- 宁　城　县：13座

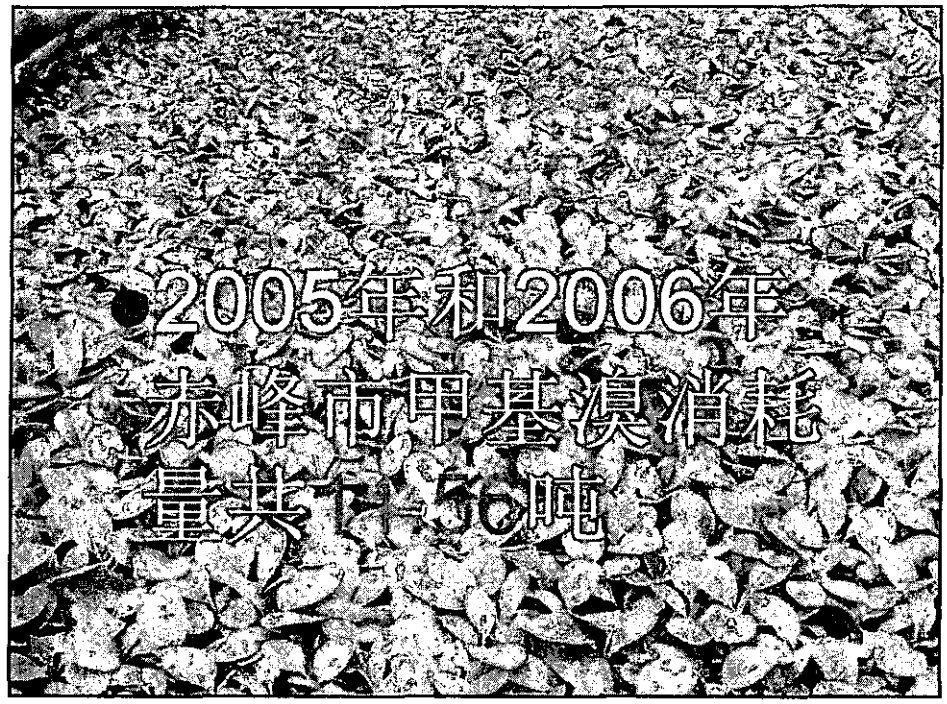


- 单座温室面积562.5m²
- 建设总面积14625 m²
- 供调节移栽面积

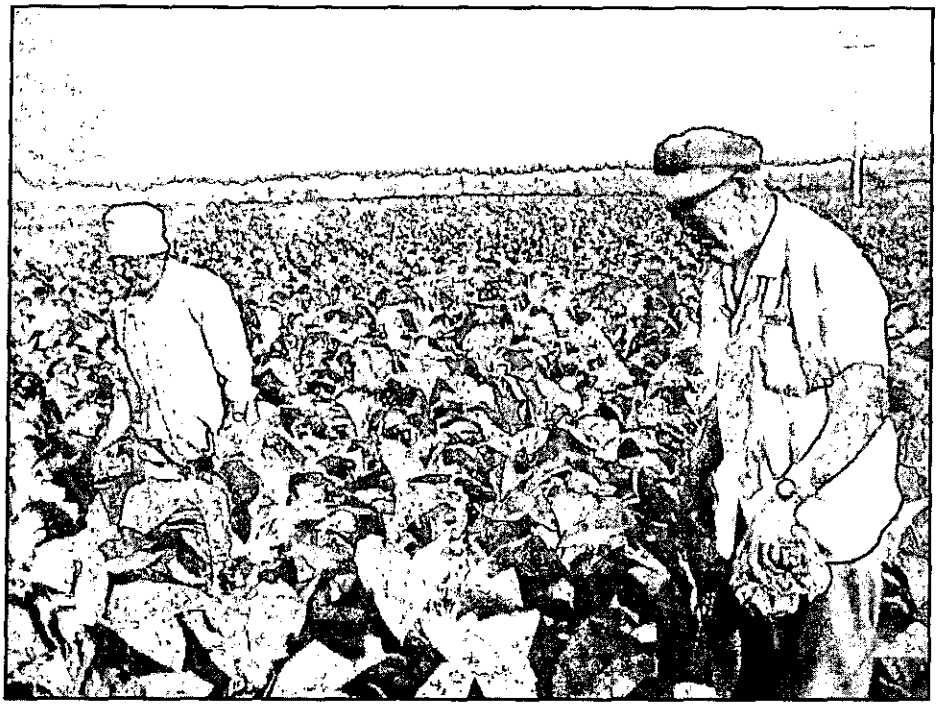
全市现有温室情况

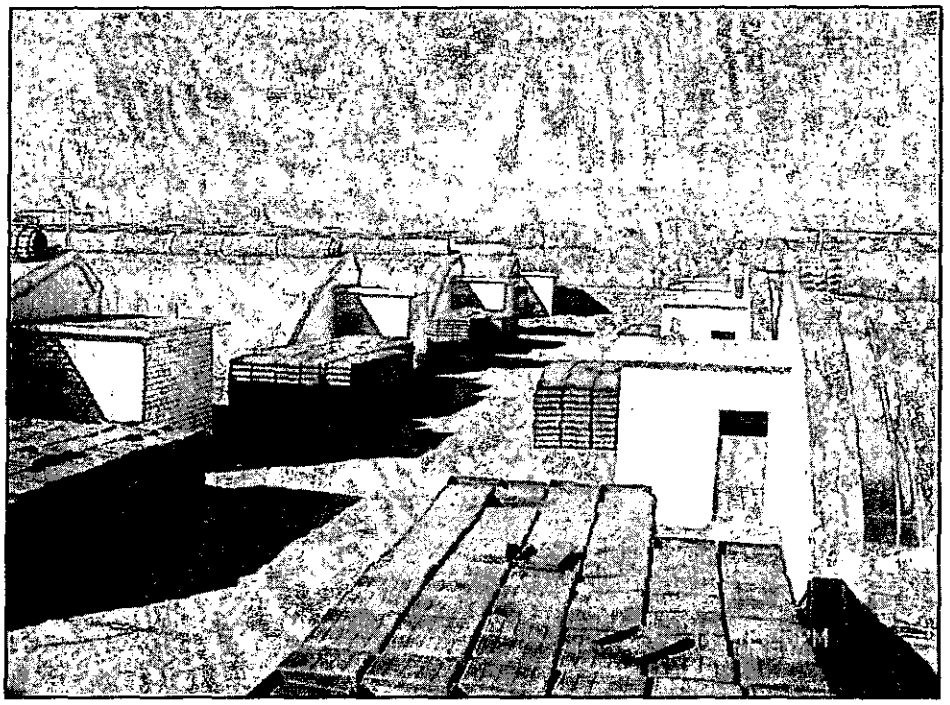
- 温室总面积17114平方米
- 可供移栽面积3.42万亩
- 占2007烟叶计划种植面积4.04万亩的84.6%

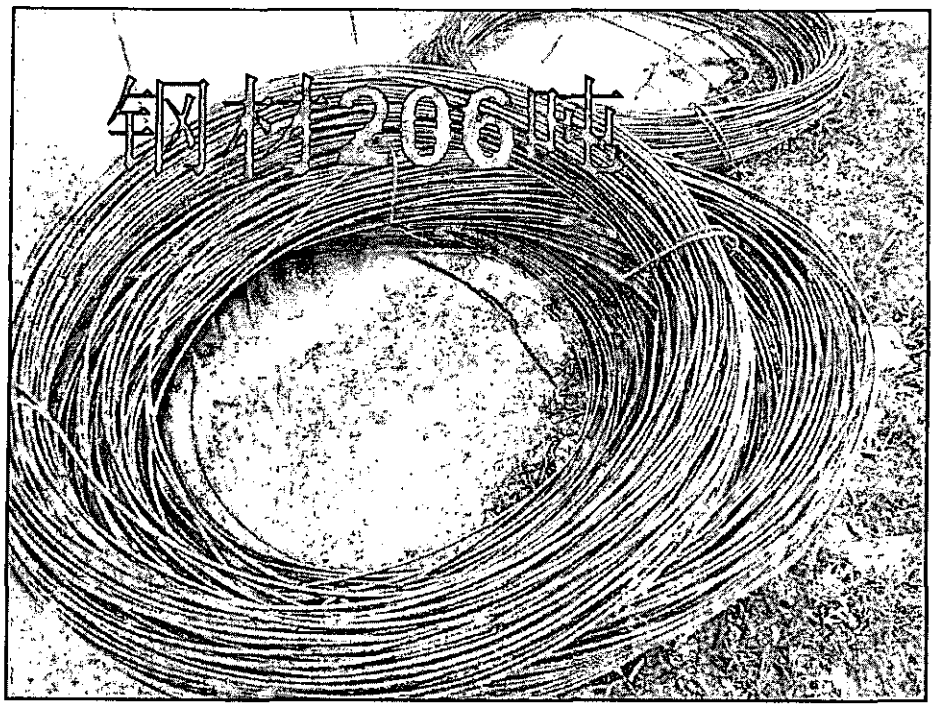


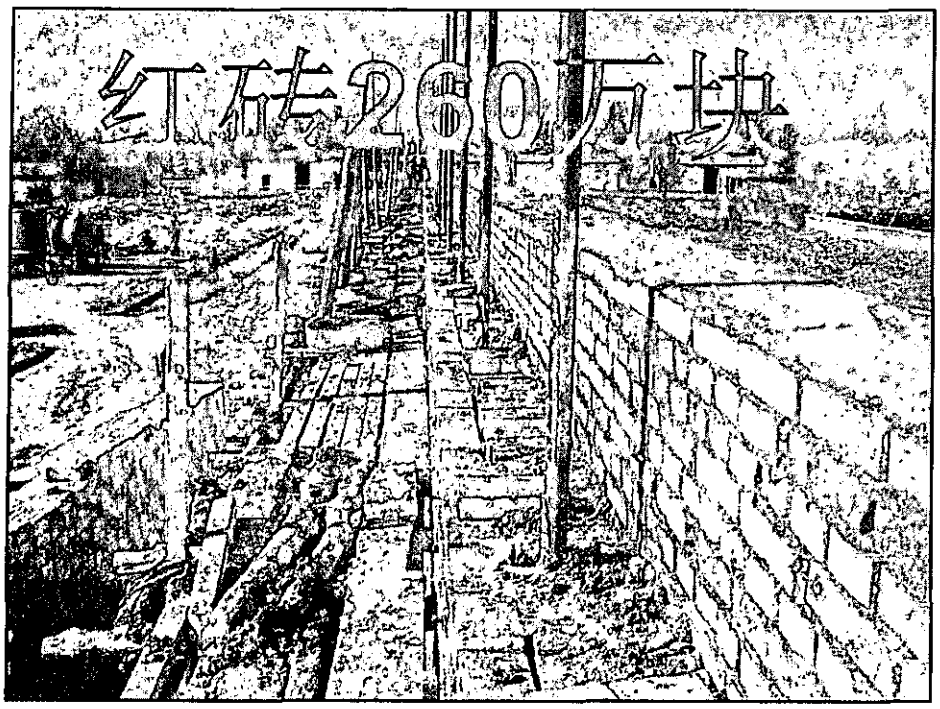

●2005年和2006年
赤峰市甲基溴消耗
量共计150吨


赤峰地区
2008年1月1日前
彻底淘汰甲基溴在
烟叶育苗生产的使用
2006.07.04



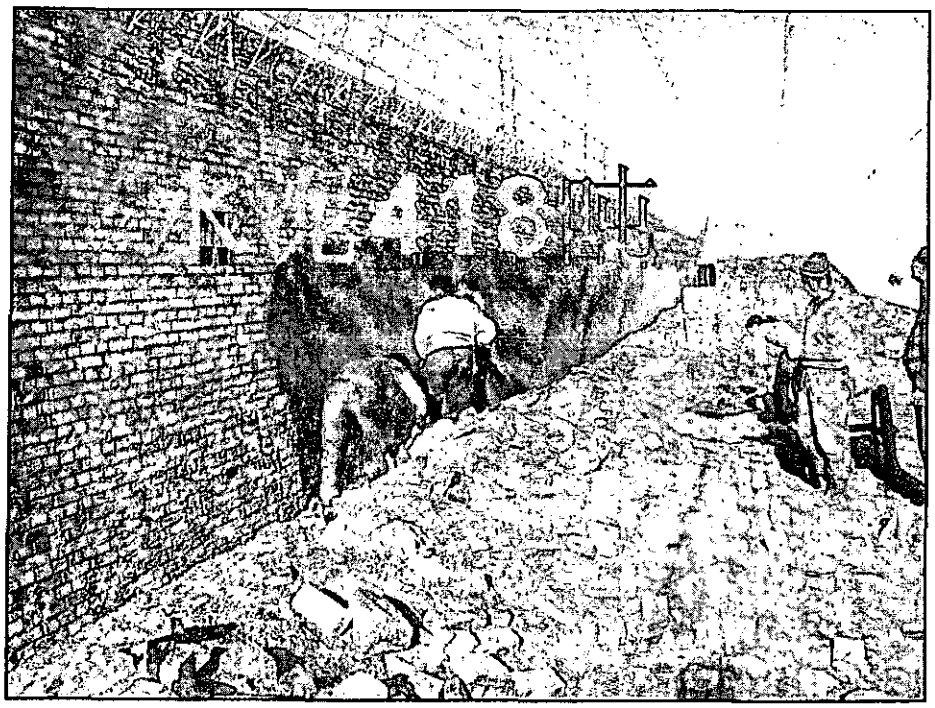


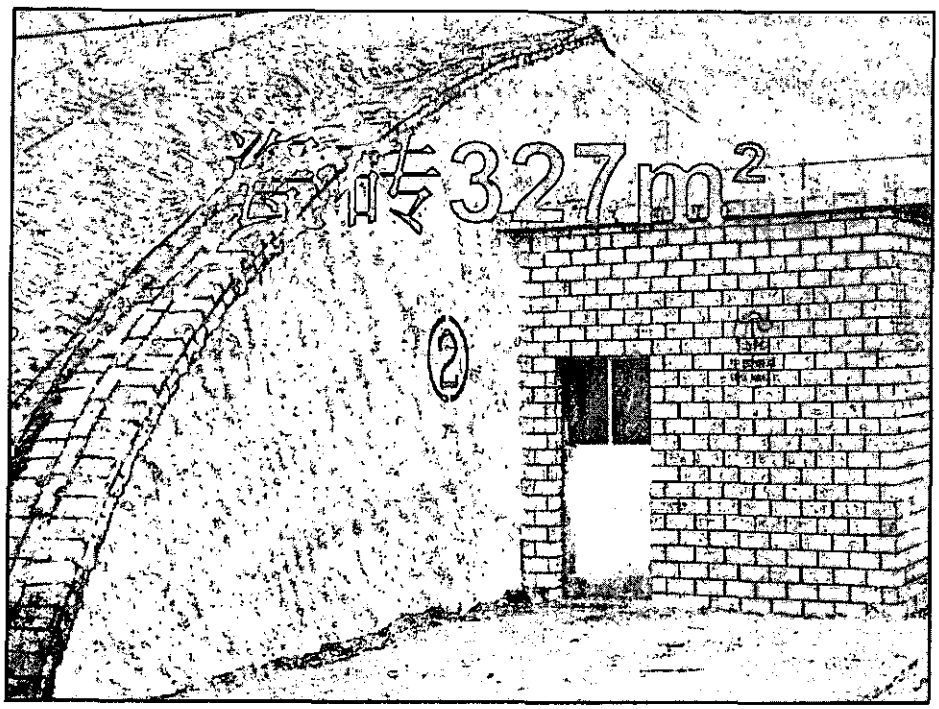

钢材2.6万吨

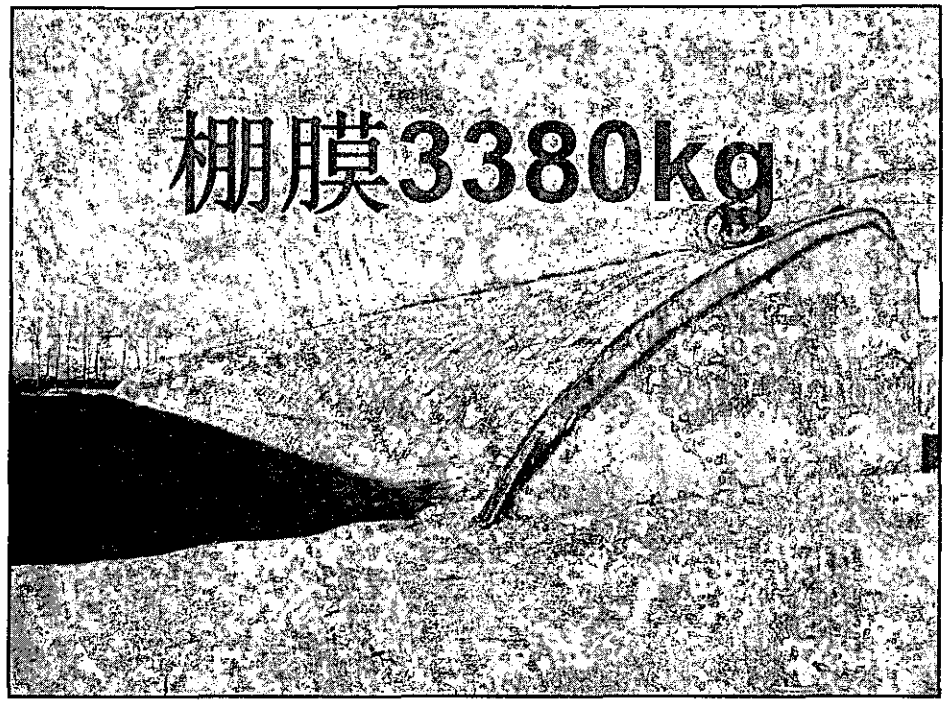

红砖280万块

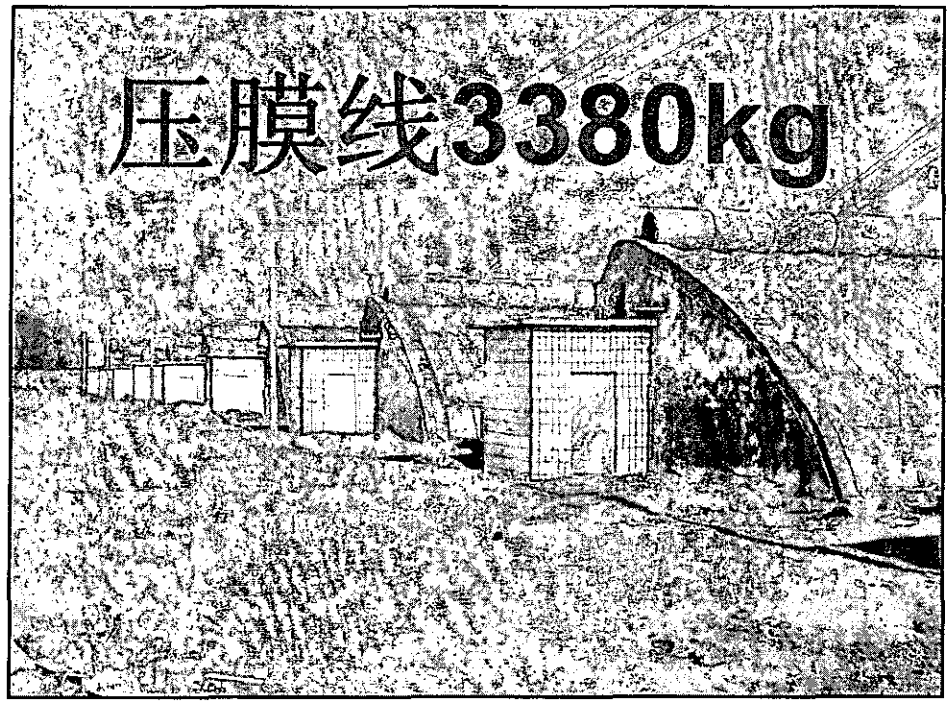

砂土方794 m3

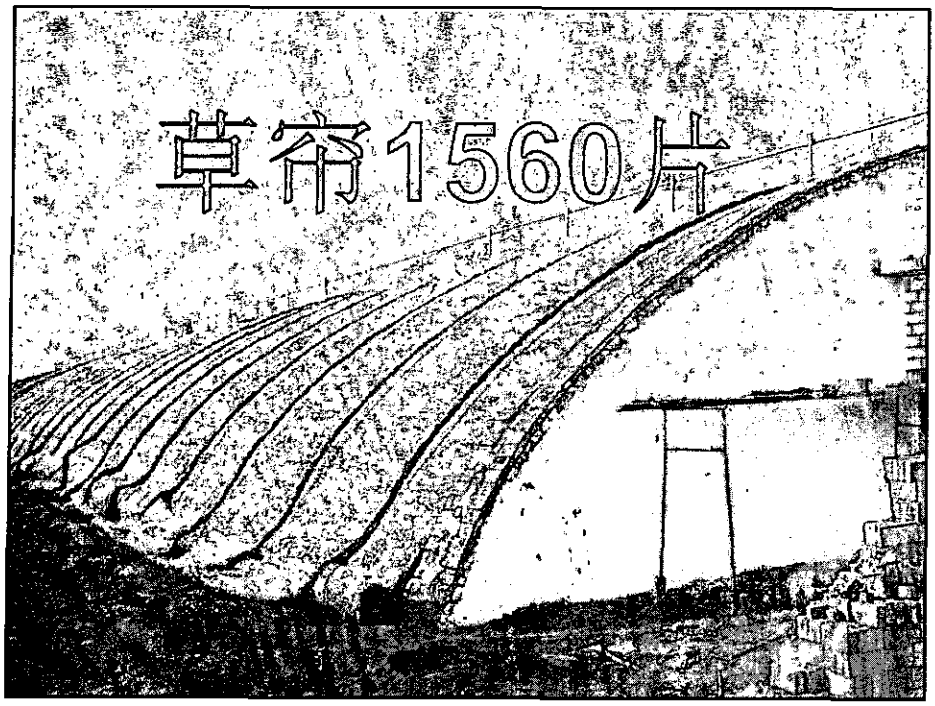

石料1143 m3

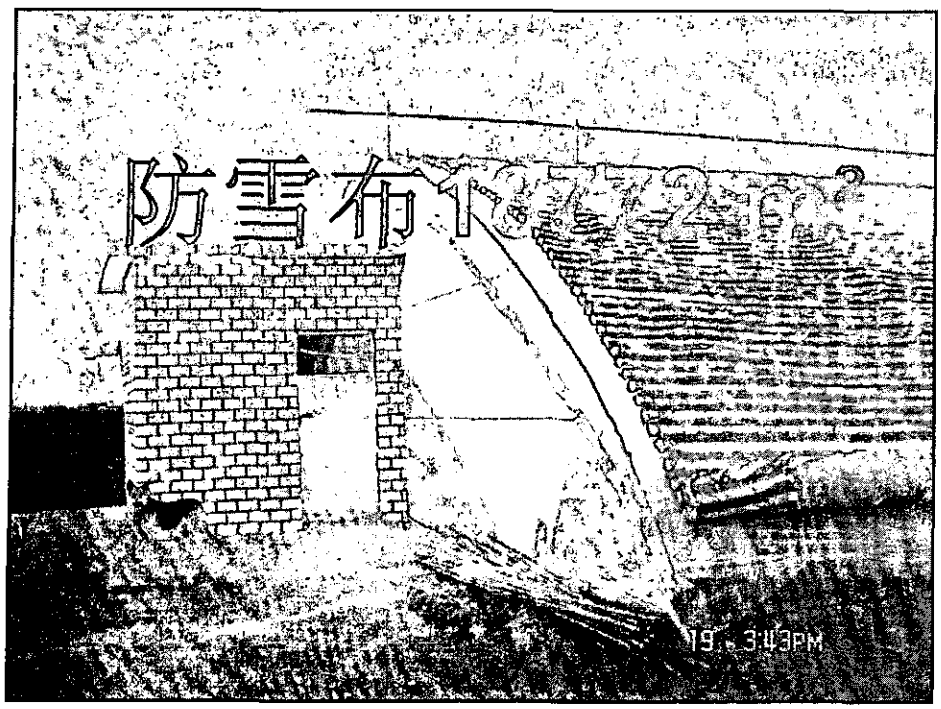


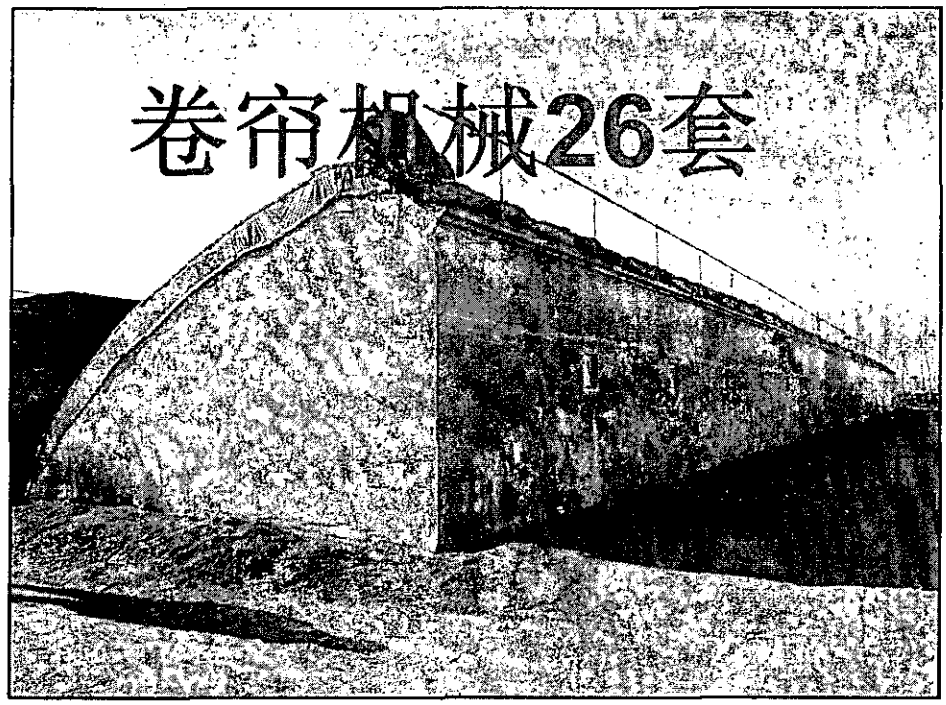

327m²
②


棚膜3380kg

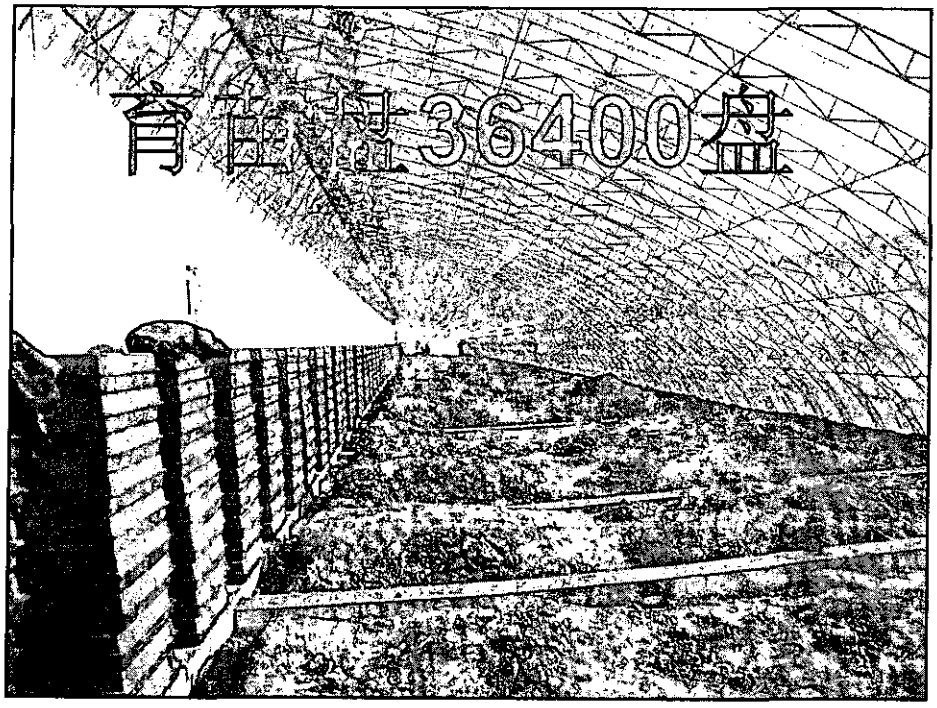

压膜线3380kg

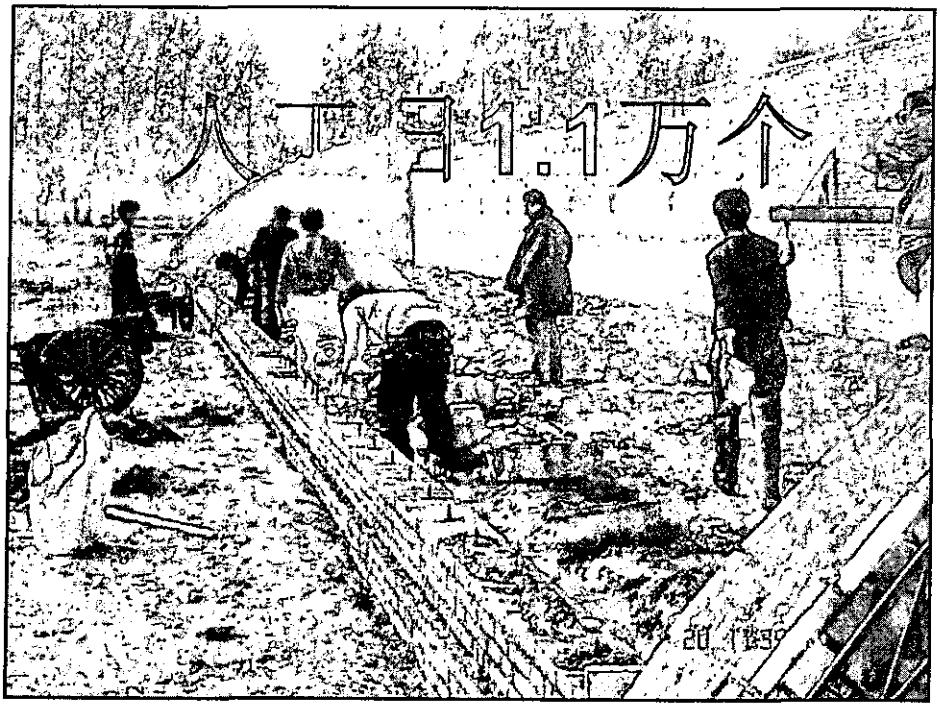

草帘1560片


防雪布

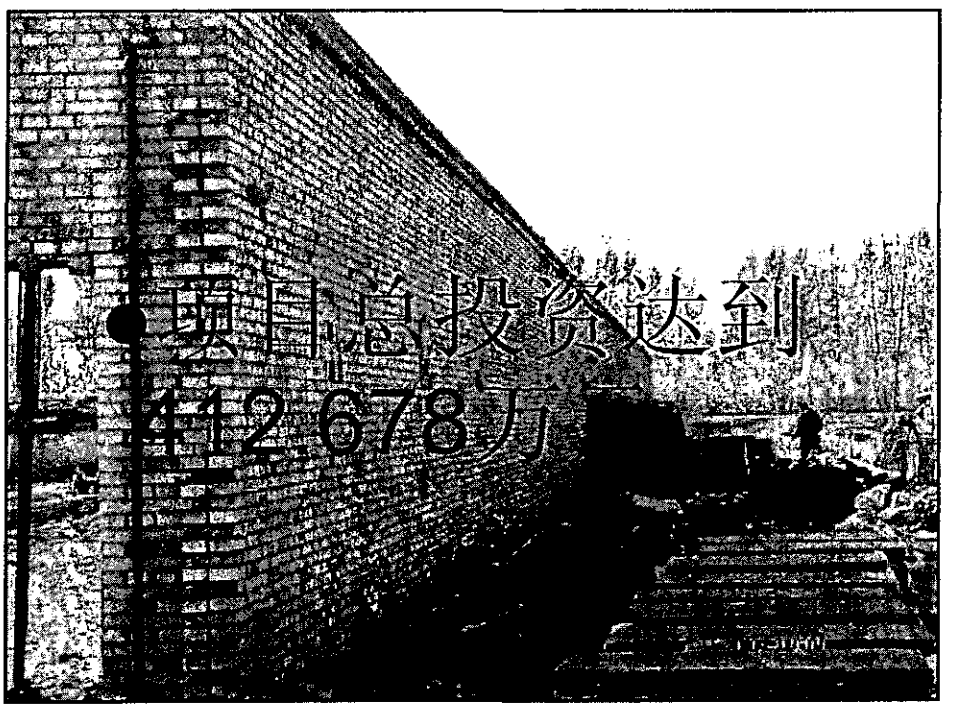

卷帘机械26套

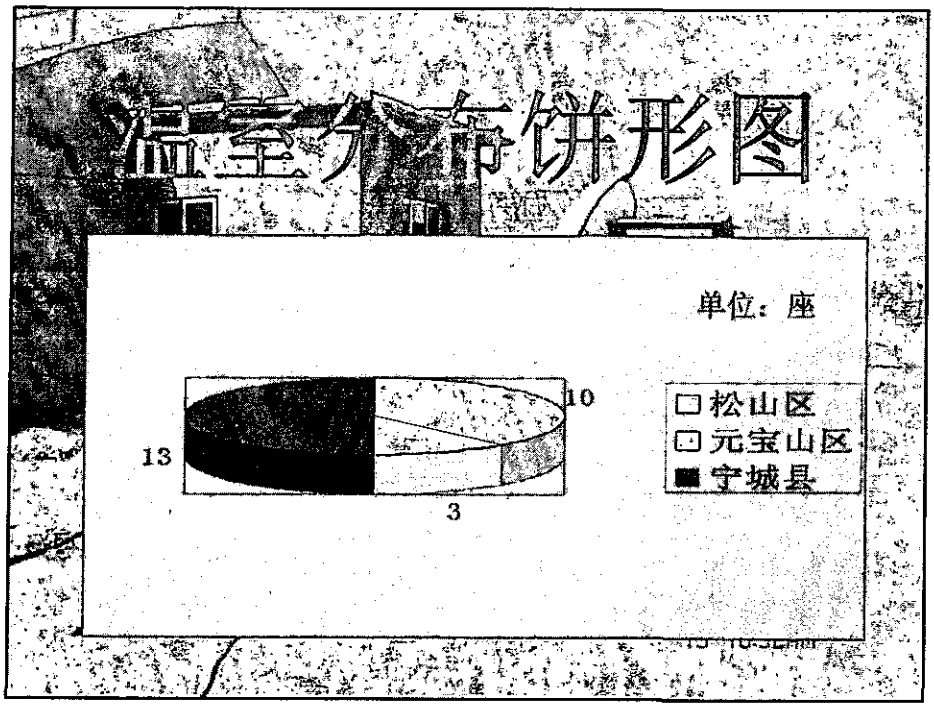

滴灌设备26套

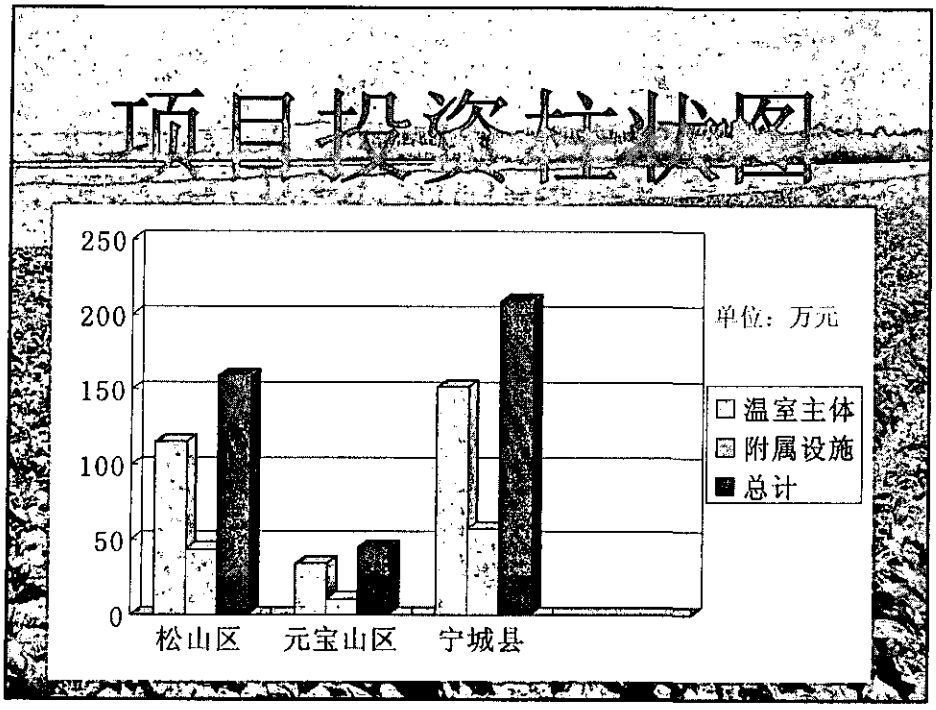

育苗盘36400盘


人工月1.1万个

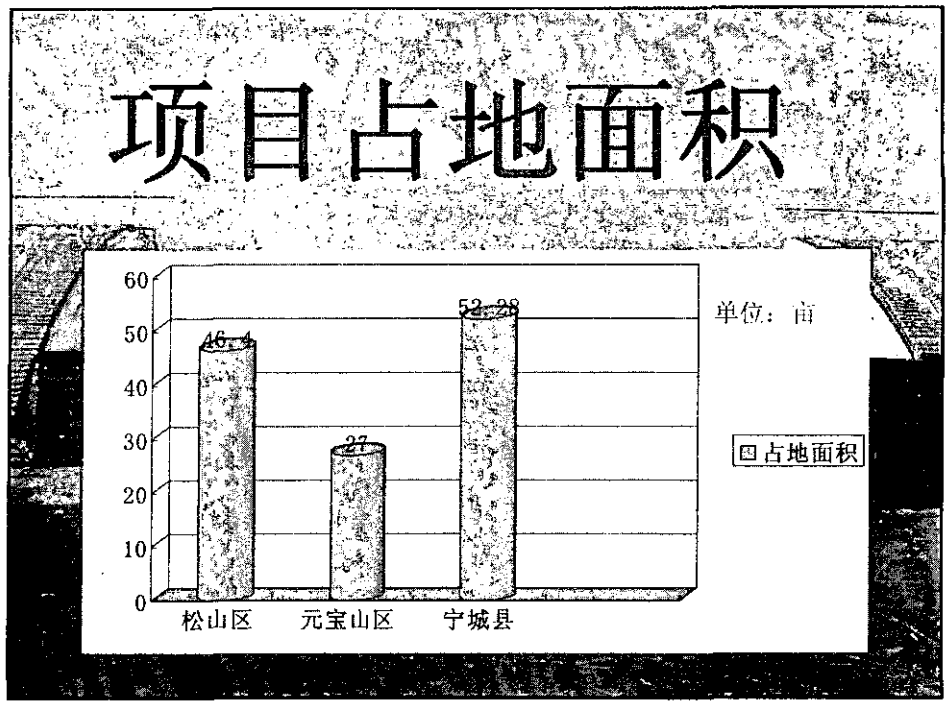
- 温室投资301.339万元
- 附属设施投资111.339万元




温室分布饼形图
单位：座
10
13
3
松山区
元宝山区
宁城县

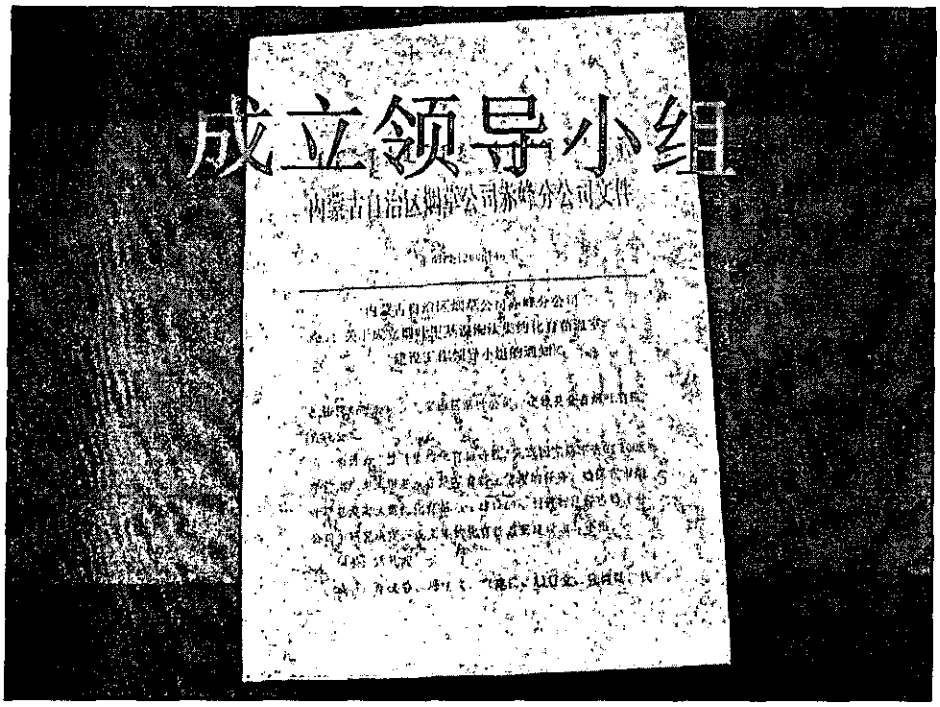

项目投资柱状图
250
200
150
100
50
0
单位：万元
温室主体
附属设施
总计
松山区
元宝山区
宁城县

项目占地面积



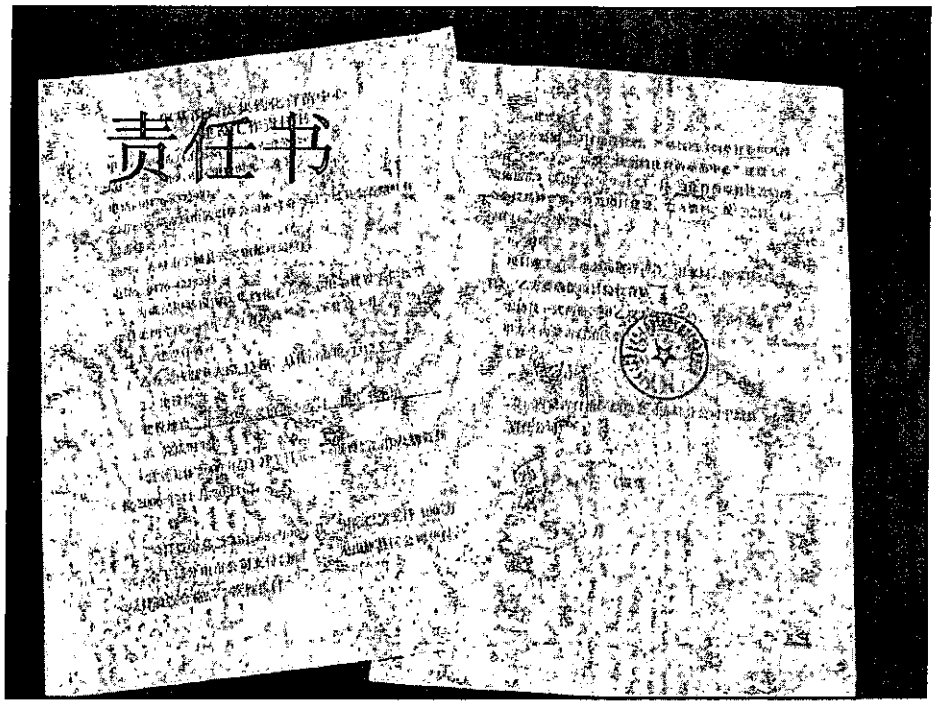
建设措施

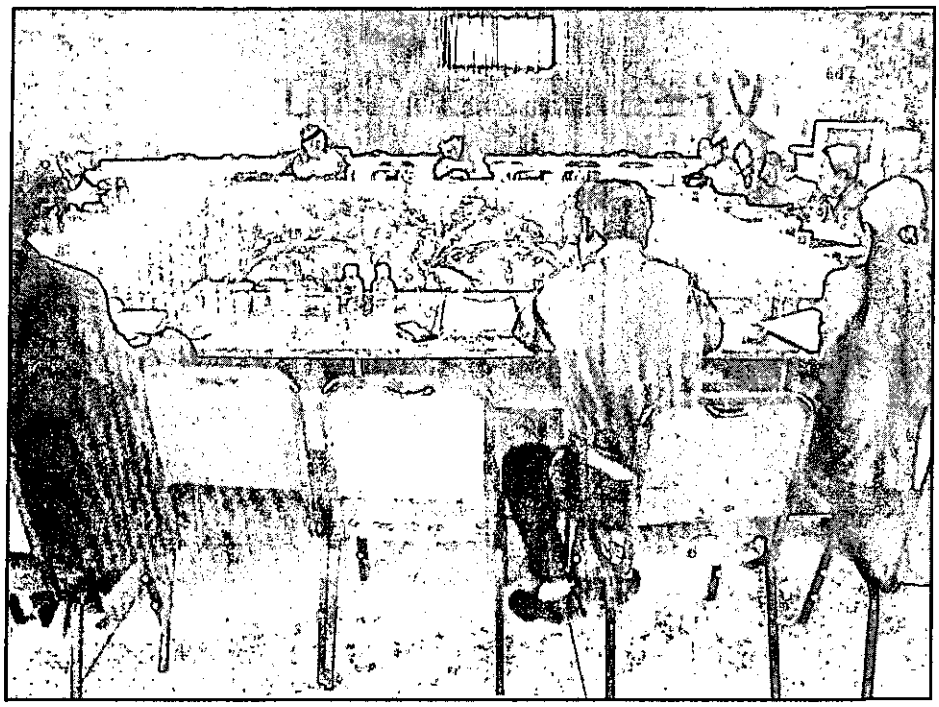

领导重视


成立领导小组
内蒙古自治区烟草公司赤峰分公司文件


领导小组深入实


实施细则

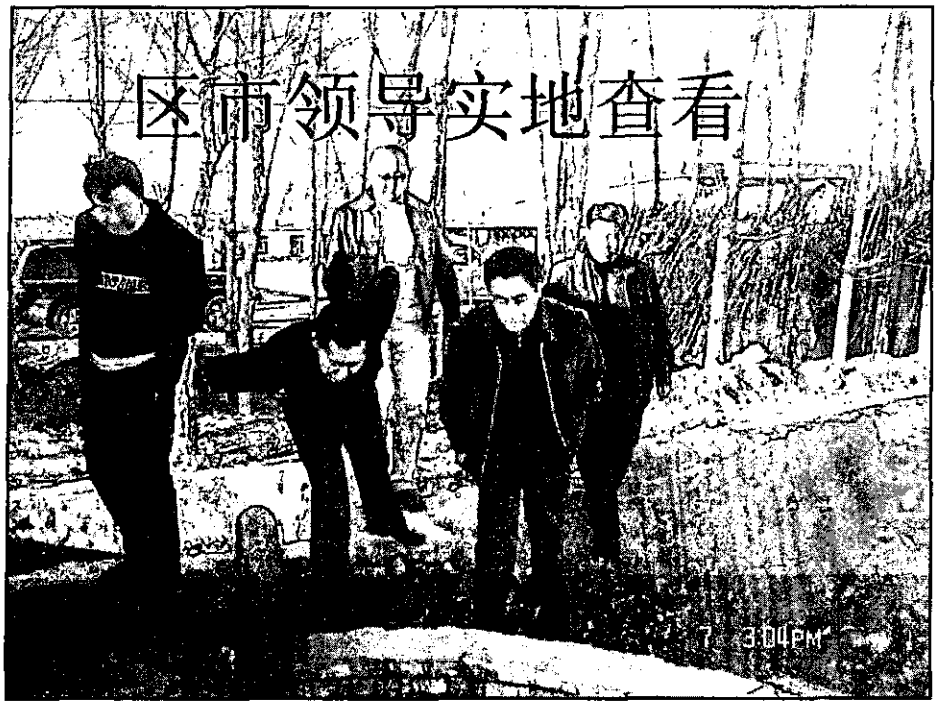

責任书

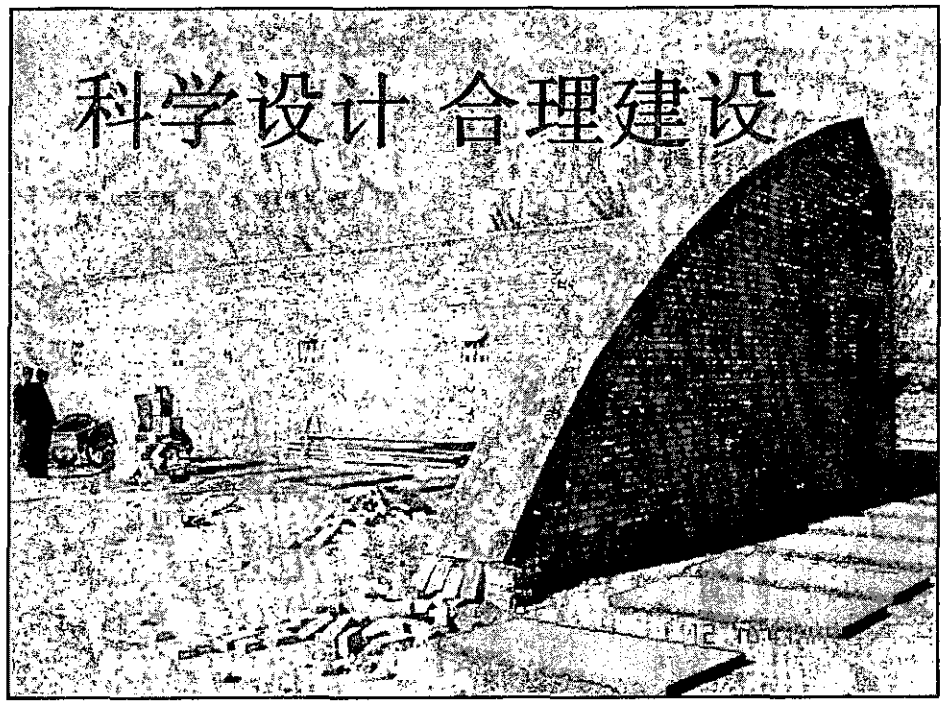


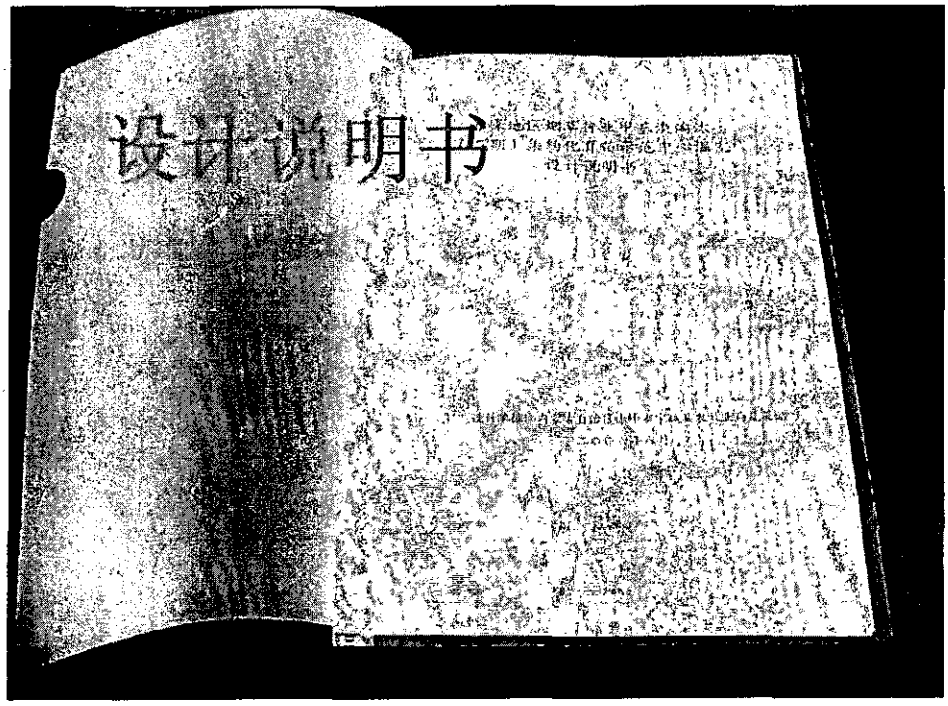

专题会议

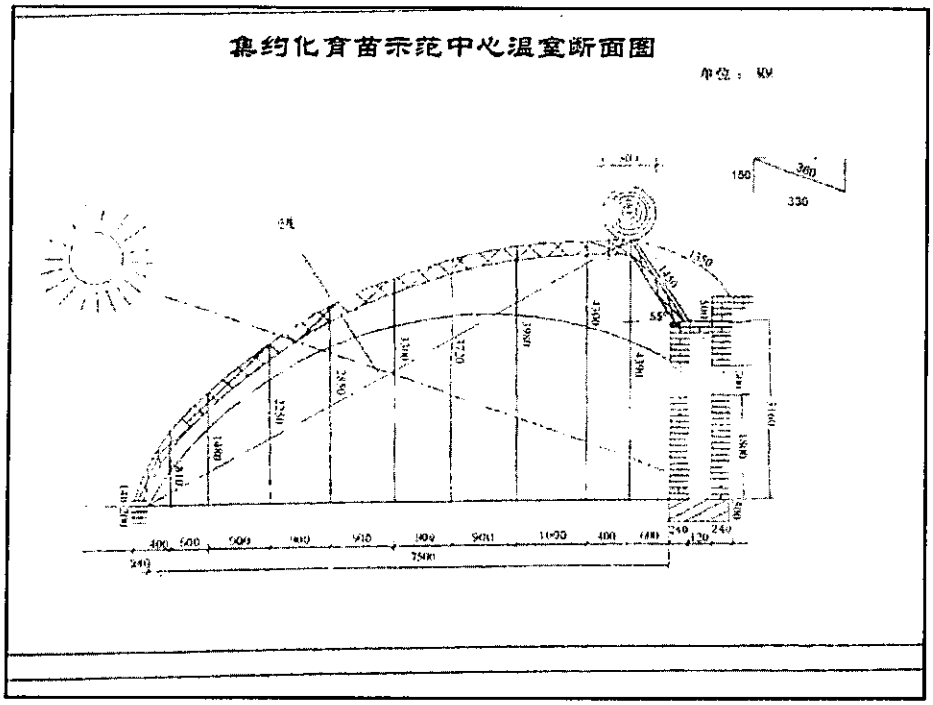

区市领导审核

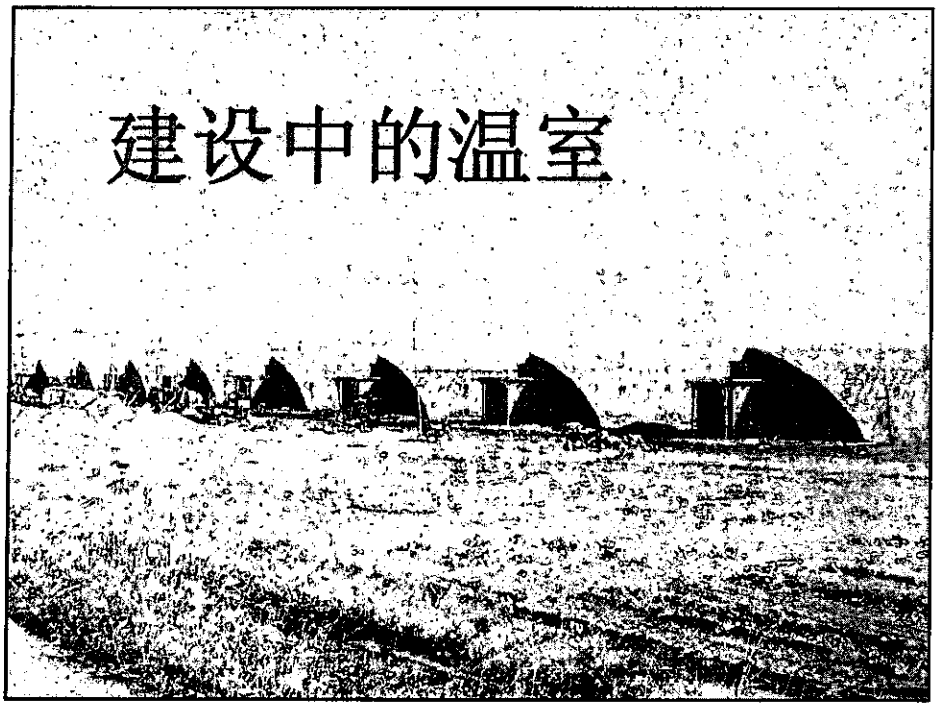

实地检查

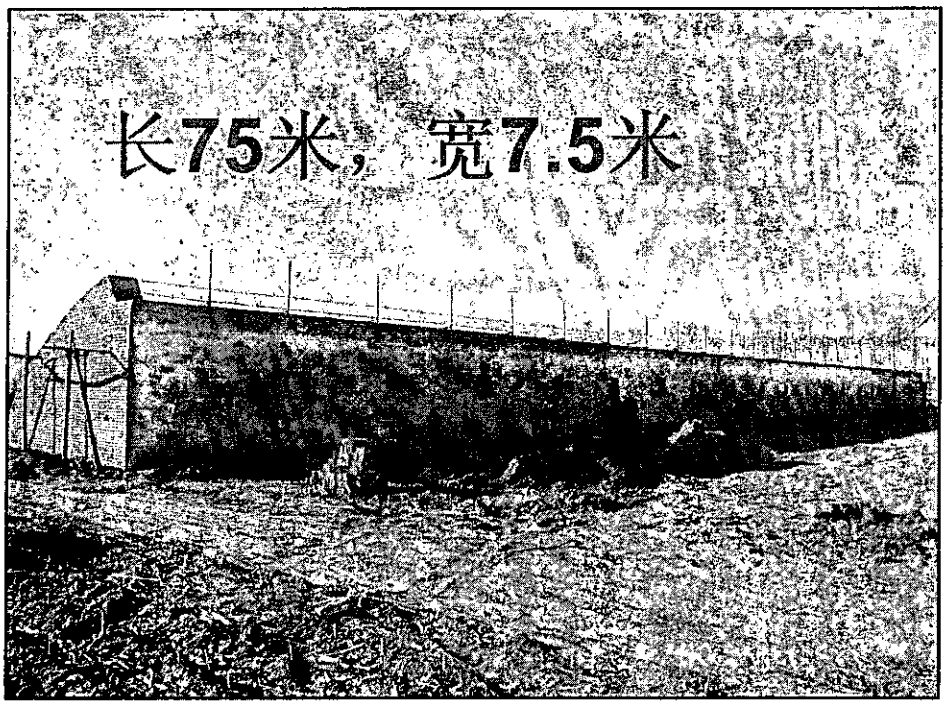

区市领导实地查看

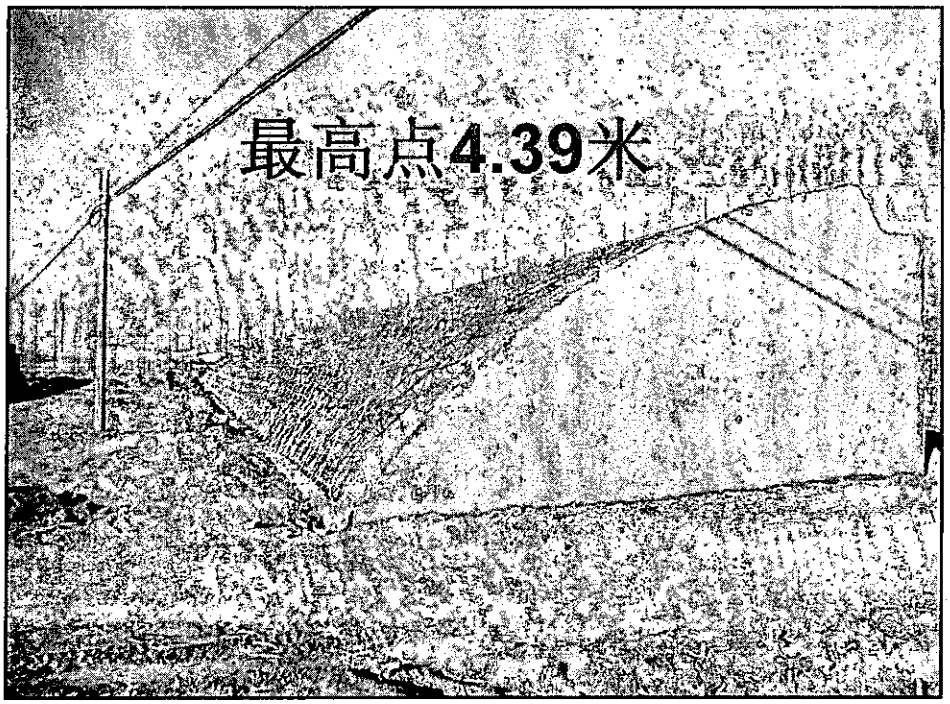

科学设计 合理建设

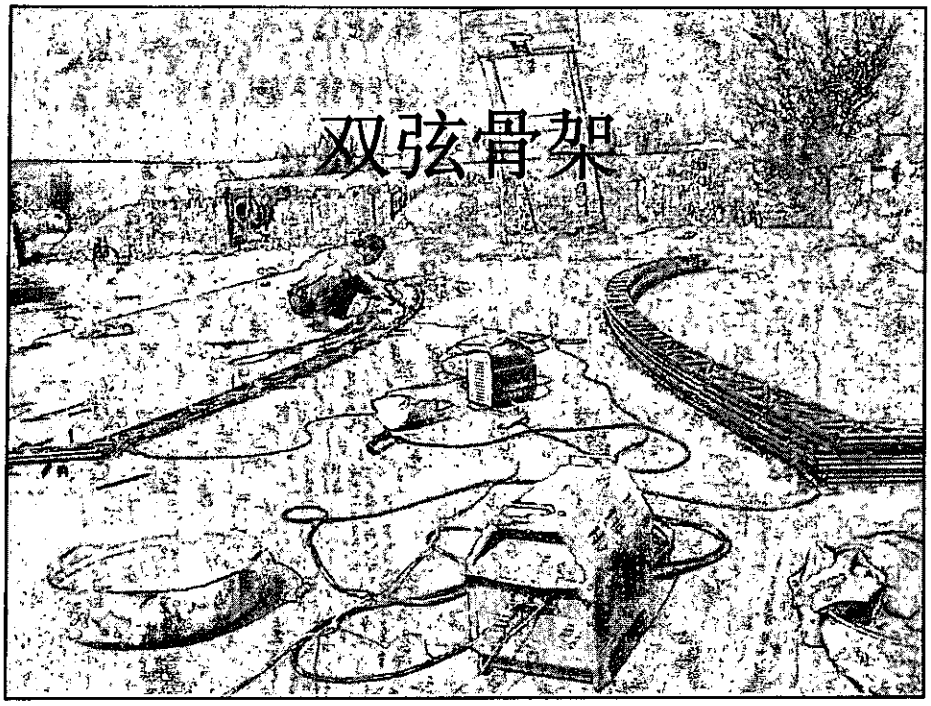

设计说明书

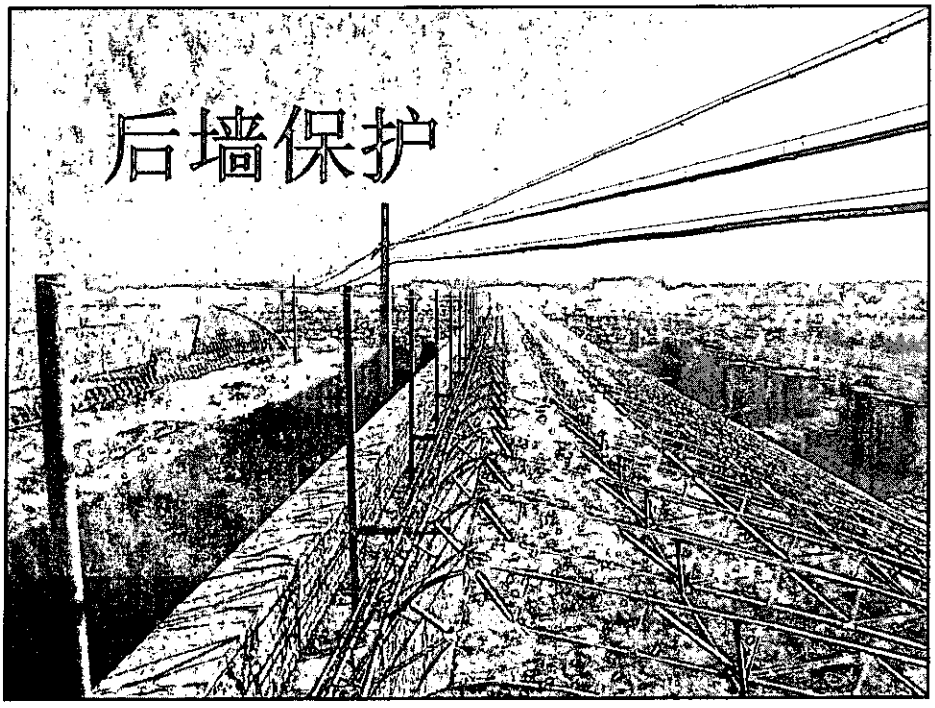

集约化育苗示范中心温室断面图
单位：
150
360
330
7500


建设中的温室

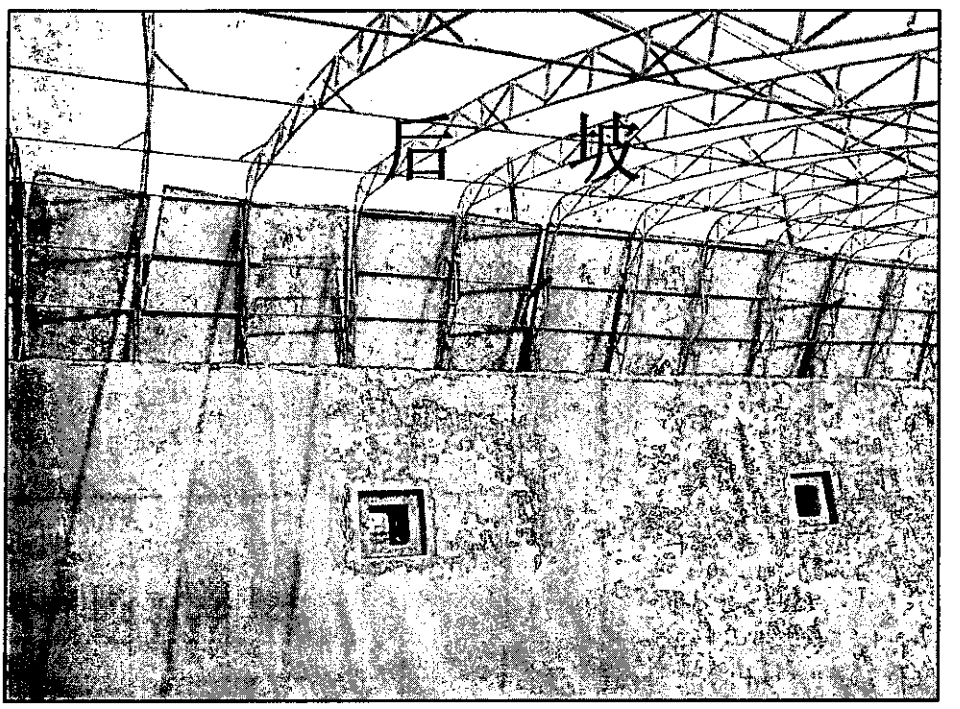

长75米，宽7.5米

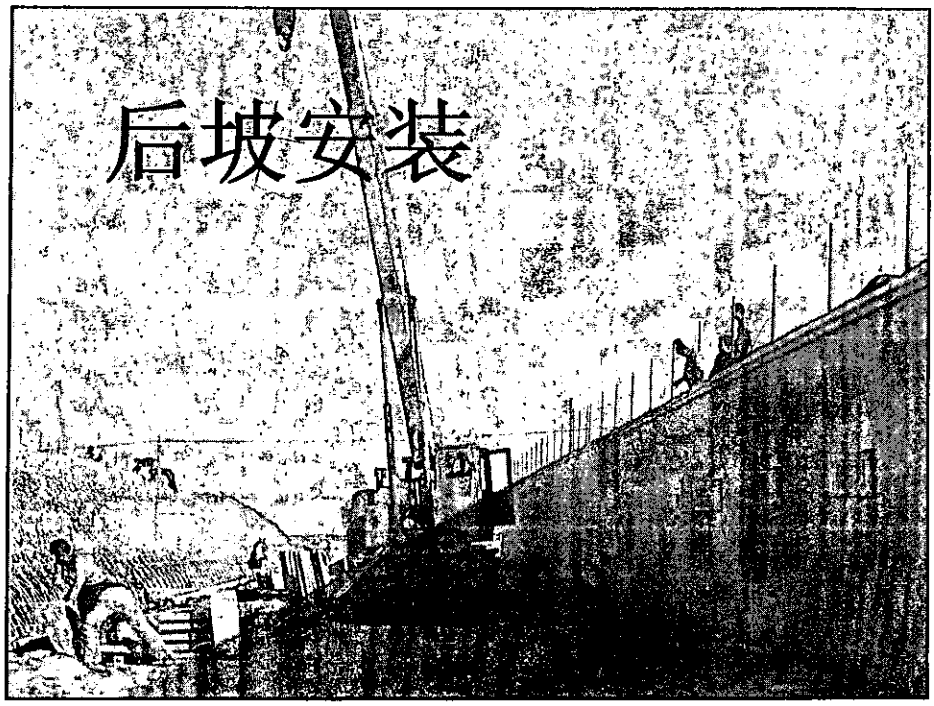

最高点4.39米

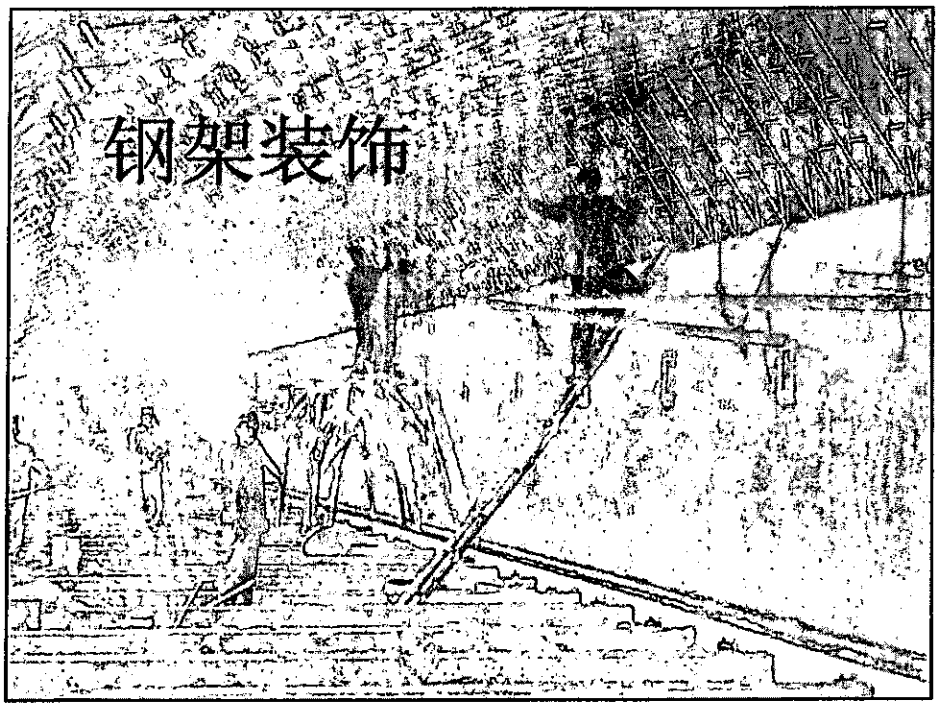

双弦骨架

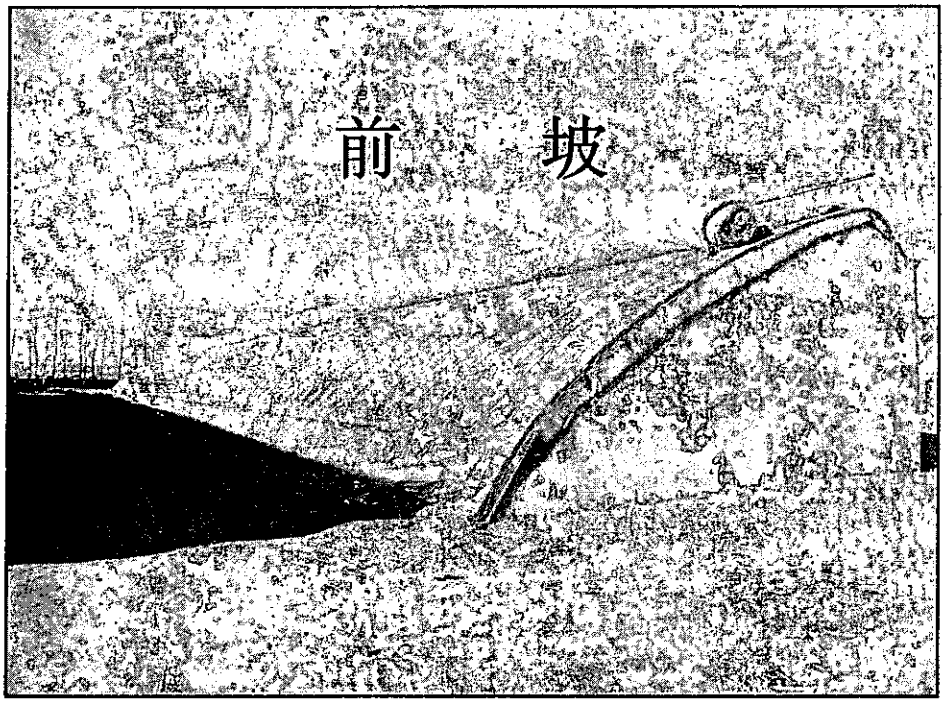

后墙保护


24中空砖墙

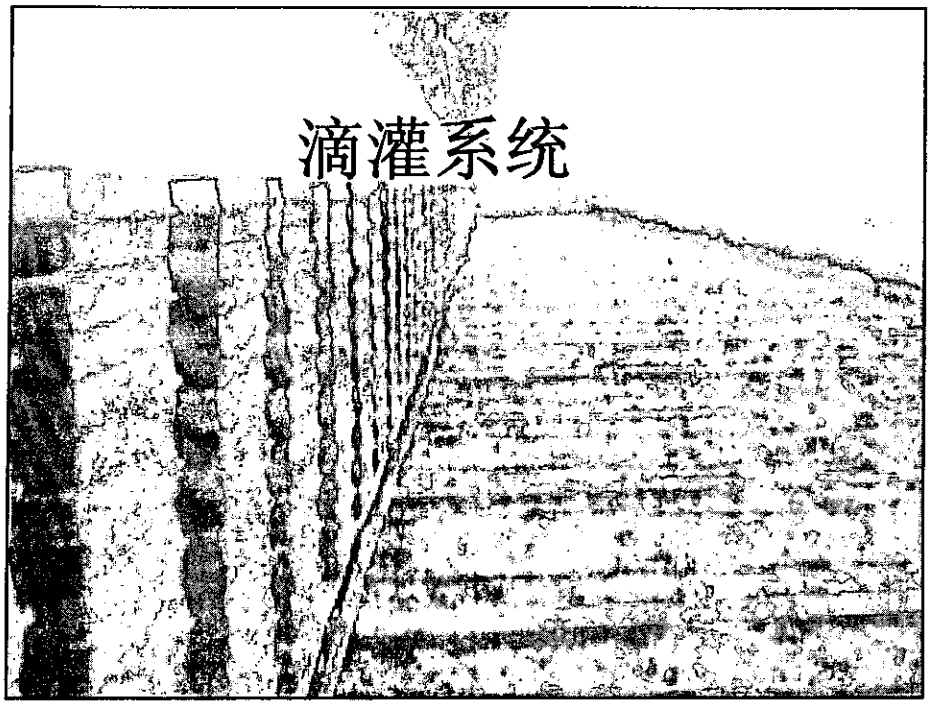

后 坡


后坡安装

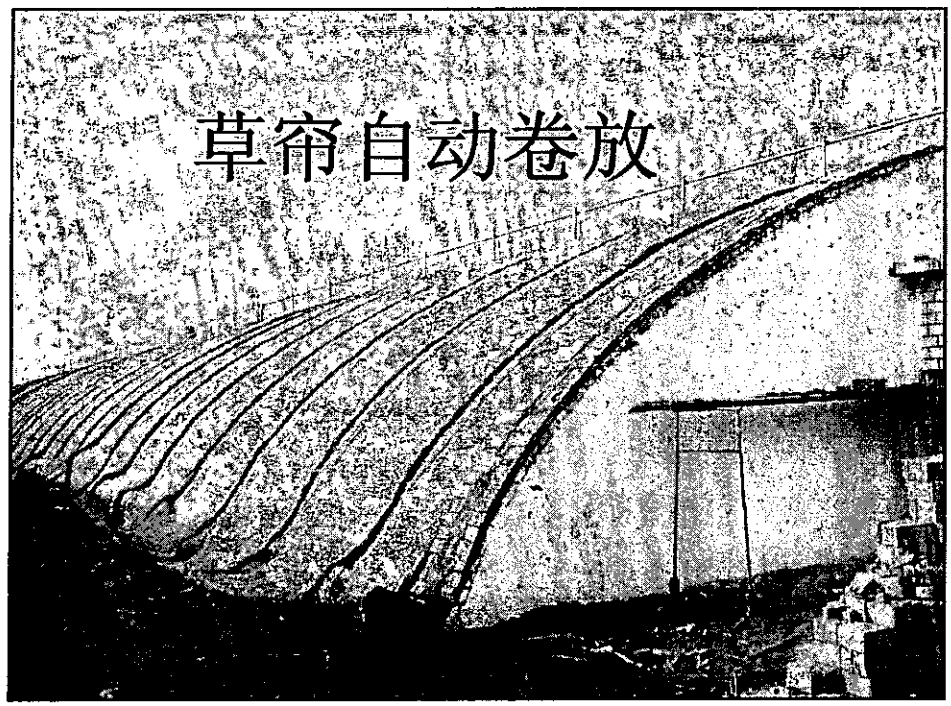

钢架装饰


前 坡


预热池


滴灌系统

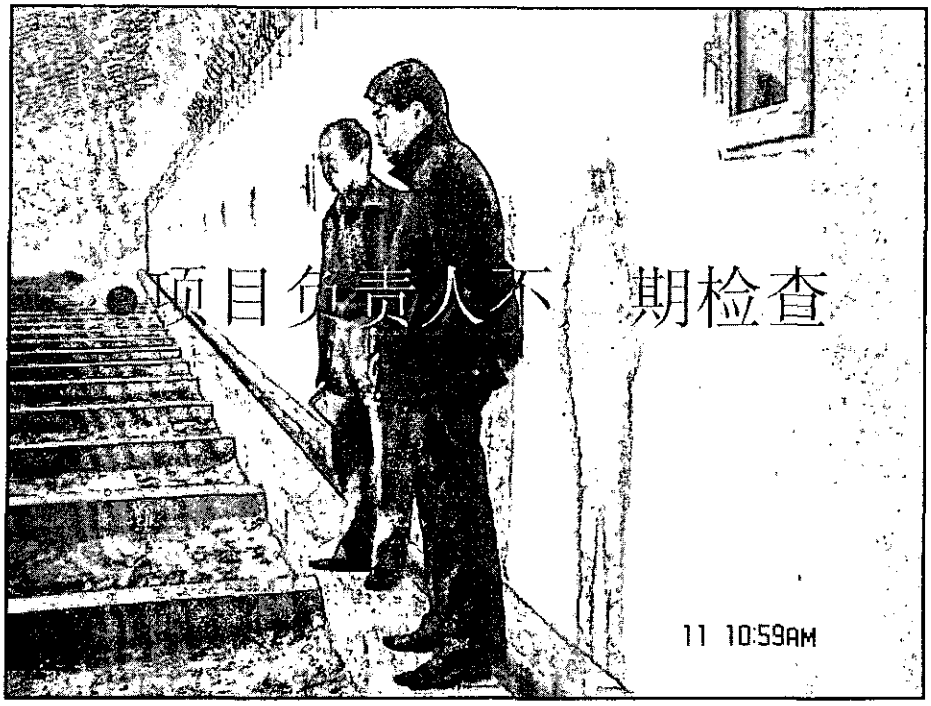

托盘育苗

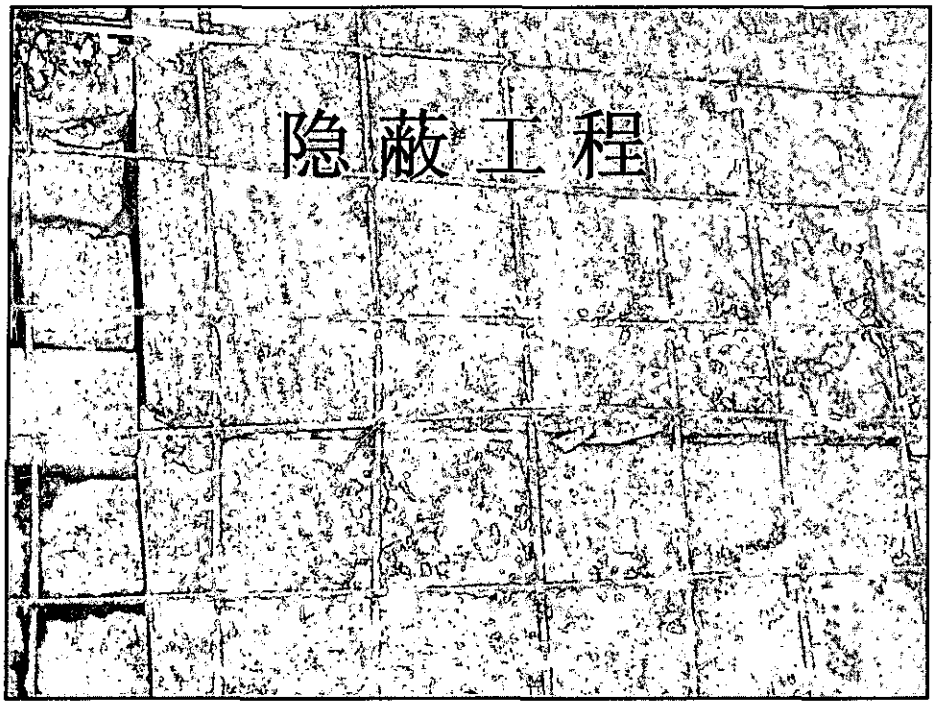

草帘自动卷放

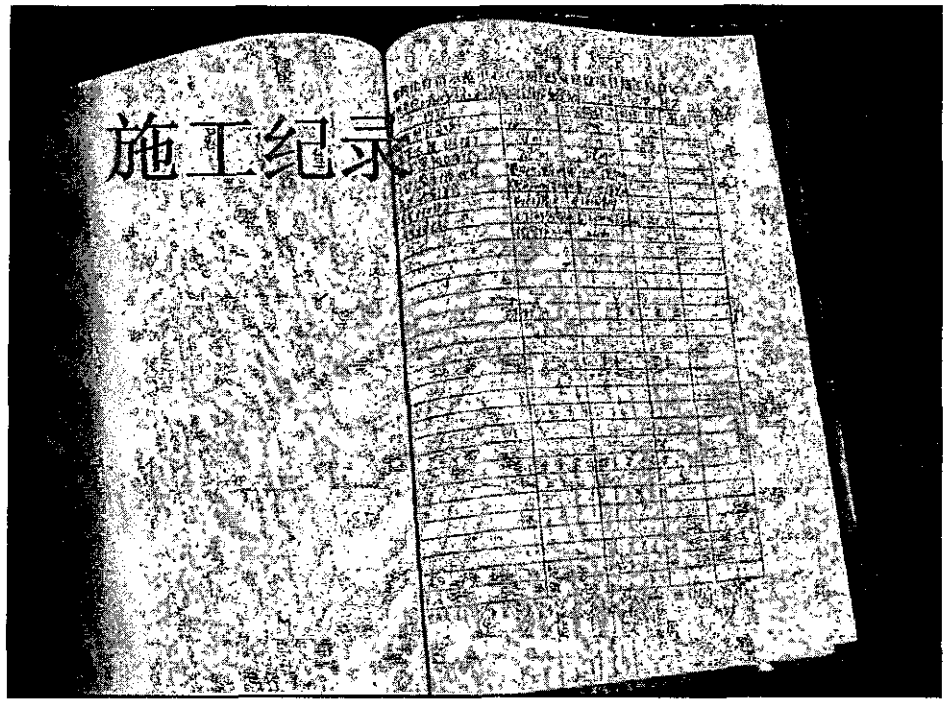

技术规程及设备

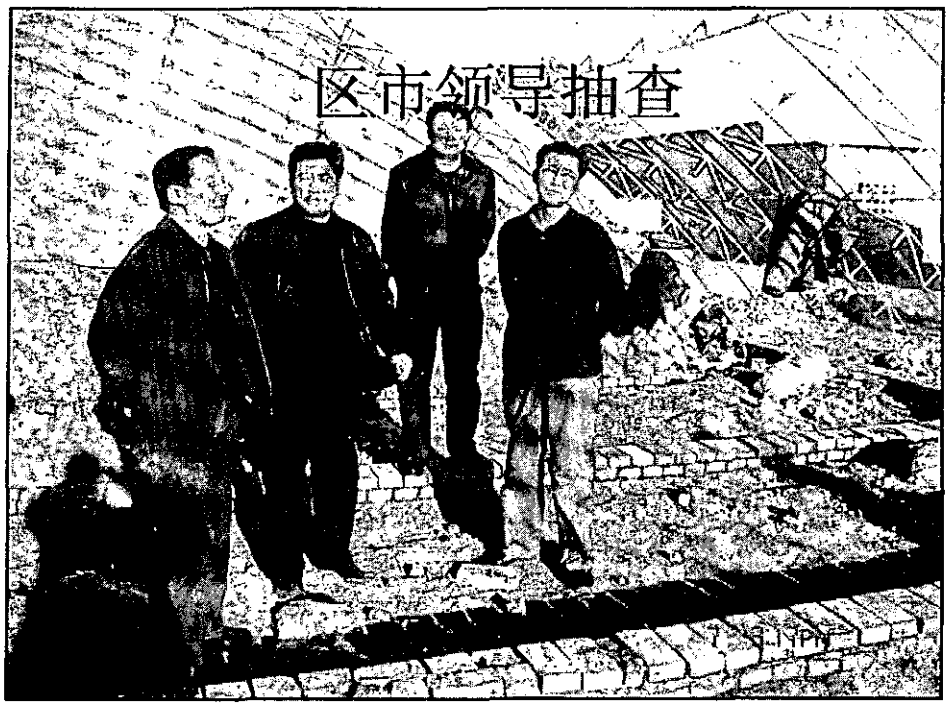

加强监督保证质量
3:14PM


国家局实施指南
烟草行业甲基溴淘汰(二期)
“甲基溴淘汰集约化育苗示范中心”
建设工作实施指南
(讨论稿)


项目负责人不 期检查
11 10:59AM


隐蔽工程


施工纪录


区市领导抽查

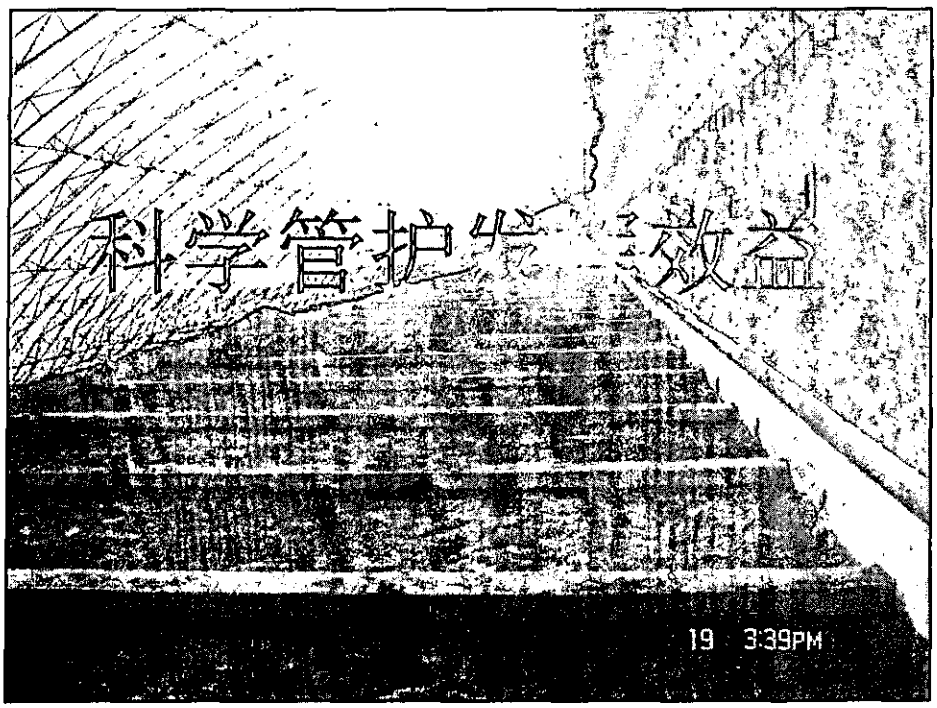

设计人员进行指导

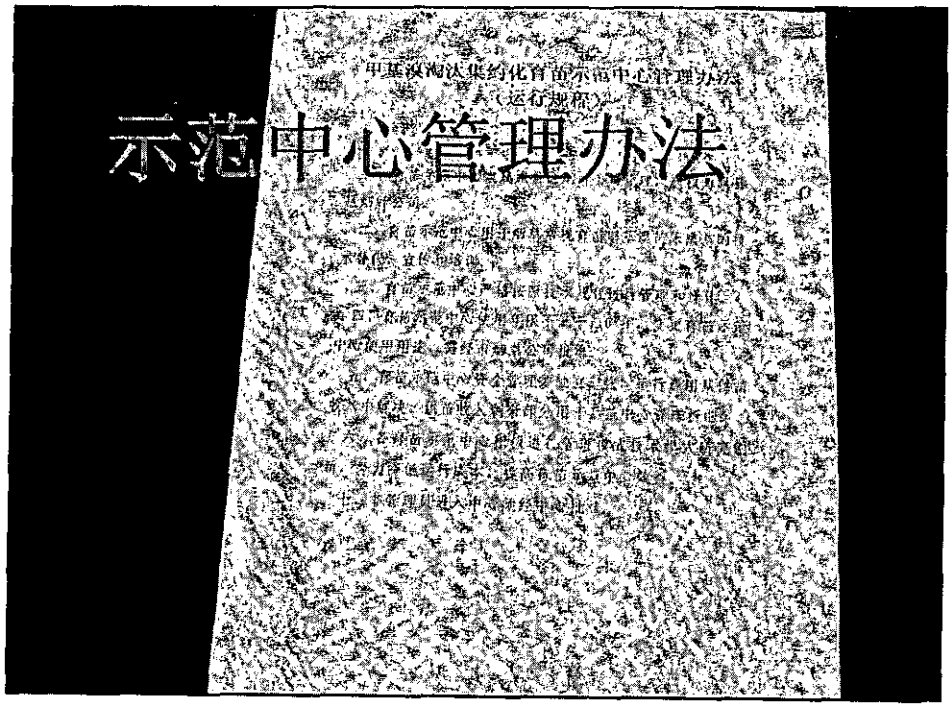

开标会议

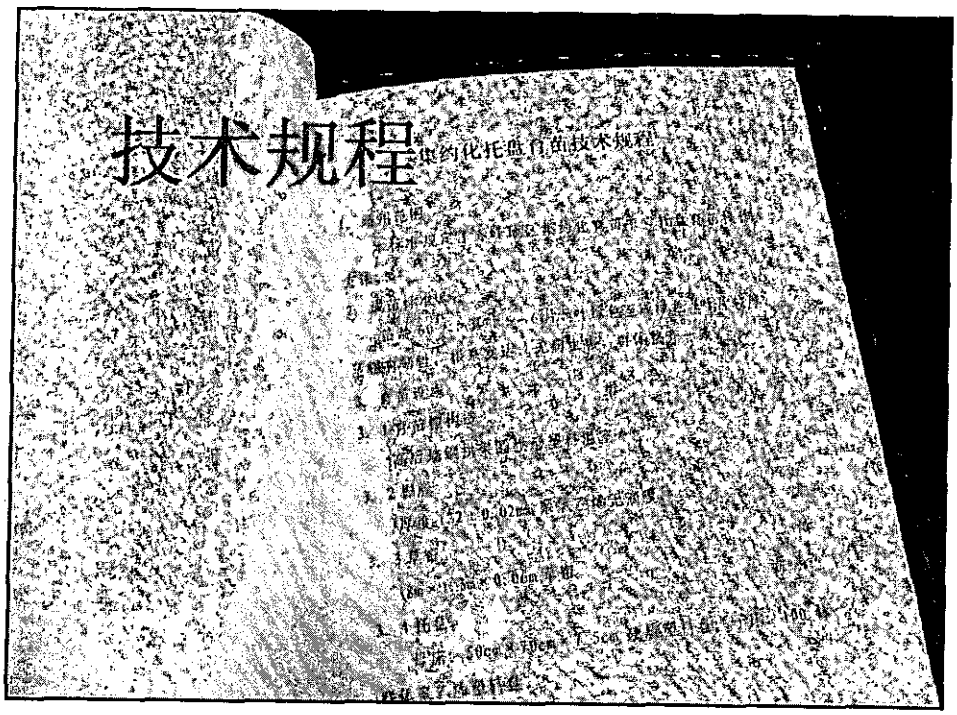

建筑材料质量检验报告


水质检验报告


建设合同
10%质量保证金


科学管护 效益
19 3:39PM


示范中心管理办法


技术规程


用户验收


用户验收现场

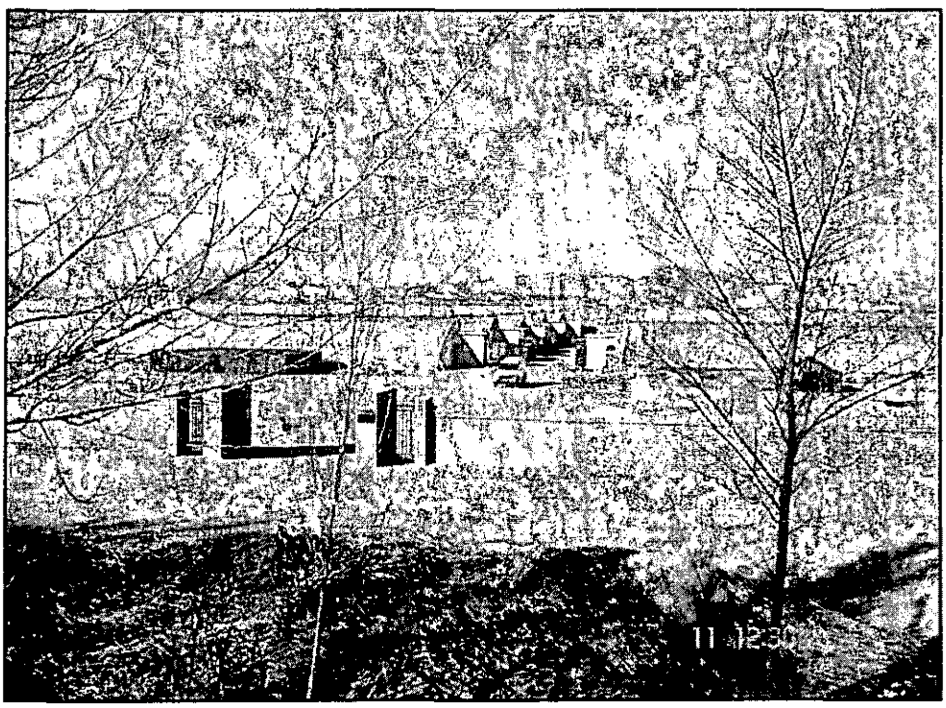

纪检部门监督项目建设
7 10:13AM


检查通风窗
0:12AM


验收会议

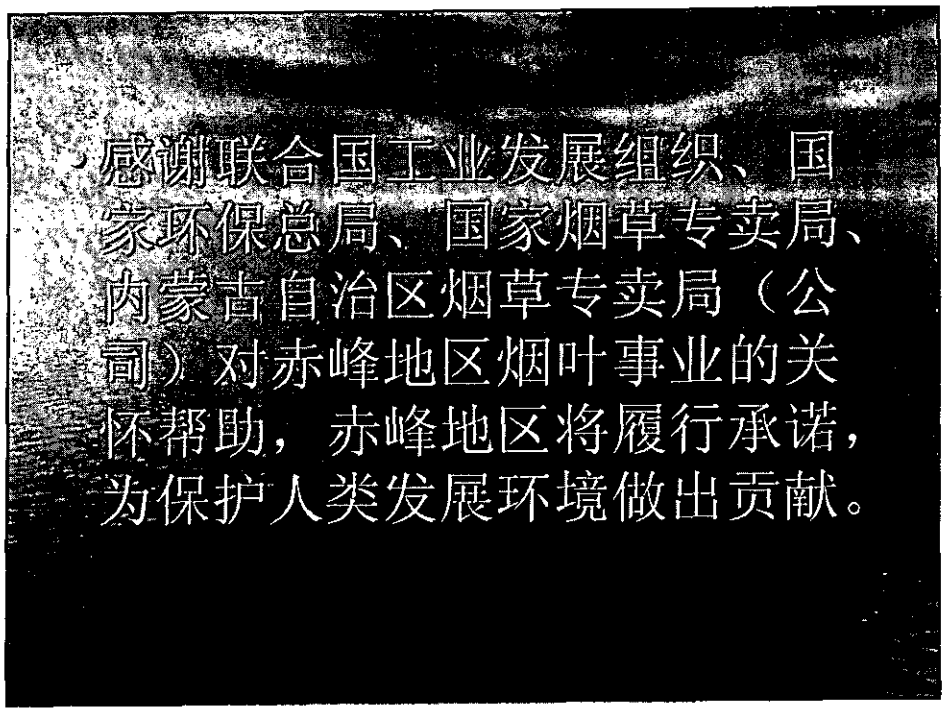

用户验收报告


本溪市烟草公司
7 10:25AM


11 12:30

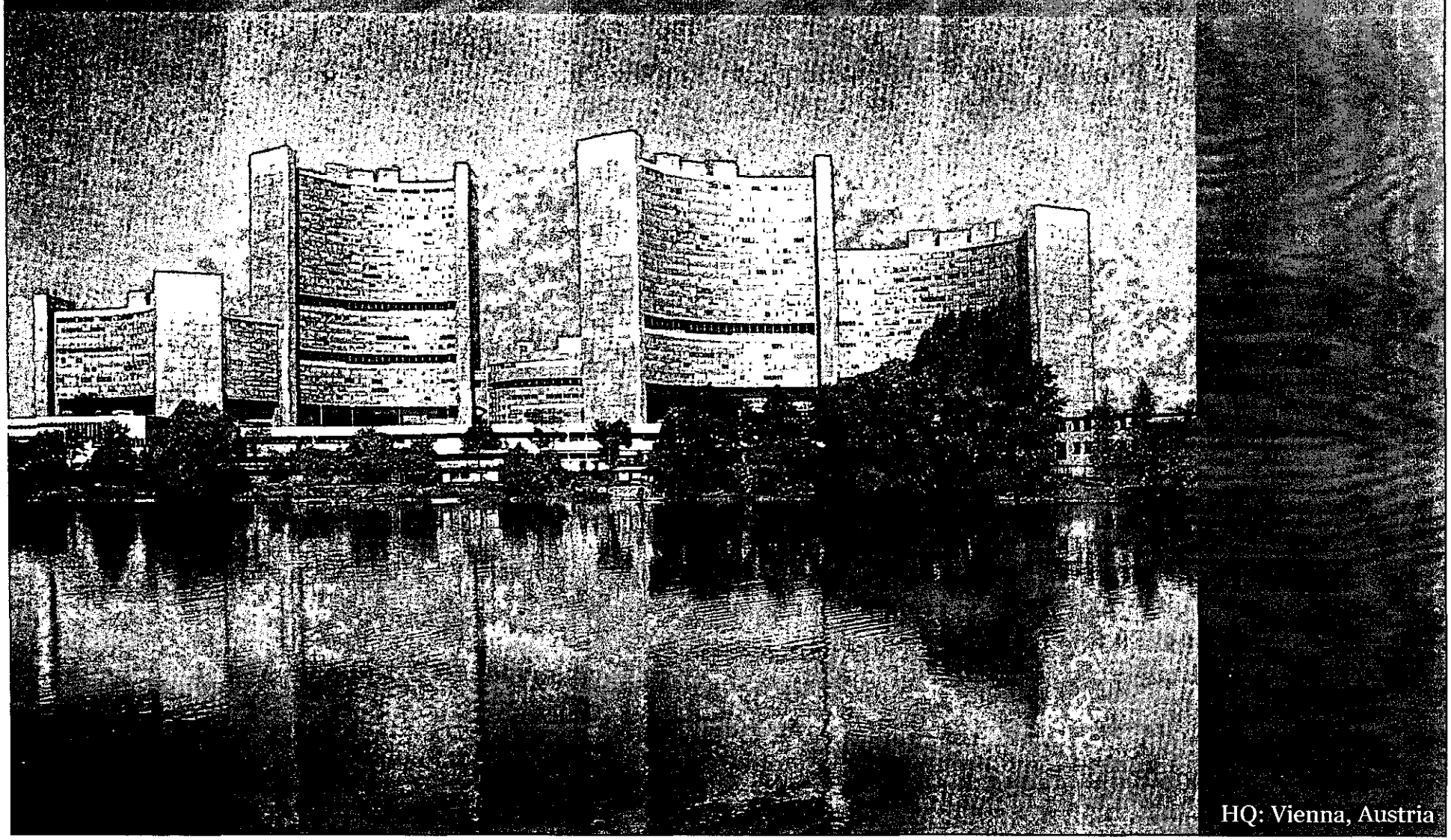
- 2007年集约化培育母苗面积100%
- 斯美地使用面积84.6%

- 2008年集约化培育母苗面积100%
- 斯美地使用面积100%


感谢联合国工业发展组织、国家环保总局、国家烟草专卖局、内蒙古自治区烟草专卖局（公司）对赤峰地区烟叶事业的关怀帮助，赤峰地区将履行承诺，为保护人类发展环境做出贡献。

UNIDO

United Nations Industrial Development Organization



HQ: Vienna, Austria

Annex IV

Greenhouse technology for seedlings production

Mr. Alessandro AMADIO
Industrial Development Officer

UNIDO Regional Office – Beijing, China

Phone: +86 10 6532 3440 ext. 220
Fax: +86 10 6532 6315
e-mail: a.amadio@unido.org

Summary

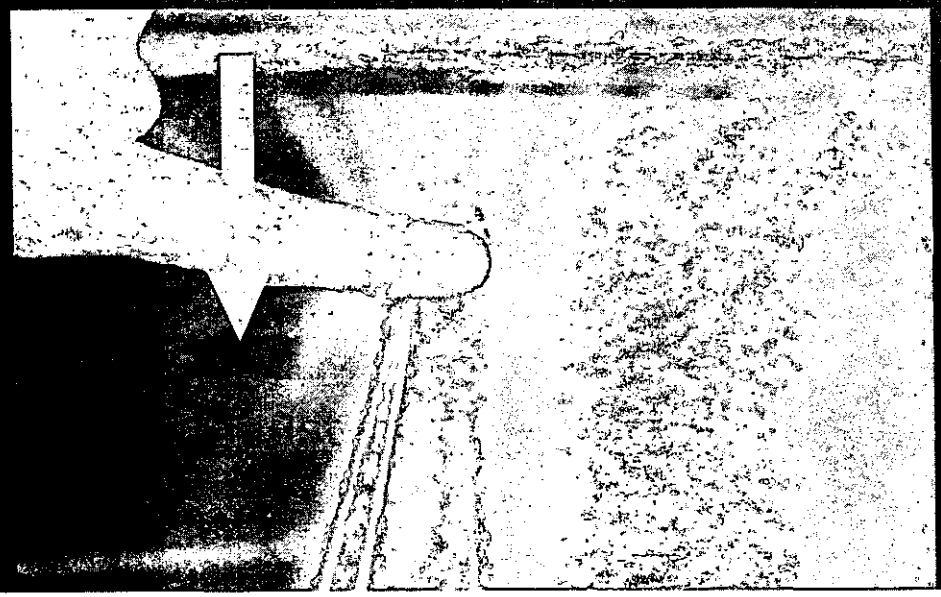
1. Nursery Location
2. Greenhouse Orientation
3. Greenhouse Types
4. Light radiation and transmission
5. Metal structure
6. Thermal Screens
7. Civil works and installation
8. Space management and efficiency
9. Greenhouse volume
10. ... Others: cooling and ventilation systems, overhead irrigation and suspended tray system.

This presentation is a summary of lessons learned during the verification missions for commissioning the greenhouses installed by the regional STMAs in Chifeng (Inner Mongolia), Fujian and Yunnan provinces

Nursery Location

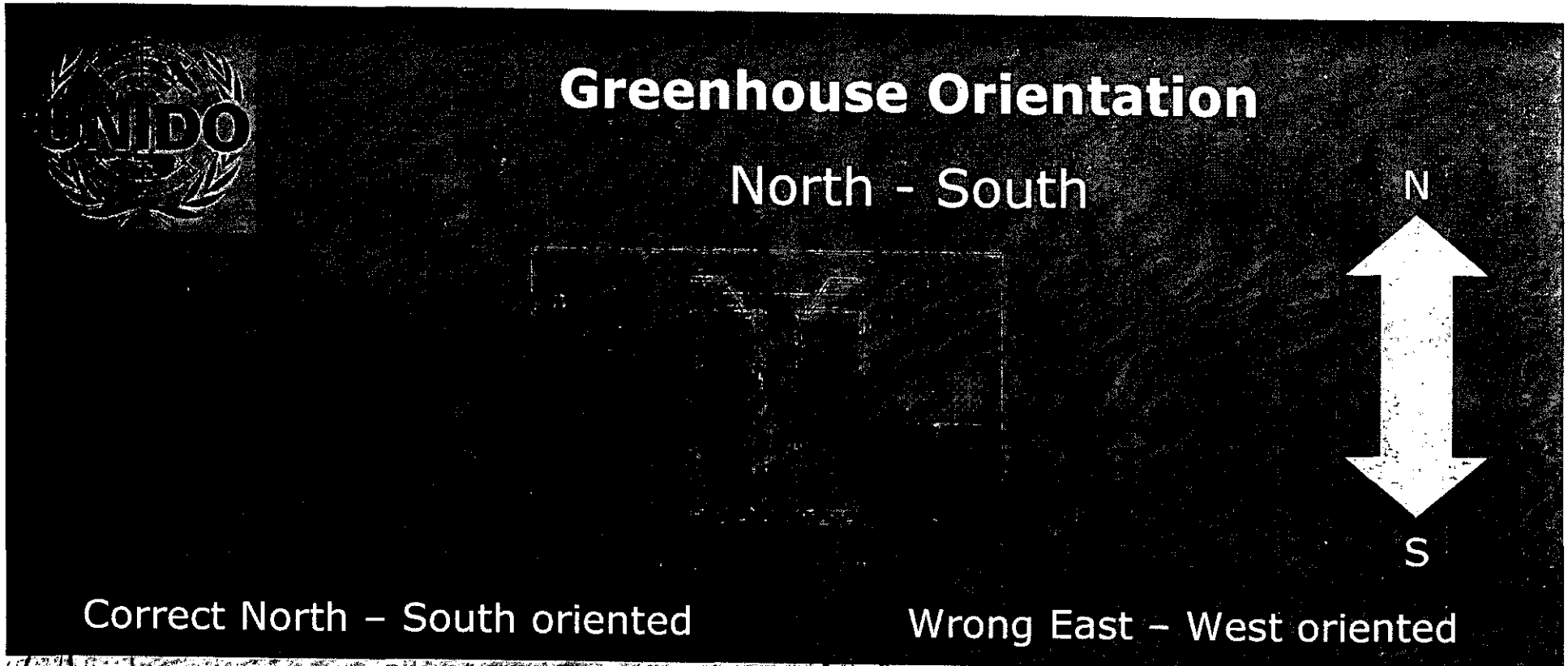
The selection of the proper location is the precondition for the success of the nursery in terms of seedling quality and cost. It has to look into the following parameters:

1. A favorable micro climatic condition characterized by: constant ventilation, high sun radiation and low relative humidity.
2. Free from potential sources of pathogens (insect, virus and fungi), as flower and horticulture crops plantations.
3. Water availability, in terms of quality, quantity.
4. Clean environment, free from pollutants such as smoke, ash, dust, etc.

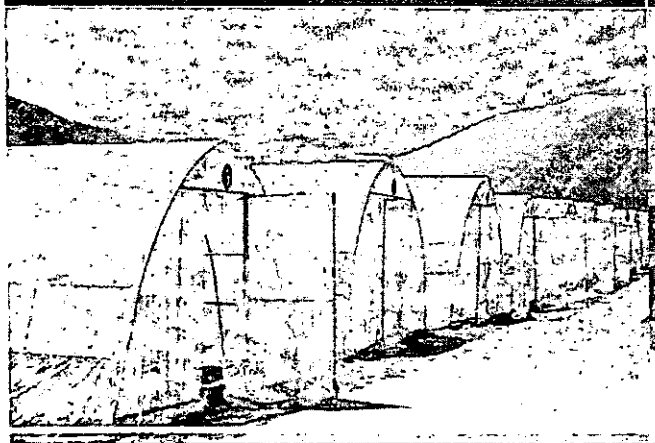
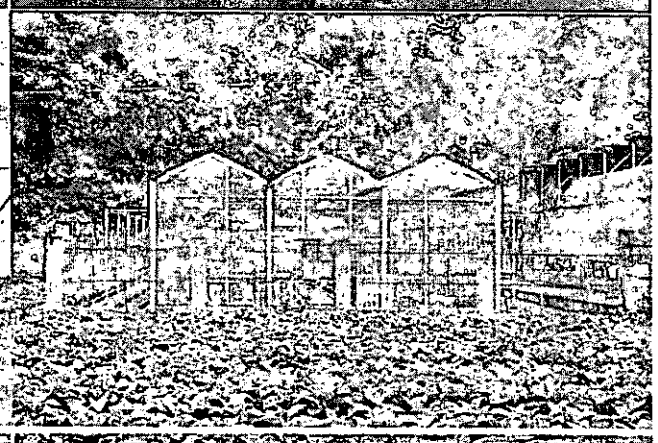


Greenhouse Orientation

North - South



Greenhouses Types

Low tunnel	High tunnel	Venlo
		
Cost: 27 RMB/m^2 (1/5)	Cost: 130 RMB/m^2 (1)	Cost: 1,040 RMB/m^2 (x8)
Polyethylene film	Polyethylene film	Polycarbonate panels
Removable structure	Fix structure	Fix structure
Low volume and poor climatic control	High volume and good climatic control	High volume and good climatic control
High light radiation	High light radiation	Low light radiation
Suitable for Short crop season	Suitable for Long crop season	Suitable for Long crop season
Poor ventilation	Good ventilation	Good ventilation
Low resistance wind	High resistance wind	High resistance wind and snow load

Light radiation and Light transmission

Light radiation is given by the local climatic condition.
Light transmission is given by the construction material.

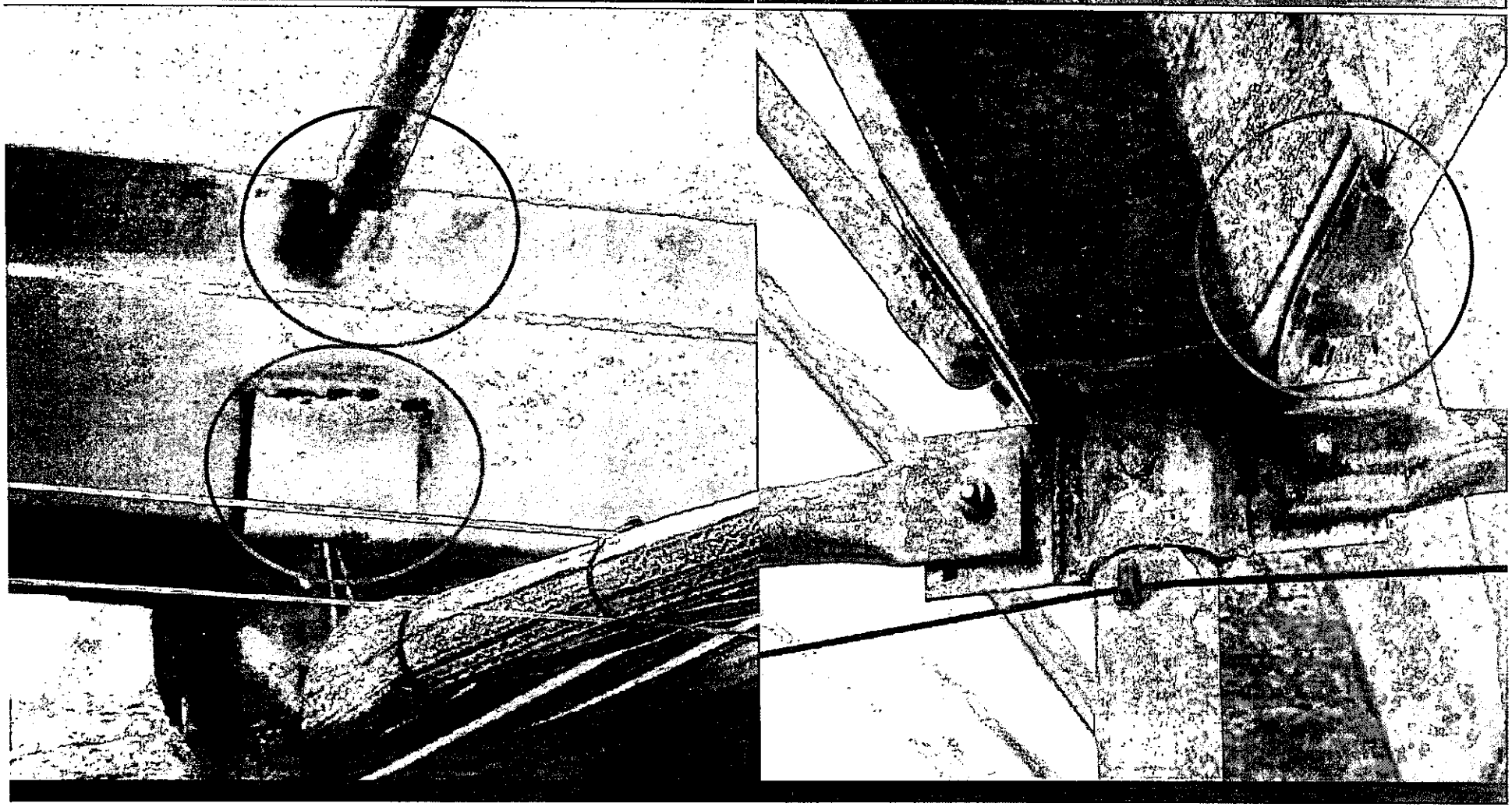
1. Light and Temperature are the two key production parameters, their control ensure the production of strong and healthy seedlings.
2. Low light radiation results on excessive internodes elongation, soft tissues, susceptibility to fungal disease, plants lost after transplanting.

Venlo – polycarbonate panels Low light transmission	High tunnel – polyethylene film High light transmission

Metal structure - Welding / bolds

1. Welding is not allowed for greenhouses installation, only bolds.
2. Temperature stress and wind quickly brake apart welded parts.

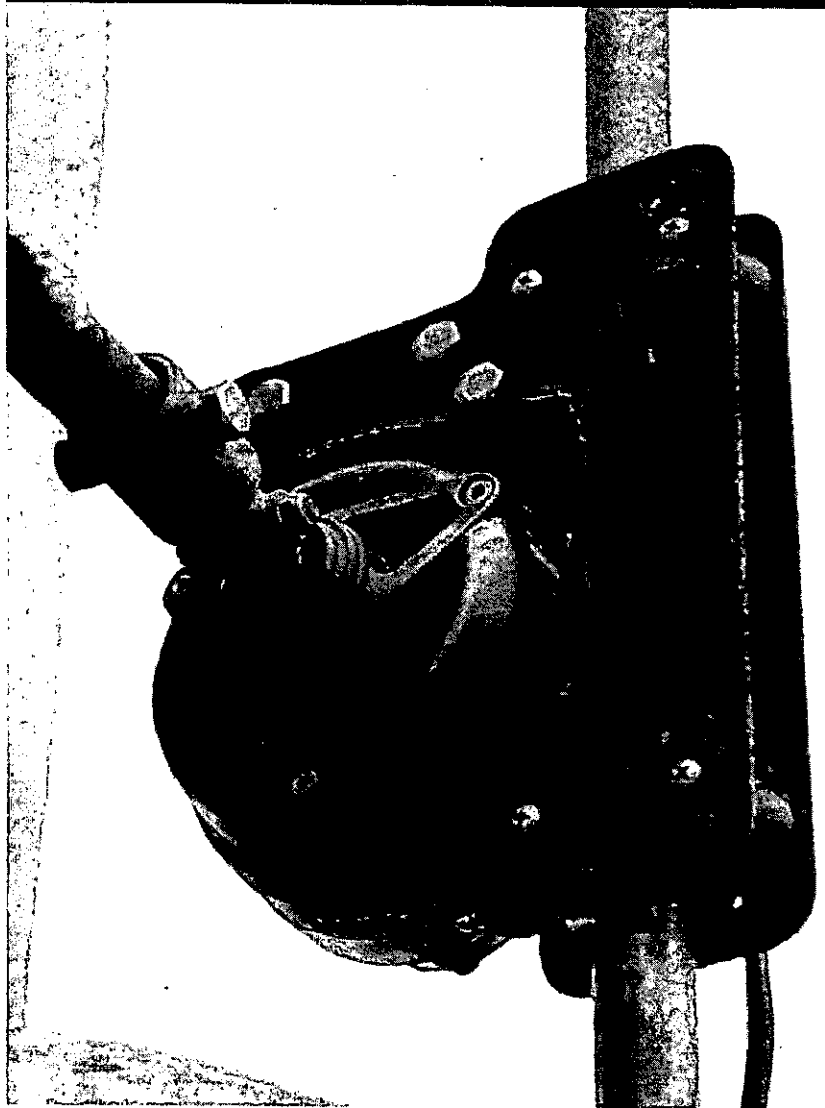
Welded - wrong	Bolded - correct

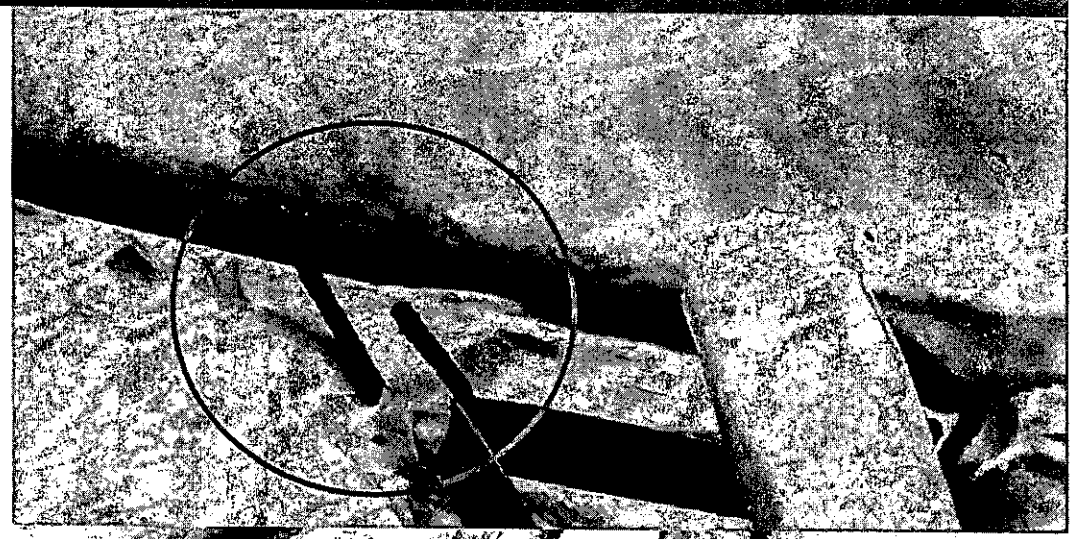


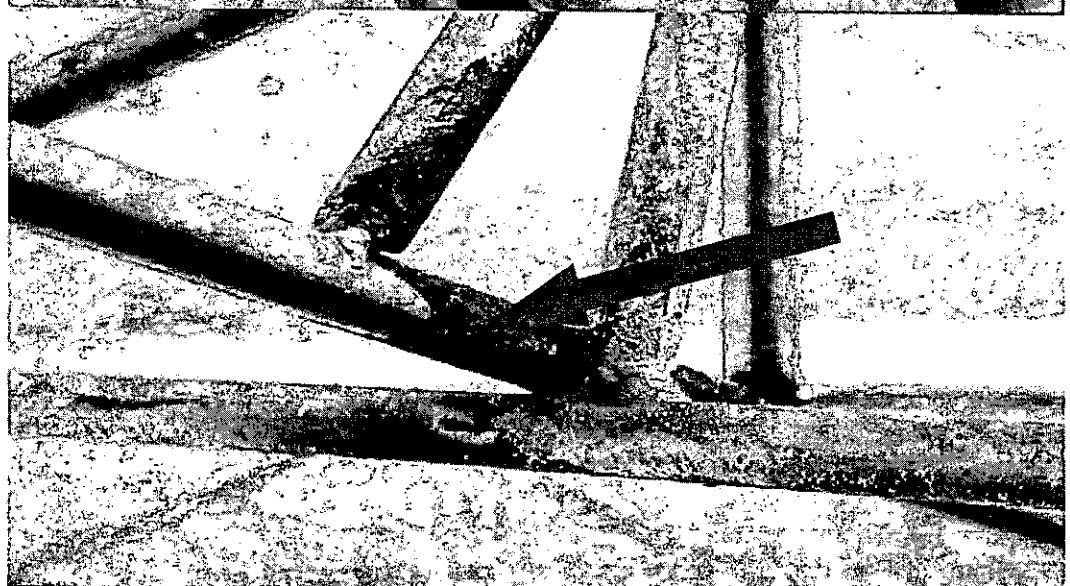
Galvanization

All component must be host still or cold (Zenzimir) galvanized

Metal part not galvanized get quickly rusted

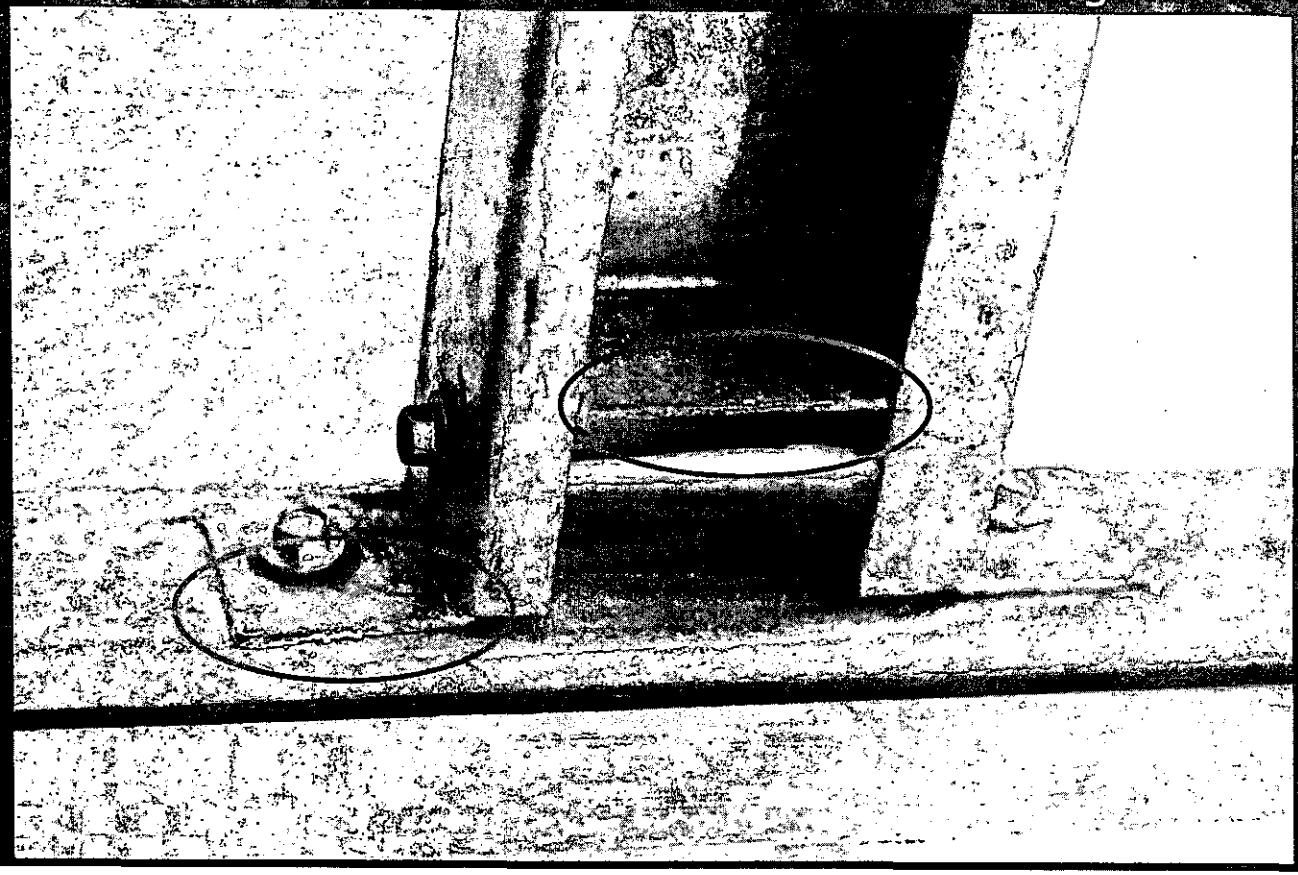






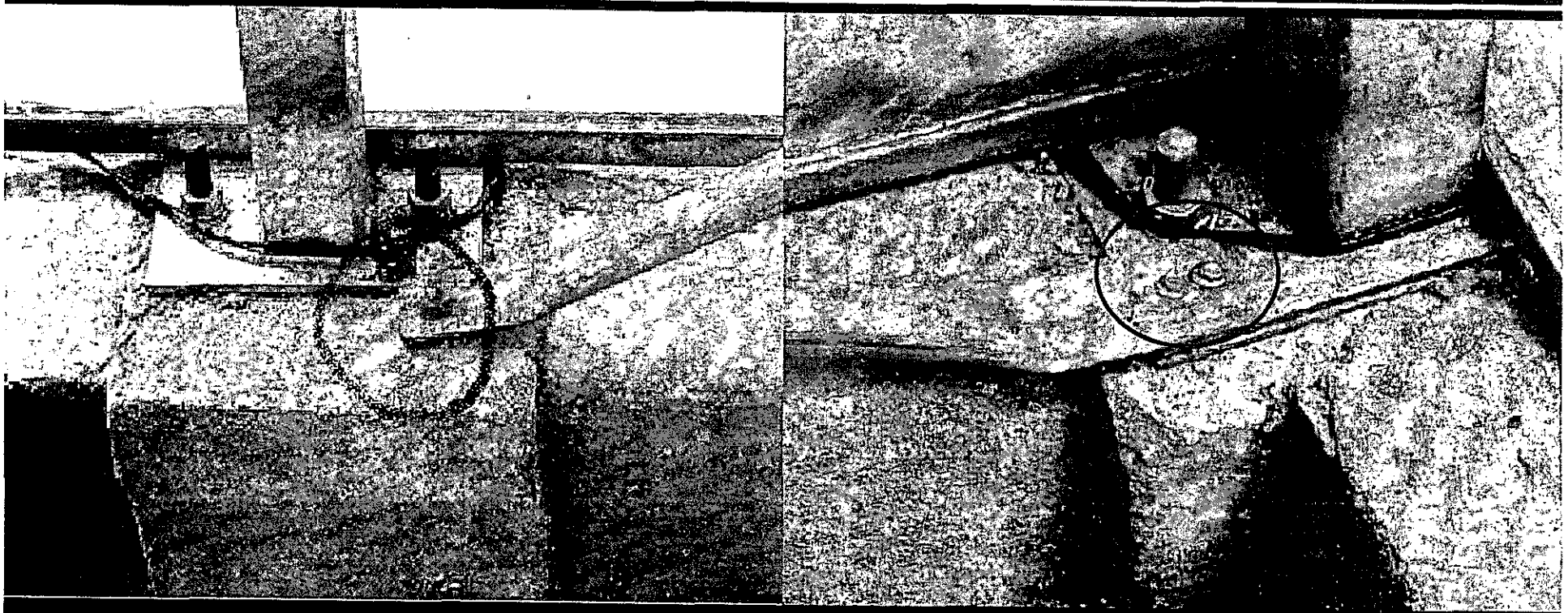
Galvanization

1. This component is cold still galvanized (Zenzimir) and was cut after the galvanization.
2. Components cut after the galvanization get rusted in the cutting point. Therefore they must be produced in row still and hot still galvanized afterward.



Bolds must be dimensioned according the the components' strength required

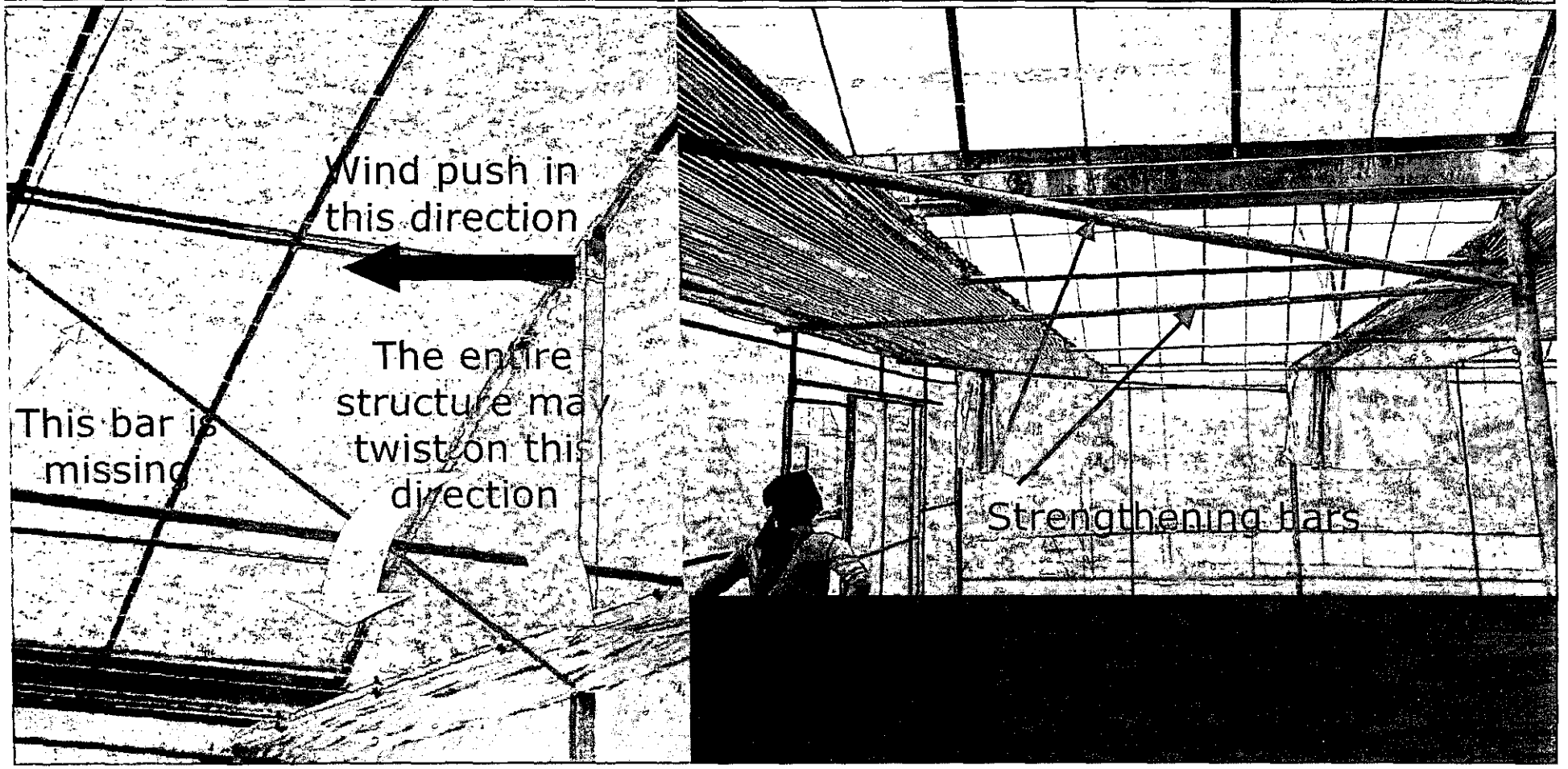
Correct bold size	Wrong bold size, too small



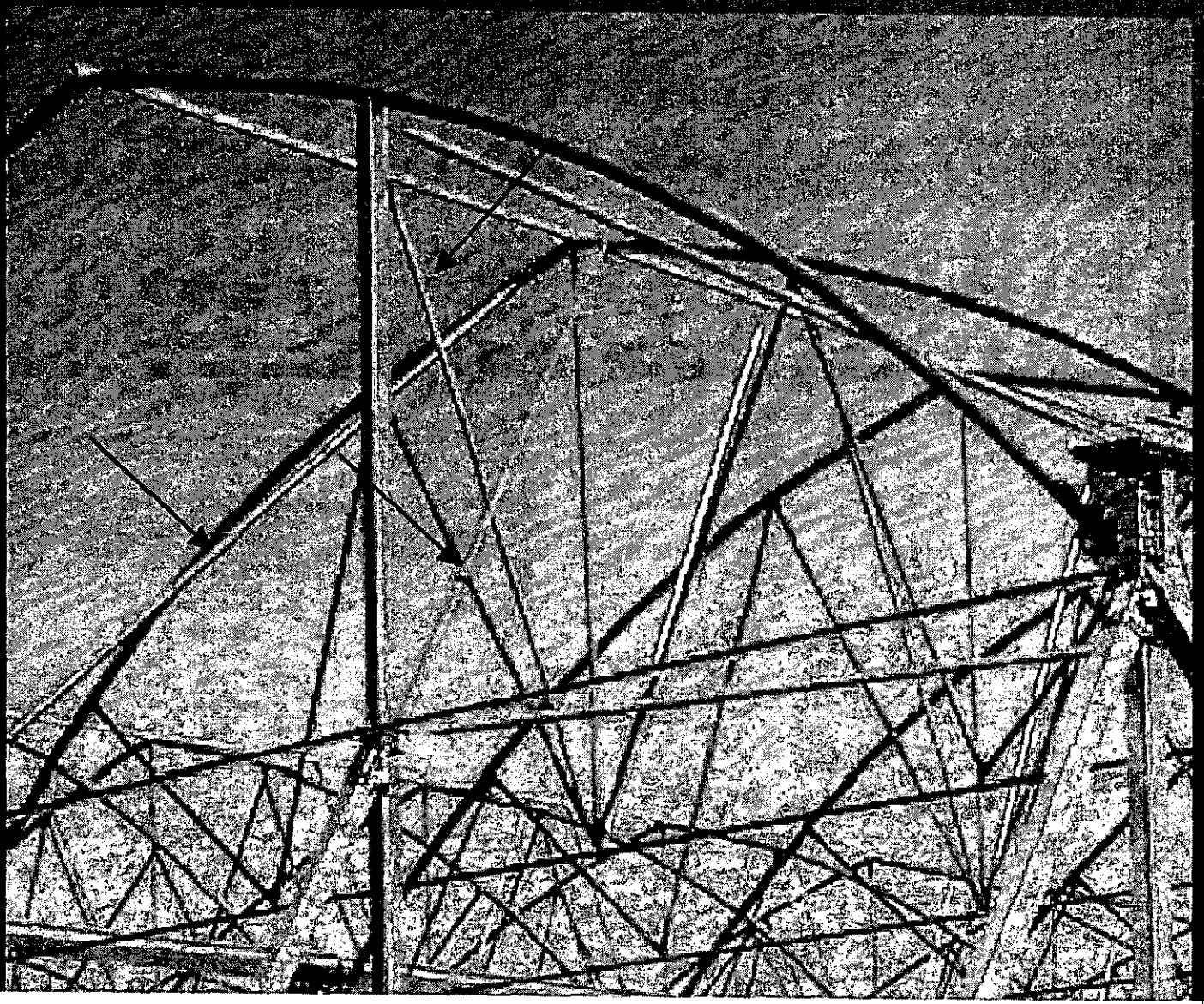
Structure strengthening components

Wrong - No bars

Bars correctly positioned



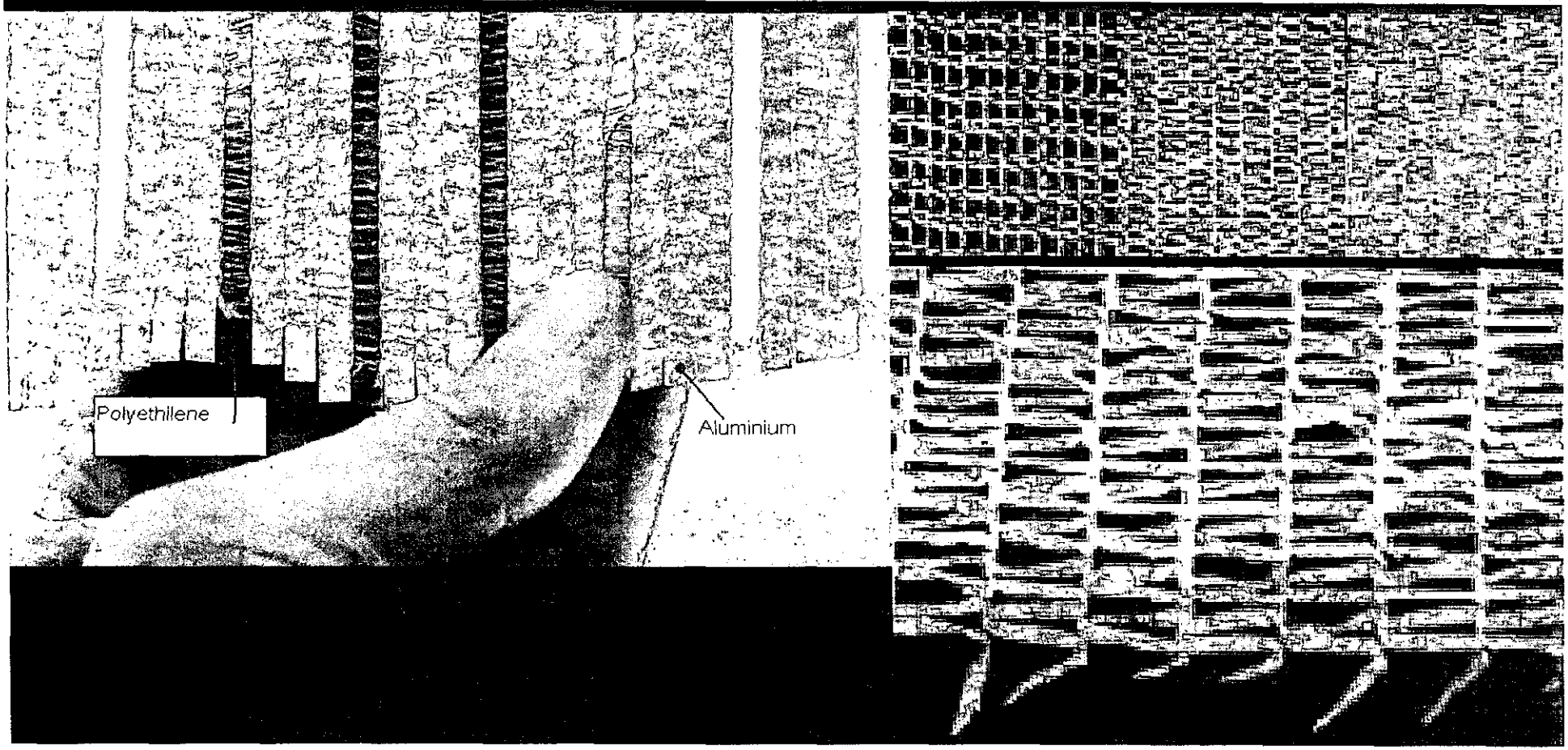
Structure strengthening components - bars



Thermal screen

Close structure: aluminum + polyethylene
Scope: to

Open structure: aluminum
Scope: to



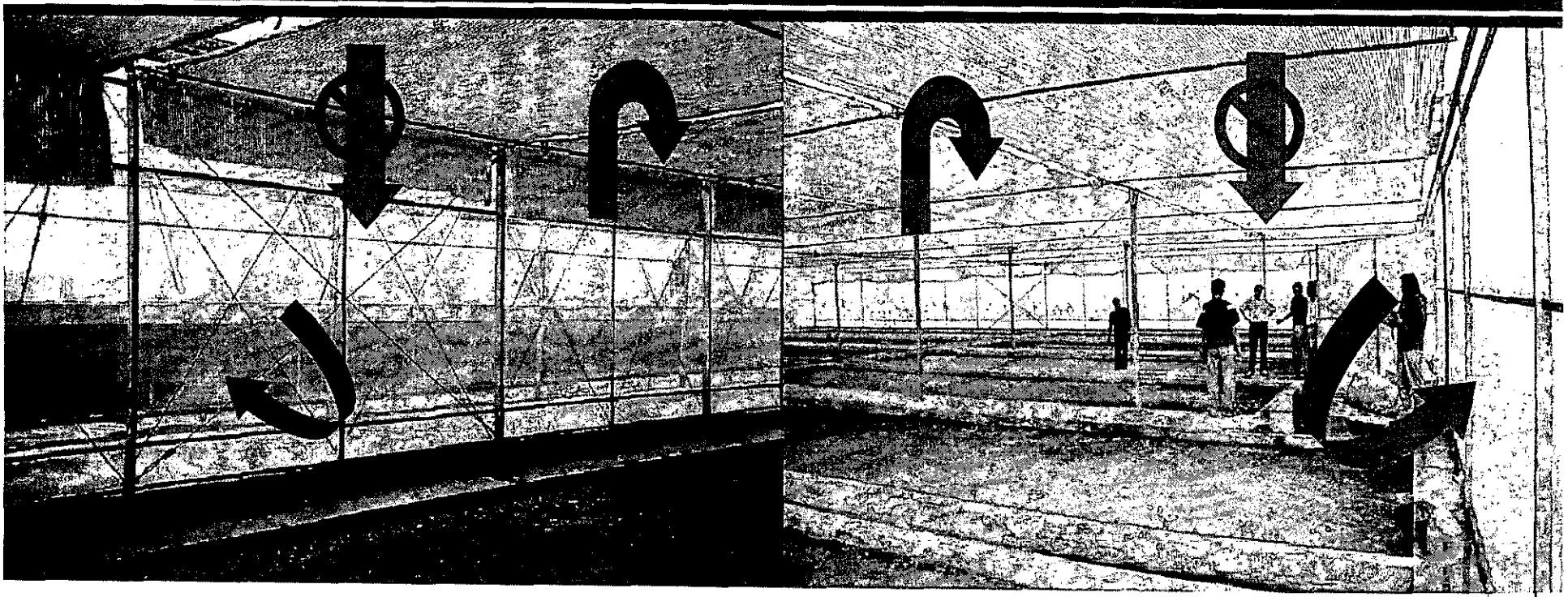
Close structure
Aluminum + Polyethylene

Strength: to temperature. It must fully cover ceiling and walls.

In the specific case shown below, the design chosen makes the screen inefficient, because heat escape through the uncovered side and front walls. No considerable increase of temperature is achieved.

Weakness: to temperature.

Very inefficient, the air circulation is limited therefore the heat do not escape through roof windows. The greenhouse overheat.

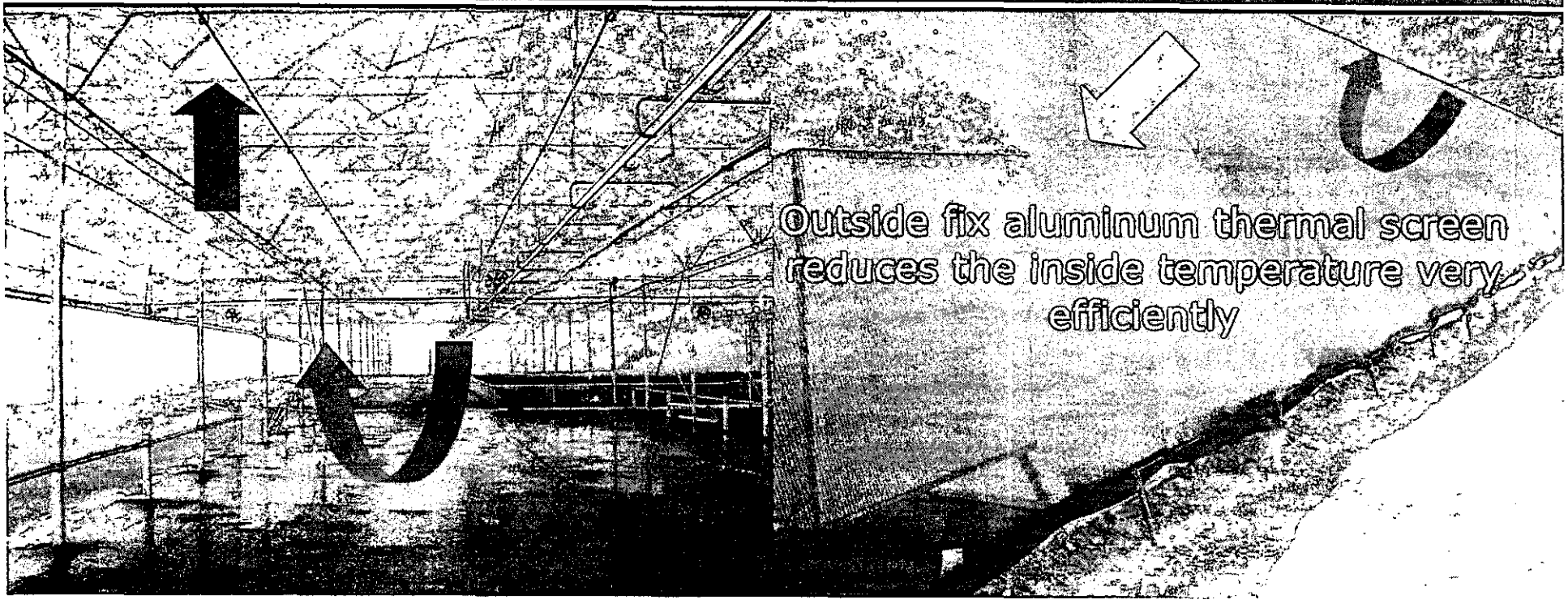


Open structure aluminum screen

Strength: to temperature. No need to cover the side walls, eventually the south wall.

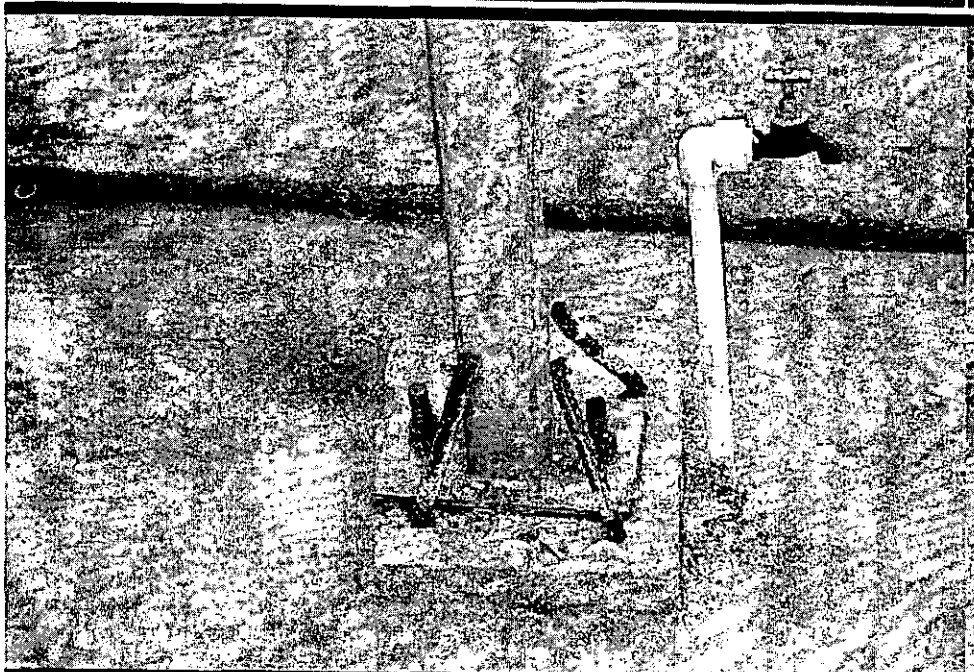
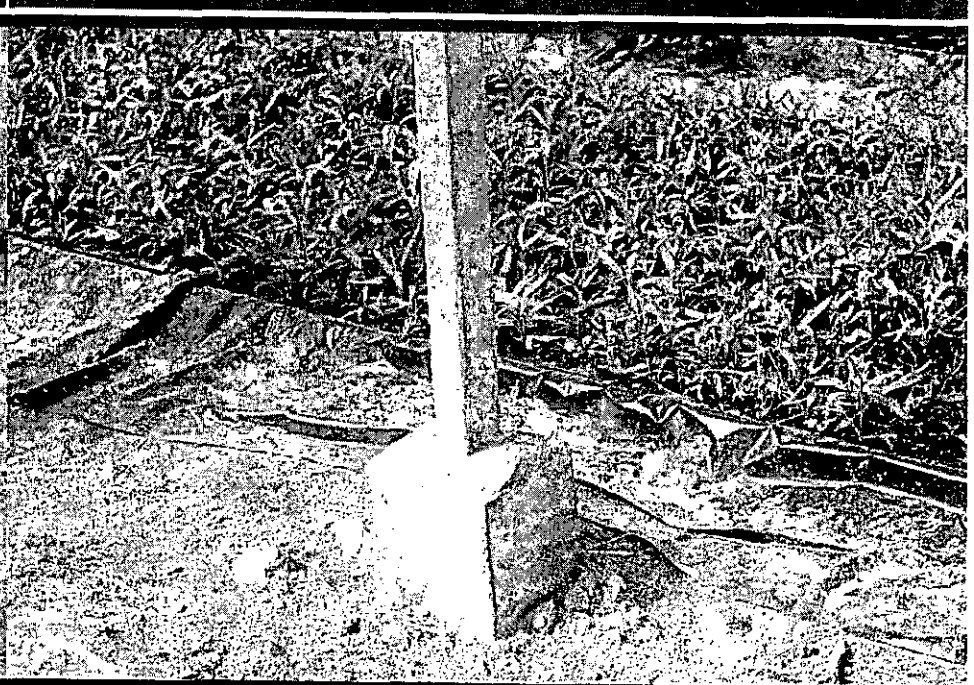
Very efficient, the air circulate through the screen and roof and side windows. A considerable reduction of the inside temperature is achieved.

Weakness: to temperature. Very limited, the heat escape through the open structure of the screen.



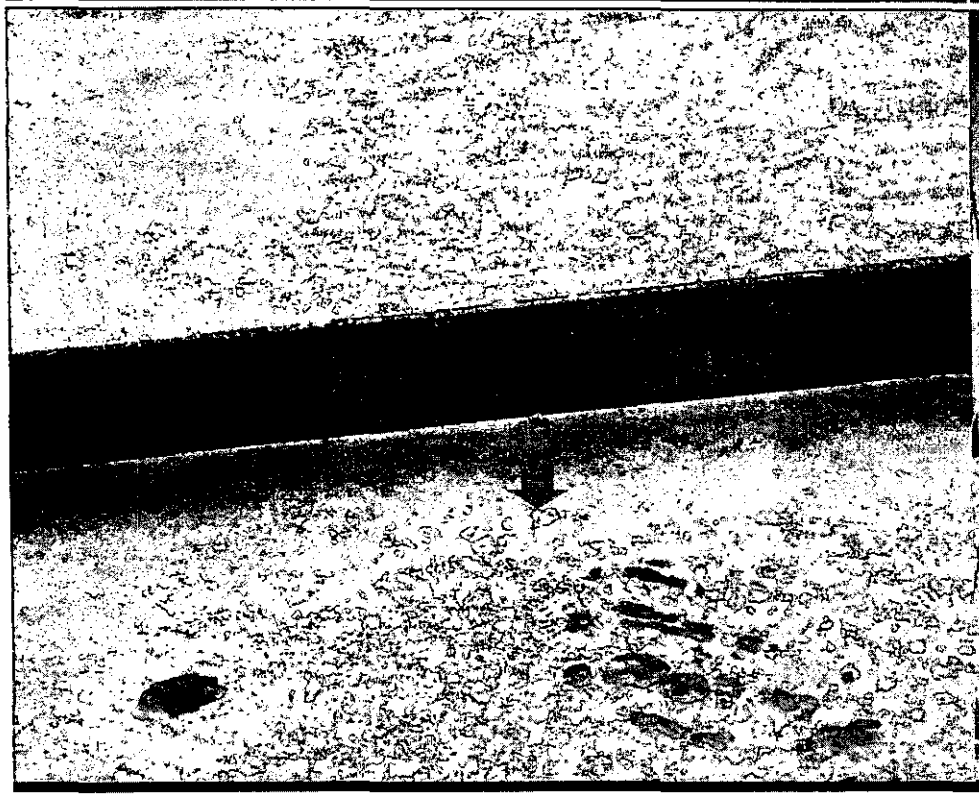
Civil works and installation

An accurate installation is the precondition to achieve the best possible performances from the equipment available

Wrong	Correct
	
The post is loose	The post is stable
Bolds and metal part are rusted	The base is protected against rust, corrosion and machinery

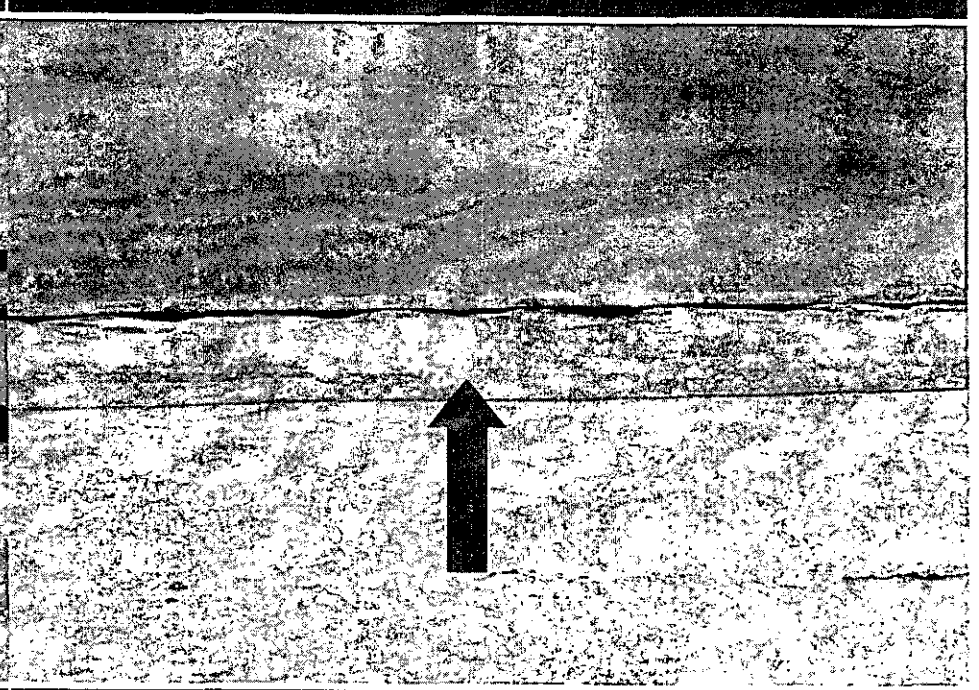
Civil works and installation

Installation of rails under entrance doors

Wrong	Correct
	
Open space between the rail and the concrete path, insect easily enter into the greenhouse	The junction between the rail and the concrete path is perfectly sealed

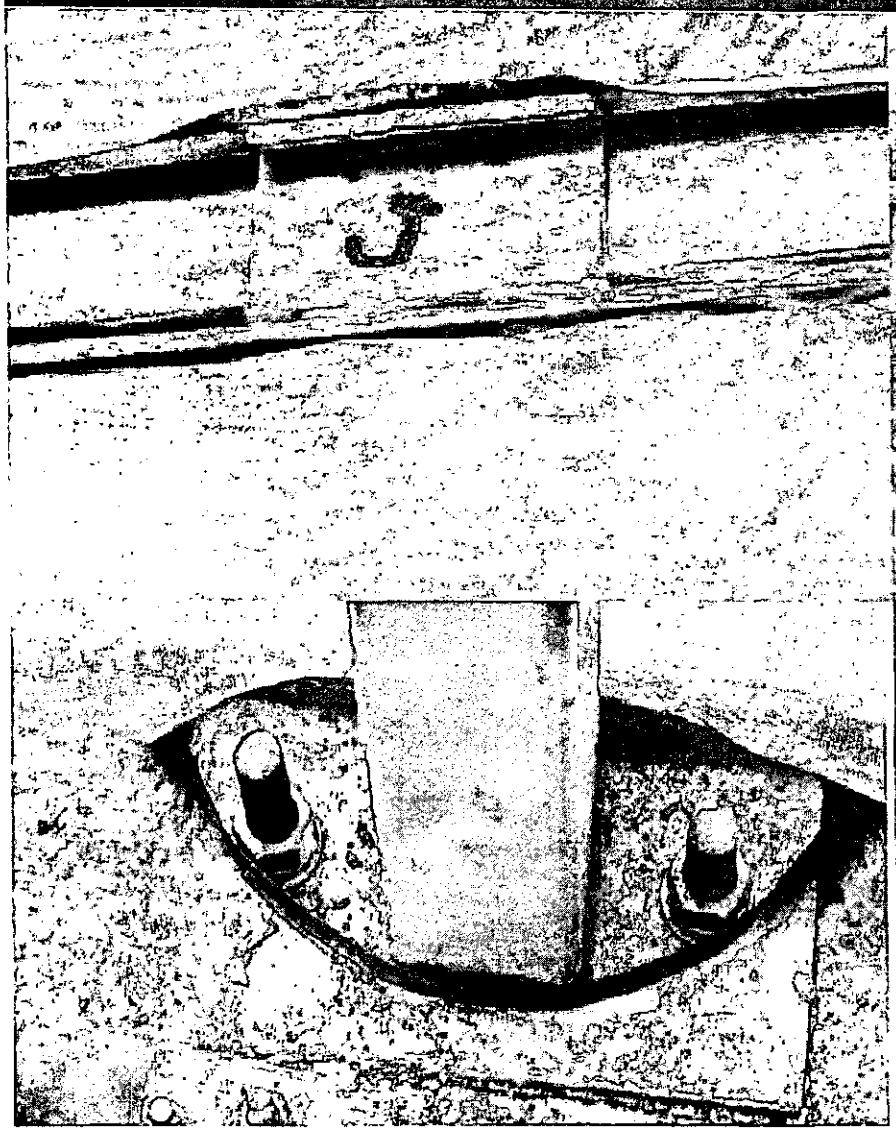
Civil works and installation

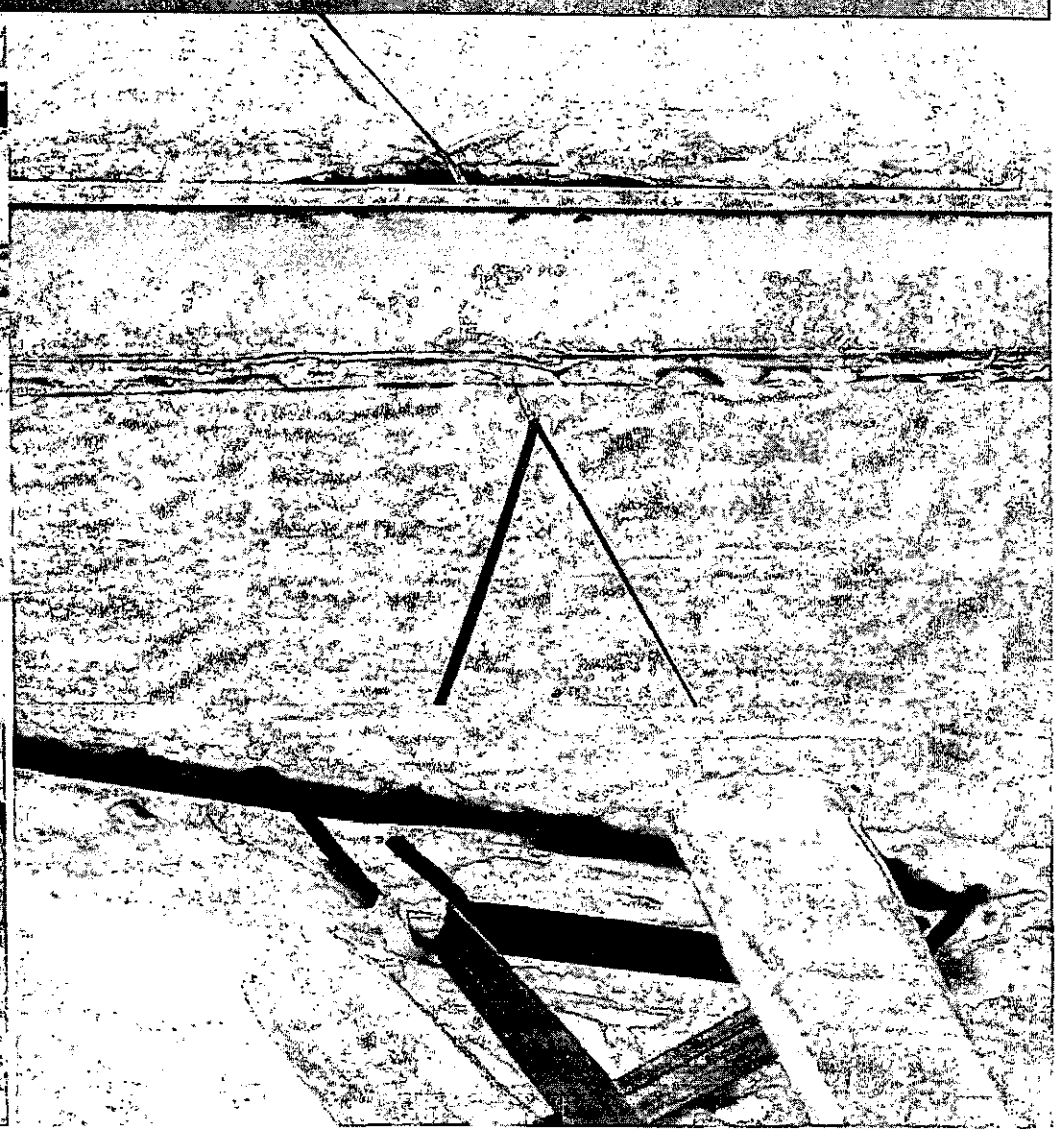
Junction between side walls and side paths

Wrong	Correct
	
Open space at the bottom of the side wall, insects, rats and other animals could easily enter into the greenhouse	The junction between the side wall and the side path is perfectly sealed

Civil works and installation

: the system is unsuitable, the hooks are too week and get quickly rusted, therefore the strings are loose and so the side curtains insecure.

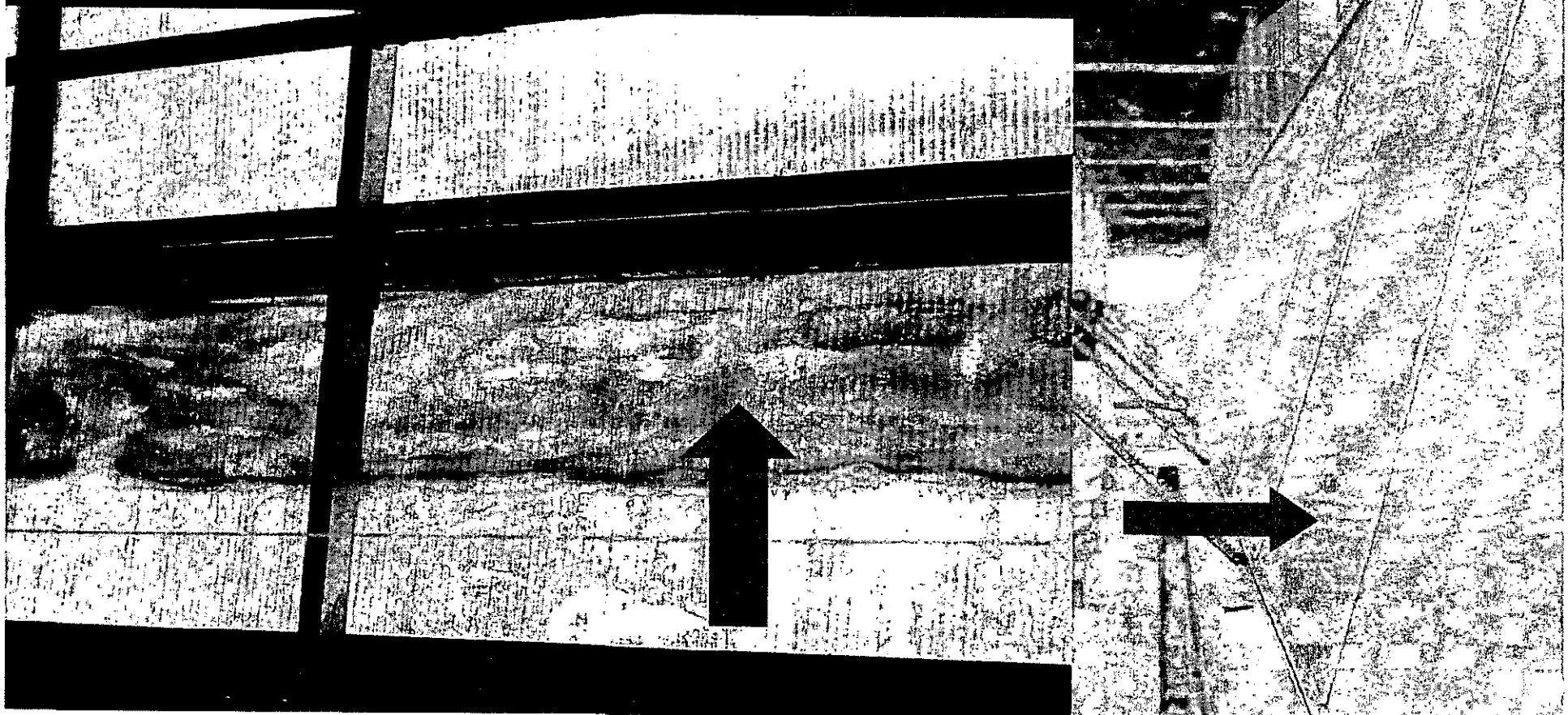




Civil works and installation

Maintenance must be carry out regularly and promptly

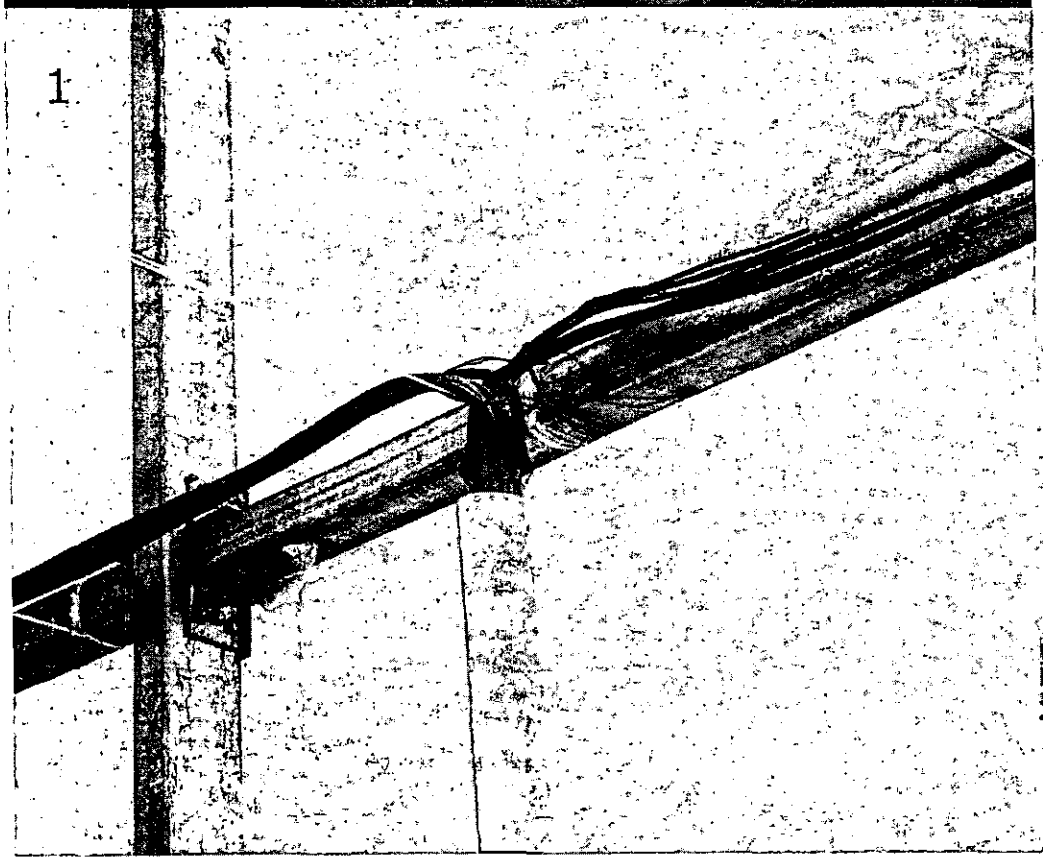
The polycarbonate panels of this Venlo greenhouse had never been cleaned, either the insect proof net. It result on a considerable reduction of light radiation inside the greenhouse.

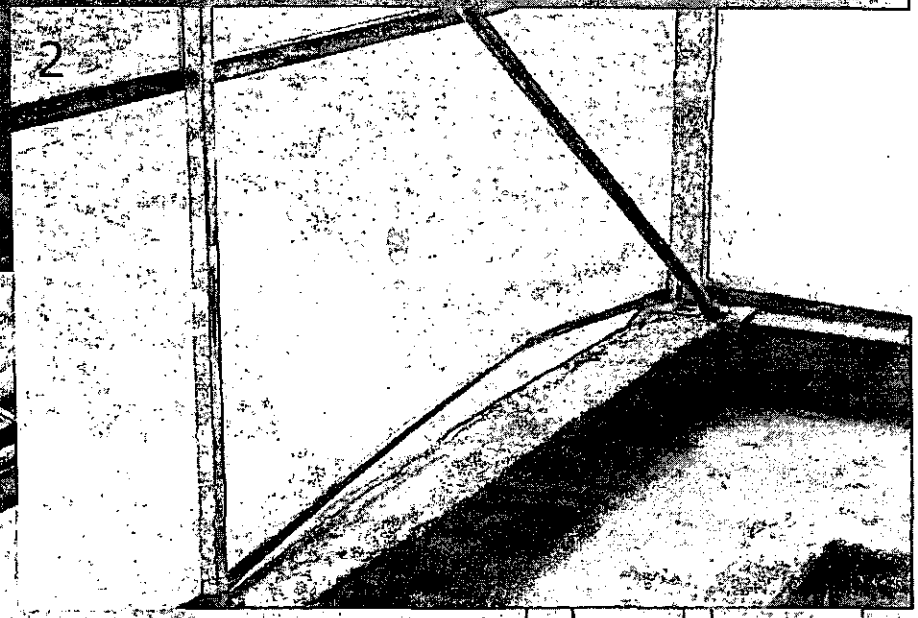


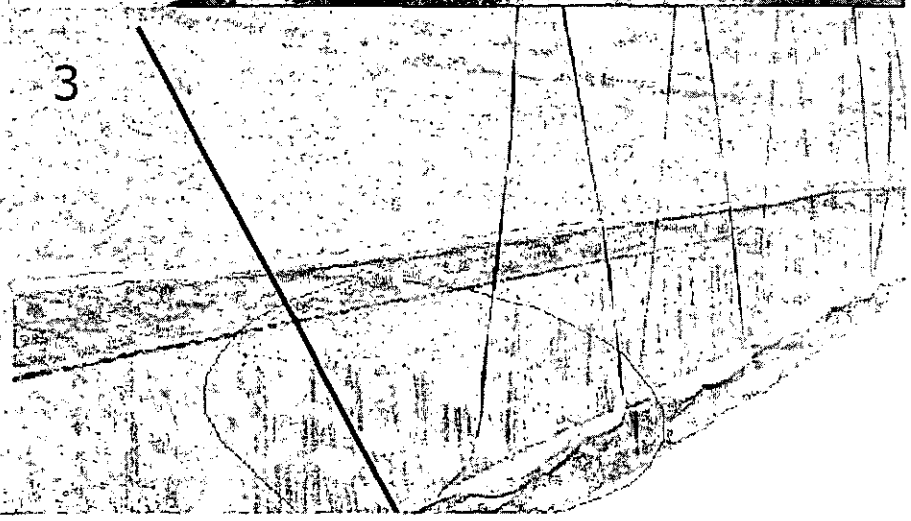
Civil works and installation

Maintenance must be carry out regularly and promptly

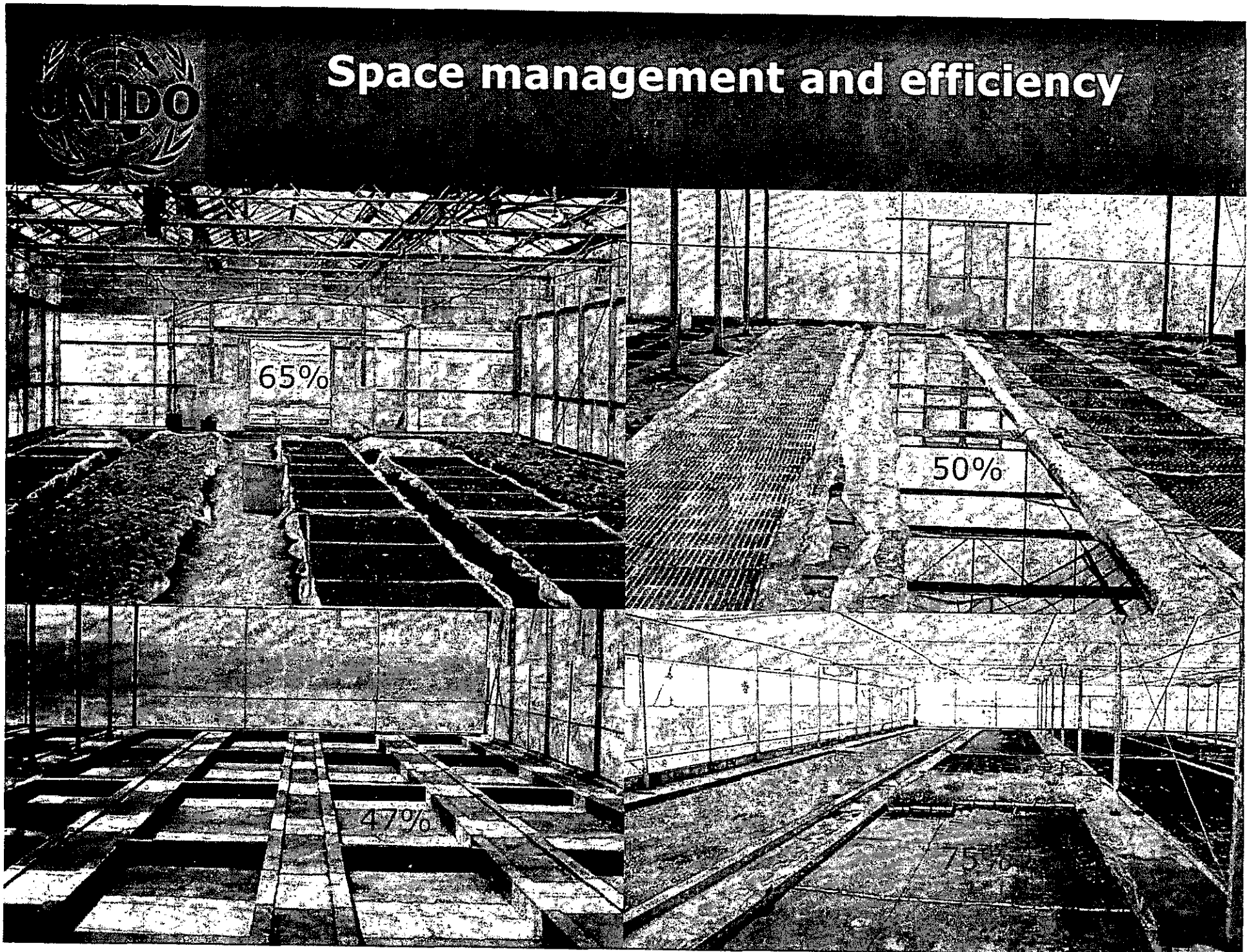
1. Electric wires unprotected.
2. Side profile damaged and bended.
3. Strings loose and partly missing







Space management and efficiency

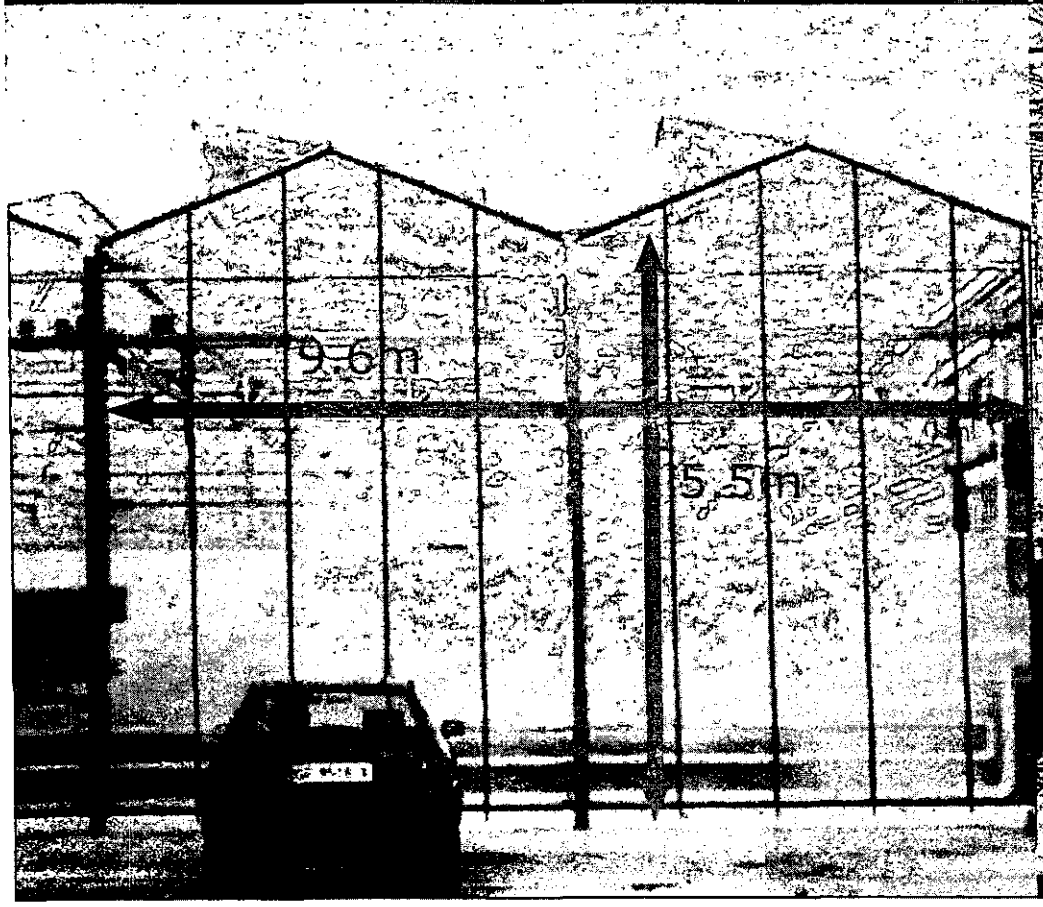


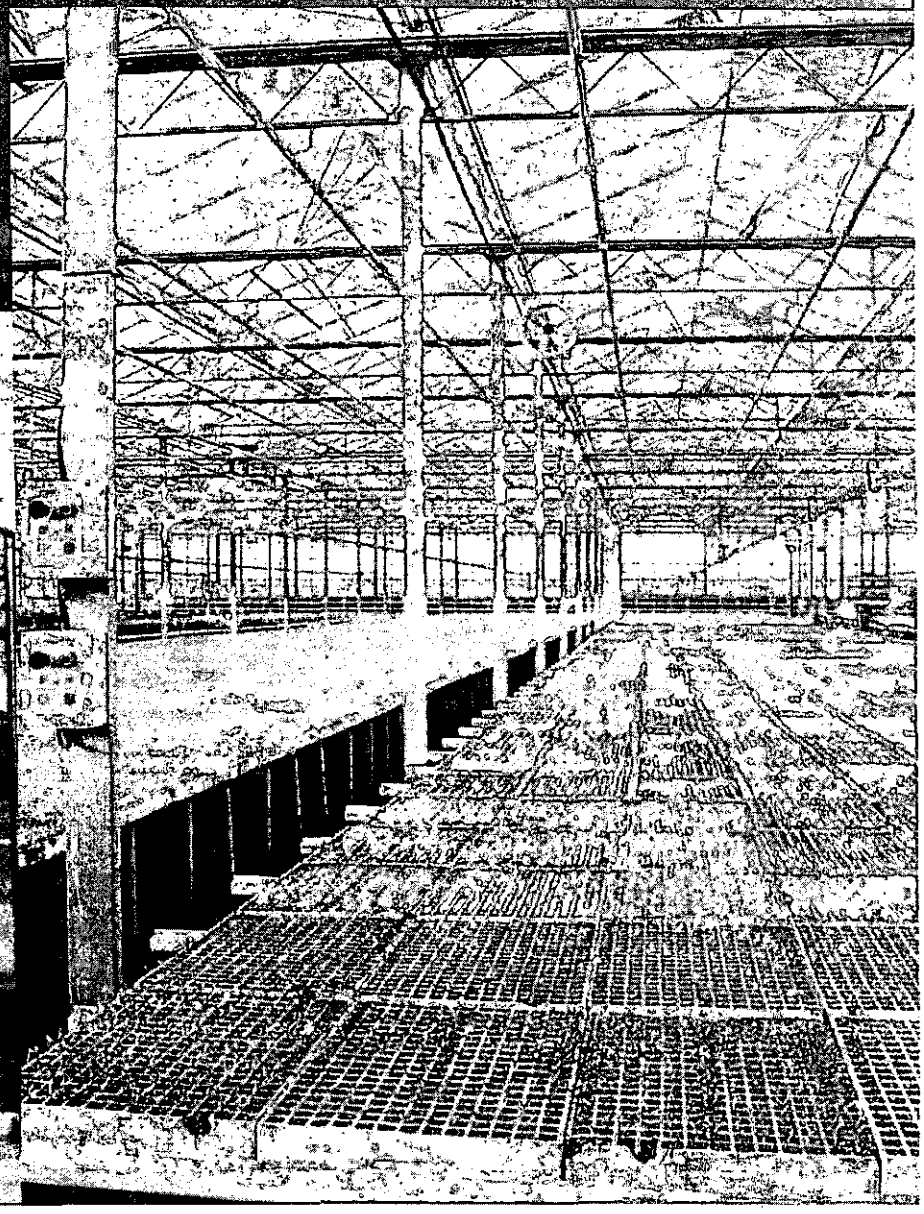
Greenhouse volume

The highest the volume the better the climatic control

Venlo type glass

1. Ratio Volume/Area = 6.1m^3/m^2
2. High energy efficiency glasshouse
3. High light radiation

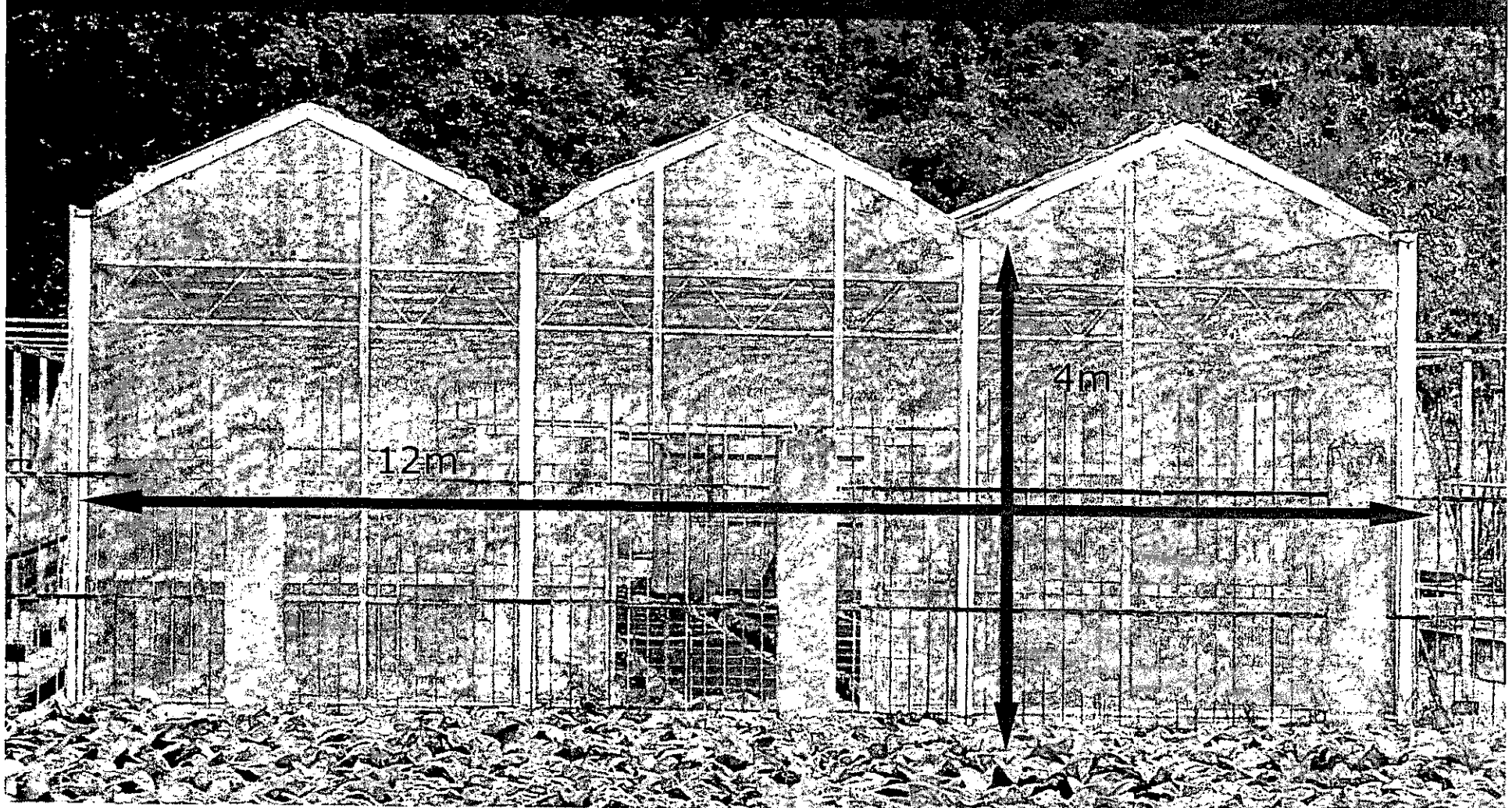




Greenhouse volume

Venlo type polycarbonate

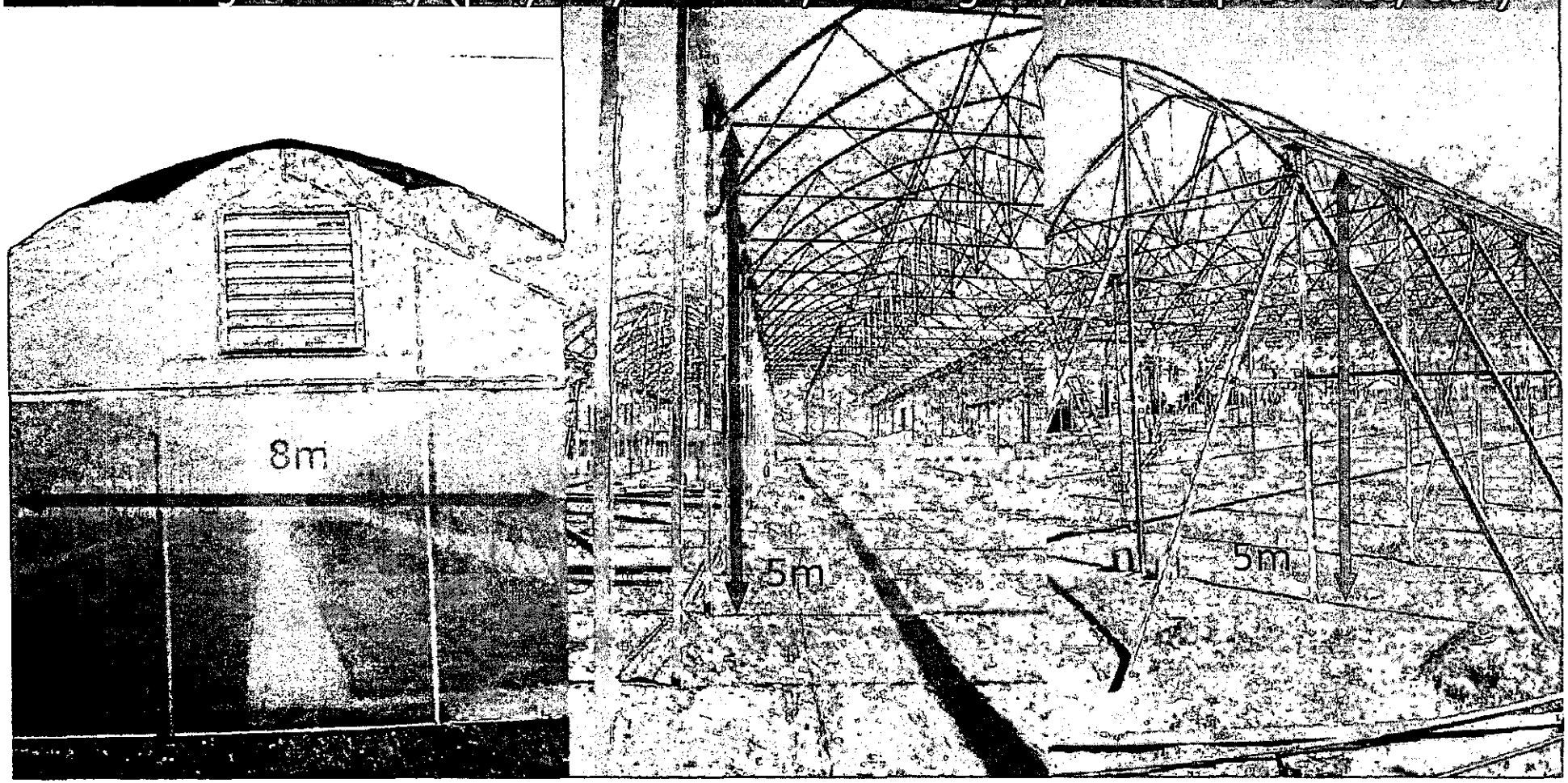
1. Ratio Volume/Area = 4.6m^3/m^2



Greenhouse volume

Multiunit plastic house - Gothic shape arch

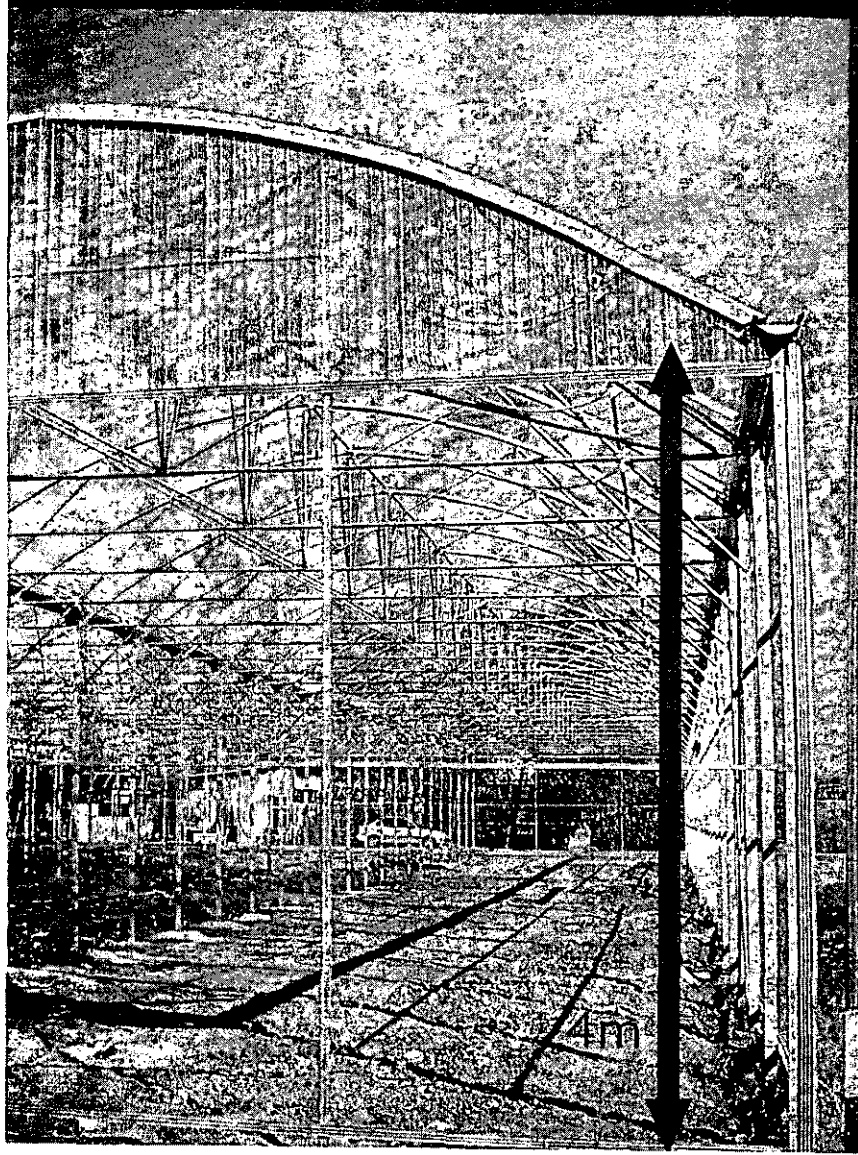
1. Ratio Volume/Area = 6.1m³/m²
2. High wind strength
3. Covering flexibility (polyethylene film, shading net, insect proof net, etc.)

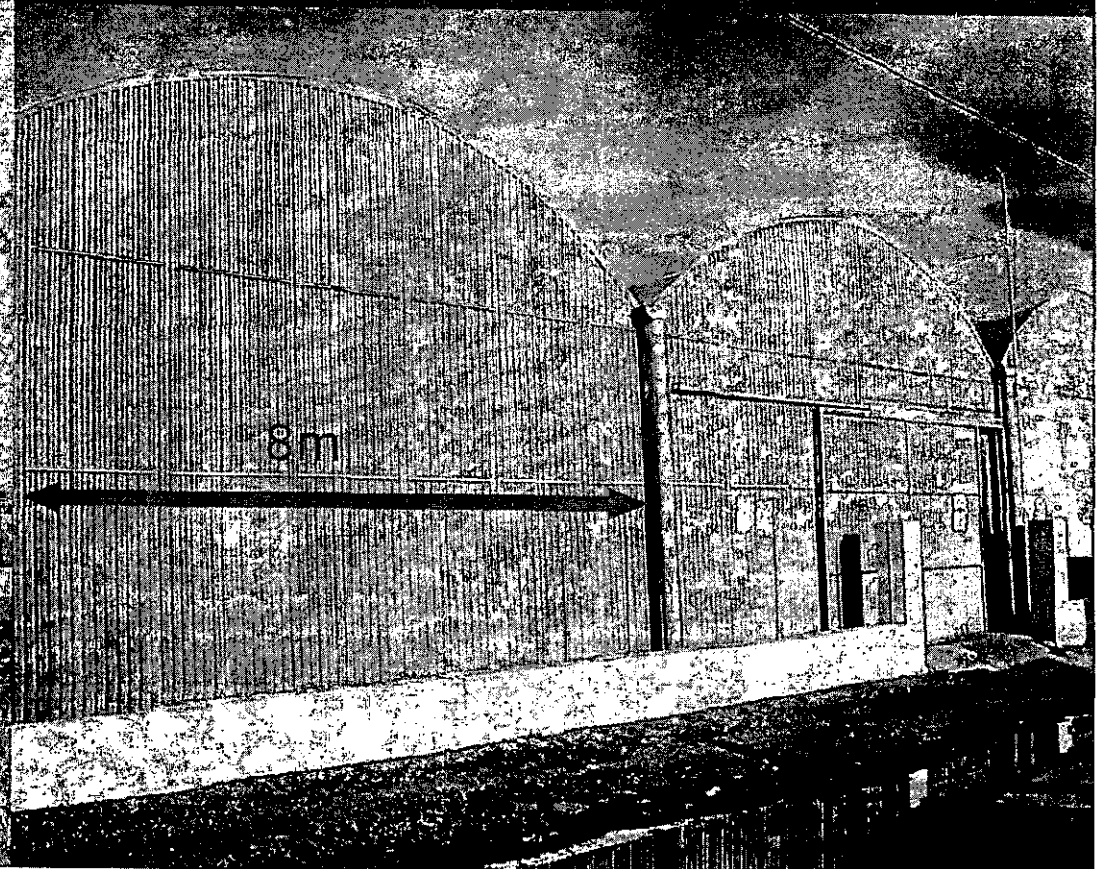


Greenhouse volume

Multiunit plastic house - Round shape arch

1. Ratio Volume/Area = 4.6m^3/m^2
2. High wind and snow load strength
3. Covering flexibility polyethylene film, shading net, insect proof net, etc.)

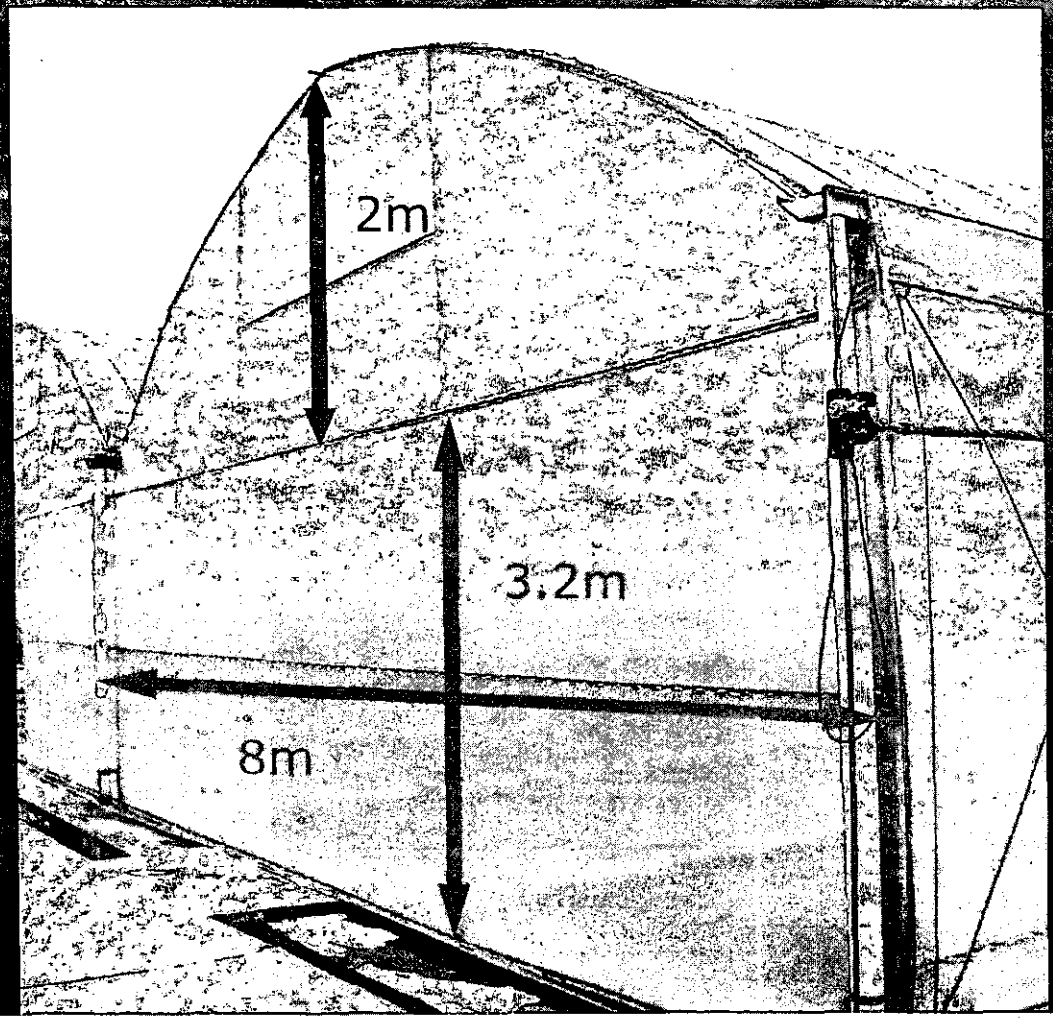




Greenhouse volume

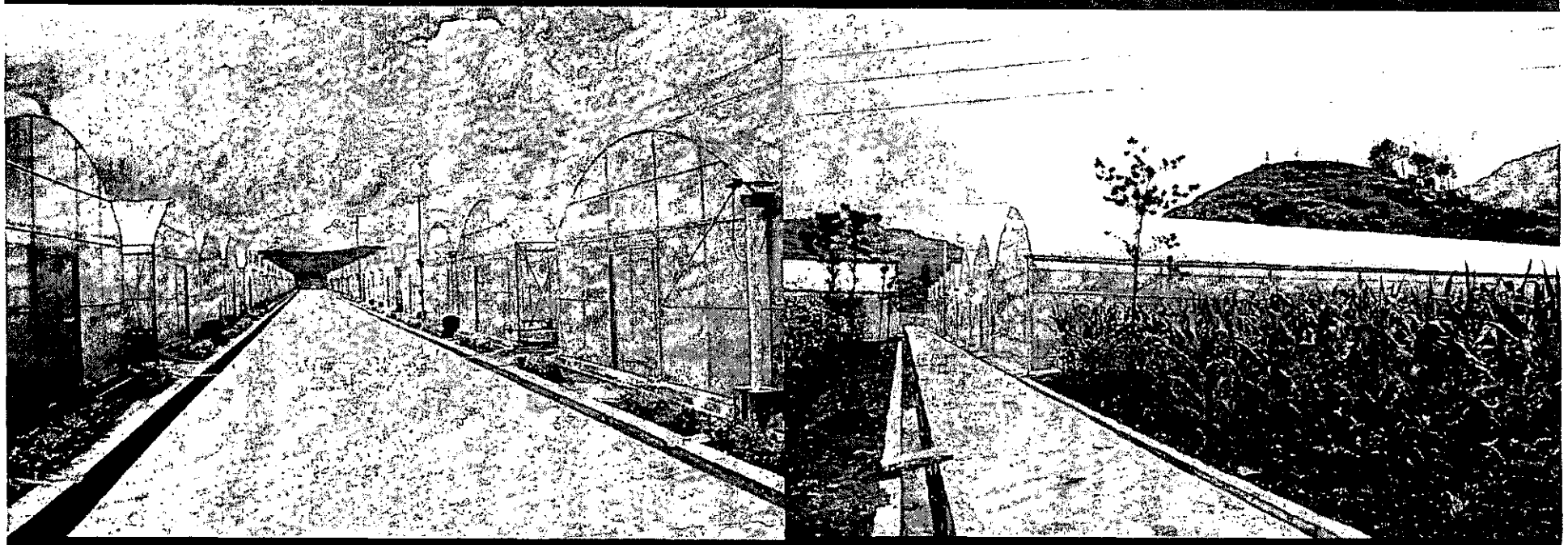
Multiunit plastic house - Round shape arch

Ratio Volume/Area = 4.3m^3/m^2



Pest management and virus management

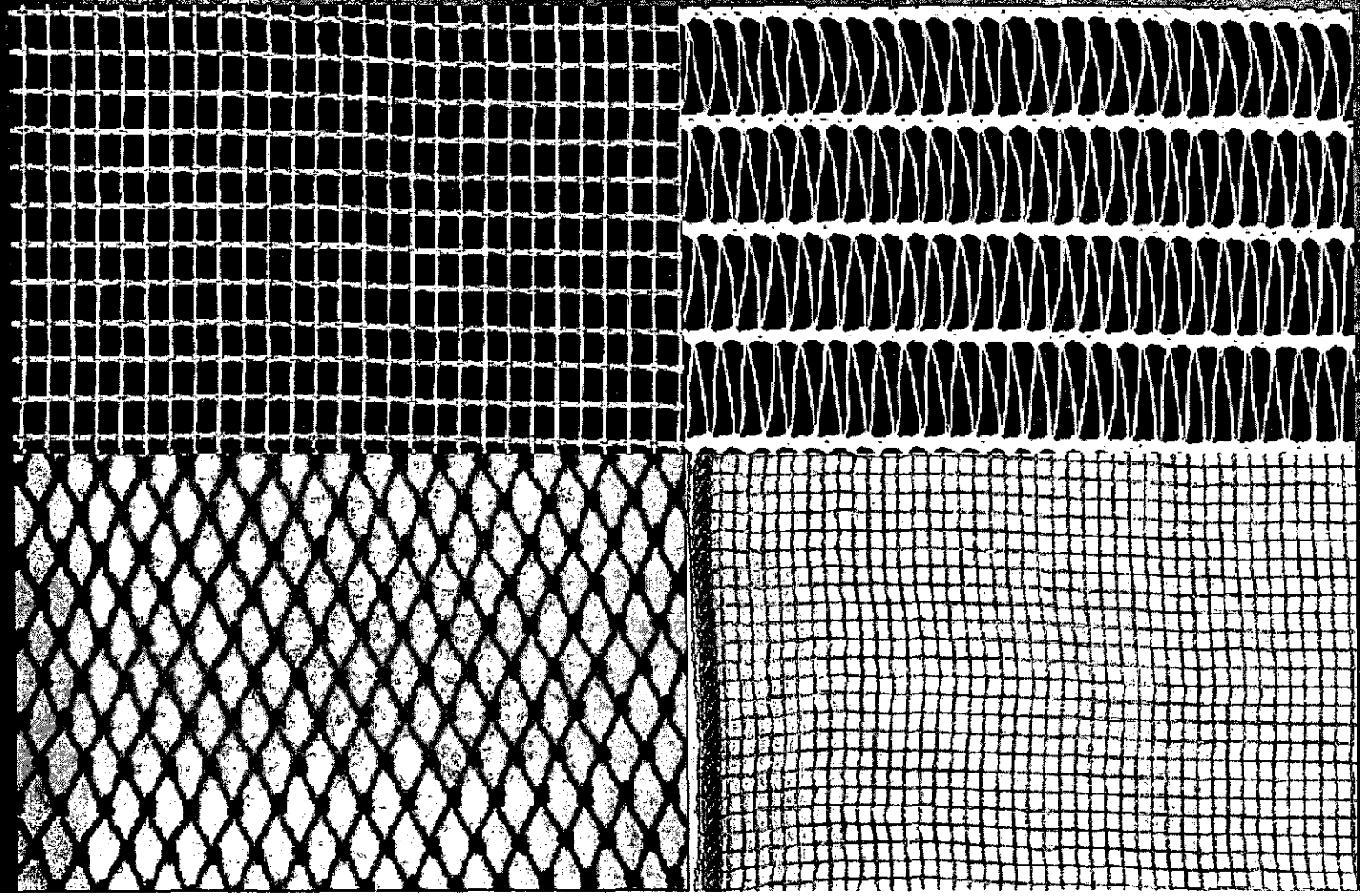
It is recommended not to grow any plants around greenhouses, it may facilitate the propagation of insects and pathogens (Virus) inside the greenhouses. The surrounding must be clean of green plants of any sort, mainly ornamentals and flowers, and weeds.



Insect proof net

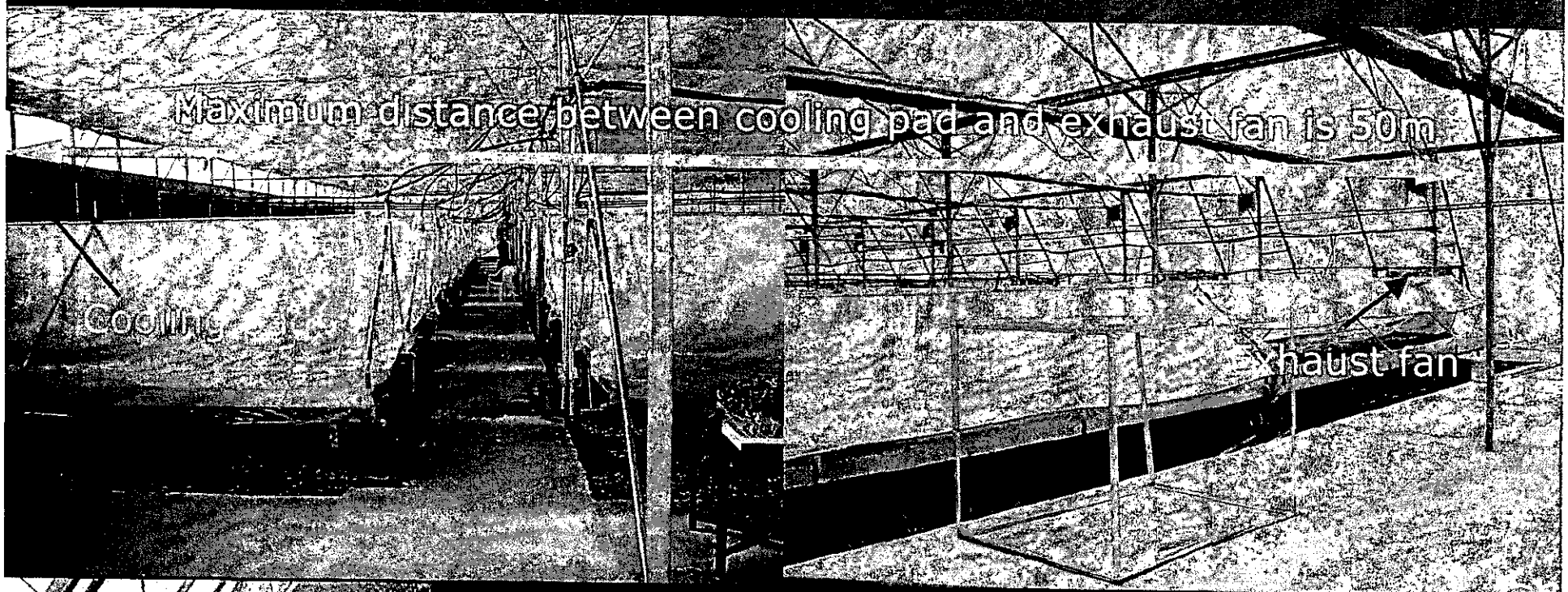
In principal, all kind of nets reduce the air circulation with consequent increase of temperature and relative humidity.

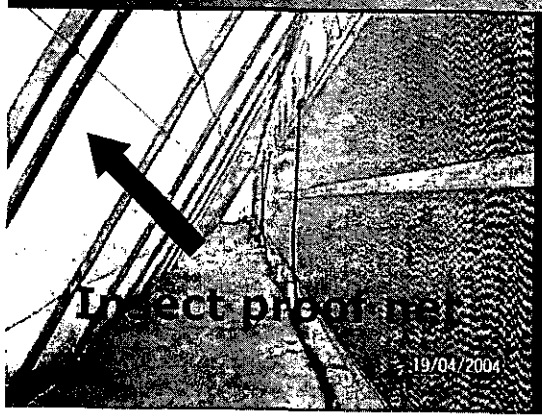
Net must be selected base on the presence of insects transmitting virus, bigger holes are preferable whenever possible



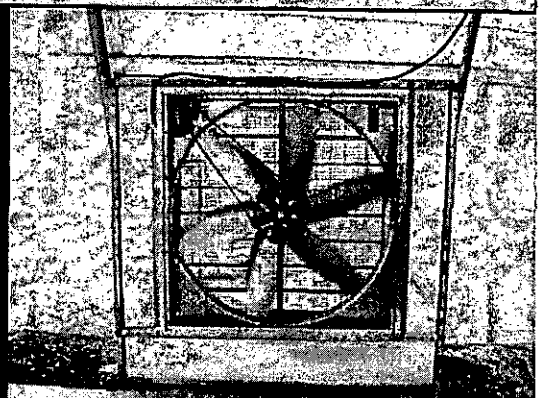
Cooling plants

It may reduce the inside temperature from 5 to 7ºC according to the relative humidity (RU) in the air. The higher the RU the lower the temperature reduction





Orientation

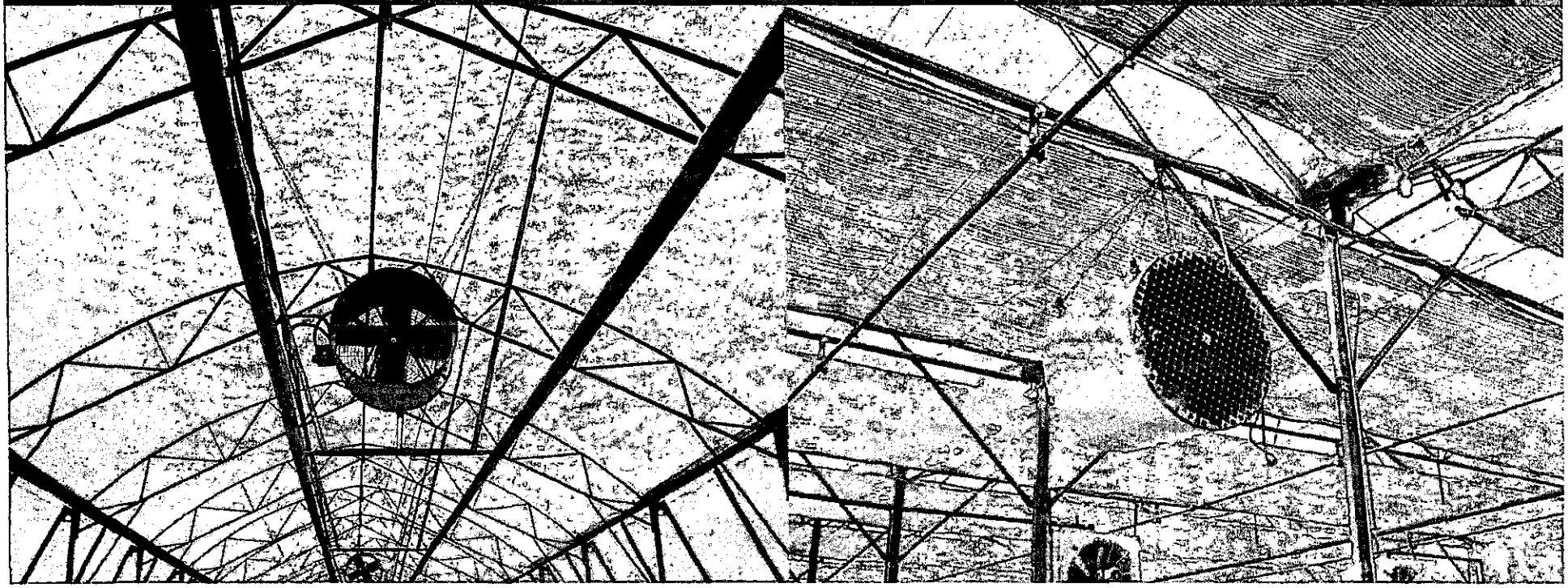


Ventilation plant

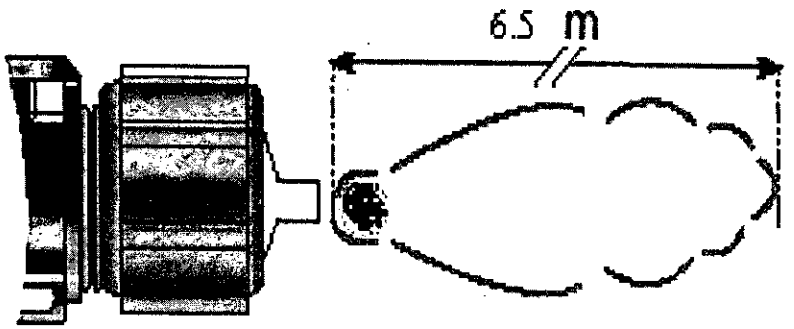
It can be used to reduce temperature and relative humidity or making them more uniform within the different layers.

It prevent the humidity to condense on the seedlings, reducing the risk of fungal diseases.

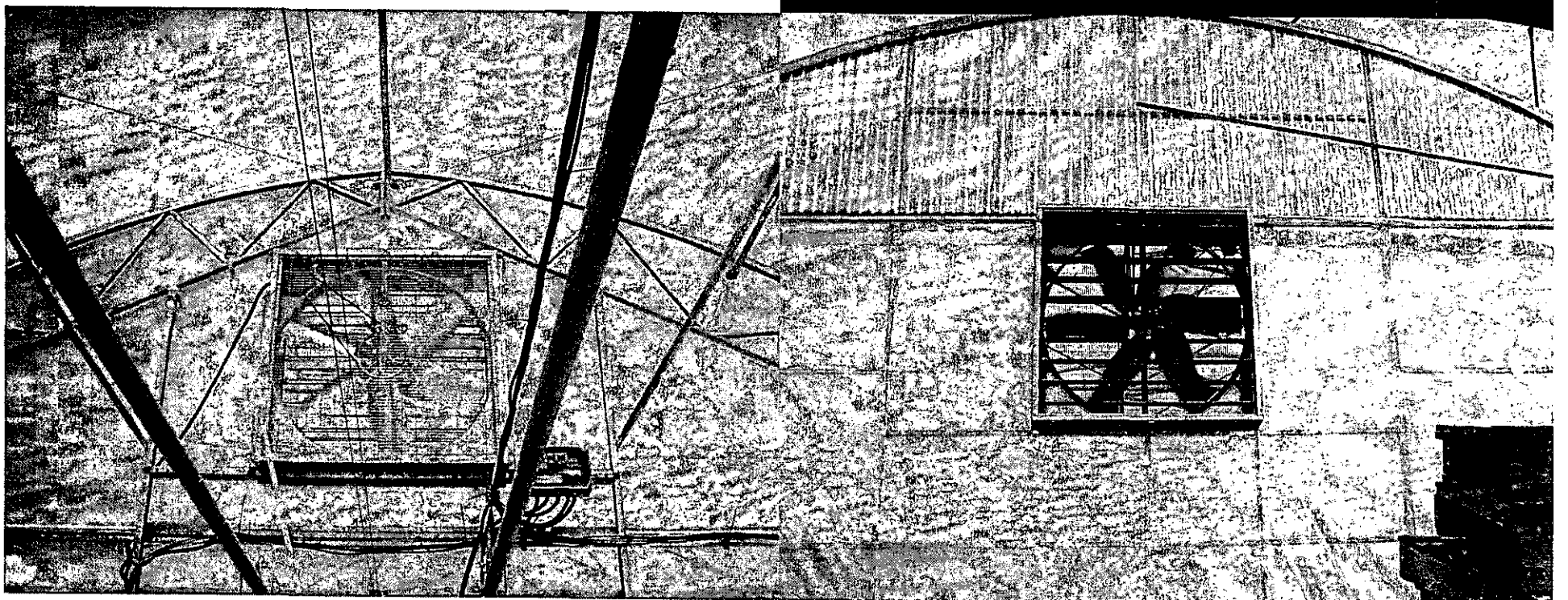
Fans: they brake and mix air layers inside the greenhouse, making the temperature and relative humidity uniform. The advantage apply for both heating and cooling.



Exhaust fan: they remove the hot air from the greenhouse. They also generate an air circulation with the same beneficial effect as fans.

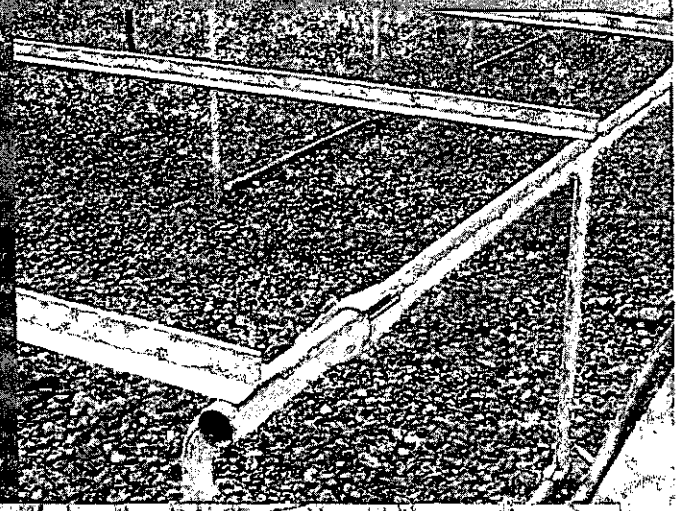


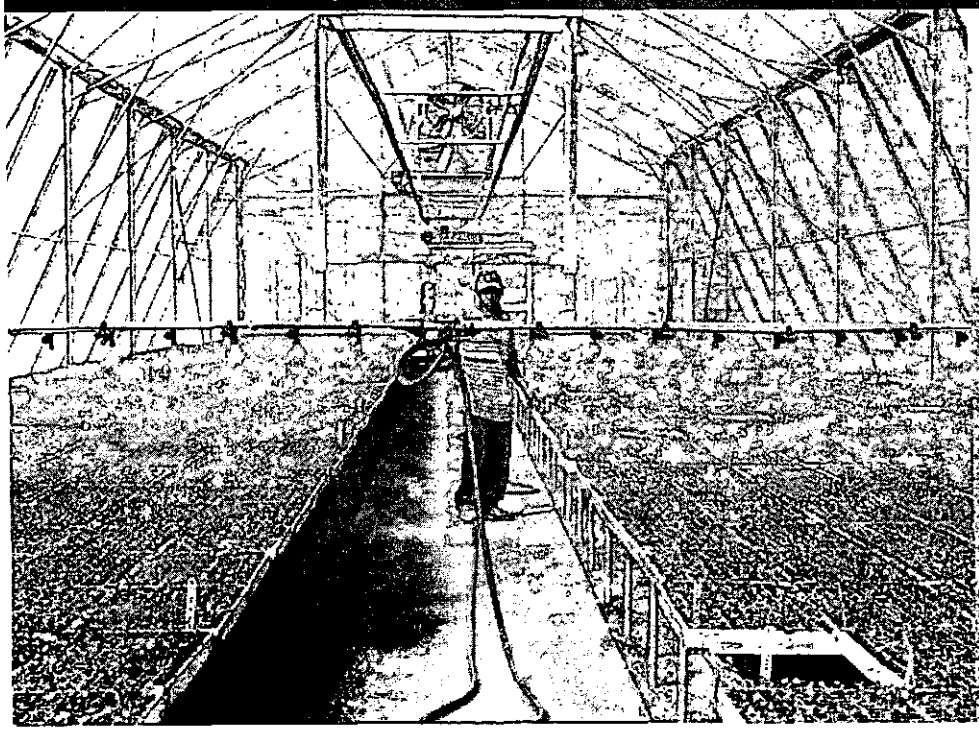
The cooling effect can be strengthen using fog nozzles (air/water) that spray small water particles (max. 50 micron) in the air. The cooling effect is achieved by evaporation

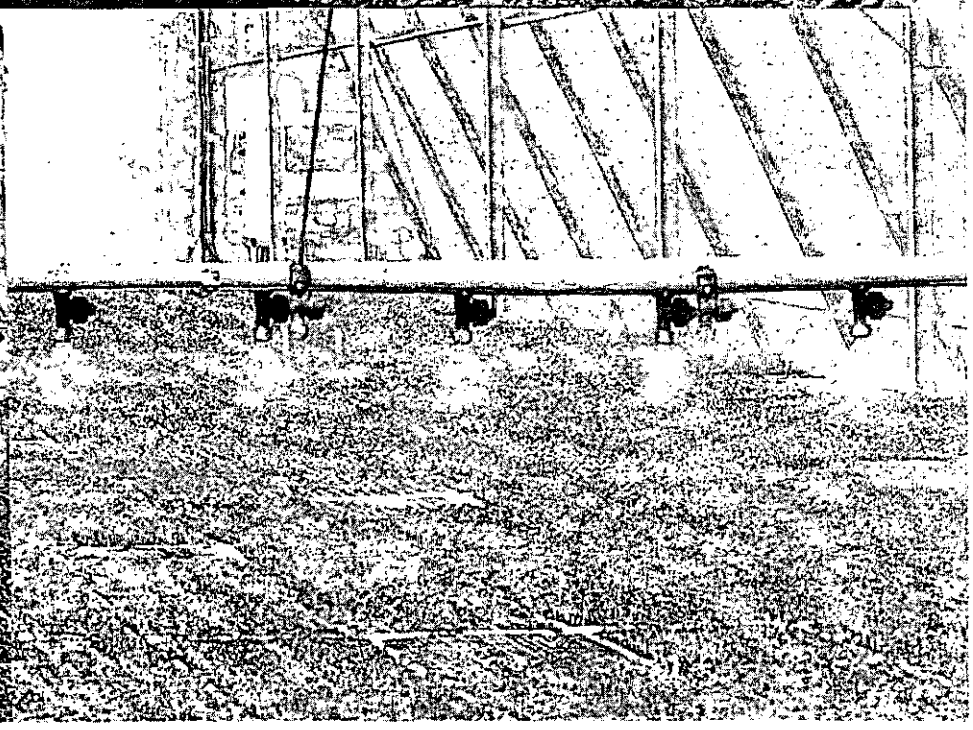


Suspended tray system and Overhead irrigation systems

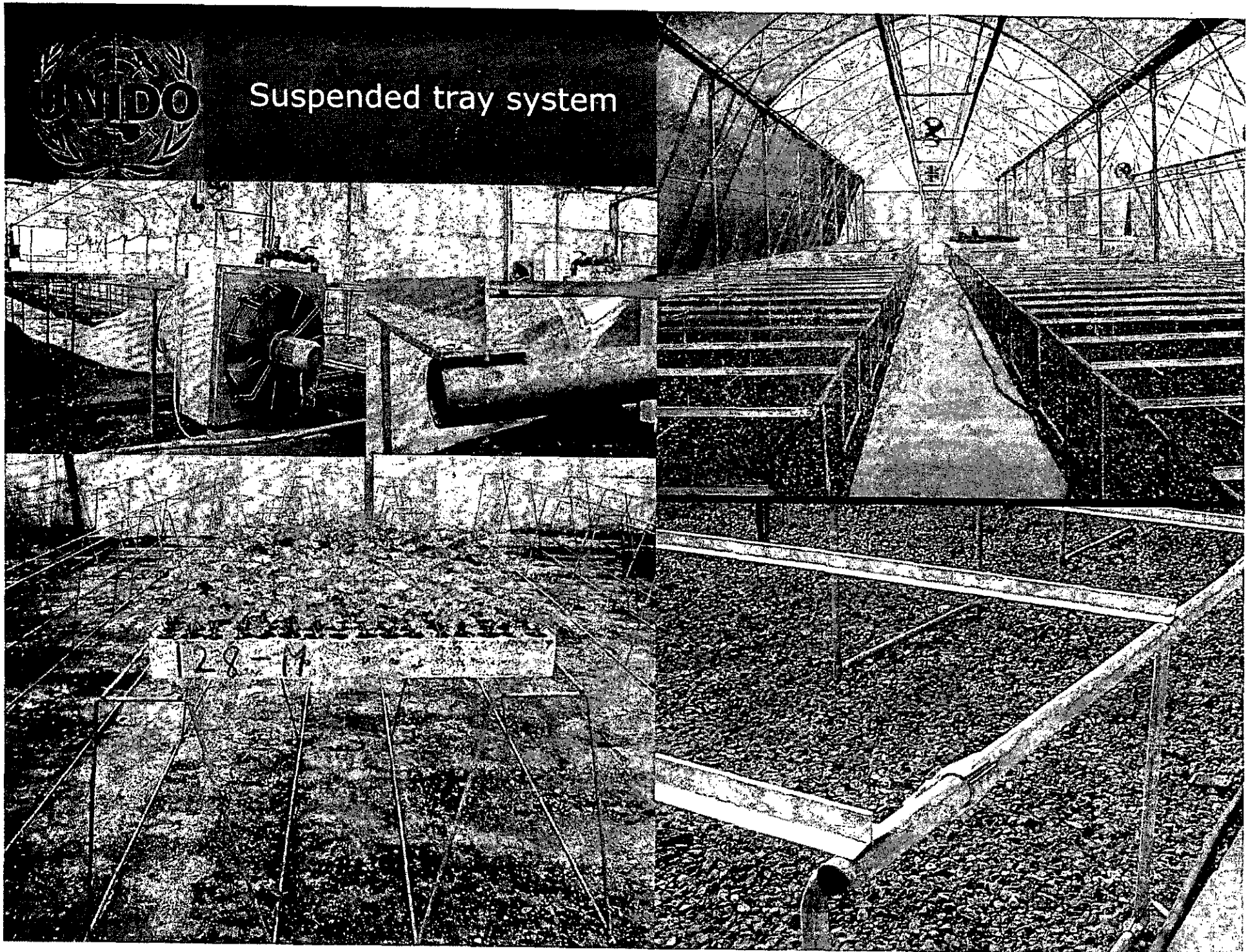
For those cases where the floating tray system is not suitable, tobacco seedlings may be produced with the suspended tray system. The irrigation is done through irrigation bars.







Suspended tray system



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Thank you

Annex V

2008 WORK PLAN FOR PHASING OUT METHYL BROMIDE IN THE AGRTICULTURE SECTOR IN CHINA

Final

31st January 2008

Acronyms:

SEPA: State Environmental Protection Administration
FECO: Foreign Economic Cooperation Office
UNIDO: United Nations Industrial Development Organization
MOA: Ministry of Agriculture
MB: Methyl Bromide
CAAS: Chinese Academy of Agricultural Sciences

1 BACKGROUND

1.1 Protected agriculture in China

In the last 10 years, following China's economic reforms and economic development, the protected agriculture has grown rapidly too. Nowadays are estimated 2 million Ha of protected horticulture crops, and 20,000 Ha of strawberries, furthermore, as an important tool for increasing farmers' incomes, protected agriculture is likely to continue expanding rapidly. In addition to the current most common crops such as tomato, cucumber, eggplant, pepper, celery and strawberries, more species are coming up, these includes cut flowers, melons, asparagus, ginger, various seedlings, medicinal herbs, etc.

The greenhouse technology in China is very simple but very energy efficient; generally, electric power and drip irrigation are not available and the main irrigation system is flooding; heating systems are very basic. There are three main types of greenhouses in China:

i. Temporary greenhouses: Wood or bamboo structure, open in summer and covered with plastic film in winter. There are straw shades for winter in the night and open the straw shade in the day. These are the common greenhouses for strawberry production in Hebei Province.
ii. Permanent greenhouses: steel or concrete structure. There are straw shade for winter in the night and open the straw shade in the day. These are mostly used for tomato, cucumber, eggplant, hot pepper production in Shandong and Henan Province.
iii. Cold plastic tunnel: Wood or steel structure, without straw shade during the winter.

The first two kind of greenhouses were called 'hot tunnel', the third one called 'cold tunnel'.

Mechanization: as for the above, regular tractors and machineries can easily operate, only in summer, in the type "i" greenhouses, small tractors can operate in the type "ii." and "iii." greenhouses.

1.2 Methyl bromide consumption in China

MB consumption in the agriculture sector in China has slightly grown, mainly in the tomato, cucumber, eggplant, hot pepper and cut flower because of the growing market demand and because of the lack of registered alternative fumigants.

With regards to ginger, the MB consumption is increasing faster then other sectors, because of the sharp increase of market price, mainly for export, and therefore good income expectations.

MB consumption in the strawberry sector is reducing, because chloropicrin has been registered and successfully used in the strawberry sector since 2006.

As a last factor affecting MB consumption, arable land is becoming scarce, due to the competition of urbanization, industrial areas and soil degradation; this put more pressure on the remaining land and so leads to an intensive cropping, with no crop rotations or other traditional practices. As a consequence, soil-borne diseases have grown exponentially and yield and quality often decreased, the losses are, as an average, of 20% to 40% but, in some cases, it reaches 60% to 100%, this push farmer at using more extensively and regularly pesticides and so fumigants as MB.

2. 2008'S TARGETS

The 2008 s targets are:

i. Phase-out out 240 tonnes of MB, of which 170 tonnes in strawberry sector, 50 tonnes in the ginger sector and 20 tonnes in the cucumber sector.
ii. Train 300 trainers.
iii. Train 13,657 farmers.
iv. Establish No. 60 model farms, of which: 45 for strawberry, 5 for cucumber and 10 for ginger.
v. Treat 600 Ha with MB alternatives.

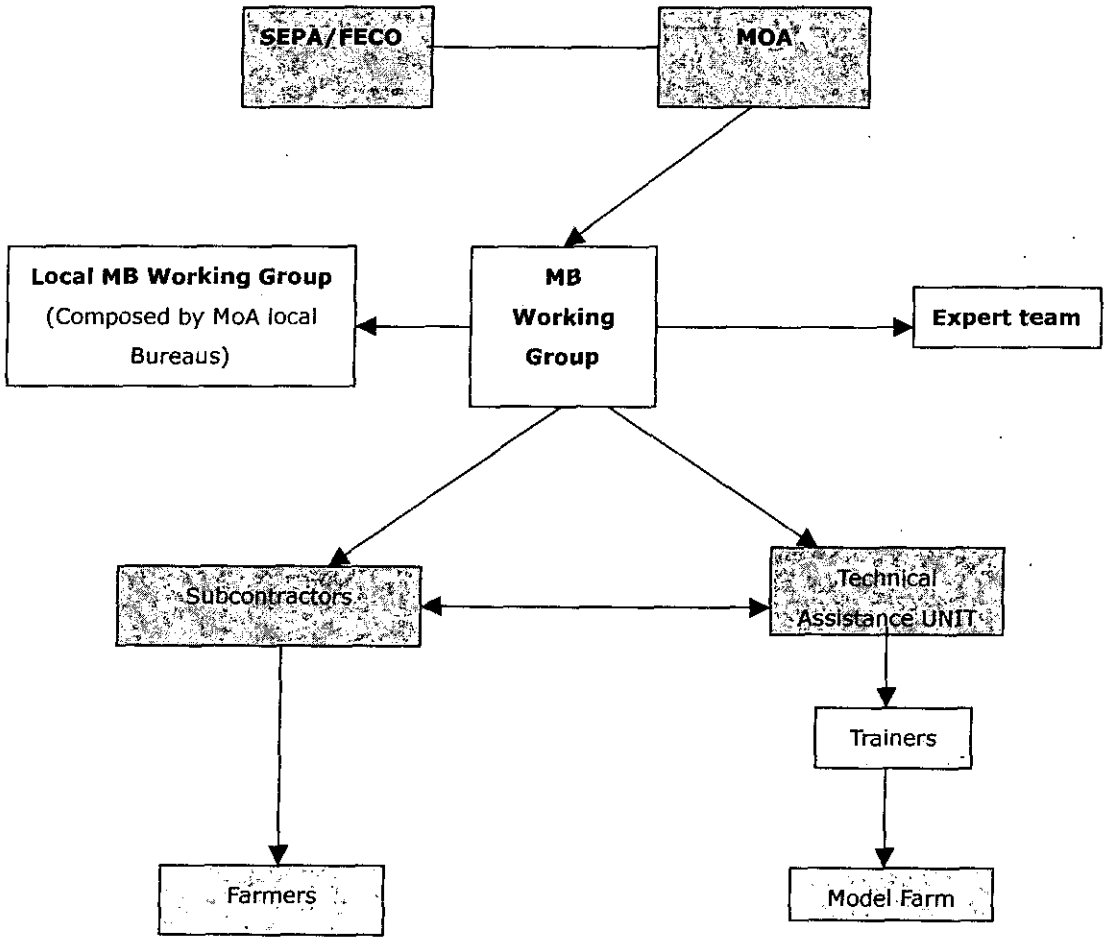
Table No.1: 2008's targets

Sector	Region	ODS tones	Model farms No.	Average farm area m^2	Total Ha to be treated	No. of Farmers	Timing for soil treatment
Strawberry	Hebei, Shandong, Liaoning, Hubei, Anhui, Zhejiang	187	45	400	467	11,667	From the end of June to the beginning of August
Cucumber	Shandong	20	5	670	50	746	From August to October
Ginger	Shandong	33	10	670	83	1,244	March and August
TOTAL		240	60		600	13,657	

3 STRATEGY

3.1 Project Management

SEPA and MOA have signed a memorandum of understanding that set up each other tasks and responsibility for phasing out methyl bromide in the agriculture sector in China. Furthermore, a MB working group has been established, MOA will be the main actor for the implementation of the programme. The overall management scheme is shown in the chart below.



3.2 Terms of reference – tasks/responsibilities

3.2.1 SEPA/FECO

1. Set up the guidelines for the implementation of the "National methyl bromide phase-out plan" in the agriculture sector.
2. Supervise and coordinate with MOA for the implementation of "Methyl Bromide phase-out plan" in agriculture sector.
3. Report to UNIDO on project implementation.
4. Disburse the annual project funds to MOA.
5. Carry out regular field visit for programme monitoring and verification.
6. Coordinate with other ministries and Government bodies the timely and effective issue of policy measures.
7. Ensure an effective implementation of existing policies.
8. Verify and audit the implementation of the programme.
9. Recruit and disburse the payment to the international experts in agriculture sector.
10. In cooperation with MOA propose and enact regulations and policies related to MB issues and MB alternatives.

3.2.2 MOA

1. Phase-out out MB in the Agriculture sector.

2. Design the work plan and implement program.
3. In cooperation with SEPA propose and enact regulations and policies related to MB issues and MB alternatives.
4. Participate in the MB working group.
5. Supervise and guide the activity of the MB working group.
6. Manage the annual fund, to ensure the funds are utilized in accordance with the MLF, UNIDO and domestic management's rules.
7. Compile progress report or other documents required.
8. Accept the audits by national finance administration department and audit department.
9. Select beneficiaries and counterparts at the field level.
10. Carry out Research and Development activities.
11. Select the MB substitute, guide and coordinate the MB alternatives dissemination within the agriculture sector.
12. Carry out regular field visit for programme monitoring and verification.
13. Sign subcontracts for the provision of services.
14. Reports to SEPA.
15. Any other activity required for a smooth, effective and sustainable phase-out of MB in the Agriculture sector.

3.2.3 MB Working Group

1. Carry out the day-to-day project management, according to the work plan and rules and regulations of SEPA and MOA.
2. Implement the work plan.
3. Coordinate the activities of all institutions involved in the programme.
4. In charge for equipment and goods procurement, responsible for equipment and goods allocation and accountable for their management.
5. Report to MOA.

3.2.4 Local MB Working Group

1. Established by local agriculture bureaus.
2. Entrusted by MOA monitor the project implementation at field level.
3. Carry out regular filed visits for programme monitoring and verification.
4. Issue and enforce local and national regulations.
5. Disseminate alternative technologies.
6. Report to MB working group.

3.2.5 Technical Assistance Unit (TA Unit), in 2008 alias The Institute of Plant Protection of the Chinese Academy of Agricultural Sciences (CAAS):

1. Implement the TA programme.
2. Assist the MB working group to implement the work plan.
3. Reports to MB working group.

3.2.6 Subcontractors

1. Responsible for the phasing out of MB at the local level.

2. Select and recruit trainers;
3. Assist TA unit to conduct training program;
4. Recipient for equipment and goods for the application of MB alternatives.
5. Employ the MB alternative;
6. Assist the local farmers for the application of MB alternatives;
7. Provide other services, if necessary, to make sure the phase-out target are achieved;
8. Manage and maintain the equipment and goods provided.
9. Report to the MB working group;

3.2.7 Trainers

1. Are selected among subcontractors' employee, local technicians, leading farmers and village leaders, by subcontractors and TA Unit.
2. Are trained by TA Unit.
3. Train farmers in their area.
4. Collect data.
5. Report to the subcontractors, those selected by subcontractors; report to TA Unit, those selected by TA unit.

3.2.8 Model Farms/Farmers

1. Are selected by trainers.
2. Receive services and goods from subcontractors and employ MB alternatives with the assistance of the trainers.
3. Are trained by trainers and encouraged to employ MB alternatives through awareness, incentives such as services and goods.
4. Report to trainers.

3.2.9 Expert team

1. Provide consultancy services.
2. Report to MB working group.

3.3 project phases and management

Step 1 Prepare and clear the Work plan
Step 2 Contracts approval
Step 3 Contracts signing
Step 4 Procurement of equipment
Step 5 Programme implementation
Step 6 Reporting and assessment

4. CROPS

The following crops have been selected for the work plan 2008:

i. Strawberry.
ii. Cucumber.
iii. Ginger.

4.1 Crops and Alternatives identification

The crops and MB alternatives for the work plan 2008 have been selected base on the following parameters:

i. Registration and availability of effectively proven alternatives.
ii. *Efficacy.*
iii. Cost.
iv. Compatible to local practices.
v. Sustainability.
vi. Potentially growing MB consumption.
vii. Experience of MB alternatives application at commercial level.

Table No. 2: chemical alternatives register in China.

Alternatives	Strawberry	Tomato	Cucumber	Eggplant	Cut flower	Ginger	Ginseng
Chloropicrin	√			√	√	√	√
Dazomet		√			√		
Metham sodium		√	√				
Avermectins			√				

The registration process is initiated for Sulfuryl Fluoride on vegetable and Dazomet and Metham sodium for strawberry, Chloropicrin for cucumber and tomato.

The strawberry sector will contribute mostly for phasing out MB in 2008 because chloropicrin has been registered since 2006 and has shown good result.

Grafted cucumber has a long tradition in China; therefore farmer acceptance is higher then other crops that, potentially, can be grafted. Grafting on tomato, eggplant, pepper, melon and watermelon will be introduced in a later stage.

Despite the fact that the MB consumption on ginger is still limited, it has increased considerably in the recent years, and can potentially grow further; therefore, ginger has become a priority for introducing MB alternatives.

4.2 Strawberry

Strawberry is an important cash crop in China and it is the largest consumer of MB. Due to the fast economic development the demand for strawberry increased enormously in the last 10 years. Presently strawberries are produced in more than 20 provinces. The total area is about 42,500 Ha, 20,000 of which protected, mostly in the Hebei Province, 5,300 Ha, Shangdong Province, 4,600 Ha, mainly in Yantai and Jinan City, Liaoning Province, 3,500 Ha, mainly in Donggang County and Dandong region, Jilin Province, 2,000 Ha, Zhejiang Province, 3,000 Ha, Jiangsu Province, Beijing and Shanghai Municipality, 4,000 Ha. There are more than 1.8 million growers involved in strawberry production.

In China, there are three cultivation methods:

i. Greenhouse: most common in the north, the total area is about 20,000 Ha, of which only 6.5% is regularly treated with MB. Plant density is about 183,333-225,000 plants/Ha. Strawberries in greenhouse are transplanted in August and harvest start in early January, the last 10 days of January is the peak period of harvesting, in

coincidence with the Chinese New Year. The average price is US$ 1/kg for wholesale. The normal yield is 22,500-30,000 kg/Ha. In most cases soil is covered with polyethylene mulching film.

ii. Open field: strawberries are also transplanted in August but the harvesting starts in April and lasts until May or June. The yield is about 30,000 to 37,500 kg/Ha. The price is lower than that in greenhouse.

iii. Cold plastic tunnel: strawberries are also transplanted in August but the harvesting starts in May and lasts until June. The price is much lower than that in greenhouse.

Strawberries are irrigated by flooding. The tunnel, or plot, is flooded immediately after transplanting. The volume of water is about 750 m^3/Ha. Since the transplanting coincides with the period of higher temperature, average maximum of 35°C, and the evaporation is high; the plots need to be slightly watered once every 3-5 days. This means that the plot needs at least 2 or 3 small additional irrigation before the plants would be rooted. A soft tillage is done after the first leaves appear, to keep the humidity and remove weeds. If the soil becomes dry, one additional profound irrigation, about 400 m^3/Ha, is applied before the 5^{th} or 6^{th} leaves emerge. After mid or late September, no more irrigation is done to control plants growth.

In greenhouses, winter temperature is kept between 10 to 15°C, relative humidity at about 70%.

The major diseases are: Fusarium, Verticilium, Phytophthora and Rhizhigh volumeoctonia. Plants show poorly developed root system, fewer new roots, slow growth. The number of flowers and fruits is drastically reduced. In most cases plants die at the beginning of harvesting. Yield may drop by 30 to 40%, in the most severe cases up to 100%.

Root-knot nematodes have been found in Shandong Province and Liaoning Province and their incidence is gradually growing in other areas.

The first cause of diseases transmission is infected propagation material; secondly, the irrigation by flooding spread pathogens, third, the monoculture builds up pathogen pressure.

Currently, the main methods to control soil pests are a) rotation with corn or wheat and b) change the soil. According to growers, to control strawberry's pathogens 10 years rotation is need to control soil borne pathogens. Because Mancheng County, Hebei Province have more than 50 years tradition on strawberry, strawberries have been grown almost in all fields, no more land is available for rotation, the only option has become soil disinfestations. Accordingly, MB is mainly used in Hebei and Shandong Province, lesser in Liaoning, Anhui and Zhejiang Province.

4.3 Cucumber

Cucumber is a very important crop in China and it is cultivated all over the country. There are more then one million Ha and usually it is rotated with tomato. The largest production areas are Shandong, Hebei, Henan, Liaoning, Jilin Province, Beijing and Tianjin metropolitan areas.

Since cucumber requires higher temperature and is tolerant to low light radiation, it is a suitable crop for greenhouse, including in the north of China.

Crop cycles:

i. The most common is the spring/autumn, in open field.
ii. The most profitable is the winter/spring, in greenhouse, seedbeds are sowed, in the greenhouse, in the middle of October, and seedlings are transplanted in the late November or early December, harvest start from February and last until June. The yield is about 60 to 80 tones/Ha.
iii. In the autumn/winter cultivation, in greenhouse, seedbed are sowed in the middle of September and seedling are transplanted in early October. Harvesting start in the early November and last until February. The yield is about 40 to 60 tones/Ha.
iv. In plastic tunnels, seedbeds are sowed in the middle of January, seedlings are transplanted in the late March and harvest last from the middle of April until early July.

Specialized growers are relatively few but grow cucumbers all year round, have greenhouses of various types and some basic equipment; they don't practice rotation and therefore use MB for soil fumigation.

The main soil-borne disease is root-knot nematode (*Meloidogyne incognita* Chitwood), other diseases that affect cucumbers are: Fusarium wilt (*Fusarium oxysporum* f. sp. *cucumberium*), cucumber damping-off (*Pythium aphanidermatum*), Phytophthora (*Phytophthora melonis*), Gummy stem blight (*Mycosphaerella melonis*), Sclerotinia rot (*Sclerotinia sclerotiorum*), Anthrocnose (*Colletotrichum lagenarium*), Block rot (*Alternaria cucumberina*), Bacteria wilt (*Pseudononas lachrymans*), Viruses such as TMV, CMV and MMV.

Grafting with black-seeds pumpkin is an effective method to control Fusarium wilt and other fungi, but many farmers are reluctant because they lack skills, training, technical assistance, equipment, and seedlings are too expensive. Some consumers argue that grafted cucumbers are too big, fibrous and taste like pumpkin; an appropriated crop management and selection of rootstock will solve the problem effectively.

Although grafting is an antique and traditional technology in China, it has not been developed in recent years. The main rootstock for cucumber is pumpkin, it has good resistance to Fusarium wilt and other fungi, but it is only slightly tolerant to nematodes, even if some farmers claim it is, therefore, if grafting technology is used to control fungi soil borne diseases, additional measures have to be employed to control nematodes.

MB is mainly used in the Shandong Province, for nematode control.

4.4 Ginger

Ginger has been grown in China for thousands of years. For its characteristics and uses, Ginger is a kind of special crop and Ginger cultivation cover a relatively small area. The main production areas are in Weifang, Laiwu, Yantai, Taian county in the Shandong Province. The products sold all over China and the main export goes to Japan, Europe, North America and South-east Asia.

Ginger can be grown in open filed, plastic tunnels or greenhouses. The preferred soils are sandy-loam; sowing takes place from March to April; rhizomes are sorted out after germination and transplanted in the soil at a dept of 8cm and 65cm apart.

The crop must be shaded to reduce heat, the irrigation is by flooding and soil must be kept constantly humid.

The harvesting starts 10 months after sowing.

The ginger rhizomes are stored in cellar, 4 to 5 meters deep underground, and can be stored up to two years.

The main soil-borne diseases are root-knot nematodes and ginger bacterial wilt caused by Ralstonia solanacearum. Ginger bacterial wilt is very difficult to control because 44 families and over 300 species host it and can survive in the soil for long period also in the absence of hosts. As most bacteria, when the temperature and humidity is high and nitrogen abundant, the disease's incidence and severity is very high too.

MB is used for soil fumigation before transplanting. The application periods are March or August.

5. GEOGRAPHICAL AREAS

For the 2008 work plan, geographical areas have been identified base on the MB consumption, selecting those where the present and potential consumption is higher, and suitable infrastructure for developing and promoting MB alternatives are available.

i. Strawberry: in the Hebei Province, Mancheng, Shunping and Xushui County and Langfang City; Shandong, Liaoning, Hubei, Anhui, Zhejiang Provinces.
ii. Cucumber: in the Shandong Province, Qingzhou, Shuoguang and Qingdao City.
iii. Ginger: in the Shandong Province, Anqiu and Yantai City.

6. SUBCONTRACTORS

MOA has selected two subcontractors for the beneficiary regions for the implementation of the 2008 work plan, those are:

i. Mancheng Xinnong Service Company: to provide fumigation service and technical assistance to Hebei , Shandong, Liaoning, Hubei, Anhui, Zhejiang Provinces for phaseing out 187 ODS tones of MB in strawberry.
ii. Qingzhou Agricultural Bureau, Shandong Province: to provide fumigation service, and technical assistance to Shandong Province for phasing out 20 ODS tones of MB in cucumber.
iii. By 31st of March, the subcontractor for the ginger sector, who is responsible for phasing out 33 ODS tones of MB, is selected by MOA and approved by SEPA.

The selection process has been verified and approved by SEPA.

7 EQUIPMENT AND GOODS

7.1 Selection

The TA Unit, in consultation with all parties, identifies and selects the equipment and prepare the technical specification. CAAS will hold an expert conference, in March 2008, to review and approve the list.

7.2 Procurement

The MB working group is in charge for equipment and goods procurement, according to

SEPA's rules and regulations. SEPA will nominate the procurement agent by 24th, Feb. The MB working group is also responsible for equipment and goods allocation and is accountable for their management. The request for proposal will be sent by 10th March.

7.3 Beneficiaries

Equipment and goods are transfer to the subcontractors; who provides services to farmers accordingly to the work plan and the contract signed with SEPA/MOA. Subcontractors are also responsible for equipment and goods custody and maintenance.

7.4 Ownership

All equipments initially belong to SPEA, once the tasks assigned to each of the beneficiary are achieved, accordingly to the subcontracts terms, and are verified by SEPA/MOA, the equipment ownership is transferred to the beneficiaries.

8. R & D

MOA entrusts the Institute of Plant Protection of the Chinese Academy of Agricultural Sciences (CAAS) to carry out R&D in 2008.

The R&D will focus on full commercial scale tests and on three areas:

i. Development of registered alternatives and new application technologies.
ii. Active ingredient not yet registered, such as: chloropicrin+1,3-D, DMDS, sulfuryl fluoride, methyl iodide; and extension of registered active ingredients to new crops and applications methodologies.
iii. Development of other non-chemical technologies.

9. TECHNICAL ASSISTANCE

Most of MB alternatives, such as chloropicrin and 1.3D, are high toxicity chemicals, dangerous for the users, for the environment and for consumers. Rules and protocols are set up once each active ingredient and application technology obtain the registration however, taking into the consideration that:

i. The agriculture sector in China employs millions of farmers.
ii. The average farms account of 3 to 5 people, a family, cropping something from 1,300 to 2,100m^2 of land.
iii. Most farmers are poorly educated and lack of knowledge, manly with regards to pesticides and their use.
iv. Most farmers have no financial resources to allow protection cloth and safe equipment.
v. High toxic fumigants, if not managed properly, may cause a severe national threat, to farmers, to the environment and to consumers.

MOA has selected one subcontractors for the technical assistance program. The Institute of Plant Protection of the Chinese Academy of Agricultural Sciences (CAAS): to provide training and Technical Assistance. The selection process has been verified and approved by SEPA.

9.1.1 Targets

The training programme aims at providing the knowledge and technical means to allow a safe and effective use of MB alternative technologies, mainly chemical alternatives. The programme is designed to target two groups of users:

i. Fumigant applicators: those are commercial companies who are authorized to apply toxic fumigants. They have appropriated equipment and their managers and personnel are trained to use high toxic fumigant on a safe and effective manner.
ii. Farmers: the training aims at raising their awareness about the use of high toxic pesticides, and fumigants, and technical knowledge for their safe and effective use.

9.1.2 Trainers

Trainers are selected among subcontractors' employees, local technicians and extension service, leading farmers and village leaders. Their tasks are to

i. Train farmers.
ii. Supervise model farms.

9.1.3 Incentives

Subcontractors provide services, such as fumigant applications, equipment, such as drip irrigation plants, and goods, such as chemicals, plastic films for mulching. The incentives are mainly addressed to model farms, but will also be used to promote the replication and adoption of MB alternatives among a large number of farmers.

9.2 Extension service

The TA Unit provides extension services to the subcontractors and farmers involved in the programme. Among the various activities it includes consultancy service, soil analysis, and pathogens identification.

9.3 Dissemination and awareness

MOA, through the Institute of Plant Protection (CAAS), carries out the dissemination. The Institute of Plant Protection develops the awareness and information material, which is disseminated through the Local Government authorities, subcontractors, trainers, local EPBs and local MOA bureaus. These materials includes: television programs, newspapers, posters, T-shirt, and any other mean that have an impact on farmers.

10. MONITORING AND ASSESSMENT

The monitoring and assessment programme has been developed by MOA and approved by SEPA. The TA Unit implements the programme, processes the data, and finalize the assessment. The trainers collect data in the field, on model farms as well on individual farms.

MB alternatives selected for the cucumber and ginger sectors have been demonstrated to be effective but have not been yet applied in large commercial scale. Therefore, the monitoring and assessment programme will take particular care of the cucumber and ginger sector. The parameters to be collected and monitored are shown in the Table No. 3 below.

Table No. 3: monitoring parameters.

Parameter	Strawberry		Cucumber		Ginger	
	Model farms	Other farms	Model farms	Other farms	Model farms	Other farms
Disease identification						
Disease incidence						
Disease severity						
Plants lost						
Yield						
Product quality						
° Brix						
Consistency						
Shelf-life						
Colour						
Climatic parameters						
Temperature						
Relative humidity						
Light radiation						

SEPA, MOA, MB working group, Experts Team and UNIDO, will jointly review and endorse the assessment.

Officials and experts from SEPA, MOA and UNIDO carry out regular verification missions to ensure that the programme objectives are met in a timely and effective manner. The MOA Bureaus will assist SEPA and MOA and carry out more frequent field visits.

11. MB ALTERNATIVES

11.1 Strawberry

The MB alternative selected for the strawberry sector in China is Chloropicrin, because:

i. According to MBTOC Progress and analysis report, one of the most effective chemical alternative for strawberry fruit production is the mixture 1.3D + Chloropicrin, applied through drip irrigation, or either Chloropicrin or 1.3D alone followed by metam sodium (Porter *et al.* 2004a). These formulations and methodologies have replaced at least 45% of MB used for soil fumigation in the strawberry fruit production worldwide.

ii. To the date, Chloropicrin is the only MB chemical alternative registered in China on strawberry. The product has been registered by Daliang Lufeng Chemical Ltd., Liaoning Province, in 2002 and so far has shown good result and acceptance by farmers. The only limitation is due to the very strong and pungent odour released during the application.

iii. The Sino-Italian demonstration project, 1999/2001, demonstrated that metam sodium, 35% Metham sodium at the rate of 1,000 litre/hectare through drip irrigation, combined

with solarisation is an effective alternative in strawberries fruit production. However, to the date, metham sodium is not yet registered on strawberry; it is expected to be in 2009.

There are three application methods available in China:

i. Manual injection: allowed to trained and certified applicators.
ii. Mechanical injection: allowed to trained and certified applicators.
iii. Capsule: allowed to individual farmers after training.

The big capsule machine will be landed to Mancheng Xingnong service company, who will sign an agreement with the owner of chloropicrin capsule patent for a period of six years. The terms of use of the above machine are included in the subcontractor sign between Mancheng Xingnong Service Company with MOA.

The small capsule machine will be landed to Mancheng Xingnong service company. The terms of use of the above machine are included in the subcontract sign between Mancheng Xingnong Service Company with MOA.

Chloropicrin injection devises so far tested in China have two inconveniences:

a. Both manual and mechanical injection equipment are not designed to lay the mulching film contemporary with the Chloropicrin injection; mulching film is lied only later on. This allows the product to release gas in the environment, which odour is very strong and pungent, particularly in greenhouse.
b. Mechanical injection is inefficient because plots are small, from 400 to 667m^2, and greenhouses are not designed for mechanical operation; tractors don't fit easily and are difficult to handle. To treat a single greenhouse it takes up to three hours. One machine can treat from 3 to 4 greenhouses per day.

In the short term, the programme aims to test more efficient machineries and adapt them to the Chinese condition (R&D); in the long term it aims to adapt the Chinese greenhouses and crop management to more efficient machinery.

Chloropicrin capsule can be applied manually or with simple tools, similar to a sowing machine, and so used by individual farmers, after a short training. The technology for producing capsule is available in China and ready to enter in to commercial scale.

Once incorporated in the soil, capsules, in contacts with the soil moisture, melt and release the chloropicrin content in 4 to 8 hours depend on the soil humidity. This allows the farmer to seal the soil with the mulching film and so avoid the release of gas in the environment. In addition, the treatment can be localized in the seedbed, or on the row, or on spots where high pathogens incidence or severity has been recorded in the previous crop cycle. The initial tests carried out have shown excellent results.

Since a bad yield most of time start with high-contaminated, by soil borne pathogens, propagation material, runners, particular attention will be given to the production of clean, and eventually certified, propagation material.

Table No. 4: machine needed for the MB phasing out on strawberry application

Application methods	Ha.	Machine needed
Manual injection machine	10	10
Small machine driven by tractor	1	2
Small machine driven by cultivators (China)	456	100
Capsules	0	2
	467	

11.2 Cucumber

The MB alternatives selected for the cucumber sector in China are:

i. Grafting.
ii. Grafting + avermectin.
iii. Metam sodium, mechanical injection or drip irrigation.

As shown in the Table No. 5 below.

Table No. 5: MB alternatives in the cucumber sector.

No. of Farmers	Total area Ha	Alternatives
600	40.22	Grafting
35	2.35	Metham sodium drip irrigation
65	4.35	Metham sodium injection
46	3.08	Avermectin, sulfuryl fluoride, 1.3D, calcium cyanamide, biological control agents
Total 746	50	

Table No. 6: machine needed for the MB phasing out on cucumber application

Application methods	Ha.	Machine needed
Grafting	40.22	0
Metham sodium drip irrigation	2.35	35
Metham sodium injection	4.35	5
Others	3.08	

Grafting technology is well known by Chinese farmers and cucumber has been grafted on black-seeds pumpkin in Shandong Province since long time. The grafted plants are resistant to Fusarium and other soil borne diseases, but only slightly tolerant to nematodes therefore, grafting technology must be combined with other techniques to control nematodes.

To make grafting technology reliable and sustainable, the programme aim at:

- Develop grafting technique and crop management protocols.
- Train farmers on seedling management and grafting technology.
- Identify suitable rootstocks.

- Develop and simple and effective tools, such as bamboo tunnel, cutting tools, clips or strips and trays.

The Sino-Italian and the World Bank demonstration projects shown that metam sodium, applied through drip irrigation, is a good alternative to MB fumigation in cucumber. Metam sodium is registered on cucumber but the drip irrigation equipment is hardly available for farmers because the cost is too high.

Mechanical injection of metam sodium faces the same restriction as Chloropicrin, low efficiency and high cost.

The UNIDO and the World Bank demonstration projects evaluated avermectin, which shown promising results to control root-knot nematodes therefore. Avermectin has been registered as nematodes in China. Avermectin will be used in combination with grafting.

Beside the three MB alternatives mentioned above, the following will be further tested at commercial scale:

iv. Calcium Cyanamid: is a very old and cheap fertilizer, it is registered in China and, combined with solarization or bio-fumigation, can be used to control nematodes, fungi, and weeds. The bibliography is vast and plenty of tests and large-scale applications have been carried out in China and abroad. Recently, preliminary tests run by local MOA bureaus and in cooperation with farmers, and focused on Calcium Cyanamid as MB alternative, have shown interesting results.

v. Sulfuryl fluoride: it has been evaluated by the World Bank demonstration project.

11.3 Ginger

The MB alternative selected for the ginger sector in China is Chloropicrin. It applies the same format as illustrated for strawberries, which however needs to be verified and adjusted for commercial scale applications.

Table No. 7: machine needed for the MB phasing out on ginger application

Application methods	Ha.	Machine needed
Manual injection machine	2	5
Small machine driven by tractor	1	0
Small machine driven by cultivators (China)	80	10
	83	

12. MB ALTERNATIVES COST COMPARISON

MB alternative cost comparison is shown on the Table No. 8 below.

Table No. 8: MB alternatives cost comparison RMB/Ha.

Crop	Alternatives	Applic. Method	Rate g/m²	Cost for the Chemical	Cost for the mulching	Applic. Cost	Total cost Ha.
Strawberry	Chloropicrin	Injection	45-50	8,325 9,250	15,750	1,800 2,000	25,875 27,000
	Chloropicrin	Capsule	40	12,000	15,750	0	27,750
	MB	Canister	40	11,000	15,750	0	26,750
Cucumber, Tomato, Eggplant, Pepper	MS	Injection	100	15,000	15,750	1,000	31,750
	Dazomet	Mixture with soil	30	10,500	15,750	1,000	27,250
	1.3D	Injection	15	2,250	15,750	1,000	19,000
	Sulfuryl fluoride	Gas	50	16,500	15,750	0	32,250
	1.8% Avermectin	Mixture with soil	1	300	0	600	900
	Calcium Cyanamide	Mixture with soil	45	3,600	15,750	1,000	20,350
Ginger	Chloropicrin	Injection	45-50	8,325 9,250	15,750	1,800 2,000	25,875 27,000
	Chloropicrin + 1.3D						
	MB	Canister	40	11,000	15,750	0	26,750
Cut flower	Chloropicrin						
Ginseng	Chloropicrin						

Table No. 9: Notes for MB alternatives

Technology	Note
Crop rotation	It is impossible to rotate with low value crops
Solarisation	Alone it does not control nematodes, good results combined with other alternatives
Bio-fumigation	Alone it does not control nematodes and fungi, the efficacy is not steady, good results combined with other alternatives
Grafting	Rootstock more tolerant to nematodes need to be identified or combined with other alternatives
IPM	Standard and protocol needs to be established.
BCA	Good results combined with other alternatives

13. POLICY

For methyl bromide production, consumption and trade, the following policy and regulation have been issued in China:

i. Circular (Huanfa) No. 60 [2003], establishment, expansion or renovation of 1.1.1-Tricholorethane and methyl bromide production equipment, 1st July 2003: it is not allowed to establish, expand or renovate methyl bromide production facilities. Local EPBs carry out the supervision and inspection.

ii. Public Notice (Huanfa) No. 155 [2004], Implementing Methyl Bromide Production License and Quota Management System, 21st May 2004: Methyl Bromide manufacturers whom do not hold Production License and Quota are not allowed to produce methyl bromide. The license and quota are issued and verified on an annual basis by FECO/SEPA. Producers have to restrict their productions within the quota assigned.

iii. Control measures for the methyl bromide import and export (including QPS): the license and management system for import and export of methyl bromide (including QPS) is effective since 1st January 2004. Import and export dealers have to obtain the license, within the quota assigned, before any methyl bromide import and export transaction initiates.

iv. Circular (Huanfa) No. 25 [2004], Catalogue of Controlled ODS in China's Import & Export (Third batch), 6th February 2004: methyl bromide has been added to the list of controlled ODS. Methyl bromide export for controlled uses, no QPS, is forbidden since 2004.

v. Circular No. 4 [2006] by SAG and SEPA, 26th September 2006: Ban of sales and uses of Methyl Bromide in the grain fumigation sector. From 1st January 2007, it is forbidden to use methyl bromide for grain fumigation.

Furthermore, SEPA and MOA will:

vi. Encourage the registration of other well-proven and effective MB alternatives, such as 1.3D, Chloropicrin+1,3-D.

vii. Develop new policies and regulation to ensure a safe and effective use of MB alternatives.

viii. Manage MB production quota, consumption registration, MB trade and uses.

14. RISK ASSESSMENT

The following risks, and possible countermeasures, have been identified:

i. Equipment and goods may not be delivered timely. The MB alternatives applications have to be postponed to the next crop season. All parties will work to their best to deliver timely .

ii. Major costs fluctuations of MB alternatives, mainly chemical fumigants, could make alternative technologies economically not sustainable. Incentives or other measure may need to be implemented.

iii. Areas and crops with no experience on MB alternatives application at commercial scale cause a major risk of failing. Training, technical assistance and monitoring has to be strengthened.

iv. Most farmers have little education and are tight to traditional agriculture practices, MB

is very effective, simple and straight forward to use, while most MB alternatives are less effective, require higher crop management skills and more elaborated pest management. Therefore, awareness and training will play a key role bridging farmers from the old to the new technologies.

v. The project fund is set in US$, while equipment and goods are purchased, for the most, in other currencies. Since the weakness of the US$ the purchase capacity has dropped considerably, and may drop further.

vi. MB production, consumption and trade are entering a phase of intensive management and strict control. In addition the matter regards a large number of Government bodies and sectors of the Chinese economy. A strong and effective coordination role is required by SEPA and a close and dedicated cooperation needed by all counterparts.

15. BUDGET

The estimated budget for the strawberry, cucumber and ginger sectors and training, in 2008, is shown in the Tables No. 10, 11, 12 and 13 below.

Table No. 10: budget for strawberry sector in 2008.

Ref. No.	Equipment and material	Unit	Amount	Unit price US$	Total US$
1	No. 1 Soft Capsule machine (Big) and No. 1 soft Capsule Machine (Small)	Set	2	50,000	100,000
2	Training, installation and service for No.2 soft capsule machine	Set	1	20,000	20,000
3	Injection machine (metham sodium), including 30 HP tractor and pump for refilling the fumigant tank	Set	2	50,000	100,000
4	Small mechanical injection machines	Set	90	2,000	180,000
5	Small mechanical injection machine including mulching film layer	Set	1	20,000	20,000
6	Manual chloropicrin injection machines	Set	10	80	800
7	Safety kits, each set is composed by No. 1 pair of gloves, No. 1 mask (including No. 3 spare canisters)	Set	600	50	30,000
8	Chloropicrin 94%	Ton	50	2,400	120,000
9	High density polyethylene plastic film for mulching	Ton	30	2,200	66,000
10	Dripping line and venture injection system for drip irrigation	Set	10	700	7,000
	TOTAL				643,800

Table No. 11: budget for cucumber sector in 2008.

Ref. No.	Equipment and material			Unit	Amount	Unit price US$	Total US$
11	Grafting kits for 40 Ha			Set	600	50	30,000
12	Dripping line and venture injection system for drip irrigation			Set	35	760	26,600
13	Injection pump system for drip irrigation			Set	4	2,000	8,000
14	Small mechanical injection machines			Set	5	2,000	10,000
15	Chemical fumigants and BCA	15.1	1.3D	Ton	0.5	N.A.	7,500
		15.2	BCA	Ton	0.5	N.A.	
		15.3	Chloropicrin 94%	Ton	2	N.A.	
		15.4	Metham sodium 35%	Ton	2	N.A.	
16	High density polyethylene plastic film for mulching			Ton	5	2,200	11,000
17	Safety kits, each set is composed by No. 1 pair of gloves, No. 1 mask (including No. 3 spare canisters)			Set	150	50	7,500
	TOTAL						**100,600**

Table No. 12: budget for ginger sector in 2008.

Ref. No.	Equipment and material	Unit	Amount	Unit price US$	Total US$
18	Injection machine (metham sodium) with rotary-tiller/spading, including tractor for 60 HP and pump to refill the fumigant tank	set	1	90,000	90,000
19	Small mechanical injection machines	set	10	2,000	20,000
20	Manual chloropicrin injection machines	set	5	80	400
21	Safety kits, each set is composed by No. 1 pair of gloves, No. 1 mask (including No. 3 canisters)	set	100	50	5,000
22	Chloropicrin 94%	ton	15	2,400	36,000
23	Metham sodium 35%	ton	1	2,000	2,000
24	1.3D	ton	1	2,000	2,000
25	High density polyethylene plastic film for mulching	ton	20	2,200	44,000
	TOTAL				**199,400**

Table No. 13: budget for training and technical assistance in 2008.

Ref. No.	Items	Cost (USD$)	Approved	To be approved
	Carried out by IPP-CAAS			
26	Inception meeting	9,260	9,260	0
27	Training	199,440	151220	48,220
28	Training equipment and consumable material	101,360	27600	73,760
29	Assessment equipment	88,800	15000	73,800
30	Dissemination	76,000	51900	24,100
31	Formulation of equipment technical specification (Study tour to Japan and expert meeting)	29,840	29840	0
32	Assessment on project progress and alternative comparison	87,820	87820	0
	Sub-total	592,520	372,640	219,880
	Carried out by SEPA, MOA and UNIDO			
33	Monitoring and Assessment (field visiting and expert meeting)	30,000	0	30,000
	Carried out by International consultants			
34	Technical Assistance (International consultants Fee)	120,000	0	120,000
	TOTAL	**742,520**	**0**	**369,880**

Table No. 13.1: inception meeting

Ref. No.	Items	Unit	Amount	Unit price US$	Total US$
26.1	Transportation	Person	40	100	4,000
26.2	Accommodation	Person, day	40*2	40	3,200
26.3	Meals	Person, day	40*2	15	1,200
26.4	Rent for meeting room	day	2	200	400
26.5	Rent for equipment in meeting	day	2	100	200
26.6	Document				260
	Total				9,260

Table No. 13.2: training

Ref. No.	Items	Unit	Amount	Unit price US$	Total US$
27.1	Training trainers	time	6	9,380	56,280

Ref. No.	Items	Unit	Amount	Unit price US$	Total US$
27.2	Training farmers	person	13,657	6.88	93,960
27.3	Training materials	book	15,000	3	45,000
27.4	Training materials compiled	day	60	70	4,200
	Total				199,440

Table No. 13.3: training equipment and material

Ref. No.	Equipment and material			Unit	Amount	Unit price US$	Total US$
28.1	Small mechanical injection machines			set	12	2,000	24,000
28.2	Manual chloropicrin injection machines			Set	12	80	960
28.3	Chloropicrin 94%			ton	1	2,400	2,400
28.4	Metham sodium, 35%			ton	1	2,000	2,000
28.5	Chemical fumigants	28.5.1	Sulfurl fluoride	ton	0.2	N.A.	3,000
		28.5.2	1.3D	Ton	0.3	N.A.	
		28.5.3	Methyl Bromide	ton	0.5	N.A.	
28.6	High density polyethylene plastic film for mulching			ton	4	2,200	8,800
28.7	Renting fee for greenhouses			No	24	600	14,400
28.8	Dripping line and venture injection system for drip irrigation			set	24	700	16,800
28.9	Safety kits, each set is composed by No. 1 glove, No. 1 mask (including No. 3 canisters)			set	60	50	3,000
28.10	Transportation for materials						10,000
28.11	No. 4 sets of Video-Computer equipment package and No. 1 Digital video camera			set	4	4,000	16,000
	Total						101,360

Table No. 13.4: assessment equipment

Ref No	Items	Unit	Amount	Unit price US$	Total US$
29.1	Soil pathogens and nematodes analysis kits	set	240	50	12,000
29.2	No. 5 Climate record and No. 1 portable water proof case meteor station	set	6	4,000	24,000
29.3	Diagnostics equipment	set	3	13,000	39,000
29.4	Scale	set	60	150	9,000
29.5	Soil analysis	Kit	120	40	4,800

Ref No	Items	Unit	Amount	Unit price US$	Total US$
	Total				88,800

Table No. 13.5: dissemination

Ref. No.	Items	Unit	Amount	Unit price US$	Total US$
30.1	Dissemination by newspaper	time	4	1,000	4,000
30.2	Dissemination by Local TV	time	4	3,000	12,000
30.3	Dissemination by post	No.	15,000	2	30,000
30.4	Dissemination by promotional T-shirt	No.	15,000	2	30,000
	Total				76,000

Table No. 13.6: assessment on project progress and alternative comparison

Ref. No.	Items	Cost (USD$)
32.1	mid-term on workshop	10,150
32.2	Closing workshop for 2008 activities (be organized in 2009)	14,800
32.3	Assessment on alternatives	58,720
32.4	Report preparation and translation	4,150
	Total	87,820

Table No. 13.7: international consultants fee

Ref. No.	Items	Cost (USD$)
34.1	Travel and DSA	70,000
34.2	Home base technical assistance for: work programme formulation, data processing and assessment, equipment identification and selection, pathogens identification	38,000
34.3	Technical assistance in China: (participation to internal meeting, document preparation, support to field visits)	12,000
	Total	120,000

Agriculture Work plan of 2008

Description		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Subcontract sign													
TA Unit contract sign													
MOA submit proposal for ginger sector and the equipment specification													
Equipment specification finalize	Expert Conference												
	Study tour												
Procurement of Equipment	Nominate the procurement agent												
	Bidding												
	Evaluation												
	Purchase contract sign												
Training material developed													
Awareness material developed													
Awareness activities													
Trainer selected													
Training of trainers	Strawberry												
	Cucumber												
	Ginger												
Alternative application and training of farmers	Strawberry												
	Cucumber												

Description		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
	Ginger												
Evaluation of Alternatives													
Mid-term workshop													

Description		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Finalize 2008 work plan													
Subcontract for ginger and TA project phase II contract sign	Subcontractor												
	TA project												

Annex VI

EXPERT MEETING 23RD FEBRUARY 2008

TECHNICAL SPECIFICATION FOR EQUIPMENT PROCUREMENT FOR THE IMPLEMENTATION OF THE WORK PLAN 2008 IN THE AGRICULTURE SECTOR
NATIONAL METHYL BROMIDE PHASE OUT PLAN

Contents

Annex VI

1. No. 1 Soft Capsule Machine (Big), see reference No. 1

Soft Capsule Machine should be equipped comprehensively with manifold of auto-control technologies, which enable the machine to acquire the strong point of accurate loading and measurement of raw materials, simple operation, compact structure, stable performance, reliable running, and ideal economic result of high production and low consumption.

This production line consists of base machine, conveyer, control system, and fitted with an insulation storage barrel, a dryer and unit of other devices. The raw materials applied to the whole production line are exquisite, in conformity to the requirements of GMP.

A. Machine body

The machine body is the core equipment of soft capsule production line. Its function is to accomplish preparation of colloid film, quantitative feed of inner content (multiple forms), and final encapsulation.

Technical specification:

a) Filling: liquid or gel.
b) Capsule volume range: from 0.2 to 5ml.
c) Capsules are made by gluten or other material resistant to chloropicrin, 1.3D and methyl iodide.
d) Capsules are filled with: chloropicrin, 1.3D and methyl iodide.
e) Accuracy: Liquid ±2%; others is ±5%.
f) Power supply: AC380V 50Hz

B. Dryer

Dryer is mainly used for shaping drying of capsules in the production line.

Technical specifications:

a) Dryer is made of stainless steel, and in conformity to GMP standard.
b) Non-lubricate structure. The machine can be clean during the production process.
c) The rotating cages are made of stainless steel plate.
d) The chambers and ventilation ducts are made of stainless steel plate..
e) The structure must easy to clean, dismantle and reassemble.

C. Conveyer

Technical specifications:

a) Material: Teflon.
b) Conveyer belt speed: about 9.5m/min
c) Size: minimum 1250 × 300 × 1000mm

D. Control System

Fully automatic control system is required. All components must be certified accordingly to the Chinese standards.

E. Insulated Storage container

Technical specifications:

a) Material: stainless steel
b) Volume: minimum 140L
c) Effective Capacity of the Water Jacket: minimum 60L
d) Heating system power supply: 1.5kW AC220V/50Hz
e) Operating temperature: room temperature ~ +95°C
f) Internal maximum pressure: 0~+0.06Mpa
g) Equipped with temperature control device.
h) Gas tight joints, safety valve.
i) Safety certification meets the Chinese standards.

F. Annex

Production Capacity and capsules shapes

Capsule Shapes	Production Capacity at average Speed (capsules/h)
Cylinder Shape	From 20,700 to 39,060
Olive Shape	From 15,840 to 50,400
Ball Shape	From 24,300 to 39,600
Tube Shape	From 18,900 to 25,200

List of potential suppliers:

A) UNIDO SPX BEIJING:

Room 804, Building B of Beijing Productivity Building No.31 Beisanhuanzhonglu, Haidian District, Beijing 100088, China
Tel:+ 86 10 820 029 01 Fax: +86 10 820 029 03
E-mail: spx@bjpc.org.cn Web: http://www.spx.org.cn
Contact person: Ms. HE Mingxia

B) UNIDO SPX CHONGQING:

No.269, Keyuansi Road , High-Tech Development Zone , Chongqing 400041, China
Tel: + 86 23 686 334 04 Fax: + 86 23 686 337 84
E-mail: eva@spx-chongqing.org Web: www.spx-chongqing.org

Contact person: Ms. EVA Leng, SPX-CQ

C) UNIDO SPX SHANGHAI:

Room 337, 815 Dong Da Ming Road, Shanghai 200082, China
Tel: +86 21 659 51197 / 659 52607 Fax: +86 21 659 503 02
E-mail: info@shanghai-spx.org Web: www.spx-shanghai.org
Contact person: Ms. SONG Joanne

D) UNIDO SPX XI'AN:

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E-mail: jk@xappc.com Web: www.xappc.com
Contact person: Mr. JIA Kai, Deputy Director

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Beijing ZhongTianJingLan Technology Co., Ltd
NO.8 South 2 Tiao WanJuZhuang ,Jiugong County, DaXing District, Beijing 100076, China
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F) BEIJING EASTHUISHEN TECHNOLOGY Co., Ltd.

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Tel: 86-10-69271828 Fax: 86-10-69271816
E-mail: vip@dfhs.cn Web: http://dfhs.diytrade.com
Contact person: Mr. DING GUO FU (Manager)

G) SKY SOFTGEL Co. ,Ltd. China Representative Office

NO 10 Yard Dongbai Street, Chaoyang District,Beijing, 100022, China
Tel: 010-5200 1928 Fax.: 010-5200 1929
E-mail: info@delcominc.net skyinfo@bj10000.net
Web : www.delcominc.net/sky.htm

2. No. 1 Soft Capsule Machine (Small), see reference No. 1

Soft Capsule Machine should be equipped comprehensively with manifold of auto-control technologies, which enable the machine to acquire the strong point of accurate loading and measurement of raw materials, simple operation, compact structure, stable performance, reliable running, and ideal economic result of high production and low consumption.

This production line consists of base machine, conveyer, control system, and fitted with an insulation storage barrel, a dryer and unit of other devices. The raw materials applied to the whole production line are exquisite, in conformity to the requirements of GMP.

A. Machine body

The machine body is the core equipment of soft capsule production line. Its function is to accomplish preparation of colloid film, quantitative feed of inner content (multiple forms), and final encapsulation.

Technical specification:

a) Filling: liquid or gel.
b) Capsule volume range: from 0.2 to 1.5ml.
c) Capsules are made by gluten or other material resistant to chloropicrin, 1.3D and methyl iodide.
d) Capsules are filled with: chloropicrin, 1.3D and methyl iodide.
e) Accuracy: Liquid ±2%; others is ±5%.
f) Power supply: AC380V 50Hz

B. Dryer

Dryer is mainly used for shaping drying of capsules in the production line.

Technical specifications:

a) Dryer is made of stainless steel, and in conformity to GMP standard.
b) Non-lubricate structure. The machine can be clean during the production process.
c) The rotating cages are made of stainless steel plate.
d) The chambers and ventilation ducts are made of stainless steel plate..
e) The structure must easy to clean, dismantle and reassemble.

C. Conveyer

Technical specifications:

a) Material: Teflon.
b) Conveyer belt speed: about 9.5m/min
c) Size: minimum 1250 × 300 × 1000mm

D. Control System

Fully automatic control system is required. All components must be certified accordingly to the Chinese standards.

E. Insulated Storage container

Technical specifications:

a) Material: stainless steel
b) Volume: minimum 35L
c) Effective Capacity of the Water Jacket: minimum 60L
d) Heating system power supply: 1.5kW AC220V/50Hz
e) Operating temperature: room temperature ~ +95°C
f) Internal maximum pressure: 0~+0.06Mpa
g) Equipped with temperature control device.
h) Gas tight joints, safety valve.
i) Safety certification meets the Chinese standards.

F. Annex

Production Capacity and capsules shapes

Shape	Max. Production Capacity (Pill/h)
Cylinder Shape	From 6,720 to 18,240
Olive Shape	From 9,600 to 19,200
Tube Shape	From 7,200 to 12,240

List of potential suppliers:

A) UNIDO SPX BEIJING:

Room 804, Building B of Beijing Productivity Building No.31 Beisanhuanzhonglu, Haidian District, Beijing 100088, China
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Contact person: Ms. HE Mingxia

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Contact person: Ms. EVA Leng, SPX-CQ

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Contact person: Ms. SONG Joanne

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E-mail:bjztjl@vip.sina.com Web: www.bjztjl.com
Contact person: Mr. LIU SHENG

F) BEIJING EASTHUISHEN TECHNOLOGY Co., Ltd.

NO. 5-1 Yingtou Road,Daxing District,Beijing,100076,China
Tel: 86-10-69271828 Fax: 86-10-69271816
E-mail: vip@dfhs.cn Web: http://dfhs.diytrade.com
Contact person: Mr. DING GUO FU (Manager)

G) SKY SOFTGEL Co. ,Ltd. China Representative Office

NO 10 Yard Dongbai Street, Chaoyang District,Beijing, 100022, China
Tel: 010-5200 1928 Fax.: 010-5200 1929
E-mail: info@delcominc.net skyinfo@bj10000.net
Web : www.delcominc.net/sky.htm

3. No. 1 set of Training, Installation and Service for No.2 Soft Capsule Machine, see reference No.2

For both machines:

a) Post sale technical assistance: the supplier has to provide post sale technical assistance, set up the equipment for production chloropicrin, 1.3D and methyl iodide capsules and train the final user operators.

b) The final user provides the room and infrastructure for operating the machineries.

4. No. 2 Injection machine (metham sodium), see reference No. 3

Technical specifications:

a) Working width: from 1,200 to 1,500mm
b) Working Depth: minimum 250 mm.
c) Power requirement: please specify and provide the technical specification for the tractor to be coupled with the machine
d) Shanks: minimum distance between shanks 150 to 180mm.
e) Shanks must be made by hardened steel.
f) Rear soil levelling and compacting device.
g) All parts in contact with the fumigant must be resistant to metham sodium, 1.3D and chloropicrin (No PVC, brass, copper, zinc, bronze parts)
h) Injection rate: from 400 to 2000 L/Ha, specify how the rate is adjusted and calibrated. Range 10 L.
i) Injection pump: piston pump with independent motor, adjustable injection rate.
j) Injectors: provided of anti drop system.
k) Tank volume: minimum 200 L.
l) Water container and hand and eyes washing system.
m) Safety device: over pressure valves in the tanks and injection pipes and fumigant level alarm.
n) Spare parts and tools: minimum one set of shanks and bolds, spare pipes and valves.
o) Manuals in English.

List of potential suppliers:

A) IMANTS BV
NLTurnhoutseweg 29
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T +31(0)497642433
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info@imants.nl
http://www.imants.de/pages/index.php?taalCode=UK

B) FORIGO ROTER ITALIA S.R.L.
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C) SCIACCO SRL
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D) OLIVER
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http://www.selvatici.com/intro.html
http://www.selvatici.com/Eco-Nurse_0_6.asp

F) KENNCO MANUFACTURING INC.
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E-mail: kenncomfg@aol.com
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G) KUBOTA
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Fax: 06-6648-3862
http://www.kubota.com/f/home/home.cfm
http://www.kubota.co.jp/english/index.html

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I) BUHLER INDUSTRIES INC.

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http://www.buhler.com/contact.shtml

J) CHECCHI & MAGLI SRL

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Web: http://www.checchiemagli.com

K) DA LIAN JIN MEI SOIL EQUIPMENT DISINFECTION AND EXPLOITATION Co. ,Ltd.

303 Room technical Agency Building, No.82 Xinkai Road ,Xigang District, Dalian City , liaoNing, China
Phone 0411-88810800, 0411-88810803 Fax: 0411—88810805
Email: king@companycn.com

5. No. 2 tractor for 30 HP, see reference No. 3

Technical specifications:

a) Tractor of 30HP with a maximum
b) Front overhang maximum (mm) 900
c) Length maximum (mm) 3000
d) Height with roll bar maximum (mm) 2200
e) Ground clearance: minimum (mm) 250
f) Model: maximum 60 HP, 4 cylinder, max engine rpsm 3000, 4 wheel drive
g) Cooling system water
h) Transmission: Manual 8x4 (8 forward, 4 reverse synchronised with inverter)
i) Pto:540 Rpm.
j) Hydraulic system: 3 points lift category I
k) Lift: 1000 kg (two extra lift cylinders)
l) Tyres (front) 7.50-16 7.50-16 260/70 R16 or similar
m) Tyres (rear) 300/70 R20 9.50-20 300/70 R20 or similar
n) Front and rear differential lock, Adjustable, sprung seat, Safety belts, Foldable safety roll bar, Series of control lights, Tachometer/revolution counter, Safety starting switch
o) Rear revolving working light, Wheel ballasts, Single acting hydraulic outlet with rear quick coupling, Mudguards widening for wide wheels, collapsible safety roll-bar.
p) Manuals and documents: Each unit shall include the following manuals and documents:
q) Three complete operating and maintenance manuals in English.
r) Manuals shall include identification references for all spare parts
s) Compliance with norms and codes equivalent to European Union or USA

List of potential suppliers:

A) ANTONIO CARRARO SPA (SEARCH FOR CHINA DEALER)
Via Caltana, n.24 - 35011 CAMPODARSEGO (PD)
Italy
Telefono: 049-921.9921
Fax: 049-921.9944
Email: info@antoniocarraro.it
Web: http://www.antoniocarraro.it

B) FERRARI - DIVISIONE DELLA BCS SPA (SEARCH FOR CHINA DEALER)
Viale Mazzini, n.161 - 20081 ABBIATEGRASSO (MI)
Italy
Phone + 39 02-94.821
Fax: 02-948.2397

Email: bcs@bcs-ferrari.it
Web: http://www.bcs-ferrari.it

C) SAME DEUTZ-FAHR ITALIA SPA (SEARCH FOR CHINA DEALER)
Viale F.Cassani, n.15 - 24047 TREVIGLIO (BG)
Phone + 39 0363-42.11
Fax: 0363-4211.46
Email: marketing@sdfgroup.com
Web: http://www.samedeutz-fahr.com

D) JOHNN DEERE CHINA
http://www.deere.com/zh_CN/JDCI/homepage/default.html?location=ww&tm=corp&link=cn.
SHANGHAI NEW HOLLAND - AGRICULTURAL MACHINERY CORP. LTD
999, XIANG YING ROAD
SHANGHAI
PEOPLE REPUBLIC OF CHINA
Phone +86 21 5505 7771
Fax +86 21 5505 7770
email: vincent.delassagne@cnh.com

E) FENDT AGCO GMBH (SEARCH FOR CHINA DEALER)
Johann-Georg-Fendt-Strasse 4
D-87616 Marktoberdorf
Phone: +49 (0) 8342 / 77-0
Fax: +49 (0) 8342 / 77-220
Mail: info@xfendt.de

F) KUBOTA (SEARCH FOR CHINA DEALER)
1-2-47 Shikitsu-higashi,
Naniwa-ku, Osaka 556-8601
Japan
Phone: 06-6648-2111
Fax: 06-6648-3862
http://www.kubota.com/f/home/home.cfm
http://www.kubota.co.jp/english/index.html

6. No. 3 pumps to refill the fumigant tank, see reference No. 3 and 18

Technical specifications:

a) All parts in contact with the fumigant must be resistant to metham sodium, 1.3D and chloropicrin.
b) *Capacity: Min 130 L/Min*
c) Max pressure 1 bar
d) Safety valves for extra gas pressure purging
e) Hoses and couplings.
f) On /off switch
g) Auto priming system
h) Inlet and outlet parts (pipes, valves, ...)
i) *Stainless steel filter (0.2 mm) in inlet side*

List of potential suppliers:

A) METTIFOGO POMPE SPA
via Armenia, 6 - Z.I. Ponte Rosso
33078 San Vito al Tagliamento PN
Italy
Tel. 0434.85121
Fax: 0434.85361
Email: info@mettifogopompe.it

B) ATA S.R.L.
Via Molinello 38 16035 Rapallo (GE)
Italy
Tel. +39 0185 263015
Fax +39 0185 260114
www.atasrl.it
atasrl@atasrl.it

C) LOWARA SRL (AREA NORTH)
Lowara Subsidiary
Viale Europa, 30
20090 Cusago (MI)
Italy
Telefono: 848787011
Fax: (+39) 0444 707176
E-mail: lowara.milano@itt.com

D) KUBOTA
1-2-47 Shikitsu-higashi,

7. **No. 1 small mechanical injection machine mulching layer, see reference No. 5**

Technical specifications:

a) Working width: 1,350mm.
b) Polyethylene mulching film width: minimum 1,500mm.
c) Working Depth: minimum 150mm.
d) Polyethylene mulching film laying device for bed fumigation or broadcast fumigation (to be clearly specified).
e) All parts in contact with the fumigant must be resistant to chloropicrin, 1,3 D, metham sodium.
f) Injection rate: from 50 to 400 Kg/Ha; specify how the rate is adjusted and calibrated. Range 1 kg.
g) Injectors: provided of anti drop system.
h) Shanks: minimum distance between shanks 150 to 180mm
i) Tank volume: minimum 50 L.
j) Power requirement: please specify and provide the technical specification for the tractor to be coupled with the machine
k) Safety device: over pressure valves in the tanks and injection pipes and fumigant level alarm.
l) Spare parts and tools.
m) Training: minimum 3 days on site training, in China (Hebei province), for machine operation, maintenance and safety.
n) Manuals in English.

List of potential suppliers:

A) 商号：株式会社佐野アタッチ研究所
SANO ATTACHMENT INSTITUTE CO.,LTD
所在地〒421－3301静岡県庵原郡富士川町北松野1204番地
TEL 0545-8-3215; FAX 0545-85-2076
web:http://www.sano-at.co.jp

B) Minoru Industrial Limited Company
International Private company
447 Shimoichi, Akaiwa-gun, Okayama, , Japan
TEL: 869551122
FAX: 869555520

8. No. 1 Injection machine (metham sodium) with rotary-tiller/spading, see reference No. 18

Technical specifications:

a) Spading or rotary-tiller, vertical or horizontal shaft driven by tractor.
b) Working width: from 1,200 to 1,500mm.
c) Working Depth: minimum 200 mm.
d) Power requirement: please specify and provide the technical specification for the tractor to be coupled with the machine.
e) Spades/blades: minimum 6/24.
f) Spades and blades must be made by hardened steel.
g) Drive system: PTO, 540 RPM.
h) All parts in contact with the fumigant must be resistant to metham sodium, 1.3D and chloropicrin (No PVC, brass, copper, zinc, bronze parts).
i) Injection rate: from 400 to 2,000 L/Ha, specify how the rate is adjusted and calibrated. Range 10 L.
j) Injector or nozzles: provided of anti drop system.
k) Rear soil levelling and compacting device.
l) Tank volume: minimum 200 L.
m) Water container and hand and eyes washing system.
n) Safety device: over pressure valves in the tanks and injection pipes and fumigant level alarm.
o) Spare parts and tools: minimum one set of spades/blades and bolds, spare pipes and valves.
p) Training: minimum 3 days on site training, in China (Hebei province), for machine operation, maintenance and safety.
q) Manuals in English.

List of potential suppliers:

A) IMANTS BV
NLTurnhoutseweg 29
5541 NV Reusel
The Netherland
T +31(0)497642433
F +31(0)497643205
info@imants.nl
http://www.imants.de/pages/index.php?taalCode=UK

B) FORIGO ROTER ITALIA S.R.L.
Via Brennero Nord - Z.i. 9
46035 OSTIGLIA MN

Italy
Phone + 39 0386 32691 - Fax 0386 31250
info@forigo.it info@forigo.it http://www.forigo.it/index.asp?IDLang=1

C) SCIACCO SRL
Vittoria – Rg
Italy
Phone + 39 0932 987277
amministrazione@sciacco.it
http://www.fumigatrice.com/

D) OLIVER
Via Torre 32
37056 Engazzà di Salizzole
Verona
ITALY
Tel.+39(0)45.695.4392
Fax.+39(0)45.695.4408
http://www.dittaoliver.com/

E) DITTA SELVATICI FRANCO
Via Laura Rodriguez 4
40068 San Lazzaro - BOLOGNA
Italy
Phone + 39 051-463328 / 051-466496 Fax 051 - 454668
www.selvatici.com
E-mail:selvatici@selvatici.com
http://www.selvatici.com/intro.html
http://www.selvatici.com/Eco-Nurse_0_6.asp

F) KENNCO MANUFACTURING INC.
PO Box 1149
Ruskin, FL 33570
USA.
Phone: 001 813 645 2591
Fax: 001 813 645 7801
E-mail: kenncomfg@aol.com
Website: http://www.kenncomfg.com

G) KUBOTA
1-2-47 Shikitsu-higashi,
Naniwa-ku, Osaka 556-8601
Japan
Phone: 06-6648-2111

Fax: 06-6648-3862
http://www.kubota.com/f/home/home.cfm
http://www.kubota.co.jp/english/index.html

H) TAMINCO CORPORATE HEADQUARTERS

Pantserschipstraat 207
9000 Ghent
Belgium
Phone: +32 9 2541411
Phone: +33 (0) 1 47 29 44 73
Fax: +32 9 2541410
Fax: +33 (0) 1 47 25 46 93
Jean-Michel.Rabasse@Taminco.com

I) BUHLER INDUSTRIES INC.

1260 Clarence Avenue
Winnipeg, Manitoba
Canada
R3T 1T2
Phone (204) 661-8711
Fax (204) 654-2503
http://www.buhler.com/contact.shtml

9. No. 1 tractor for 60 HP, see reference No. 18

Technical specifications:

a) Tractor of 60HP with a maximum
b) Front overhang maximum (mm) 1500
c) Length maximum (mm) 3200
d) Height with roll bar maximum (mm) 2200
e) Ground clearance: minimum (mm) 250
f) Model: maximum 60 HP, 4 cylinder, max engine rpsm 3000, 4 wheel drive
g) Cooling system water
h) Transmission: Manual 12x12 (12 forward, 12 reverse synchronised with inverter)
i) Pto: 540 Rpm.
j) Hydraulic system: 3 points lift category I
k) Lift: 2,000 kg (two extra lift cylinders)
l) Tyres (front) 8.25-R16 280/70-R18 300/80-R15.3 280/70-R18 or similar
m) Tyres (rear) 11.2 R20 360/70 R20 360/70 R20 12.4 R20 or similar
n) Front and rear differential lock, Adjustable, sprung seat, Safety belts, Foldable safety roll bar, Series of control lights, Tachometer/revolution counter, Safety starting switch
o) Rear revolving working light, Wheel ballasts, Single acting hydraulic outlet
p) with rear quick coupling, Mudguards widening for wide wheels, collapsible safety roll-bar.
q) Manuals and documents: Each unit shall include the following manuals and documents:
r) Three complete operating and maintenance manuals in English.
s) Manuals shall include identification references for all spare parts
t) Compliance with norms and codes equivalent to European Union or USA

List of potential suppliers:

A) ANTONIO CARRARO SPA (SEARCH FOR CHINA DEALER)
Via Caltana, n.24 - 35011 CAMPODARSEGO (PD)
Italy
Phone: +39 049-921.9921
Fax: 049-921.9944
Email: info@antoniocarraro.it
Web: http://www.antoniocarraro.it

B) FERRARI - DIVISIONE DELLA BCS SPA (SEARCH FOR CHINA DEALER)
Viale Mazzini, n.161 - 20081 ABBIATEGRASSO (MI)
Italy
Phone + 39 02-94.821

Fax: 02-948.2397
Email: bcs@bcs-ferrari.it
Web: http://www.bcs-ferrari.it

C) SAME DEUTZ-FAHR ITALIA SPA (SEARCH FOR CHINA DEALER)
Viale F.Cassani, n.15 - 24047 TREVIGLIO (BG)
Phone + 39 0363-42.11
Fax: 0363-4211.46
Email: marketing@sdfgroup.com
Web: http://www.samedeutz-fahr.com

D) JOHNN DEERE CHINA
http://www.deere.com/zh_CN/JDCI/homepage/default.html?location=ww&tm=corp&link=cn.

SHANGHAI NEW HOLLAND - AGRICULTURAL MACHINERY CORP. LTD
999, XIANG YING ROAD - SHANGHAI - PEOPLE REPUBLIC OF CHINA
Phone +86 21 5505 7771 - Fax +86 21 5505 7770 - email: vincent.delassagne@cnh.com

E) FENDT AGCO GMBH (SEARCH FOR CHINA DEALER)
Johann-Georg-Fendt-Strasse 4
D-87616 Marktoberdorf
Phone: +49 (0) 8342 / 77-0
Fax: +49 (0) 8342 / 77-220
Mail: info@xfendt.de

F) KUBOTA (SEARCH FOR CHINA DEALER)
1-2-47 Shikitsu-higashi,
Naniwa-ku, Osaka 556-8601
Japan
Phone: 06-6648-2111
Fax: 06-6648-3862
http://www.kubota.com/f/home/home.cfm
http://www.kubota.co.jp/english/index.html

10.No. 117 Small mechanical injection machines, see reference No. 4, 14, 19 and 28.1

Technical specifications:

a) Working width: minimum 440mm.
b) Working Depth: minimum 100mm.
c) Motor: No. 63 diesel engine, minimum 6HP and 64 gas engine, minimum 8HP.
d) All parts in contact with the fumigant must be resistant to chloropicrin and 1.3D.
e) Injection rate: from 200 to 400 Kg/Ha.
f) Tank volume: minimum 20 L.
g) Manual: Chinese.

List of potential suppliers:

A) DA LIAN JIN MEI SOIL EQUIPMENT DISINFECTION AND EXPLOITATION Co. ,Ltd.

303 Room technical Agency Building, No.82 Xinkai Road ,Xigang District, Dalian City , liaoNing, China
Phone 0411-88810800, 0411-88810803 Fax: 0411—88810805
Email: king@companycn.com

11.No. 27 Manual chloropicrin injection machines, see reference No. 6, 20 and 28.2

Technical specifications:

a) Tank volume: 3L.
b) Weight: maximum 2.7 Kg.
c) Injection range: from 1 to 5ml per stroke.
d) Injection depth: from 12 to 18cm..
e) All parts in contact with the fumigant must be resistant to chloropicrin and 1.3D.
f) Manual: Chinese.

List of potential suppliers:

A) DA LIAN JIN MEI SOIL EQUIPMENT DISINFECTION AND EXPLOITATION Co. ,Ltd.

303 Room technical Agency Building, No.82 Xinkai Road ,Xigang District, Dalian City , liaoNing, China

Phone 0411-88810800, 0411-88810803 Fax: 0411—88810805

Email: king@companycn.com

12.No. 910 sets of Safety kits, each set is composed by No. 1 pair of gloves, No. 1 mask (including No. 3 canisters), see reference No.7, 17, 21 and 28.9

Technical Specification:

No. 910 full-face masks, including No. 2,730 canisters

Standards		
Name of gas chemical	**Concentration of gas mg/L**	**Life time**
Chloropicrin, 1,3-D, methyl bromide	3.0	>=100min

No. 910 pair of gloves

Chemical Name	Physical Phase	Average Normalized Breakthrough Time, min	Average Permeation Rate,μg/cm2/min
Chloropicrin, 1,3-D, methyl bromide	Gas and liquid	>480	<0.02

List of potential suppliers:

A) *BEIJING JINJIEKANG KEMAO Co.,Ltd.*

No.40 Baochao Bystreet, Dongcheng District,Beijing, 100009,China
Tel: 010-62242818 010-84241818 13701391028
Fax: 010-84242343
E-mail: yii@public3.bta.net.cn

B) *EHSY Westing area Produce Service center in China*

18F,Qiangsheng Building, No.145 Pujian Road, PuDong NewDistrict, Shanghai,200127, China.
Tel: 400-880-8822 /86-21-50898822
Fax: 400-880-8812 /86-21-58734680
E-mail: SH@ehsy.com Web: http://www.ehsy.com/

13.Chloropicrin, see reference 8, 15.3, 22, 28.3

Technical Specification:

a) Quantity: 68 tonnes.
b) Concentration: minimum 94%.
c) Container: maximum 25 Kg.

List of potential supplier:

A) SIS SPA
Via Palestro 241
97019 Vittoria RG
Italy
sis@sis-italia.it

B) TRIS INTERNATIONAL
Bologna
Italy
Phone: +39 051 33 47 49
m.piardi@trisinternational.com

C) BROMOTIRRENA
Italy - 04022 FONDI (LT)
via Torino 4
Italy
tel +39 0771 511225
fax +39 0771 531532
http://www.bromotirrena.it/eng/contatti.htm

D) TRICAL INC
Telephone: 831-637-0195
FAX: 831-637-0273
Postal address: P.O. Box 1327, Hollister, CA 95024-1327
USA
General Information: jcooper@trical.com
Sales: sales@trical.com
Customer Support: customersupport@trical.com
Webmaster: jcooper@trical.com

E) HENDRIX AND DAIL, INC.
P.O. Box 648
Greenville, NC 27835

1-800-637-9466
USA
http://www.hendrixanddail.com/

F) NIKLOR CHEMICAL COMPANY
2060 East 220th Street
Long Beach, CA 90810
USA
Phone: +001 562-830-2253

G) DALIAN DYE-CHEMICALS GROUP CO.LTD.
No.188Zhen Xing Road Ganjingzi Dist., Dalian ,liaoning, 116113,China
TEL:0411-86861148 PHONE:13904113240
FAX:0411-86861018
Web:http://www.dalianda.com
Email:dlldj@sina.com

14.Metham sodium, see reference No. 15.4, 23 and 28.4

Technical Specification:

a) Quantity: 4 tonnes.
b) Concentration: minimum 35%.
c) Container: maximum 20 Kg.

List of potential supplier:

A) TAMINCO CORPORATE HEADQUARTERS
Pantserschipstraat 207
9000 Ghent
Belgium
Phone: +32 9 2541411
Fax: +32 9 2541410

B) SIAPA S.R.L.
Via Caldera, 21
Palazzo D - Ala 3
20153 Milano
Italy
Phone + 39 02.40946.1
fax +39 02.40946210
email: siapa@siapa.mi.it

C) CEREXAGRI ITALIA
S. Carlo di Cesena (FC)
47023 - Via Terni, 275
Italy
Phone + 39 0547 661523
Fax 0547 661450
pietro.di-primo@cerexagri.com
italiacesena@uniphos.com

D) CERTIS
http://www.certiseurope.com/Certis/English/Home/Our_Offices/Worldwide+Locations/page.aspx/83

E)EXPORT DEPARTMENT OF SHENYANG FENGSHOU PESTICIDE Co.,Ltd.
No.10 Haitang Street Sujiatun Dist. Shenyang City, Liaoning Provice,110101,China
Phone: 86-24-89487890 Fax: 86-24-89487788
Web: http://www.agrochemcn.com

15. 1.3-D, See reference No. 15.1, 24 and 28.5.2

技术规格:

a) 总量: 1.8 吨;
b) 纯度: ≧93%.
c) 每罐重量≦20 千克.

潜在供应商:

A) DOW AGROSCIENCES
Global Headquarters
Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268
USA
Telephone: +1 317 337 3000
http://www.dowagro.com/china/prod/

B) CERTIS
http://www.certiseurope.com/Certis/English/Home/Our_Offices/Worldwide+Locations/page.aspx/83

C) ZIBO YUANWANG CHEMICAL Factory
Zhutai industry Linzi Dist. ,Zibo City, Shangdong province,China
TEL: 86-0533-7785987 , 13606436983
E-mail: root@zywchem.com
Contact person:Mr Zhu Xueyi

D) DOW AGROSCIENCES IN CHINA
1103 Room ,east 3 Office ,East trade Building ,East Square ,No 1 East chang'an Street ,Dongcheng District ,Beijing ,100738, China
Tel: 010-8518 5599
Fax: 010-8518 1251

16. Sulfuryl fluoride, see reference No. 28.5.1

Technical Specification:

a) Quantity: 0.2 tonnes.
b) Concentration: minimum 99%.
c) Container: maximum 10 Kg.

List of potential supplier:

A) DOW AGROSCIENCES
Global Headquarters
Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268
USA
Telephone: +1 317 337 3000
http://www.dowagro.com/china/prod/

B) LINHAI LIMIN CHEMICAL Co.Ltd.
ChengGuan Zhenxin Street linhai City Zhejiang Province 317000, China
TEL: 86-576-5177672 FAX: 86-576-5177681
Web: http://liminchemicals.com.cn

C) DOW AGROSCIENCES IN CHINA
1103 Room ,east 3 Office ,East trade Building ,East Square ,No 1 East chang'an Street ,Dongcheng District ,Beijing ,100738, China
Tel: 010-8518 5599
Fax: 010-8518 1251

17.Methyl bromide, see reference No. 28.5.3

Technical Specification:

a) Quantity: 0.5 tonnes.
b) Concentration: minimum 98% plus 2% chloropicrin.
c) Container: maximum 10 Kg.

List of potential supplier:

A) SHANGDONG CHANGYI CHEMICAL FACTORY
Erjia Village, Liutong Town, Changyi City, Shandong province,261303,China
TEL：0536-7802210
FAX：0536-7802133

B) Israel Dead Sea Bromide Group
Hongkong Asia Bromide Co., Ltd.SHANGHAI , 200001,China
TEL：021-63630018
FAX：021-63620899

C) LINHAI JIANXIN CHEMICAL Co.Ltd.
Chengguan White Tower,Linhai City, Zhejiang Province 317000, China
TEL：0576-5135553
FAX：0576-5135505
Web：http://www.xingye.net

18. BCA, see reference No. 15.2

Technical Specification:

a) Quantity: 0.5 tonnes.
b) Components: trichoderma, bacillus subtilis, avermectin, streptomyces.
c) Container: maximum 10 Kg.

List of potential supplier:

A)QINHUANGDAO LEADST TECHNOLOGY DEVELOP Co. ,Ltd.

No.16 Yellow river Road, high-tech Develop Dist.Qinhuangdao City ,Hebei Province , 066004,China

TEL：0335-8500880

FAX：0335-8500880

Web：http://www.leadst.com

19. No. 59 tonnes high density polyethylene plastic film for mulching, see reference No. 9, 16, 25 and 28.6

Technical specifications:

a) High density virgin polyethylene film
b) Length: 300 m;
c) Width: 50% 8m and 50% 4m, in rolls 2m width;
d) Thickness: 0.040-0.050mm ± 15%;
e) Colour: transparent;
f) Roll weight: maximum 70 kg; and
g) Additives: lubricated, no UV additives.

List of potential supplier:

A) EIFFEL OFFICES AND PRODUCTION PLANT
Via Provinciale, 35/A
Località Ghiara Sabbioni
43012 Fontanellato (Parma)
EU - Italy
Call Center: +39 +521 829711
Fax Center: +39 +521 829777
eMail Center: info@eiffel.it

B) AGRIPLAST
c.d.a Marangio
97019 VITTORIA (RG)
ITALY
Phone: +39 09 32 99 72 11
Fax: +39 09 32 86 72 38
e-mail: agriplast@agriplast.com

C) AT PLASTICS INC.
134 Kennedy Road S.
Brampton, Ontario L6W 3G5
CANADA
Tel:(905) 451-9985
Fax:(905) 451-7650

D) MUTHU SHRI CHAKRA PACKAGING PVT. LTD.
71/1, Poraiyur, Villianur Commune, Villianur,
Pondicherry - 605 110
INDIA

Phone: +(91)-(413)-2666145/2668292
Fax: +(91)-(413)-2668294
Email: muthushrichakra@yahoo.co.in

E) GINEGAR PLASTIC PRODUCTS LTD.
Kibbutz Ginegar 30053
ISRAEL
Phone: +972 6 654 42 22
Fax: +972 6 654 42 11
E-mail: GPP@ginegar.co.il
Contact Person: Mr. Yehuda Shenkar

F) INDUSTRIA PLASTICA MONREGALESE
Via Vigevano
12084 MONDOVI (TO)
ITALY
Phone: +39 0174 55 25 51
Fax: +39 0174 48 10 04
e-mail: ipm@ipmspa.com

G) PLASTIKA KRITIS
P.O Box 1093
GR 711 10 IRAKLION
Greece
Phone: +30 810 30 85 00
Fax : +30 810 381328
E-Mail: info@plastikakritis.com

H) ARVIND CHEMI SYNTHETICS PVT. LTD.
B - 7 / 7 Safdarjung Enclave,
New Delhi-110029
INDIA
Phone: +91 11 51 65 04 27
Fax: +91 11 51 65 04 28
e-mail: acspl@del6.vsnl.net.in
Contact Persons: Mr. Arvind Gupta

I) GRAHA PURA
JL. Pancoran Indah I No.52
Jakarta Selatan 12780
INDONESIA
Tel: (+62-21) 79193585, 79193686
Fax: (+62-21) 79193586-7, 79193774, 79193775
e-mail: marketing@puragroup.com

Web: http://www.puragroup.com/pura.html

J) PLASTOPIL

Menashe Hazarie
Marketing Manager
UK, USA, ASIA
Kibbutz Hazorea 30060, Israel
Tel: 972-4-9598800
Mobile: 972-54-4541521
Fax: 972-4-9894250
Email: menashe_ha@plastopil.com

K) ARUN MANUFACTURING SERVICES PVT. LTD.

Contact Person : Mr. H.P. Agarwal
Address : B-53, FF complex, Rani Jhansi Road, Jhandewalan,
New Delhi - 110 055 INDIA
Phone no : +(91)-(11)-23544555/23551699
Mobile : +(91)-9350107214
Fax : +(91)-(11)-23638587
Email : amspoly@vsnl.com ,amsdelhi@yahoo.co.in

L) BAODING JUXIN PLASTIC FACTORY ,HEIBEI

Contact Person : Mr CHEN GUOLONG
Address : ManCheng County BaoDing City, HeBei Province,China
Tel: 0312-7075782

M) SHANDONG ZIBO ZHONG YI PLASTIC PRODUCE Co. Ltd.

Contact Person : Mr XU JIANQIANG
Tel: 0536-3591189
Fax: 0536-3591189
Address: QingZhou city ,Shangdong province

N) **QINGDAO HUA YANG FILM FACTORY, SHANDONG**

Contact Person: Mr CHEN LING
Address: Kangcheng industry, QingDao
Web: http://www.qingdaohuayu.com
Tel: 13969632858

L) XINJIANG TIAN YE GROUP , Co. Ltd.

Tianye Industrial Park Shihezi Development Zone Xinjiang, 832000, China
TEL:0993-2623102
Fax:0993-2623103

20.No. 69 sets of dripping line and venture injection system for drip irrigation, see reference No. 10, 12 and 28.8

Technical specification for one set:

a) Main pipe: No. 65m lay-flat PE or PP pipe diameter 55mm.
b) Dripping lines: 1,400m drip lines, inner diameter 6mm.
c) Fittings: No. 120 fittings between main pipe and dripping lines, No. 1 cap and No. fitting 1.5" for layflat pipe
d) Drippers: flow rate from 1.2 to 2.4 l/h, no PVC allowed, pressure minimum 1, maximum 4 bar.
e) Spacing: 400mm.
f) Disk filter: 120 mesh, diameter 1.5" and anti-back flow valve.
g) Venturi: injection rate from 2 to 30 L/h, pressure from 1 to 4 bar, anti-back flow valve.
h) All materials must be compatible with metham sodium, chloropicrin, 1,3 D

List of potential list:

A) NETAFIM™
Derech Hashalom 10, Tel Aviv 67892
ISRAEL
Phone: 972 - 8 - 6474747
Fax: 972 - 8 - 6473983
e-Mail: postmaster@netafim.com

B) NETAFIM CHINA BEIJING OFFICE
ROOM 2608, Wen Hua Palace In The Working People's Cultural Palace,
Beijing 100006
Phone:86 10 65237521/31
Fax: 86 10 65237522
mailto: laoma@netafim.cn
Web site: www.netafim-china.com

C) IRRIGRO USA - MAILING ADDRESS:
LPO Box 163
1755 Factory Outlet Blvd
Niagara Falls, NY
USA
14304-0163
http://www.irrigro.com/indexx.html

D) METZERPLAS

Kibbutz Metzer
M.P. Hefer 38820
Israel
Tel. 972-4-6387001
Fax. 972-4-6385385
info@metzerplas.com

E) PLASTRO – HEADQUARTERS ISRAEL
Kibbutz Gvat D. N. Ha'Amakim 36579
Telephone: 972-4-6549444
Fax: 972-4-6449244

F) CARSON
IDA Industrial Estate,
Racecourse Road,
Roscommon,
Ireland
Tel +353 (0)9066 25922
Fax +353 (0)9066 25921
email Customer Service: sales@carsoneurope.com

G) KOMET STANDARD SRL
Via dell'Ora del Garda 11
I - 38014 Gardolo / TN
Italy
phone (+39) 0461 990138
fax (+39) 0461 990201
http://www.kometirrigation.com/w3k/index.jsp?k=5

H) JIAN IRRIGATION
Ontario, California
P.O. Box 3760
1450 E. Francis St.
Ontario, CA 91761
1-800-828-9919 or (909) 395-5200
Fax: 1-800-777-6162 or (909) 395-5201
http://www.aquariusbrands.com/contactus/

I) RAIN BIRD CHINA
http://www.rainbird.com/worldwide/asia.htm

21.No. 4 injection pump systems for drip irrigation, see reference No. 13

Technical specifications:

a) Pumps piston and chamber: stainless steel or Teflon.
b) Use: to inject metham sodium, chloropicrin, 1.3D.
c) Flow rate of injection: from 2 to 30 L/h.
d) Pressure: minimum 10 bar.
e) Adjustment steps: minimum 0.25 L.
f) Motor: one cylinder gas engine.
g) Safety valve and anti-back flow valve.
h) Filter: in the inlet, stainless steel, 200 micron.
i) Spare parts and tools (specify).

List of potential supplier:

A) AGROQUIMICOS DE LEVANTE
Spain
Poligono Industrial Castilla (Cl Vial) 5 46380 Cheste
SPAIN
Email: aqlsa@arrakis.es
Tel: +34 962 51 10 00
Fax: +34 962 51 14 61

B) ATA S.R.L.
Via Molinello 38
16035 Rapallo (GE)
Italy
Phone +39 0185 263015
Fax +39 0185 260114
www.atasrl.it
atasrl@atasrl.it

C) AGRICONTROL S.R.L.
Reg. Str. Torre Pernice 13/6 17031 Albenga (Sv)
Italy
Phone +39 0182 21002 Fax +39 0182 21095
info@agricontrol.it

D) MILTON
Milton Roy USA
201 Ivyland Road
Ivyland, PA 18974

Phone (215) 441-0800
Fax: (215) 441-8620
Tammy Coulton
Purchasing coultot@miltonroy.com

E) CDS-JOHN BLUE COMPANY

Division of Advanced Systems Technology
P.O. Box 1607, Huntsville, Alabama 35807
http://www.cds-johnblue.com/contact-john-blue-company.shtml

F) LOWARA SRL (AREA NORTH)

Lowara Subsidiary
Viale Europa, 30
20090 Cusago (MI)
Italy
Phone Fax: (+39) 0444 707176
E-mail: lowara.milano@itt.com

22.No. 600 Grafting sets, see reference No. 11

Technical specifications:

Each set is composed by:

a) No. 1,100 grafting clips for cucumber (elastic body);
b) No. 200 L Substrate, porosity about 60%, pH 6~7.
c) No. 50 trays.
d) 3 cutters and 15 spare blades.

List of potential supplier:

A) BEIJING MIAOLE SEEDING CONTAINER FACTORY
103 Room 9Door No.118 Shaoyaojubeili Chaoyang district,beijing
Tel: 01084617663
Web: http://mlym.myqy.cn

B) **WEIFANG HUINONG ZHONGYE TECHNOLOGY Co. Ltd.**
North Road linglong hill ,Qingzhou City, Shandong province,262500,China
Tel: 86 0536 2132718
Fax: 86 0536 3306856
Contract person: Cui Xiujing

23.No. 4 sets of Video-Computer equipment package, see reference No. 28.11

Each set of Video-Computer equipment package is composed by No. 1 LCD Projector, No. 1 notebook PC, No.1 digital camera:

Technical Specification:

A. LCD Projector.

a) General

Device Type	LCD projector
Weight	Less than 1.8 kg
Lamp life	2,000hours

b) Project panel

Image Brightness	2100 ANSI lumens
Image Brightness (Reduced)	1600 ANSI lumens
Image Size	3.3 ft - 25 ft
Projection Distance	4 ft - 35 ft
Digital Zoom Factor	4x
Resolution	1024 x 768 (native) / 1400 x 1050 (resized)
Native Aspect Ratio	4:3
Display Format	2,359,296 pixels (1,024 x 768 x 3)
Max Sync Rate (V x H)	92 Hz x 92 kHz
Lamp Type	UHP 165 Watt
OSD Languages	Chinese (traditional), Chinese (simplified) and English at least
Features	Freeze frame

c) Environmental Parameters

Min Operating Temperature	32 °F
Max Operating Temperature	95 °F
Humidity Range Operating	35 - 85%

d) Power

Power Device	Power supply - internal
Voltage Required	AC 120/230 V (50/60 Hz)
Power Consumption Operational	220 Watt

e) *Miscellaneous*

Included Accessories	Carrying case
Cables Included	1 x VGA cable ¦ 1 x A/V adapter
Compliant Standards	FCC Class B certified, CE, IC Class B, C-Tick, VCCI Class B ITE, CE-LVD, cUL, EN 60950, NEMKO, UL 1950
Warranty	One year

B. Notebook PCs.

a) General

System Type	Notebook
Built-in Devices	Stereo speakers, Wireless LAN antenna
weight	2,000-2,500g
Wireless	*802.11b, 802.11g*

b) Processor

Processor	Intel PRO/wireless
Multi-Core processor technology	Dual-Core

c) Storage

Hard drive	160 GB
Hard drive type	*Portable*

d) display

Display type	14.1 TFT active matrix
Max Resolution	1280 x 800 (WXGA)
Screen display	wide

e) battery

Battery capacity	at least 56 Wh

f) Warranty

Service & support type	*One year warranty*

g) Environmental parameters

Min operating	32 °F

temperature	
Max operating temperature	95 °F
Operating humidity rang	10 - 90%

h) Operating system/software

OS Provided	Microsoft Windows Vista Home Premium Edition
Software	Drivers & Utilities, Microsoft Office, Adobe Acrobat Reader,

C. Digital camera.

Megapixel Banding	8 to 8.9 Megapixels
Maximum Image Resolution	3264 x 2448
Optical Zoom	3.8x
Lens	Zoom
Digital Zoom	4x
Focal Length	(35mm equiv) 28 - 105 mm Macro: 3 cm
Storage for Digital Compacts	SD Card
Connection Type	USB
Operating System	Mac OS, Windows 2000, Windows XP, Windows Vista,
LCD Monitor	3.0"-3.5"
Built-in Flash	Yes
Battery Type	Lithium-ion (NB-5L)
Audio Recording	Yes
Burst Mode	Yes
CCD Size	1/2.5 inch
Exposure Compensation	Yes
Movie Mode	Yes
Video Out	PAL, NTSC or Mutli-Use Connector
Weight (g)	150-200 g

D. After sale service

For all the equipments, after sale service office has to be available in China widely.

24.No. 1 Digital Video Camera, see reference No. 28.11

Technical Specification:

Surround Sound Type	Dolby Digital
Digital Zoom	20x
Fixed Image Resolutions	640x480
Image Sensor Type	CMOS
Colour Viewfinder	yes
Camer a Resolution	4.0 MP
Optical Zoom	10x
Digital video format	MPEG
Video resolutions	2304x1728, 2304x1296, 640x480, 1600x1200
Low Lux	2
Night Shot Mode	Yes
Digital Still Shot Mode	Yes
Display Technology	Colour LCD TFT (Active Matrix)
Screen size	2.7" and up
Weight (g)	500-600
Supported Memory Media	Memory Stick Duo, Memory Stick PRO Duo
Built-in Microphone (Mobile)	Yes
Power Supply	Battery
Wired Terminals / Ports	Video Out, mini-USB, Component Video Output, Microphone Jack , S-Video Output, USB 2.0

After sale service

For all the equipments, after sale service office has to be available in China widely.

List of potential supplier:

25. No. 5 sets of Climate record, see reference No. 29.2

Each set is composed by:

a) No. 1 water proof case temperature data logger
b) No. 1 portable water proof case PH meter.
c) No. 1 portable water proof case EC meter.
d) No. 1 portable water proof case photometer.

Technical specifications:

A. water proof case temperature data logger

a) 1 wire probe (wire probe: minimum 5 meters) for air temperature monitoring (minimum range -20°C ± 0.1 +90°C ± 0.1)
b) 2 wire probes (wire probe: minimum 5 meters) for soil temperature monitoring (minimum range -20°C ± 0.1 +90°C ± 0.1).
c) USB plug and related accessories for data download (Windows Office Excel compatible).
d) Battery: minimum 1 year of duration.
e) Low battery charge alarm.
f) Software Windows compatible for data logger settings (n° of samples for each probe per hour.
g) *Minimum 30 samples/hour per probe.*
h) Digital display with current sampled data check.
i) Memory: minimum 15,000 data (5,000 per probe).
j) Nonvolatile EEPROM memory retains data even when the battery has been removed.

B. portable water proof case PH meter.

a) Automatic calibration at 1 or 2 points with 4 memorized buffers to assure reliable readings over the entire measurement range.
b) Storage of a minimum of 200 measurements, complete with date and time (transfer to the computer an RS232 serial port, using cable and windows compatible software).
c) 1 pH electrode with protector sleeve
d) 1 temperature probe,
e) pH4 and pH 7 buffer sachets,
f) electrode cleaning solution,
g) batteries,
h) rugged carrying case and instructions.
i) PH range 0-14 ± 0.01 at -10°C + 100°C.
j) Automatic and manual temperature compensation.

k) Battery life: minimum 200 hours, rechargeable throughout with a direct cable connection.
l) Auto off.

C. portable water proof case EC meter.

a) Rugged waterproof conductivity meter.
b) Storage of a minimum of 200 measurements, complete with date and time (transfer to the computer an RS232 serial port, using cable and windows compatible software).
c) 1 EC probe (potentiometric 4-ring probe) and temperature probe;
d) stainless steel sensors and 1.5 m screened cable.
e) EC range 0 – 200 ± 0.01 mS/cm at +10°C + 100°C.
f) Automatic and manual temperature compensation.
g) Battery life: minimum 200 hours, rechargeable throughout with a direct cable connection.
h) Auto off

D. portable water proof case photometer.

a) Measurement of light levels with result display in Lux and Watt/m^2.
b) The light sensor connected to the meter/data logger on a 5m cable.
c) Measurement ranges: 0.001 to 1.999Klux; 0.01 to 19.99 Klux; 0.1 to 199.9 Klux.
d) Storage of a minimum of 200 measurements, complete with date and time (transfer to the computer an RS232 serial port, using cable and windows compatible software).
e) Rugged water resistant case with protected keyboard.
f) Battery life: minimum 200 hours, rechargeable throughout with a direct cable connection.
g) Auto off

List of potential supplier:

A) MICRODAQ.COM, LTD.
PO Box 249
Warner, NH 03278
U.S.A.
Tel: 603-746-5524
Fax: 603-746-5384

B) MILWAUKEE B.V.B.A.
Abtsdreef 10 - 2940

Stabroek
Belgium
Tel.: +32 3 569 00 28
Fax: +32 3 569 09 28
E-mail: milwaukee@skynet.be

C) MILWAUKEE S.R.L.
Corso Leonardo da Vinci 48/50
21013 Gallarate (VA)
Italy
Tel.: +39 0331 26 80 09
Fax: +39 0331 26 80 33
E-mail: sales@milwaukee.191.it

D) SPECTRUM TECHNOLOGIES, INC.
12360 South Industrial Dr.
East - Plainfield, Illinois 60585
United States
Tel: +1 (815) 436-4440
Fax: +1 (815) 436-4460

E) ANALYTIKA
32 Aristomenous Str.,
12135 Peristeri, Athens
GREECE
Tel: (+30) 2105785970-2
Fax: (+30) 2105785973
Email : contact@analytika.gr
Contact person : Mr. Andreas Kyriakouleas

F) FISHER BIOBLOCK SCIENTIFIC
Parc D'Innovation, BP 50111
67403 Illkirch
Cedex, France
Tel: 33 3 88 67 14 14
Fax: 33 3 88 67 11 68
Website: www.bioblock.com

G) FISHER SCIENTIFIC UK, LIMITED
Bishop Meadow Road
Loughborough, Leicestershire LE11 5RG
UK
Tel: 44 150 923 1166
Fax: 44 150 923 1893

Website: www.fisher.co.uk

H) Fisher Scientific GmbH
Im Heiligen Feld 17
Schwerte, D-58239 Germany
Tel: 49 (0) 2304 932 5
Fax: 49 (0) 2304 932 950
Website: www.de.fishersci.com

I) ONSET
470 MacArthur Blvd.
Bourne, MA 02532
USA
Phone: + 1-800-564-4377
Fax: + 1-800-508-759-9100
Web: www.onsetcomp.com
e-mail: onsales@cape.com

J) SHAMBHAVI IMPEX
493, "B-Wing", 2nd Floor,
Vashi Plaza, Sector-17, Vashi
Navi Mumbai - 400703
Maharashtra
INDIA
Phone:+(91)-(22)-56114923
Fax: + (91)-(22)-27621281
Web: www.shambhaviimpex.com
e-mail: info@shambhaviimpex.com
Contact Person: Mr. Shekhar Narain

k) Rajco Scientific and Engineering Products
15/17, Ist Floor, Ashok Nagar
Behind Tilak Nagar, Police Station,
New Delhi- 110018
INDIA
Phone:+(91)-(11)-25130328
Fax: + (91)-(11)-2510329/25529384
Web: http://www.rajcoscientific.com
e-mail: info@rajcoscientific.com
Contact Person : Mr. P.K.Sethi

L) Thermo Electron Austria
wissenschaftliche Gerate GmbH
Wehlistrasse 27b

A-1200 Wien
Austria
Tel: (+43)(1) 333 50 34-0
Fax: (+43)(1) 333 50 34 - 26

M) LZS-CONCEPT Handels- und Service GmbH
Wirtschaftspark Poettelsdorf, Viktor Kaplan Allee 5
A-7023 Poettelsdorf
AUSTRIA
Phone: +43 (0) 2626 20090
Fax: +43 (0) 2626 2009030

N) GRANT INSTRUMENTS (Cambridge) Ltd
29 Station Road
Shepreth
Cambridgeshire
SG8 6GB
UK
Tel: +44 (0)1763 260811
Fax: +44 (0)1763 262410

O) HANNA INSTRUMENTS DEUTSCHLAND GMBH
Lazarus-Mannheimer Str. 2-6,
D-77694 Kehl am Rhein,
Germany
Tel: +49 (7851) 9129-0
Fax: +49 (7851) 9129-99
Hanna instruments
http://www.hannainst.com/
http://www.hannainst.cn/

P) Tecnovetro srl.
Via Gabriele D'Annunzio, 19, 20052 Monza (Italy)
Phone + 39 039 2006017
http://www.tecnovetro.it/

Q) Nordeader Italy
http://www.nordealer.com/html/english.htm

R) MECSTRUMENTI di Filippo Rossi
www.mecstrumenti.com
info@mecstrumenti.com

26.No. 1 portable water proof case meteor station, see reference No. 29.2

Technical specifications

a) Air temperature -30 + 90 °C ± 0.1;
b) Relative humidity 0 - 100 % ± 0.1;
c) Rain (presence/absence and mm/day);
d) Light radiation (Lux and Watt/m^2);
e) Soil temperature 30 + 90 °C ± 0.1;
f) Wind speed (0 - 50 m/s);
g) Wind direction;
h) Pressure (mBar or mm Hg).
i) Data logger for data storage
   - ✓ Battery life: minimum 1 year, with alarm for low battery level, rechargeable throughout with a direct cable connection.
   - ✓ Software Windows compatible for data logger settings (n° of samples for each probe per hour. Minimum 30 samples/hour per parameter).
   - ✓ Digital display with current sampled data.
   - ✓ Memory: minimum 40,000 data (5,000 per probe).
   - ✓ Memory storage not erased in case of power supply cut off.
   - ✓ USB plug and related accessories for data download (Windows Office Excel compatible).
   - ✓ Fully equipped with stainless steel support.
   - ✓ Non-volatile EEPROM memory retains data even when the battery has been removed.

List of potential supplier

A) MicroDAQ.com, Ltd.
PO Box 249
Warner, NH 03278
U.S.A.
Tel: 603-746-5524
Fax: 603-746-5384

B) Milwaukee b.v.b.a.
Abtsdreef 10 - 2940
Stabroek
Belgium
Tel.: +32 3 569 00 28
Fax: +32 3 569 09 28
E-mail: milwaukee@skynet.be

C) Milwaukee s.r.l.
Corso Leonardo da Vinci 48/50
21013 Gallarate (VA)
Italy
Tel.: +39 0331 26 80 09
Fax: +39 0331 26 80 33
E-mail: sales@milwaukee.191.it

D) Spectrum Technologies, Inc.
12360 South Industrial Dr.
East - Plainfield, Illinois 60585
United States
Tel: +1 (815) 436-4440
Fax: +1 (815) 436-4460

E) Analytika
32 Aristomenous Str.,
12135 Peristeri, Athens
GREECE
Tel: (+30) 2105785970-2
Fax: (+30) 2105785973
Email : contact@analytika.gr
Contact person : Mr. Andreas Kyriakouleas

F) Fisher Bioblock Scientific
Parc D'Innovation, BP 50111
67403 Illkirch
Cedex, France
Tel: 33 3 88 67 14 14
Fax: 33 3 88 67 11 68
Website: www.bioblock.com

G) Fisher Scientific UK, Limited
Bishop Meadow Road
Loughborough, Leicestershire LE11 5RG UK
Tel: 44 150 923 1166
Fax: 44 150 923 1893
Website: www.fisher.co.uk

H) Fisher Scientific GmbH
Im Heiligen Feld 17
Schwerte, D-58239 Germany
Tel: 49 (0) 2304 932 5
Fax: 49 (0) 2304 932 950

Website: www.de.fishersci.com

I) ONSET
470 MacArthur Blvd.
Bourne, MA 02532
USA
Phone: + 1-800-564-4377
Fax: + 1-800-508-759-9100
Web: www.onsetcomp.com
e-mail: onsales@cape.com

J) SHAMBHAVI IMPEX
493, "B-Wing", 2nd Floor,
Vashi Plaza, Sector-17, Vashi
Navi Mumbai - 400703
Maharashtra
INDIA
Phone:+(91)-(22)-56114923
Fax: + (91)-(22)-27621281
Web: www.shambhaviimpex.com
e-mail: info@shambhaviimpex.com
Contact Person: Mr. Shekhar Narain

K) Rajco Scientific and Engineering Products
15/17, Ist Floor, Ashok Nagar
Behind Tilak Nagar, Police Station,
New Delhi- 110018
INDIA
Phone:+(91)-(11)-25130328
Fax: + (91)-(11)-2510329/25529384
Web: http://www.rajcoscientific.com
e-mail: info@rajcoscientific.com
Contact Person : Mr. P.K.Sethi

L) THERMO ELECTRON AUSTRIA
wissenschaftliche Gerate GmbH
Wehlistrasse 27b
A-1200 Wien
AUSTRIA
Tel: (+43)(1) 333 50 34-0
Fax: (+43)(1) 333 50 34 - 26

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Lazarus-Mannheimer Str. 2-6,
D-77694 Kehl am Rhein,
Germany
Tel: +49 (7851) 9129-0
Fax: +49 (7851) 9129-99
Hanna instruments
http://www.hannainst.com/
http://www.hannainst.cn/

P) TECNOVETRO SRL.
Via Gabriele D'Annunzio, 19, 20052 Monza (Italy)
Phone + 39 039 2006017
http://www.tecnovetro.it/

Q) NORDEADER ITALY
http://www.nordealer.com/html/english.htm

R) MECSTRUMENTI DI FILIPPO ROSSI
www.mecstrumenti.com
info@mecstrumenti.com

27.No. 60 Scales, see reference 29.4

Technical specifications:

a) Accuracy: 10g
b) Maximum load: 50 Kg.
c) Minimum load: 0,5 Kg
d) Water proof case easily cleanable
e) Stainless steel platform, removable and easily cleanable
f) *Digital weight meter; zero adjustment;*
g) Battery life: minimum 200 hours, rechargeable throughout with a direct cable connection.

List of potential supplier:

A) MICRODAQ.COM, LTD.
PO Box 249
Warner, NH 03278
U.S.A.
Tel: 603-746-5524
Fax: 603-746-5384

B) Milwaukee b.v.b.a.
Abtsdreef 10 - 2940
Stabroek
Belgium
Tel.: +32 3 569 00 28
Fax: +32 3 569 09 28
E-mail: milwaukee@skynet.be

C) Milwaukee s.r.l.
Corso Leonardo da Vinci 48/50
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Italy
Tel.: +39 0331 26 80 09
Fax: +39 0331 26 80 33
E-mail: sales@milwaukee.191.it

D) Spectrum Technologies, Inc.
12360 South Industrial Dr.
East - Plainfield, Illinois 60585
United States
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Fax: +1 (815) 436-4460

E) Analytika
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GREECE
Tel: (+30) 2105785970-2
Fax: (+30) 2105785973
Email : contact@analytika.gr
Contact person : Mr. Andreas Kyriakouleas

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Cedex, France
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Fax: 33 3 88 67 11 68
Website: www.bioblock.com

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Tel: 44 150 923 1166
Fax: 44 150 923 1893
Website: www.fisher.co.uk

H) Fisher Scientific GmbH
Im Heiligen Feld 17
Schwerte, D-58239
Germany
Tel: 49 (0) 2304 932 5
Fax: 49 (0) 2304 932 950
Website: www.de.fishersci.com

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470 MacArthur Blvd.
Bourne, MA 02532
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Phone: + 1-800-564-4377
Fax: + 1-800-508-759-9100
Web: www.onsetcomp.com
e-mail: onsales@cape.com

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Maharashtra
INDIA
Phone:+(91)-(22)-56114923
Fax: + (91)-(22)-27621281
Web: www.shambhaviimpex.com
e-mail: info@shambhaviimpex.com
Contact Person: Mr. Shekhar Narain

K) Rajco Scientific and Engineering Products
15/17, Ist Floor, Ashok Nagar
Behind Tilak Nagar, Police Station,
New Delhi- 110018
INDIA
Phone:+(91)-(11)-25130328
Fax: + (91)-(11)-2510329/25529384
Web: http://www.rajcoscientific.com
e-mail: info@rajcoscientific.com
Contact Person : Mr. P.K.Sethi

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Fax: (+43)(1) 333 50 34 - 26

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D-77694 Kehl am Rhein,
Germany
Tel: +49 (7851) 9129-0
Fax: +49 (7851) 9129-99
Hanna instruments
http://www.hannainst.com/
http://www.hannainst.cn/

P) Tecnovetro srl.
Via Gabriele D'Annunzio, 19, 20052 Monza (Italy)
Phone + 39 039 2006017
http://www.tecnovetro.it/

Q) Nordeader Italy
http://www.nordealer.com/html/english.htm

R) BEIJING FEIMUSI TECHNOLOGY COMPANY
2F Electricity Building, NO2, Majiabao east Road, Fengtai
District,Beijing,100077,China
TEL: 010-67238335
Web: www.114mama.cn

S) Chengdu Precision counting scale company
6F Ronghua Building,No45 4-ring north,2-ring Road,Chengdu City,Sichuang
Tel: 028-83251651
Fax: 028-83254031

28. No. 3 sets of Diagnostics equipment, see reference No.29.3

Each set is composed by:

a) No. 1 Binocular Stereo Microscope with built in camera.
b) No. 1 Binocular microscope with built in camera.

Technical specifications:

A. Binocular Stereo Microscope.

a) Magnification: 0,6-0,8x to 4,5x
b) Zoom ratio: min. 5:1
c) Tube inclination angle: 45°-60°
d) Eyepieces: Eyepieces must be 10X, available ranging from 10X to 30X
e) No 1 auxiliary objectives 2X or 5X
f) Illumination Systems: Up (with articulated arm) and down (transmitted light illumination with reflector) lightning with halogen lamp 6 V 20W
g) Light source input rating: 200-240 V
h) Digital camera system for video and image must be attached (Camera specification: Camera adepter systems for the microscope, Memory card: minimum 256 MB, Output for digital images and videos to PC, Zoom for calibration purposes, digital camera's zoom must have wide, medium and narrow angle modes)

B. Binocular microscope.

a) Viewing Head: Binocular heads rotate 360° with 30° inclined eye tubes interpupillary and dioptrically adjustments.
b) Eyepieces: 10X Wide Field (DIN) Field number 18
c) Nosepiece: Quintuple, reversed, extra-large, ball bearing nosepiece with a wide, knurled grip for easy operation Features high-grade lubricant and positive stops
d) Objectives: plan Achromatic 4x, 10x, 40x, 100x oil (All objectives are manufactured to DIN standards and are coated)
e) Stage: Delivering a high level of fluid motion control and longevity, the stage measures 140mm x 140mm. Featuring a removable spring-clip slide holder and a chemical-resistant finish. Motion is controlled with a right-hand, low-position, rack and pinion coaxial control.
f) Focusing Movement: Coaxial, ultra low-position coarse and fine focus controls Graduated to 2 microns per division, 40mm focusing range with safety up stop feature.
g) Transmitted Illumination: 20W variable quartz halogen light source. Comes with blue, green and neutral density (frosted) filters.
h) Base: Stable design is fitted with anti-skid rubber feet.

i) Body: Cast metal, ergonomic body with stain-resistant enamel finish.
j) Approximate dimensions: 225mm(L) x 160mm(W) x 400mm(H) 8.3 kg.
k) Digital camera system for video and image must be attached (Camera specification: Camera adepter systems for the microscope, Memory card: minimum 256 MB, Output for digital images and videos to PC, Zoom for calibration purposes, digital camera's zoom must have wide, medium and narrow angle modes).

C. After sale service

For all the equipments, after sale service office has to be available in China widely.

List of potential supplier:

A) Carl Zeiss Shanghai Co. Ltd., Guangzhou
Guangzhou Representative Office
Phone: +86 20 8775 5770
Fax: +86 20 8769 0609 gro@zeiss.com.cn
www.zeiss.com.cn

B) Carl Zeiss Shanghai Co. Ltd., Shanghai
Phone: +86 21 5048 1717
Fax: +86 21 5048 1193 sro@zeiss.com.cn
www.zeiss.com.cn

C) Carl Zeiss Shanghai Co. Ltd., Beijing
Beijing Representative Office
Phone: +86 10 6566 3316
Fax: +86 10 6566 3319 czfe@zeiss.com.hk
www.zeiss.com.cn

D) Harry Fein World Precision Instruments
Liegnitzer Strasse 15
D-10999 Berlin
Germany
Tel: +49 (0)30 6188845
Fax: +49 (0)30 6188670
Email: wpide@wpi-europe.com
www.wpi-europe.com

E) AGENTEK (1987) LTD.
Atidim Scientific Park
P.O.Box 58008
Tel-Aviv 61580

ISRAEL
Tel: +972-3-649 31 11
Fax: +972-3-648 12 57

F) OPTOTEAM GES.MBH.
Neulerchenfelder Strasse 83
1162 Vienna
AUSTRIA
Tel: +43-(0)1-484 49 00-0
Fax: +43-(0)1-484 49 00-20
E-mail: office@optoteam.at
Company Website: www.optoteam.at

G) OLYMPUS AUSTRIA GES.M.B.H.
Shuttleworthstrasse 25
1210 Wien
AUSTRIA
Tel. +43 1 29 101-0
Fax +43 1 29 101-222
Email sonja.klement@olympus.at
Website www.olympus.at

H) OLYMPUS CHINA
http://cn.olympus.com/about.html

I) INCEKARA A.S.
25 Sok. # 16, N Akar Mah., Balgat
06520 Ankara
TURKEY
Tel. 0090-312-2952525
Fax 0090-312-2952500
Email oincekara@incekara.com.tr

J) GANTENBEIN TICARET
Kosuyolu Caddesi No 44
Istanbul , 34718 Kosuyolu
Turkey
Phone +90 216 325 57 05
phone II +90 216 325 57 06 / 07
telefax +90 216 325 57 08

K) LEICA MIKROSYSTEME HANDELSGES.M.B.H.
Hernalser Hauptstrasse 219
4th floor

A-1170 Vienna
Austria
Tel.:+43 1 486 80 50 0
Fax.:+43 1 486 80 50 30

L) M.A.D. Apparecchiature Scientifiche
Via Rigla, 32 - 24010 Ponteranica (Bg) - Italy
Phone +39 035 571392 (6 Linee r.a)
Fax +39 035 571435 - R.E.A. 316531
http://www.optikamicroscopes.com/group.asp

M) SPECK ANALYTICAL LIMITED
Alva Industrial Estate
Alva
FK12 5DQ
UNITED KINGDOM
Tel: +44 1259 222600
Fax: +44 1259 222618

N) LZS-CONCEPT HANDELS- UND SERVICE GMBH
Wirtschaftspark Poettelsdorf, Viktor Kaplan Allee 5
A-7023 Poettelsdorf
AUSTRIA
Phone: +43 (0) 2626 20090
Fax: +43 (0) 2626 2009030

O) MDS SCIEX
71 Four Valley Drive
Concord, ON
L4K 4V8
CANADA
Tel: +1 (905) 660-9005
Fax: +1 (905) 660-2600

29.N. 240 Soil pathogens and nematodes analysis kits, see reference No. 35

Technical specifications:

Fast kit (lateral flow, express kit or other similar diagnostic test) singly packed (max 2 test for each single pack) in water and humidity proof pack. The kit must contains all needed material for the diagnostic procedure excepting commonly available tools (cutters, knives, ...). An instruction manual must be included (English, Chinese language).

List of pest disease and virus detected by the tests

a) Diseases
Rhizoctonia sp.
Sclerotinia sp.
Pythium sp.
Phytophthora sp.
Botritys cinerea
Other soilborne and airborne fungi to infect tomato, cucumber, ginger.

b) Virus
Tomato mosaic virus
Cucumber mosaic virus
Tobacco mosaic virus
Other virus able to infect tomato, cucumber, ginger.

c) Bacteria
Ralstonia solanacearum
Clavibacter michiganensis subsp *michiganensis*
Ervinia carotovora
Other bacteria able to infect tomato, cucumber, ginger.

List of potential supplier:

A) Eco Diagnostics
Dr Andrew Groenhof
23 Orchard Way,
Kenton,
Exeter,
EX6 8JU,
Tel./Fax:01626 899098
e-mail: info@soilsense.net
http://www.soilsense.net/contact.php

B) EnviroLogix do Brasil Diagnósticos Ltda.
F3306, Yuan Chen Xin Office Building
No. 12 Yumin Road
Beijing, 100029
CHINA
Contacts: Mr. Marc Wong
Ms. Jessica Li
Phone: +86 10 82251883 or 82251884
Fax: +86 10 82250447

C) Hai Kang Life Corporation Ltd.
8/F, Hang Tung Resources Centre
18 A-Kung Ngam Village Road
Shau Kei Wan, Hong Kong SAR, China
Contact: Terence L. T. Lau, Ph.D.
Executive Director and Chief Operating Officer
Phone: +852 2111 2123
Fax: +852 2111 9762
Email: terence.lau@dnachip.com.hk
URL: www.dnachip.com.hk

D) BEI JING HAI KANG DAN CHIPS LIMITED
Building Beigongda Software Park, 2No 1 Disheng North Street, Economic and Technological Development Zone Beijing,100176,China
Tel: (86) 10 5802 2266 ext 575
Fax:(86) 10 5802 2500

E) Neogen Europe, Ltd.
Cunningham Building
Auchincruive
Ayr, KA6 5HW
Scotland, UK
Phone, UK: 01292 525 275
International: ++ 44 1292 525 275
Fax, UK: 01292 525 477
International Fax: ++ 44 1292 525 477
info@neogeneurope.com

F) Mybatec
Mybatec S.R.L. Bovio, 6 I-28100 Novara (NO)
Phone: +39 0321697174
Fax: +39 0321696332

e-mail. info@mybatec.eu

G) FLORILAB srl,
Voc. Soriano 7, Doglio - 06057 Montecastello di Vibio, (PG) ITALIA
Phone +39 075 8950046
fax +39 075 8950077
e-mail florilab@tin.it