ਸਲਾਨਾਂ ਪ੍ਰਬੰਧਕੀ ਰਿਪੋਰਟ

ANNUAL ADMINISTRATIVE REPORT

ਸਾਲ 2014-15

(01-04-2014 to 31-03-2015)

ਭੂਮੀ ਅਤੇ ਜਲ ਸੰਭਾਲ ਵਿਭਾਗ, ਪੰਜਾਬ

Department of Soil & Water Conservation, Punjab

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ਭੂਮੀ ਅਤੇ ਜਲ ਸੰਭਾਲ ਵਿਭਾਗ ਪੰਜਾਬ ਦੇ ਕੰਮਾਂ ਦੀ ਸਾਲ 2014-15 (1-04-2014 ਤੋਂ 31-3-2015 ਤੱਕ) ਦੀ ਸਲਾਨਾ ਪ੍ਰਬੰਧਕੀ ਰਿਪੋਰਟ

ਤੱਤਕਰਾ

CHAPTER-1

BACKGROUND

Soil Conservation works in the state were carried out by the Soil Conservation Wing of the Agriculture Department prior to 1969. Subsequently its status was raised and was made an independent Department by the Punjab Government. It was named as "SOIL CONSERVATION AND ENGINEERING DEPARTMENT" and the head of the department was designated as "Chief Conservator of Soils Punjab. As per need of time, during 2000 the name of the department was changed as "DEPARTMENT OF SOIL AND WATER CONSERVATION, PUNJAB". Dr. Balwinder Singh Sidhu held the charge of Chief Conservator of Soils, Punjab during the year 2014-15 and this is the 46th Annual Report on the working of this department.

Photograph: Soil Conservation Complex building, Phase-6, Mohali

CHAPTER-2

ORGANIZATIONAL SETUP OF THE DEPARTMENT

Department of Soil and Water Conservation, Punjab is headed by the Chief Conservator of Soils, Punjab. During the year, 3 Circles and 14 works Divisions were covering the entire State. These 14 works divisions have 43 works Sub Divisions with supporting staff. For the in-service training of the subordinate staff, there is Training Institute at Mohali under the charge of a Divisional Soil Conservation Officer (Training Institute). Besides this, there is one Soil Survey Division for Soil Survey work in the State under the charge of Divisional Soil Conservation Officer (Soil Survey) with headquarters at Mohali. Under Divisional Soil Conservation Officer (Soil Survey), there are 3 Sub Divisional Soil Conservation Officers (Soil Survey) with head quarters at Ludhiana, Hoshiarpur and Mohali. There is a separate Division for running & maintenance of machinery like Bulldozers, Tractors and Laser Levelers under the charge of a Divisional Soil Conservation Officer (Machinery) with head quarter at Mohali. One Conservator works as Director (Technical), State Land Use Board at Mohali. Organization chart of the Department for the year 2014-15 is given in Appendices Section.

A. Field Divisions

Successful crop production depends upon the way how best we utilize two resources Soil and Water. The main objective of the Department is to conserve Soil and Water resources for their judicious use to obtain optimum returns from agricultural land on sustained basis. State can be divided in to 3 Agro-climatic zones on the basis of Soil and Water management programme.

1. NORTHERN ZONE:

Northern Zone is located in the foothills of Shivaliks and extends from Derabassi block of Mohali district to Dhar block of Gurdaspur district falling in Roopnagar, S.A.S. Nagar, S.B.S. Nagar, Hoshiarpur , Gurdaspur and Pathankot districts. Common features of this zone include Soil erosion due to flash floods and droughts.

Photograph: Problem of Water Scarcity in Kandi area

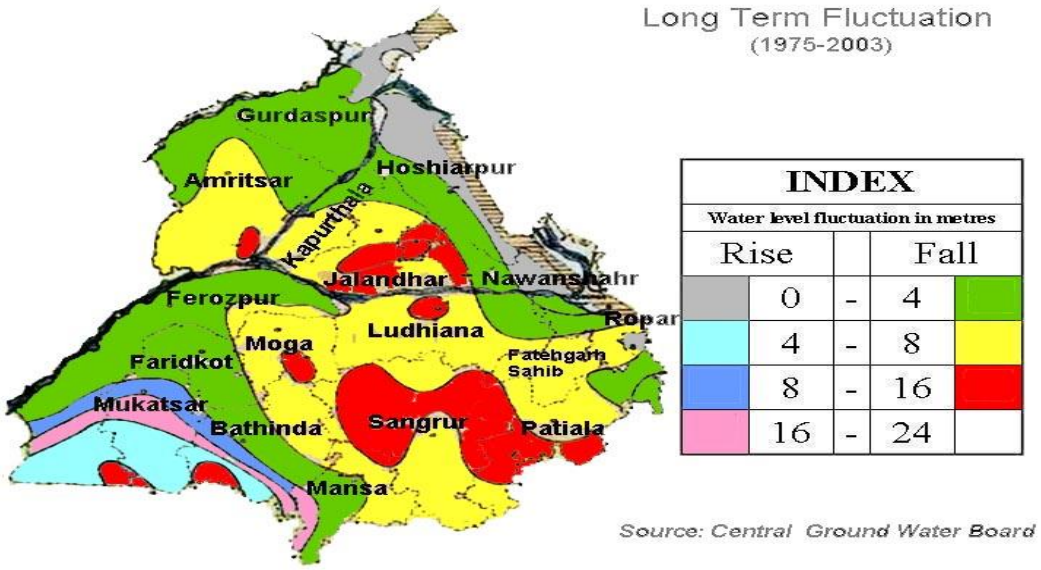
The following Soil and Water Conservation works are undertaken in this region:

a) In the rainfed areas of Kandi, Centrally Sponsored Watershed management Program scheme of Rural Development Department.
b) Ground Water Recharge through Rain Water Harvesting structure/low dams.
c) Micro Irrigation (Drip & Sprinkler Irrigation System).
d) Assistance to farmers on laying of Under Ground Pipeline System (UGPS) from Individual tube wells.
e) Water harvesting structures (Makkowal Type) and lift irrigation for expanding Irrigational potential.
f) Drainage line treatment works.
g) Reclamation of degraded land in affected pockets of ecologically handicapped areas.
h) To provide treated sewage water of cities for irrigation to farmers through underground pipeline system.

2. CENTRAL ZONE:

Central Zone comprises of Patiala, Fathegarh Sahib, Ludhiana, Jalandhar, Nawanshahar, Kapurthala, Amritsar and Tarntarn districts. This zone is the most developed area of the State. The lands are leveled and under ground water is

available for irrigation. Moreover the over exploitation of sub-soil water is causing ground water depletion at the most alarming rate in this zone.



Photograph: Fluctuation of ground water level in state

In this zone, following works are being undertaken:-

a) Assistance to farmers on laying of community Under Ground Pipeline System (UGPS) from tube wells and canal outlets.

b) Micro Irrigation (Drip & Sprinkler Irrigation System).

c) Technical advice to farmers for Modernization of irrigation conveyance system on individual tube wells using underground pipeline system to reduce water losses.

d) To provide treated sewage water of cities for irrigation to farmers through underground pipeline system.

3. SOUTHERN ZONE

Southern Zone comprises of Sangrur, Barnala, Bathinda, Mansa, Mukatsar, Moga, Faridkot, Ferozepur and Fazilka districts. In this region, the sub soil water is generally brackish and unfit for irrigation in many pockets. As sufficient water is not available at the tail end, canal Water for irrigation is carried to the fields of the farmers through Under Ground pipeline System.

Photograph: Salinity of land in South-western districts

In this zone, following works are being undertaken:-

a) To Provide Irrigation Water from Canal Outlet to the fields at tail-ends through community underground pipeline system .
b) Assistance to farmers on laying of Under Ground Pipeline System (UGPS) from Individual tube wells and canal outlets
c) Micro Irrigation (Drip & sprinkler).
d) To provide treated sewage water of cities for irrigation to farmers through underground pipeline system.

B Machinery Division:-

Machinery Division has a fleet of 5 bulldozers, 1 excavator-cum-loader, 5 tractors, I trencher and 6 Laser levelers for undertaking various soil and water conservation works in the state. There is separate division for running & maintenance of machinery working under Divisional Soil Conservation Officer with its head quarter at Mohali. This machinery is not only used for Departmental works but also provided on subsidized rates to farmers.

Photograph: A Bulldozer of Machinery division

C Soil Survey Division

This wing is engaged in collection of field information of soils, mapping of soils. Different type of Soil Survey i.e Detailed soil survey, semi-detailed survey, reconnaissance survey etc. are conducted. The reports of these surveys are used as bench marks for planning of Soil & Water Conservation Works in the department. Other line departments also refer these reports.

D Training Institute

Departmental Training Institute (with Hostel) to impart training to farmers and Technical staff up to the level of Soil Conservation Officers is located at Mohali. The courses cover all the practical aspects of Soil & Water Conservation works such as land leveling, Construction of open channels, laying of Under Ground Pipelines, contour bounding, bench terracing, gully reclamation, water harvesting structures, lift irrigation, Field drainage, Drip/Sprinlker Irrigation System and preparation of plan & estimates etc.

E State Land Use Board

State Land Use Board has been created as a nucleus cell to carry out studies to assess the land resources like soil, water & vegetation. This Board discharges the responsibility for generating awareness for optimum & judicious use of soil & water resources in the State. This Board has been carrying out the activities under a state plan scheme under the control of a Director (Technical).

CHAPTER-3

PHYSICAL AND FINANCIAL PROGRESS FOR PREVIOUS TWO YEARS COMPARED WITH YEAR BEING REPORTED

Comparative Physical Progress:

Sr. No.	Item of work	Unit	2012-13	2013-14	2014-15
1	Water management works (UGPL, Water Harvesting structures, tapping of Perennial flow and small lift irrigation schemes.)	Hect.	20525	17957	20286
2	Underground pipe line	Kilometer	1231.48	1077.42	1217.16
3	Micro Irrigation (Drip & sprinkler)	Hect.	2790	2008	875
4	Watershed Management Works	Hect.	9259	8572	12276
5	Land leveling/Ravine Reclamation/Waste Land Development.	Hect.	9591	2204	109
6	Working of bulldozers/ Tractors.	Hours	2294	4610	5627
7	Soil Survey Works	Hect.	114200	487098	177762

Comparative Financial Progress:

(Amount Rs. in Lakhs)

S. No.	Item		2012-13	2013-14	2014-15
A.	**Non plan**		4538.56	4782.41	4835.50
B.	**Plan**				
	i)	State Plan Schemes (including NABARD)	5460.23	5073.59	5390.23
	ii)	Centrally Sponsored Schemes	748.16	597.75	145.36
	Total Plan (i + ii)		6208.39	5671.34	5535.59
C.	**Total (A+B)**		**10746.95**	**10453.75**	**10371.09**
D.	**Other Department's Schems.** Agriculture Department (RKVY and CDP Schemes),Rural Development Department, Punjab State Council of Science & Technology, Local Bodies, Punjab Pollution Control Board,DC Funds etc.		4445.16	4223.23	6823.62
	Grand Total(C+D)		**15192.11**	**14676.98**	**17194.71**

CHAPTER-4

VISION, MISSION AND GOALS

Vision

To enhance productivity with our limited resources without adversely affecting natural resources in terms of soil health, ground water and environment.

Mission

To achieve the goal of higher productivity and production of agriculture and high value horticultural crops through dissemination of latest farm technologies regarding precision farming with a view to enhance the profitability of farm sector. Emphasis will be given to diversify area under horticultural crops with forward and backward linkages along with infrastructure support.

Goals

- ✓ Management and conservation of on-farm water to increase the water use efficiency;
- ✓ To increase productivity of sub-mountainous rainfed areas through rainwater harvesting and ground water recharge;
- ✓ To control soil erosion in Kandi area and siltation of rivers & water bodies;
- ✓ Reclamation of degraded lands.

Policy

Purpose:

About 13 lakhs hectares (26%), out of the total geographical area of 50.36 lakhs hectares of the state, is under various forms of degradation due to soil erosion in northern Punjab, water logging and Stalinization of soils in south–western Punjab. Approximately 70% area constituting the central Punjab faces ground water depletion. 112 out of 141 blocks have already been categorized as over-exploited or dark blocks. The purpose of most activities is to help in sustaining and developing the agricultural production system by mitigating the harmful effects of these resource problems.

Content:

The department executes following types of works under various schemes of Soil Conservation and Water Management:-

a) Laying of underground pipe line for irrigation on tube wells/canal outlet.

b) Promotion of Sprinkler/Drip irrigation system.

c) Gully reclamation and soil erosion control works on watershed basis.

d) Rain Water Harvesting & Ground Water Recharging through small dams.

e) Lift irrigation/Perennial Flow tapping Structure.

f) Improvement of ecological & degraded land on project basis..

g) Tapping of treated sullage water for irrigation.

h) To contribute in Departmental and Farmer's works through departmental Machinery.

i) Soil survey works.

Output:

The physical achievement of major activities since inception of the department is listed below up to 2014-15:

S. No.	**Item of work**	**Area covered (In Ha.)**
1.	Water Management Works	5,71,477
2.	Length of Underground Pipeline	34,289 Km
3.	Micro Irrigation	32,471
4.	Water Harvesting Structure, Tapping of Hill Seepage and lift irrigation schemes etc.	34,086 (Water harvesting Structure -No.74 Hill Sepage-No.39 & lift irrigation – No.-33
5.	Length of Common Water Courses	3,831 Km
6.	Land Development Works	1,35,644
7.	Contour bunding and Gully Reclamation and waste land development	1,23,368
8.	Bench Terracing	30,000
	Grand Total	**8,92,960**

Programmes and Projects

The soil degradation due to soil erosion in shivalik foothills, alarmingly depleting ground water in the Central Punjab, water logging and salt affected soils in the south-western Punjab and micro-nutrient imbalance in most parts are the important focused areas in Punjab state. This implies that there is great need for soil and water conservation & management works. Water management works conserve water by checking seepage evaporation losses, thus creating more irrigation potential by which further area can be brought under irrigation. There is impetus on providing assistance on laying of under ground pipe line in fields for irrigation in the Southern and Central Districts. For efficient use of irrigation water, the Micro Irrigation (Drip/Sprinkler) system is being promoted in all districts. In addition to it, Rain Water Harvesting structures, Makowal type structures and small lift irrigation projects are constructed for ground water storage, supplementary irrigation and soil erosion control in kandi area. Land Development & water management works are being executed by the department under the State Plan Schemes and centrally sponsored schemes.

Centrally Sponsored Schemes

(1) Centrally Sponsored Scheme on Micro Irrigation under National Mission on Sustainable Agriculture (NMSA)

Under this scheme, 35% subsidy is given to the farmers on Drip/ Micro sprinkler & Sprinkler irrigation systems for Horticulture as well as Non-horticulture crops. 10% extra Subsidy has been allowed by GOI for small and marginal farmers since 2011-12. The subsidy is provided by the GOI & State Govt. on 80:20 basis. During 2014-15 with approved Rs. 404.78 lakhs (GoI Rs. 145.36 lakhs + State Rs. 259.42 lakhs) assistance is provided on drip and micro sprinkler irrigation to an area of 875 hectares in all districts of the state.

Photograph: Drip Irrigation System

(2) Scheme for Special problematic & degraded soils under Technology Development, Extension and Training (TDET)

Under the GOI TDET programme for treatment of special problematic areas on Project basis, 60% funds are provided by GOI and the balance 40% by Beneficiaries. 100% assistance is given for community works by GOI. At present such Project is ongoing in Gurdaspur district only. Under this Project Rs. 92.40 lakhs were approved by GoI during 2014-15. Bills were not passed by treasuries. Therefore progress was nil.

Photograph: Reclamation of Ravine area under TDET

State Plan Schemes

(3) Project for Promotion of Micro Irrigation in Punjab (NABARD-RIDF XVI)

RIDF (NABARD) Project has been implementing for Promotion of Micro Irrigation (Drip & Sprinkler) in Punjab during 2011-12. Under this Scheme, the Beneficiaries are given additional 25% subsidy on Micro Irrigation (Drip & Sprinklers), over & above the approved subsidy under ongoing GOI Micro Irrigation Scheme. Apart from this, 50 % subsidy with maximum limit of Rs. 1.00 lakhs is given on water storage tanks in canal command areas. During 2014-15 non approval of any funds progress was nil.

(4) Project for Promotion of Micro Irrigation in State (NABARD-RIDF XX)

This new scheme was started in the year 2014-15. NABARD Bank approved a project "Project for Promotion of Micro Irrigation in State (NABARD-RIDF XX) (95:5)" under Rural Infrastructure Development funds (RIDF-20) amounting Rs. 4842.04 lakhs (NABARD Loan Rs. 4599.95 lakhs + State Govt. share Rs. 242.09 lakhs). Under this scheme Rs. 933.41 lakhs were approved during 2014-15 but bills were not drawn from treasuries. Therefore progress was nil.

Photograph: Mini Sprinkler Irrigation System

(5) Scheme for assistance on UGPS for promotion of on-farm water conservation (ACA)

Under this scheme, 50% subsidy, with maximum limit of Rs. 22000 per hectare, is being provided to farmers on laying of underground pipe line system (UGPS) from individual tube wells and canal outlets. This is Additional Central Assistance (ACA) scheme. During 2014-15, Financial Progress was Rs. 14.88 lakhs benefiting 181 Hect.

(6) Project for judicious use of available water and harvesting of rain water for enhancing irrigation potential in Punjab state (NABARD-RIDF-17)

A "Project for Judicious use of available water and Harvesting of rainwater for enhancing irrigation potential in Punjab state" has been approved by NABARD under RIDF-17 for 90% assistance for Community Underground Pipeline System (UGPS) Projects in 10 districts and 100% assistance on Rainwater Harvesting Structures in Kandi area. During 2014-15, 6211 Hect. was benefited with financial progress of Rs 1599.23 lakhs.

(7) Community Micro Irrigation Project in Kandi-belt of Talwara and Hajipur blocks of District Hoshiarpur (NABARD-RIDF-18)

Under NABARD approved project, there is a proposal to cover 658 Hect. of 14 Villages of Hajipur and Talwara blocks falling in Kandi area of Hoshiarpur District. At present, Irrigation water is not available in this area. Under this project the water from nearby kandi canal is to be lifted and carried to farmer's fields through underground pipeline systems and is to be utilized by automation micro irrigation system for agriculture. During 2014-15, project has been started with financial progress of Rs. 1000.00 lakhs.

(8) Project for laying of Underground Pipeline for irrigation from Sewage Treatment Plants of various Towns/ Cities (NABARD-RIDF-18)

This project was approved by NABARD during 2012-13. Under this project, treated water from completed/ running savage treatment plants has been provided to nearby fields of the farmers. Under this Scheme there is a proposal to cover 33

cities/ towns falling in 14 districts. During 2014-15, about 370 Hect. was benefitted with financial progress of Rs. 516.70 lakhs.

NEW SCHEME

(9) Scheme for Conveyance of irrigation water to the fields at the tail ends of canal network in Sangrur and Barnala Districts.

A new scheme for "Conveyance of irrigation water to the fields at the tail ends of canal network in Sangrur and Barnala Districts" was started during 2014-15. For providing irrigation water to fields of farmers at far ends from canal/ponds and any other irrigation source, 90% subsidy is provided on community underground pipe lines projects. Balance 10% share is provided by farmers in form of cash or labor. During 2014-15, Rs. 2000.00 lakhs was approved under this scheme for providing irrigation water to fields of villages falling in canal command area of Sangrur and Barnala Districts and benefited about 6328 hect.

OTHER DEPARTMENTAL SCHEMES

(1) Rashtrya Krishi Vikas Yojna (RKVY)

This is scheme of Agriculture Department. The objective of the scheme is to enhance agricultural production in rainfed area by efficient use of surface and sub-surface water. This scheme is implemented almost in all Districts especially in south-western water-logging affected districts. The main activities under the scheme are conservation of irrigation water through laying of community under ground pipeline system. Under this scheme for community under ground pipeline system GOI assistance is 90% and balance 10% is borne by the farmers in cash/labor form. During 2014-15 separate funds were released to execute Talwara project shown at sr. no. 7 with Solar power. During 2014-15, about 10174 Hect. was benefitted with financial progress of Rs. 3817.02 lakhs. In addition to it, a scheme of 50% subsidy (maximum limit Rs.22,000/- per Hect) on individual pipe line system was started during 2013-14 under Crop diversification Plan. During 2014-15, an area of 2,711 hectares was benefitted with financial progress of Rs. 505.23 lakhs..

Photograph: A Community UGPS Canal Lift Project

(2) Integrated Wasteland Development Project (IWMP)

These schemes are implemented on District level funded by Rural Development Department. Under this programme, schemes for Soil & Water Conservation works in special problematic areas of different districts are proposed to GOI through the respective Deputy Commissioners & implemented in the field. The field Officers of this Department are the Project implementing Agencies (PIAs) for these Projects. Under this scheme soil and water conservation works such as water harvesting structures, check dam. Underground pipelines and laser leveling etc. are carried out. Special preference is given to this scheme in kandi area. Farmers who have less or no agriculture land are promoted to other allied works such as poultry, piggery etc. and economic benefit is given to them from this scheme. Income Source is created for women for making their self-help groups. During 2014-15, an area of 10,145 hectares is benefitted with financial progress of Rs. 1784.63 lakhs.

Photograph: Entry Point Activity under IWMP

(3) Scheme for utilizing treated Sullage Water of cities/ towns for Irrigation

To improve environment and to control pollution, Individual projects for using treated sullage water of city/towns for irrigation are formulated and implemented. Funds are provided by other Departments and agencies like Punjab State Pollution Control Board & Local Bodies Department. 100 hectares area was benefitted with financial progress of Rs. 366.09 lakhs on lying underground pipe line from STP Anandpur Sahib and Nangal project during 2014-15.

Photograph: Utilizing Sewage Treated water for Irrigation

(4) Mahatma Gandhi National Rural Employment Guarantee Scheme (MNREGS)

This Central Government scheme is implemented on district level for which Funds are provided by concerned Deputy Commissioner. The major works carried out under this scheme are renovation of ponds, repair of water harvesting structures, land protection works, underground pipeline system & other soil moisture conservation activities. Under this scheme, 100 hectares area was benefitted with financial progress of Rs. 24.41 lakhs during 2014-15,.

Photograph:Development works under MNREGS

Annual Targets of each Programme

Financial and Physical Targets for various schemes/ projects are listed below:

S. N.	Name of Scheme/ Project	Financial Target (Rs in Lakhs)	Physical Target (Area in Ha)
1	Centrally Sponsored Scheme on Micro Irrigation (NMSA)	1048.28	2052
2	Project for Promotion of Micro Irrigation in Punjab (RIDF-20)	933.41	
3	Scheme for Special problematic & degraded soils under Technology Development, Extension and Training (TDET)	92.40	1000
4	Scheme for assistance on UGPS for promotion of on-farm water conservation (ACA)	14.88	115
5	Project for judicious use of available water and harvesting of rain water for enhancing irrigation potential in punjab state (NABARD-RIDF-17)	1599.23	4500
6	Community Micro Irrigation Project in Kandi-belt of Talwara and Hajipur blocks of District Hoshiarpur (NABARD-RIDF-18)	1000.00	263
7	Project for laying of Underground Pipeline for irrigation from Sewage Treatment Plants of various Towns/ Cities (NABARD-RIDF-18)	1000.00	2925
8	Scheme for Conveyance of irrigation water to the fields at the tail ends of canal network in Sangrur and Barnala Districts.	2000.00	4000

CHAPTER-5
KEY PERFORMANCE INDICATORS

Review of Key Activities during the year

During the year under report, an area of 35,738 hectares is benefitted under various soil conservation and water management works with financial progress of Rs. 17194.71 lakhs. Financial progress under Non-plan was Rs. 4835.50 lakhs and under State Plan and Centrally Sponsored Schemes was Rs. 5535.59 lakhss. Under other district level schemes i.e. Rashtriya Krishi Vikas Yojna (RKVY), Integrated Watershed management Projects (IWDP/IWMP), etc. the financial progress was Rs. 6823.62 lakhs.

Under Water management works, laying of underground pipe line was carried out to a length of 648.708 kms benefiting an area of 20,286 hectares owned by 14,591 farmers of 1,349 villages. 875 hectares were covered under Micro Irrigation Scheme benefiting 791 farmers of 531 villages. 2,192 hectares were covered under small water harvesting structures, tapping of perennial flow and small lift irrigation projects benefiting 5,007 farmers of 216 villages. 12,2762 hect. were covered under Water management works benefiting 73,089 farmers of 803 villages. Thus, total 35,738 hectares area was covered under various Soil Conservation and water management works in 2,903 villages benefiting 93,493 farmers.

In addition to it, an area of 1,77,762 hectares in different districts of state was covered under detailed/ semi-detailed survey.

A fleet of 5 Bulldozers, 1 excavator-cum-loader, 5 Tractors, 1 trencher and 6 laser levelers are engaged in land development works for 5,627 hours during this period. During 2014-15, scheme "SWC-6 Machinery Division at Head Quarter" was not sanctioned by Govt. However Machinery division earned Rs. 37.10 lakhs out of which Rs. 24.96 lakhs was utilized on fuel and repair of Machinery and Rs. 10.00 lakhs was deposited in the State Revenue head. About 6,000 hectares area was covered under land development works during 2014-15.

There is Training Institute at Mohali to impart training to farmers and Technical staff upto the level of Soil Conservation Officers. The courses cover all the practical aspects of Soil & Water Conservation works such as land leveling, Construction of open channels, laying of Underground pipe line, contour bounding, bench terracing, gully reclamation, water harvesting structures, Lift Irrigation, Field drainage, Drip/ Sprinkler Irrigation & preparation of plan & estimates etc. 197 officers/officials and 25 farmers were trained under different courses at various GOI training institutes and the Departmental Institute at Mohali.

Review of Goals achieved during 2014-15

1. Subsidy up to 45% was provided to farmers in all districts of the State for Micro Irrigation (Drip & Sprinklers) to ensure efficient use of irrigation water on 876 hectares.
2. Under Rashtriya Krishi Vikas Yojana (RKVY), 90% assistance was provided for Community Underground Pipeline Projects (UGPS) for conveying life-saving irrigation water from canal outlets to 10,058 hectares of tail-end fields of the farmers.
3. 85 Rainwater Harvesting structures were completed under different schemes of the department.
4. 50% subsidy was provided to individual farmers on UGPS projects under Additional Central Assistance (ACA) scheme& Crop Diversification Plan (CDP) scheme benefiting 4,866 hectares.
5. 90% subsidy on Community UGPS projects and 100% grant for Rainwater Harvesting Structures was provided under NABARD-RIDF-17 project benefiting 6,211 hectares.
6. Work on a special Solar Powered Community Micro Irrigation Project in Kandi-belt of Talwara and Hajipur blocks of District Hoshiarpur started with assistance from RIDF-18 and RKVY.
7. Work on 4 Projects of laying of Underground Pipeline for irrigation from Sewage Treatment Plants started with funding from NABARD-RIDF-18 and other agencies.
8. A new Scheme, "Scheme for Conveyance of irrigation Water to the fields at the tail-ends of the Canal network in Sangrur and Barnala Districts" has been executed benefiting an area of 3,145 ha.

CHAPTER-6

ACHIEVEMENTS/ OUTCOMES

Notable Achievements

- ✓ An area of 21135 Hectare has been covered by laying underground pipelines.
- ✓ An area of 876 Hectare was benefitted under Micro Irrigation (Drip & Sprinkler) scheme.
- ✓ 85 small Rainwater Harvesting structures were constructed.
- ✓ Work on a special Solar Powered Community Micro Irrigation Project in Kandi-belt of Talwara and Hajipur blocks of District Hoshiarpur has been started.
- ✓ 4 Projects of laying of Underground Pipeline for irrigation from Sewage Treatment Plants has been started.
- ✓ An area of 3145 Hectare was benefitted under Watershed Management works.

Quantitative Outcomes

- Assured/ Life-saving irrigation,
- Conservation of irrigation water.
- Increase in yield / production
- Farm land saving.
- Saving of Labor;
- Power Saving.
- Increase in Land value.
- Rain Water storage.
- Ground water recharge.
- Control of salt-accumulation and Erosion Control.
- Improvement of physical condition & structure of soil.
- Seasonal as well as permanent Water-logged area reclaimed
- Ravinous and marshy land along the rivers reclaimed
- Productive land having hard impervious pan improved.

Qualitative Outcomes

- Help in diversification to vegetable & horticulture crops.
- Training of Technical Officers/ Officials and Progressive farmers;
- Extension & Awareness generation among farmers & rural masses;
- Promotion & development of innovative field technologies through field demonstrations;
- Farm Production system strengthened by assisting small/ marginal farmers.
- Livelihood of the landless families improved through various income generating activities.
- Socio-economic upliftment of small/ marginal farmers and the landless;
- Environment rehabilitated.

Policy

The department is being managed by mainly Group-A officers starting with Soil Conservation Officers (SCO). These SCOs are managed at sub-division level by Sub Divisional Soil Conservation Officers (SDSCO) who are controlled by Divisional Soil Conservation Officers (DSCO) at division/ district level. There are Conservator of Soils at Circle level consisting of a few divisions to manage. The department has Chief Conservator of Soils on the top as its Head. However, the department has been dealing with a personnel crisis for the last 9 years as no promotions of Officers of the rank of SCO, SDSCO and DSCO could be carried out in the absence of requisite Group-A rules. In order to remove this crisis, the State Govt. has notified 'Punjab Soil and Water Conservation (Group 'A') Service Rules, 2014' vide Gazette Notification No. G.S.R.44/Const./Art.309/2014 dated 29-08-2014. This policy decision has been the most significant during 2014-15.

Notable achievements concerning HR Communication, Media, Information, Education

- ❖ During the year 2014-15, total 197 officers/officials and 25 farmers were trained under different courses at GOI training institutes and departmental training institute, Mohali.
- ❖ 1 officer from Head office got 1 month training from Japan regarding "Farmers Organization water Management through small water impounding reservoir (small dam) for Asia.

- During the year 2014-15, an area of 1,77,762 hectares was surveyed for planning of different Soil & water Conservation Schemes of the Department. For preparing various Departmental Schemes, Semi detailed survey of 1, 77,437 Hect. in block Patiala, Ganour, Rajpura and Nabha of Patiala district using GPS technique.

CHAPTER-7

ORGANISATIONAL ISSUES

Challenges

Out of the total geographical area of 50.36 lac hectares of the state, about 13 lac hectares (26%) is under various forms of degradation due to soil erosion in northern Punjab, water logging and salinization of soils in south–western Punjab. Approximately 70% area constituting the Central Punjab faces ground water depletion. 112 out of 141 blocks have already been categorized as over-exploited or dark blocks. The present challenges are:

- Management & conservation of on-farm water to increase the water use efficiency;
- To increase productivity of sub-mountainous rainfed areas through rainwater harvesting and ground water recharge;
- To control soil erosion in Kandi area and siltation of rivers & water bodies;
- Reclamation of degraded lands;
- To create public awareness regarding the natural resource degradation and its management.

Changes

During establishment of department in 1969, there were different challenges that included excessive soil erosion in Northern sub-mountainous areas, Sand dunes in South-western districts and poor irrigation efficiency and low productivity in the entire state. The main emphasis of the departmental activities was on soil conservation in those days. However after Green Revolution, new challenges have surfaced as listed above and therefore the emphasis of the departmental works has changed to Water Conservation in agriculture sector. Therefore, the major works of the department include promotion of underground pipeline and micro irrigation system for judicious and efficient use of irrigation water respectively on the fields of farmers.

Reforms

There were no promotions of Officers of the rank of SCO, SDSCO and DSCO since 2005 in the absence of requisite Group-A rules. The department was reeling under the problem of stagnation in career prospects of officers for the last 9 years. The State Govt. has notified 'Punjab Soil and Water Conservation (Group 'A') Service Rules, 2014' vide Gazette Notification No. G.S.R.44/Const./Art.309/2014 dated 29-08-2014 as a major reforming step.

Outcomes

The reforming decision of notifying Group-A rules has lead to opening of blocked promotional channel for the officers of the department. This step has removed a sense of frustration among officers thereby boosting their confidence to perform better at their respective positions in the service of farming community.

CHAPTER-8

EVALUATION: SWOT ANALYSIS

Significant Challenges to the department:

The department is being managed by mainly Group-A officers starting with Soil Conservation Officers (SCO). These SCOs are managed at sub-division level by Sub Divisional Soil Conservation Officers (SDSCO) who are controlled by Divisional Soil Conservation Officers (DSCO) at division/ district level. There are Conservator of Soils at Circle level consisting of a few divisions to manage. The department has Chief Conservator of Soils on the top as its Head. However, the department has been dealing with a personnel crisis for the last 9 years as no promotions of Officers of the rank of SCO, SDSCO and DSCO could be carried out in the absence of requisite Group-A rules.

Significant Internal and external strengths and opportunities:

Newly notified Punjab Soil and Water Conservation (Group 'A') Service Rules, 2014 have ensured that the professionally qualified candidates are recruited as Soil Conservation Officers to serve farming community at front level. Further promotions to higher posts ensure additional field experience. This arrangement has improved the internal strength and offered opportunities for growth of the department. Externally, the abrupt climate changes over the years have invited global focus on water conservation. Therefore, there are unending opportunities for water conservation works in the present and future and the department is strong enough to meet this demand.

Summary of outcomes from surveys, benchmarks for action and other assessment metrics:

The evaluation reports of various schemes by GoI and external agencies have proved that the works executed by the department have not only helped in conserving the soil and water resources through their judicious use but have also helped in raising the productivity in South-western and Northern districts. These results have raised the demand of water conservation works among farmers. The limited resources of state have not been sufficient to meet this huge demand. Therefore, dependence on NABARD and GoI has increased for raising funds.

Use of results to improve processes and programs

The reforming decision of notifying Group-A rules has lead to opening of blocked promotional channel for the officers of the department. This step has removed a sense of frustration among officers thereby boosting their confidence to perform better at their respective positions in the service of farming community. Due to persistent efforts of department, the farmers have now started adopting Smart Irrigation Methods in order to achieve higher yields of diversified crops like horticulture. There is increased awareness of depleting water resources among farmers now and they are willing to chip-in by modernizing their irrigation methods. More and more farmers are positive to technological literacy.

CHAPTER-9

RECOMMENDATIONS FOR NEW DEVELOPMENTS AND RESOURCES

Strategic Planning Goals:

Year	Strategic Goals Identified	Budget/ Source of Funding	Targets & Timelines
1	Scheme for Conveyance of irrigation water to the fields at the tail ends of canal network in Sangrur and Barnala Districts.	Rs 20.00 Cr. (State Plan)	01-04-2014 to 31-03-2015

Description of future Goals/ objectives:

a) Short-term (one-year):

A new State Plan Scheme for Conveyance of irrigation water to the fields at the tail ends of canal network in Sangrur and Barnala Districts has been started. An area of 4000 hectares of farmers is to be benefited.

b) Long-term (two to five year):

- 19,700 ha of additional area at a total cost of 236.40 cr shall be covered under Drip and Sprinkler Irrigation systems during next 5 years.
- To check seepage and evaporation losses in irrigation water conveyance system, underground pipelines of 11,600 kms shall be laid at a total cost of 1150.00 cr benefitting an area of 145000 ha.
- For utilization of treated water in agriculture, conveyance system from approx 54 sewerage treatment plants shall be laid providing an alternate source of irrigation water for an area of 37,589 ha at a total cost of 269.91 cr during next 5 years.

c) Summary of policy reforms & plans for 2015-16 to achieve goals:

- Regular Promotions of Officers to fill higher level vacant posts of Officers;

- District level committees to be constituted under the chairmanship of concerned Deputy Commissioners for streamlining the priority in works of laying Underground Pipeline system;
- Standard Operating Procedure of departmental works shall be revised;
- Business Rules of the department to be reviewed in view of emerging trends of climate change effects.
- New project to be proposed to NABARD to meet the demand of underground pipeline projects.

CHAPTER-10

PERFORMANCE & INITIATIVES BY AGENCIES OF THE DEPARTMENT

State Land Use Board

A nucleus cell i.e. State Land Use Board has been created to carryout studies to assess the land resources like soil, water & vegetation. This Board discharges the responsibility for generating awareness for optimum & judicious use of soil & water resources in the State. This Board under the control of a Director (Technical) SLUB has been carrying out the activities under a state plan scheme. However, no funds have been released by State Govt. under this scheme and therefore no activities could be carried out.

CHAPTER-11
APPENDICES

WATER MANAGEMENT WORKS

The prosperity of the State depends upon the development of Agriculture through extension of irrigation facilities. At present 70% area is affected by depleting water table and water level is declining @50cm every year. Out of 141 Blocks 110 Blocks have been declared Dark Blocks due to extraction of more water than recharging. About 25% of irrigation water is lost in conveyance channels through seepage and evaporation. In addition, this seepage has created problem of water logging in many areas. This loss can be eliminated and water thus saved can be utilized for more irrigation facilities. In order to ensure the coverage of maximum area with available water, installation of underground Pipeline system (UGPS), Micro Irrigation (Drip & Sprinkler) along with proper land grading are necessary.

During 2014-15 an area of 23,353 hectares was covered under water management works by benefiting 20,389 farmers of 2,096 villages of the state. During the year under report, laying of underground pipe line was carried out to a length of 648.708 kms benefiting an area of 20,286 hectares owned by 14,591 farmers of 1,349 villages of the State. On individual UGPS projects 50% and on community UGPS projects 90% subsidy is provided. In addition, 875 hectares was covered under Micro Irrigation (Drip & Sprinkler) benefiting 791 farmers of 531 villages. 2,192 hectares were brought under additional irrigation by constructing/renovating water harvesting structures, tapping of perennial flow and small lift irrigation projects by benefiting 5,007 farmers of 216 villages

District wise progress of water management works is given in the following tables:-

Table 11.1: District wise area covered under water management works in Punjab State up to 2014-15

(Area in hectares)

Sr. No.	District	Upto 2012-13	During 2013-14	During 2014-15	Total up to 2014-15
1	Ropar	27198	422	97	**27717**
2	SAS Nagar	236	118	155	**509**
3	SBS Nagar	7855	177	72	**8104**
4	Patiala	35070	921	415	**36406**
5	Fatehgarh Sahib	3484	112	330	**3926**
6	Hoshiarpur	40137	1136	921	**42194**
7	Sangrur	43465	2755	4862	**51082**
8	Barnala	3016	643	1326	**4985**
9	Gurdaspur	23908	249	353	**24510**
10	Pathankot	503	144	78	**725**
11	Jalandhar	32554	330	1013	**33897**
12	Kapurthala	13185	797	79	**14061**
13	Amritsar	26064	178	165	**26407**
14	Taran Taran	2231	138	140	**2509**
15	Ludhiana	30635	528	624	**31787**
16	Ferozepur	43248	226	534	**44008**
17	Fazilka	1225	666	998	**2889**
18	Faridkot	98438	2868	756	**102062**
19	Moga	7018	536	274	**7828**
20	Shri Mukatsar Sahib	21932	2791	2358	**27081**
21	Bathinda	61513	724	1998	**64235**
22	Mansa	10319	1498	2738	**14555**
	Total	**533234**	**17957**	**20286**	**571477**

Table 11.2: District wise progress of underground pipe line laid in the Punjab State up to 2014-15.

(Length kilometres)

Sr. No.	District	Upto 2012-13	During 2013-14	During 2014-15	Total up to 2014-15
1	Ropar	1631.88	25.32	5.82	**1663.02**
2	SAS Nagar	14.16	7.08	9.30	**30.54**
3	SBS Nagar	471.30	10.62	4.32	**486.24**
4	Patiala	2104.20	55.26	24.90	**2184.36**
5	Fatehgarh Sahib	209.04	6.72	19.80	**235.56**
6	Hoshiarpur	2408.22	68.16	55.26	**2531.64**
7	Sangrur	2607.90	165.30	291.72	**3064.92**
8	Barnala	180.96	38.58	79.56	**299.10**
9	Gurdaspur	1434.48	14.94	21.18	**1470.60**
10	Pathankot	30.18	8.64	4.68	**43.50**
11	Jalandhar	1953.24	19.80	60.78	**2033.82**
12	Kapurthala	791.10	47.82	4.74	**843.66**
13	Amritsar	1563.84	10.68	9.90	**1584.42**
14	Taran Taran	133.86	8.28	8.40	**150.54**
15	Ludhiana	1838.10	31.68	37.44	**1907.22**
16	Ferozepur	2594.88	13.56	32.04	**2640.48**
17	Fazilka	73.50	39.96	59.88	**173.34**
18	Faridkot	5906.28	172.08	45.36	**6123.72**
19	Moga	421.08	32.16	16.44	**469.68**
20	Shri Mukatsar Sahib	1315.92	167.46	141.48	**1624.86**
21	Bathinda	3690.78	43.44	119.88	**3854.10**
22	Mansa	619.14	89.88	164.28	**873.30**
	Total	**31994.04**	**1077.42**	**1217.16**	**34288.62**

Table 11.3 : District wise progress under Drip and Sprinkler irrigation System up to 2014-15

(Area In hectares.)

Sr. No.	District	Up to 2012-13	During 2013-14	During 2014-15	Total up to 2014-15
1	Ropar	1136	47	21	**1204**
2	SAS Nagar	699	40	13	**752**
3	SBS Nagar	571	46	22	**639**
4	Patiala	1698	105	15	**1818**
5	Fatehgarh Sahib	519	30	7	**556**
6	Hoshiarpur	3627	324	85	**4036**
7	Sangrur	1005	105	18	**1128**
8	Barnala	441	79	30	**550**
9	Gurdaspur	2337	108	24	**2469**
10	Pathankot	167	71	41	**279**
11	Jalandhar	1804	134	56	**1994**
12	Kapurthala	628	30	10	**668**
13	Amritsar	1291	141	38	**1470**
14	Taran Taran	844	127	66	**1037**
15	Ludhiana	1293	133	26	**1452**
16	Ferozepur	4994	11	6	**5011**
17	Fazilka	704	110	288	**1102**
18	Faridkot	1019	25	9	**1053**
19	Moga	557	41	29	**627**
20	Shri Mukatsar Sahib	1151	36	0	**1187**
21	Bathinda	2098	175	40	**2313**
22	Mansa	1005	90	31	**1126**
	Total	**29588**	**2008**	**875**	**32471**

Table 11.4: District wise Area covered, villages covered and cultivators benefited under Micro Drip & Sprinkler irrigation system during 2014-15.

Sr. No.	District	Area covered (Hectares.)	Cultivators benefited (Nos.)	Villages covered (Nos.)
1	Ropar	21	21	18
2	SAS Nagar	13	12	12
3	SBS Nagar	22	23	19
4	Patiala	15	21	14
5	Fatehgarh Sahib	7	7	6
6	Hoshiarpur	85	65	58
7	Sangrur	18	17	17
8	Barnala	30	24	20
9	Gurdaspur	24	24	20
10	Pathankot	41	41	35
11	Jalandhar	56	55	47
12	Kapurthala	10	10	10
13	Amritsar	38	38	38
14	Taran Taran	66	66	66
15	Ludhiana	26	22	19
16	Ferozepur	6	5	5
17	Fazilka	288	223	52
18	Faridkot	9	9	8
19	Moga	29	20	17
20	Shri Mukatsar Sahib	0	0	0
21	Bathinda	40	52	25
22	Mansa	31	36	25
	Total	**875**	**791**	**531**

Table 11.5: District wise progress of Water Harvesting/ Makowal type/Lift Irrigation works up to 2014-15

(Area in Hectares).

Sr. No.	District	Upto 2012-13	During 2013-14	During 2014-15	Total upto 2014-15
1	Ropar	9280	694	1273	**11247**
2	SAS Nagar	1717	0	242	**1959**
3	SBS Nagar	551	0	0	**551**
4	Patiala	173	0	0	**173**
5	Fatehgarh Sahib	0	0	0	**0**
6	Hoshiarpur	10298	355	525	**11178**
7	Sangrur	0	0	0	**0**
8	Barnala	0	0	0	**0**
9	Gurdaspur	6443	1200	27	**7670**
10	Pathankot	513	670	125	**1308**
11	Jalandhar	0	0	0	**0**
12	Kapurthala	0	0	0	**0**
13	Amritsar	0	0	0	**0**
14	Taran Taran	0	0	0	**0**
15	Ludhiana	0	0	0	**0**
16	Ferozepur	0	0	0	**0**
17	Fazilka	0	0	0	**0**
18	Faridkot	0	0	0	**0**
19	Moga	0	0	0	**0**
20	Shri Mukatsar Sahib	0	0	0	**0**
21	Bathinda	0	0	0	**0**
22	Mansa	0	0	0	**0**
	Total	**28975**	**2919**	**2192**	**34086**

Table 11.6: District wise villages covered and cultivators benefited by Water management works during 2014-15

(in numbers).

Sr. No.	District	Watershed Management		Water Harvesting/Perennial flow/lift Irrigation	
		Cultivators benefited	Villages covered	Cultivators benefited	Villages covered
1	Ropar	59	27	211	18
2	SAS Nagar	184	27	31	2
3	SBS Nagar	34	19		
4	Patiala	246	58		
5	Fatehgarh Sahib	156	66		
6	Hoshiarpur	411	118	3320	62
7	Sangrur	2562	79		
8	Barnala	663	28		
9	Gurdaspur	131	84	400	12
10	Pathankot	39	25	1045	122
11	Jalandhar	1345	51		
12	Kapurthala	2043	16		
13	Amritsar	42	35		
14	Taran Taran	38	27		
15	Ludhiana	262	181		
16	Ferozepur	329	77		
17	Fazilka	616	63		
18	Faridkot	374	64		
19	Moga	37	74		
20	Shri Mukatsar Sahib	2282	147		
21	Bathinda	1114	52		
22	Mansa	1624	31		
	Total	**14591**	**1349**	**5007**	**216**

LAND DEVELOPMENT WORKS

Soil and water are two natural resources. Agricultural production depends upon the optimum utilization of these two resources. The top soil, (usually of 7" to 8" thickness) is the principal feeding zone for the growth of most agricultural crops. The loss of this valuable top soil by water and wind results in deterioration in the quality of land which if allowed, ultimately results in its turning out of cultivation completely. It can be replenished only with the appropriate soil conservation measures and can be improved further by suitable follow up practices.

The Punjab State in its northern region comprising of mountainous area is blessed with a good rainfall, but due to sloppy and undulating topography of land, there is a large scale soil erosion problem. To check this erosion, control measures are required to be taken in order to obtain sustained higher level of production. The area which suffers from soil erosion lies mostly in the district of Hoshiarpur, Gurdaspur, Pathankot, Ropar, Mohali and Nawanshahr districts. In order to protect this land against erosion and for making it more productive, soil conservation works such as gully reclamation and land development are being carried out.

Under watershed management works 12276 hectares were covered benefiting 73089 cultivators of 803 villages and under land development works 109 hectares were covered benefiting 15 cultivators of 4 villages.

District-wise progress of the soil erosion control works executed by the department in the Punjab state during 2014-15 has been given in the following tables:-

TABLE 11.7- District wise progress of soil erosion control and watershed management works on agricultural land up to 2014-15

(Area in hectares).

Sr. No.	District	Upto 2012-13	During 2013-14	During 2014-15	Total up to 2014-15
1	Ropar	23060	971	2216	**26247**
2	SAS Nagar	5762	666	990	**7418**
3	SBS Nagar	2397	880	781	**4058**
4	Patiala	4060		760	**4820**
5	Fatehgarh Sahib	0			**0**
6	Hoshiarpur	53132	5856	4802	**63790**
7	Sangrur	0	199		**199**
8	Barnala	0			**0**
9	Gurdaspur	1045			**1045**
10	Pathankot	12774		900	**13674**
11	Jalandhar	97		1008	**1105**
12	Kapurthala	191		393	**584**
13	Amritsar	2			**2**
14	Taran Taran	0			**0**
15	Ludhiana	0		426	**426**
16	Ferozepur	0			**0**
17	Fazilka	0			**0**
18	Faridkot	0			**0**
19	Moga	0			**0**
20	Shri Mukatsar Sahib	0			**0**
21	Bathinda	0			**0**
22	Mansa	0			**0**
	Total	**102520**	**8572**	**12276**	**123368**

TABLE 11.8: District wise villages covered and cultivators benefited from the land development and watershed management works up to 2014-15.

Sr. No.	District	Land Development		Watershed management works	
		Cultivators benefited	Villages covered	Cultivators benefited	Villages covered
1	Ropar			35691	41
2	SAS Nagar			6454	41
3	SBS Nagar			471	15
4	Patiala			1000	114
5	Fatehgarh Sahib				
6	Hoshiarpur	2	2	25693	286
7	Sangrur				
8	Barnala				
9	Gurdaspur	12	1	1000	31
10	Pathankot			1100	32
11	Jalandhar			730	106
12	Kapurthala			200	35
13	Amritsar				
14	Taran Taran				
15	Ludhiana	1	1	750	102
16	Ferozepur				
17	Fazilka				
18	Faridksdot				
19	Moga				
20	Shri Mukatsar Sahib				
21	Bathinda				
22	Mansa				
	Total	**15**	**4**	**73089**	**803**

TRAINING OF STAFF

In order to improve the technical skill and efficiency of the field staff, the personnel of Soil and Water Conservation Department, Punjab are sent for training at the various Training Centers of Government of India and also to the State Government Training Institute, Mohali. The State Government training institute was established in the year 1965 at Hoshiarpur and upgraded to Divisional level in 1975. It was shifted to Mohali during the year 1995-96. The official staff i.e. Clerks, Assistants, Draftsmen, Surveyors, Agricultural Sub Inspectors etc. and farmers are trained at the State Training Institute at Mohali while the gazetted officers,Soil Conservation Officers and Junior Engineers get training at the Govt. of India's training centers. Surveyors and Sub Inspectors are imparted 5½ months training and the course covers all practical aspects of Soil and Water Conservation works such as land leveling, construction of open channels, underground pipe line, contour bunding, bench terracing, gully reclamation, water harvesting structures, lift irrigation, Field drainage, Drip/sprinkler irrigation and preparation of plan and estimates etc. During the year 2014-15, total 197 officers/officials and 25 farmers were trained under different courses at GOI training institutes and departmental training institute, Mohali.

6 surveyors/ agriculture sub-inspectors were trained under 51/2 Months regular sub-assistant course at departmental training Institute Mohali. 25 farmers of Patiala district were trained under IWMP Schemes.

1 officer from Head office got 1 month training regarding "Farmers Organization water Management through small water impounding reservoir (small dam) for Asia" at Japan.

Photograph: Departmental Officer during Training at Japan.

5 officers got one week training at Hyderabad regarding Gio- Spatial for planning and management of watershed project. 3 officers got training at Goa

regarding domestic enquiry, disciplinary action and discipline subject. 3 officers got training at Rajive Gandhi national ground water training and research institute, Raipur (Chhattisgarh) regarding conjunctive use of surface and ground water. 6 officers got training at Soil conservation training centre, Damodar valley corporation, Hajaribagh, Jharkhand regarding Rain water Harvesting structure, micro irrigation and participatory resource appraisal. 3 officers got training at Gohatti regarding participatory approaches for irrigation management.6 officers got training at NASC complex Pusa, New Delhi regarding Natural Resource management for food security and Rural Livelihood. 91 officers got training at Punjab Agriculture Management and Extension, Training Institute (PAMETI) PAU complex Ludhiana on various subjects .64 officers got training at Central Soil & Water Conservation Research and Training Institute, Sectot-27A, Chandigarh regarding IWMP. 4 officers got training at Conference Hall, Hotel Shivalik View, sector-17, Chandigarh regarding Government process re- engineering (S2-GPR).

5 officers got training at Mahatma Gandhi Institute of Public Administration, Bathinda, Punjab regarding Aquifer information system and aquifer management plan.

SOIL SURVEY

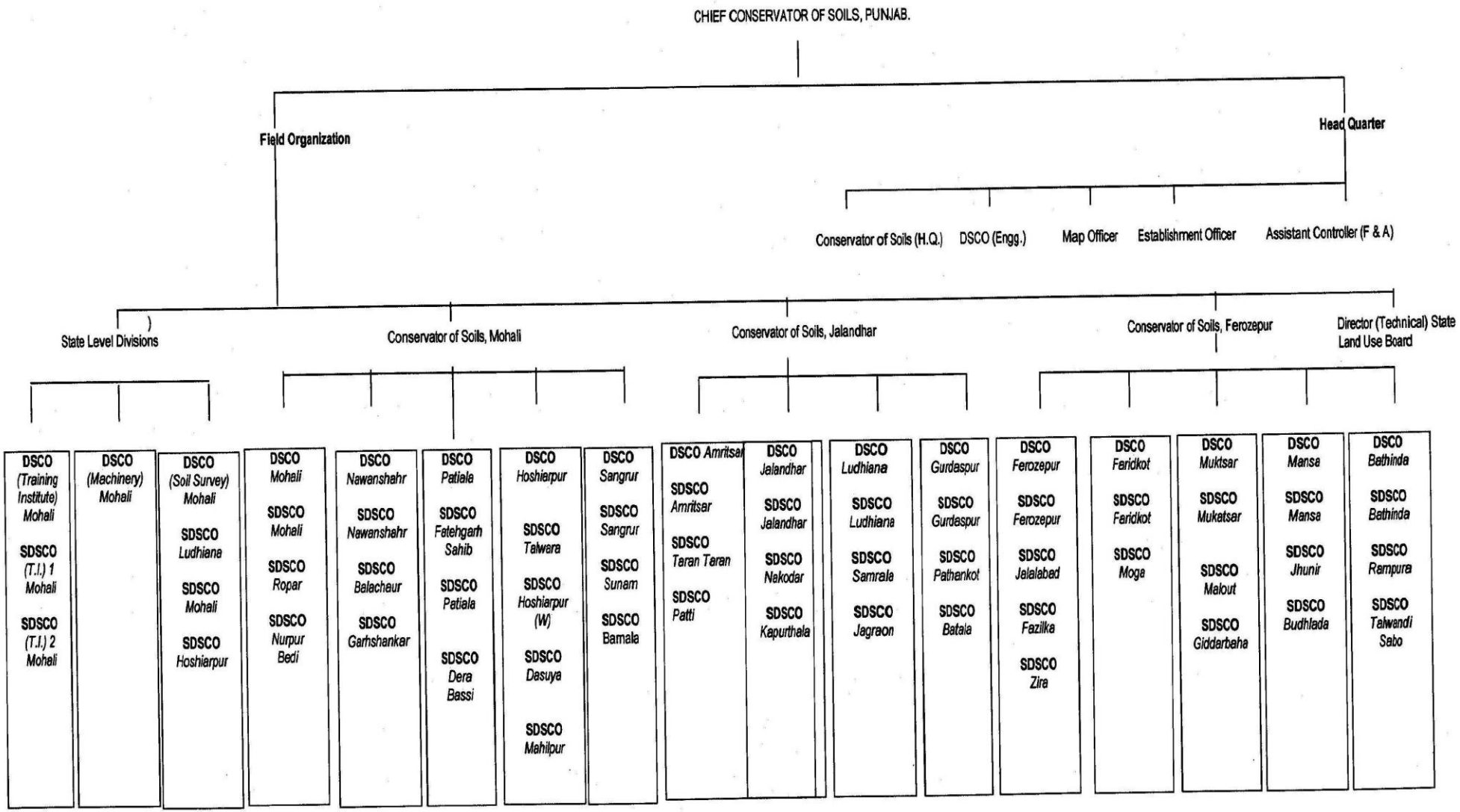
Different kinds of soil according to their physical and chemical properties need different levels of soil and water management practices and different level of inputs for optimum agriculture production. Soil Survey are thus crucial to suggest proper and optimum use of land according to its capability and also for formulation of suitable cropping pattern, proper soil and water management, land development, land reclamation and other management practices.

The purpose of the scheme is to carry out land use survey in the State. The Soil Survey is carried out, problems are investigated and solutions are suggested. The fertility status of the soil is evaluated so that every piece of land is put to the use for which it is best suited in order to get maximum production. In this context, the emphasis is laid on the detailed soil survey of problematic and command area. Soil survey is carried out using village cadastral maps, Toposheets, Aerial Photographs and Land set Imagery as base map to delineate soil boundaries of uniform groups having the same characteristics for similar management practices to work efficiently and profitably.

During the year 2014-15, an area of 1,77,762 hectares was surveyed for planning of different Soil & water Conservation Schemes of the Department. For preparing various Departmental Schemes, Semi detailed survey of 1, 77,437 Hect. in block Patiala, Ganour,Rajpura and Nabha of Patiala district using GPS technique. This survey is done to know the type of soil, land use, land capability classification, fertility status (Macro/Micro) and to fix limit of crop suitability in Patiala district. Soil map, Land capability map, fertility status map, crop suitability map of Patiala district were prepared on basis of information received from survey with GIS technique and complete detailed soil survey Report of district was prepared. In addition to this 105 hectare of village Dhelabarh of Ropar district for constructing earthen dam and 220 hectares of pondage area of 3 earthen dams at village Tonsa of Saheed Bhagat Singh Nagar was surveyed profile study report of Dam sites was prepared.

Photograph: Departmental officers/ officials engaged in Soil Survey

DEPARTMENT's ORGANIZATION STRUCTURE



DSCO- Divisional Soil Conservation Officer
SDSCO- Sub-divisional Soil Conservation Officer
TI Training Institute
SS- Soil Survey