



Ministry of Jal Shakti



'Sahi Fasal'

Proceedings for the 'Sahi Fasal' Workshop
held on 14th **FEBRUARY** 2020
in Kurukshetra, Haryana



National Water Mission

PROCEEDINGS

INTRODUCTION: 'SAHI FASAL'-CONCEPT NOTE AND CAMPAIGN

National Water Mission (NWM) is one of the 8 missions set up in 2011 as a part of the National Action Plan on Climate Change (NPCC) launched in 2008 by the Government of India to meet the impact of Climate Change. The main objective of NWM is "conservation of water, minimizing wastage and ensuring its more equitable distribution both across and within States through integrated water resources development and management" and has 5 main goals and 39 identified strategies.

The goals 3 and 4 under the mission are "Focused attention to vulnerable areas including over-exploited areas" and "increasing water use efficiency by 20%" respectively. Keeping with the spirit of these goals, NWM has launched the "Sahi-Fasal" campaign-an initiative to nudge the stakeholders in agriculture towards crops which use less water but more efficiently; have high nutritional quality and are economically remunerative to farmers, and based on a holistic and integrated strategy.

"Sahi-Fasal": Concept Note

India is an agrarian country being one of the top producers of several crops such as wheat, rice, pulses, sugarcane, and cotton globally. Agriculture is also the source of livelihood for about 58% of India's population. In the financial year 2017-2018, the gross value added by agriculture, forestry, and fishing is estimated at Rs 18.53 trillion (US\$ 271.00 billion).

Currently, about 51% of the agricultural area cultivating food grains is covered by irrigation and rest is dependent on rainfall (rain-fed agriculture). Cross country comparison of water use efficiency shows that India uses 2-3 times water to produce one unit of major food crops as compared to other major agricultural countries like China, Brazil and the USA. The Economic Survey 2015-16 observed that India largely uses the technique of flood irrigation which results in huge wastage of water.

According to the Central Water Commission (CWC), by 2050, the total water demand will overshoot supply in the country and the share of irrigation will account to 68%. Though 78% of the freshwater available in the country is diverted towards agriculture, only 48% of the gross cropped area has been brought under irrigation indicating the rampant use of groundwater resources. Water intensive crops like paddy and sugarcane crops together occupy one-fourth of the gross cropped area consuming over 60% of the total irrigation water supplied to agriculture. In moving towards more sustainable agriculture, *improving water use efficiency* should be a key priority.

In coming years, the inter-sectoral competition for water will increase with the rise in urbanization along with agriculture. But with increasing population, per capita demand for food is also going to increase. It may be worth noting that water is likely to be a more binding constraint to the Indian agriculture sector, than even land. This will lead to the dichotomy of 'needing more agri-produce with less water on a sustainable basis'.

Reforms must start from water use in agriculture focusing on raising agricultural productivity per hectare of land rather than per cubic meter of water supplied and/or consumed. Crop production should be aligned according to natural water resource endowment and agro-climatic conditions of state, unlike the present scenario of paddy in Punjab and sugarcane in Maharashtra -that are not in line with the climatic and hydrogeological pattern of these states.

Paddy and sugarcane crops which uses more than 60% of irrigation water available in the country are largely being cultivated in the most water-scarce regions of the country as they are incentivised there by highly subsidized surface water irrigation, free power (facilitating rampant exploitation of groundwater), subsidised fertilizers and assured prices for their produce, leading to a major skew in cropping patterns from the perspective of water. The hot-spots being Punjab-Haryana belt for rice and Maharashtra, Karnataka, Andhra Pradesh and Tamil Nadu for sugarcane. There is urgent need for reform in policies and programs to rectify the skewed cropping pattern.

The impacts of climate change are becoming more noticeable in agriculture, with an increase in extremes, such as droughts, floods, etc., the frequency and intensity of which is likely to only increase. There is a need to utilize scarce water resources in the most prudent manner possible. The present Government is concerned with the issue and has prioritized agriculture water use through schemes like "*HarKhetkoPani* – Water for every field" and "More Crop per Drop".

Water use efficiency in agriculture has assumed critical importance because of the increasing areas under irrigation and high water requirements of crops.

Creating awareness among farmers on appropriate crops, micro-irrigation, soil moisture conservation among other things; weaning them away from water intensive crops like paddy and sugar cane, to crops like corn and maize, which require less water; effective pricing of inputs (water and electricity); protection of environment and assisting policy makers to improve procurement policies, creating appropriate storage facilities and markets etc. are the key elements of the "Sahi-Fasal" campaign.

In addition to this, bringing policy makers and programmers together for framing policies/ programs that promote water conservation in agriculture along with mainstream agricultural policies to aid the rapid uptake of the program among key stakeholders. Furthermore, the campaign aims to alter from price policy approach of heavily subsidizing inputs to income policy approach of directly giving money into the accounts of the farmers on per hectare basis (direct benefit transfer of input subsidies) and letting prices be determined by market forces.

नहीं है जल, तो नहीं फसल
कम जल ले, वो "सही-फसल"



AGENDA:

“SAHI FASAL”

Workshop on Increasing Water Use Efficiency in Agriculture

Time	Activity	Description
09:00 –10:00 Hrs	Registration and Tea	
10:00 – 10:10 Hrs	Inauguration of Exhibition	Mr. Rattan Lal Kataria, Hon'ble MOS for Jal Shakti, Govt of India
10:10 – 10:15 Hrs	Welcome Address and Objectives of the Workshop	Mr. G. Asok Kumar, Additional Secretary & Mission Director, National Water Mission
10:15 – 10:20 Hrs	Jal Kalash Pujan	In presence of Mr. Nayab Singh Saini, MP(LS) Mr. Sandeep Singh, MoS Sports & Youth Affairs Mr. Subhash Sudha, MLA, Kurukshetra
10:20 –10:25 Hrs	NWM Profile Movie	
10:25 –10:35 Hrs	Address	Mr. Sandeep Singh, MoS Sports & Youth Affairs Govt of Haryana
10:35 – 10:45 Hrs	Opening address	Mr. U. P. Singh, Secretary, DoWR, RD & GR Ministry of Jal Shakti, Govt of India
10:45 – 11:00 Hrs	Keynote address by Chief Guest	Mr. Rattan Lal Kataria, Hon'ble MOS for Jal Shakti, Govt of India
11:00 – 11:05 Hrs	Water Pledge	
11:05 –11:30 Hrs	Talk on 'Ground Water in Haryana'	Mr. Anoop Nagar, Regional Director CGWB, Chandigarh
11:30 – 11:55 Hrs	Talk on 'Crop Diversification'	Mr. Suresh Gahlawat, Addl Director Agriculture and Farmer Welfare Deptt, Govt of Haryana
11:55 – 12:10 Hrs	Voices from the Field - I	
12:10 – 12:35 Hrs	Talk on 'Crop Economics'	Dr Ramesh Kumar Yadava, Chairman Haryana Kisan Ayog
12:35 – 12:50 Hrs	Culture Programme	
12:50 – 13:15 Hrs	Talk on 'Crop Diversification'	Dr Hari Om, Consultant Faculty KVK Kurukshetra
13:15 – 13:40 Hrs	Talk on 'Water Use Efficiency'	Mr. Neeraj Sharma, Executive Engineer CAD Division, Kurukshetra
13:40 – 14:05 Hrs	Talk on 'Crop Diversification'	Dr Dinesh Kumar, Principal Scientist, Indian Agriculture Research Institute
14:05 – 14:20 Hrs	Voices from the Field - II	
14:20 – 14:25 Hrs	Vote of Thanks	Mr. Suneel Kumar Arora

		Advisor (C&M), NWM
14:25 Hrs Onwards	Lunch	

WORKSHOP

MORNING SESSION:

SHRI G ASOK KUMAR

ADDITIONAL SECRETARY & MISSION DIRECTOR, NWM



Welcomes all the participants and esteemed dignitaries on the dais before talking about the main objective of the 'SahiFasal' campaign, which is recognising the relationship between water and the farmers. He spoke about:

- Being at the forefront of our battle towards being food secure, during the green revolution, has led to Punjab and Haryana contributing more than 20% of the country's crop, but with adverse side effects of critically depleted groundwater table in these regions.
- Talking about the importance of acknowledging these overexploited blocks, he raised the question, 'who are we producing for' when our buffer stocks are full and exports, satisfactory.
- Due consideration to the water footprint of the crops in production is important at a time when horticulture is in the rise and demand for grains has been falling.
- NWM has been trying to address the issue of the right crop with the SahiFasal campaign, which aims to spread awareness about exploitation of ground water and nudge farmers to lean towards less water intensive crops.

SHRI SANDEEP SINGH

MINISTER OF STATE, SPORTS & YOUTH AFFAIRS



Giving an example of a movie he has recently seen, that depicts a dystopian future with war breaking out due to water shortages, he spoke about myopic world view that is hurting us.

- Small changes in our everyday life will make a big difference when it comes to saving water-simple solutions and mindfulness, go a long way.

- Subsidising water pumps, electricity and motors encourages the idea that the water being extracted is also free, this behavioural pattern must be checked.
- He spoke about his efforts in the state to institute fields that do not require water for maintenance- which could potentially save large volumes of water
- And concluded by saying that even water rich states today can face acute shortage like some other states very soon and issues such as crops with high water footprint sitting in procurement chambers should be taken seriously.

U. P. SINGH

SECRETARY, D/OWR, RD & GR, M/O JAL SHAKTI

Sharing his experience of coming from an area that used to be water rich and in a matter of a few decades became a place where long queues for a single pot of water became common place. He spoke about the very real consequences of neglect, further stating that:



- One of the Vice Presidents of World Bank said that the next World War would not be over oil or petroleum, but over water-and it feels like we are inching closer to that scenario.
- A popular statistic has been our country hosting 18% of the world's human population and 15% of the world's cattle population, while sporting only 4% of the world's freshwater reserves.
- The availability of water, per capita, has gone down to one-fourth of the level that it was during the time of independence. Now, with population still expanding and urbanisation on the rise- consumption is bound to increase, for drinking, agriculture, construction and industry.
- Climate change and its impacts are further exasperating erratic rainfall patterns while increasing the frequency and intensity of weather extremities, which would adversely affect monsoons and water availability in more and more unpredictable ways
- The last couple decades has seen a very dramatic decrease in the ground water table, especially in certain areas, like Punjab and Haryana, dropping 2-3 times in the absence of active recharge efforts.

- PMABY (*Pradhan Mantri Atal Bhujan Yojana*) and other such similar schemes are aiming to initiate participatory irrigation and much needed water budgeting in villages; such DSM schemes play an equally important role towards water security as do SSM schemes.
- Paddy is not necessarily a 'water guzzler' but rather a 'water tolerant' crop- understanding the actual requirement and restraint here would in moving away from flood irrigation, coupled with techniques like direct seeding, instead of transplantation, which immediately saves 20% water use.
- Judicious use of water starts at home with small things, a mind set and mindfulness. While we are go ahead with policies like the '*Jal Jeevan Abhiyaan*', while we are striving to provide a tap to each household, it's up to us to make sure that those taps don't remain dry.

RATTAN LAL KATARIA

MINISTER OF STATE, JAL SHAKTI, GOI

Expressing his pleasure in addressing the gathering in his 'home state' to talk about 'SahiFasal', he went on to talk about how:



- When it comes to water, it's a fundamental need, not just for humans but all of plant and animal life- and the usage of water has increased with industries and urbanisation, while our sources remain static- from 5000 to 1500 cubic metres of water, today.
- Almost 70% of our water demand comes from the agricultural sector; even in comparison to other agrarian countries, like China, we use two to three times as much water.
- Our agricultural sector needs to move towards micro-irrigation and soil moisture conservation in a large way; and we must promote crops that align with the specific climate zones, thus reducing water stress in critical areas
- Awareness campaigns, such as today's workshop, are required to promote awareness about the right crop to be used, maintaining high water use efficiency and ultimately crop productivity and income
- Despite 40% of its water being saline, Haryana has been doing moderately well with the water available in the state, largely due to government measures in the area towards water conservation, rain water harvesting, etc.

- Recycling and reuse of water, whether using industrial equipment or large scale system tanks or in the house, both are much needed and require promotion

ANOOP NAGAR

REGIONAL DIRECTOR-CHANDIGARH, CGWB

Addressing the gathering and sharing the findings of his work in CGWB, he gave a comprehensive picture of the irrigation scenario in Haryana, while making a strong case for aquifer mapping and generating lithographs and lithological fenses

- Starting with the ground water (GW) occurrence, he explained the fresh water, saline and hard rock aquifers in the area, along with the depth to water level in the state, over the years- showing the depletion in ground water in the state as well as the decline trends in the Kurukshetra and Kaithal districts.
- A study of dynamic ground water resources and draft shows an overdraft of 3.37 bcm per annum- of which the lion share goes to irrigation. 78 out of 128 blocks are over-exploited, as of 2017, which is roughly, 61% of all blocks.
- Distribution of sediments show that GW is fresh in the major part of northern Haryana, in the Central and southern part, fresh water is underlain by brackish saline water and the water is saline in the entire southern region of the state
- As far as GW contamination goes- 36% blocks are fresh, 25% are highly saline, 21% have Fluoride contamination 23% have very high Nitrate concentration and 2 blocks have more than permissible Arsenic
- Suggesting supply and demand side management measures for over-draft, he spoke about efforts such as- artificial recharge, rooftop rainwater harvesting and village ponds, as well as prevention of losses, crop diversification and drip/ sprinkler irrigation
- Haryana has an artificial recharge potential of 0.7 bcm, laying of pipes and shifting to maize/soybean would save 0.85 and 1.8 bcm; utilisation of rural waste water would save 0.3 bcm- adding up to the amount of overdraft

VOICES FROM THE FIELD: **VIKAS CHAUDHARY**

FARMER

Talking about his work done on the field, he went on to share his experiences as a farmer and as an active member of the 'Society for Conservation of Natural Resources and Empowerment of Rural Youth'

- As they got to know about what kinds of new technologies could be used to used, the farmers in the area could go and demand for such help- awareness of facilities is still a concern.
- An initiative was taken to form a society for being eligible for government grants to procure heavy machinery and other equipment
- The society aims to create opportunities to make agriculture profitable while also conserving the endowment of natural resources- started with 15 young farmers who were willing to try out Direct Seeder Rice (DSR)- which is 30-40% water saving.
- Zero tillage techniques, compared to conventional tillage-saves time and also uses relatively less water. Using a laser land-leveller also saves 10-15% water.
- Substituting corn for paddy is one of the biggest savers, using upto 70% less water, but here there is a supply chain issue. Problems with storage and procurement deter a shift from paddy to corn.
- Despite government efforts to promote maize, lack of processing units has been a deterrent in that shift as well; existing LPOs could be strengthened and equipped with processing units- which would make it so much more easier for farmers to shift to maize, especially because, it dies have a lucrative international market.
- The society has been demonstrating techniques like zero tillage in a comparative fashion in a five acre land owned by Vikas for the benefit of over 10-20,000 farmers, who have visited it and benefitted from the practical demonstration.

AFTERNOONSESSION:



Left to Right: Neeraj Sharma, Executive Engineer, CAD Division, Kurukshetra; Anoop Nagar, Regional Director- Chandigarh, CGWB; Dr Ramesh Kumar Yadava, Chairman, Haryana Kisan Ayog; U.P Singh, Secretary, DoWR, RD & GR, MoJS, Dr Hari Om, Consultant Faculty, KVK, Kurukshetra, G Asok Kumar, AS & MD, NWM, Vikas Chaudhary, Farmer, Member of Youth Empowerment Society

SURESH GAHLAVAT

ADDITIONAL DIRECTOR, D/O AFW

Shri Gahlawat gave the actual facts about the cropping patter in Haryana. He stated that, 60% of the country's production of Basmati is in Haryana

- Paddy is sown on an area of 14 lakh hectares, of which 6.5 lakh hectares is Non-Basmati and rest is high quality Basmati rice. He said that despite of huge efforts done last year to grow maize instead of paddy, it was not successful on ground.
- Main reason for failure is MSP for wheat and paddy, he added. Excessive rainfall also hindered the efforts of change in cropping pattern. He emphasized that this year, an action plan will be made for sowing maize again by implementing assured procurement policy and the government will bring an advanced methodology to implement this scheme.
- If maize is replaced instead of paddy crop, we can save 30 lakh liters of water in one cropping season, he added.

RAMESH KUMAR YADAV

CHAIRMAN, HARYANA KISAN AYOOG

Dr Yadav started his talk with the quote apt to Sahi-Fasal campaign that "कमजल, सहीफसल, सुनेहराकल".

- He said that, Maize was a major crop in North Eastern Haryana until 1970s in kharif season having more than 1.7 lakh ha in Karnal, Ambala, Kurukshetra, Yamunanagar, Panipat etc.
- Due to raw material availability, first starch industry of the country was established at Yamunanagar in 1937. Non-traditional rice cultivation shifting was accelerated by non-availability of high yielding cultivars in maize at that time and now a days, 60% of the cultivable land is under paddy.
- Maize have high amount of starch than rice, and hence we need to promote maize. Also, Maize can be used as the fodder for cattle and poultry, thus helpful in other livelihood options, he added.

He also emphasized on suitable drip irrigation systems for respective crops and need to change the policies for the same. He also added that Castor can be better option in southern parts of Haryana.

- Dr Yadav concluded by saying that there is a genuine need to work out better cropping options with respect to the water availability and market demand for sustainable water management

CULTURAL PROGRAM

A cultural programme was organised in order to spread awareness about importance of water among the participants. Mr. Abhishek Sharma sang an awareness song on “Jal Hai to Kal Hai” and a short skit on “Jal Bachao” was presented by Shri Harikesh and his team.

HARI OM

CONSULTANT FACULTY, KVK KURUKSHETRA

Starting by talking about the eminent impact of climate change, he stated that:

- In last 45 years there is increase in temperature of 0.45°C degree in Kharif and 0.3°C in Rabi which has resulted in reduction of production by 26% and 33% in both the seasons respectively. For every 1°C increase in temperature, 60 lakh tons of wheat production gets affected which further results in 6% income depletion.
- He said that as a result of last three decades of plantation of rice and wheat, soil of Haryana has deteriorated to a great extent. The plantation of rice and wheat is been controlled by MSP.
- Dr Om highlighted the agro technical solutions for saving water as use of Underground Irrigation System, Laser Land Levelling, Bed Planter, Zero Tillage, Happy seeder, DSR, Mulching, Crop Rotation, Organic manure, and use of micro irrigation like drip and sprinkler.

NEERAJ SHARMA

EXECUTIVE ENGINEER, CAD DIVISION, KURUKSHETRA

Shri Sharma explained about the pilot project undertaken by CAD division.

- He spoke more about the pilot project, that had been undertaken for Installation of Community Based Solar/Grid Powered Micro Irrigation Infrastructure in existing canal commands in various districts of Haryana in 5511 acre out of 2231 ha

- Another project he mentioned was installation of Solar/Grid Powered Micro Irrigation Infrastructure on Sewage Treatment Plants for utilizing treated Water for Irrigation in 717acre out of 290 Ha. Shri Sharma highlighted the advantages of these pilot projects as below:
 - New area will be brought under irrigation with optimum utilization of the available surplus water.
 - The projects will encourage use of Micro Irrigation technologies.
 - No non-renewable sources of energy will be used as it is proposed to use only Solar Power for pumps.
 - These projects will save the villages from various diseases arising out of the overflowing and accumulated water.

VOTE OF THANKS

One day workshop on "Increasing Water Use Efficiency in Agriculture" ended with great learnings and vote of thanks by Shri Suneel Kumar Arora, Adviser (C&M), National Water Mission