

Deloitte.



Deloitte Health Equity Institute

Haryana State CSR Fund

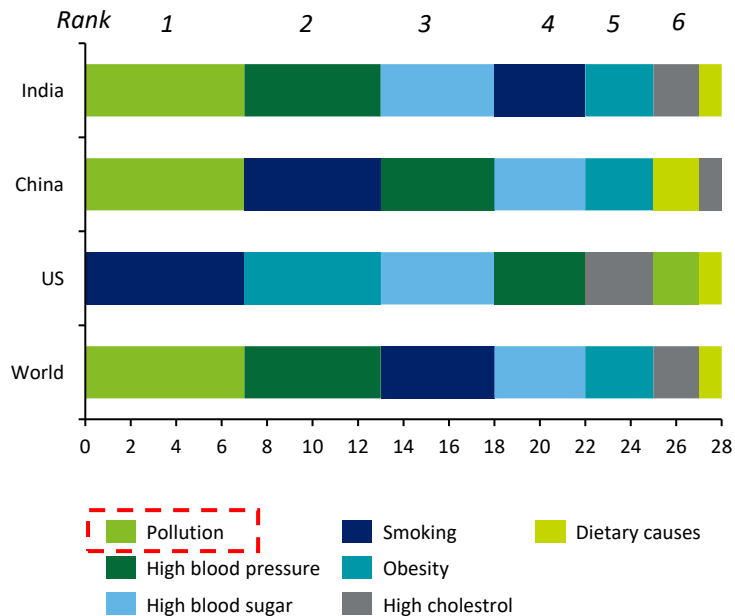
FEB 2024

Stubble Burning and Air pollution: leading contributors to deaths in India

Air pollution is the most severe health problem in India, and stubble burning contributes to a mammoth chunk of the issue

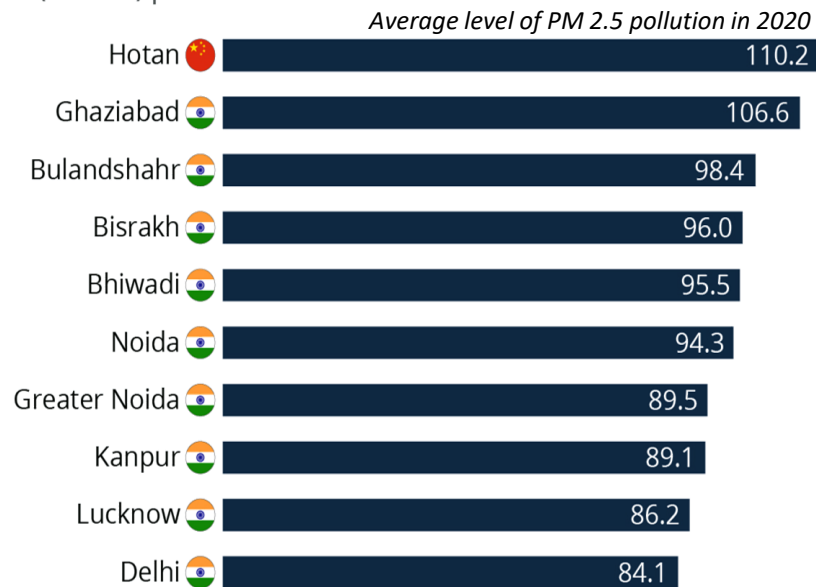
All the cities in the top 10 rankings are in the northern belt of India - the region with the highest crop burning incidences - indicating a strong correlation in crop burning and severity in pollution levels

Ranking of top risk factors for diseases based on contribution to DALYS¹



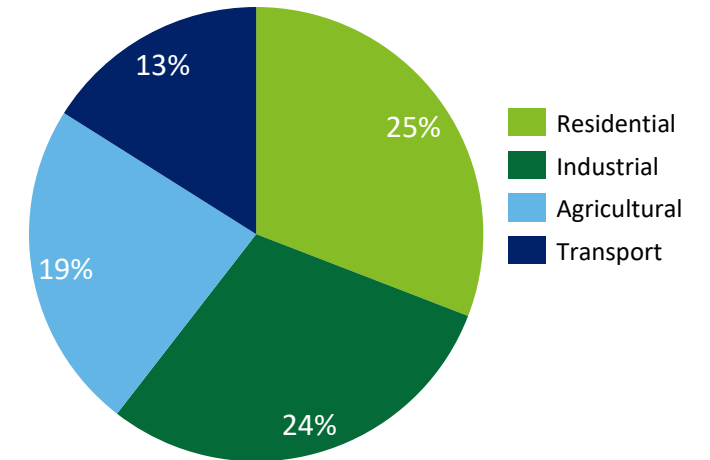
Pollution is the leading cause of Deaths in India

Most Polluted cities on Earth



9 out of the top 10 most polluted cities in the world are in India

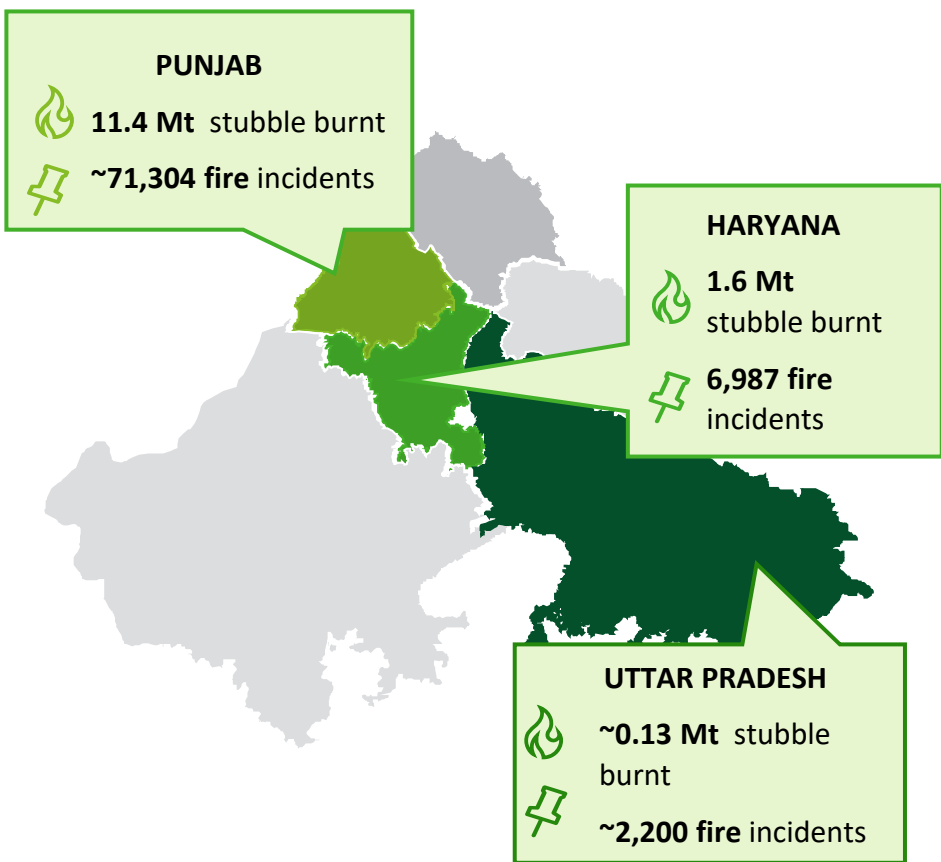
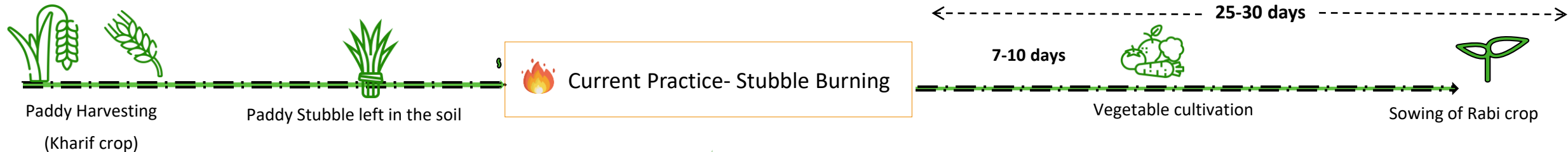
Major Sources of Air pollution in India



Agricultural Burning is the third largest source of pollution, accounting for almost one – fifth of the total air pollution in India

The Stubble Burning Problem: An overview

~ 13 MT of paddy straw was burnt in Haryana, Punjab & UP in 2021 leading to health concerns



~7,000 fire incidents in Haryana (2021)

90% Fire events in 9 districts

Adverse health consequences of stubble burning

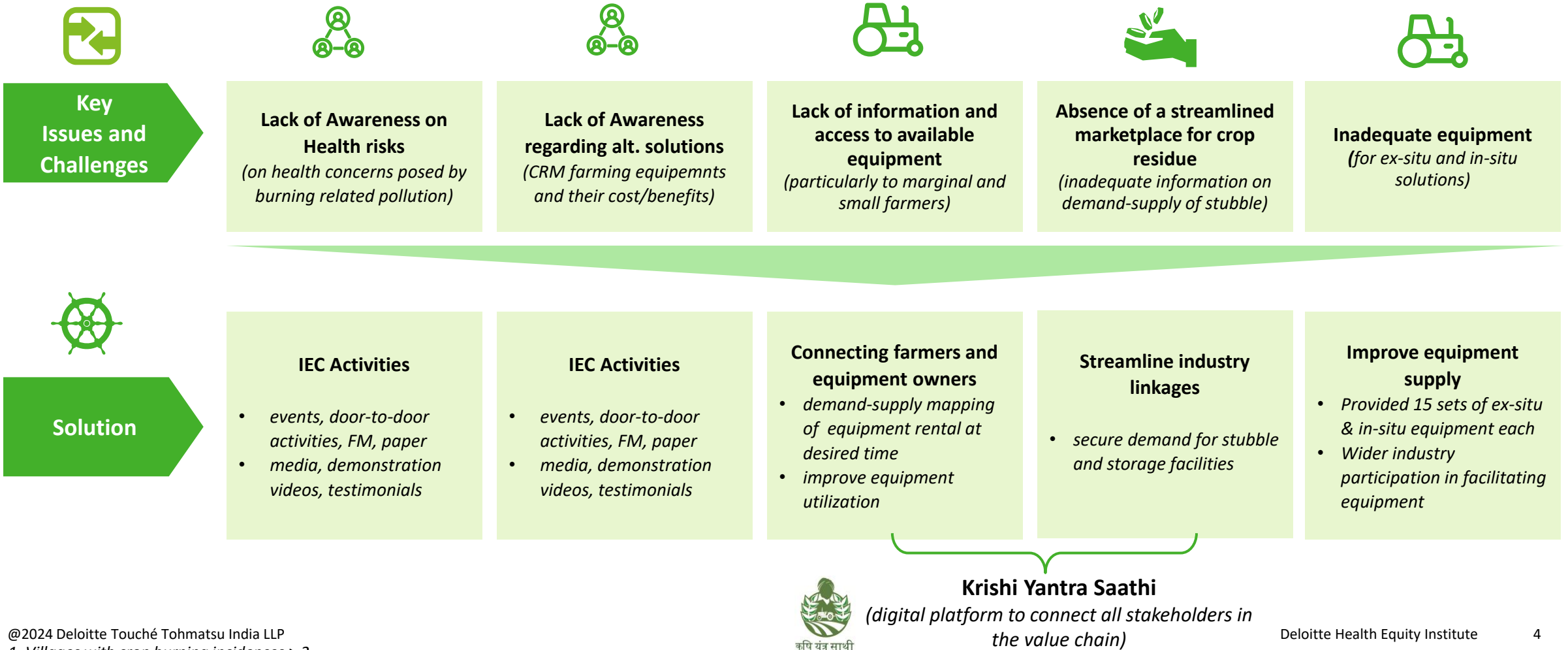
2-3X respiratory issues

'Severe' Air Quality Index – National Capital Region

14.9 Mn Disability-Adjusted Life Years or ~ 2 lakh lives lost¹

Our Approach: Understanding the problem

- To understand the problem better, Between Mar 2022 and Apr 2022, we conducted 10 - 12 FGDs, an app-based primary survey of 1,500 farmers across yellow and red zone villages¹ and hosted 6 farmer events in **Karnal district**
- From May 2022 to Sep 2022, we designed the blueprint and built the solution



Our Solution: A three pronged approach

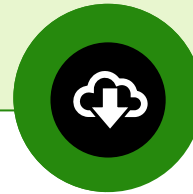
Information, Education, and Communication Activities (IEC) : Raising Awareness on **health risks** and CRM Alternatives

- Conducting extensive awareness campaigns to educate farmers about the *health risks* associated with paddy crop residue burning and promote alternative methods
- Utilizing demonstration vans to disseminate information on *health impacts* and available alternatives.
- Using Farmer anthem to spread the message and putting out public appeal messages through interview on local FM channel
- Publishing Articles in newspapers of local dialect and Identifying local influencers to promote change



Krishi Yantra Saathi: A Digitized Supply Chain Solution to connect farmers, equipment owners and end use industries

- Deployment of an IT platform (*Krishi Yantra Saathi*) to match users and service providers of CRM equipment as well as end-user industries
- Taking farmer booking requests through WhatsApp chatbot, Interactive Voice Response System (IVRS)
- Allocating of bookings to CHCs based on i) preferred villages, ii) distance, iii) ML-based model; >2.5 lakhs GIS coordinates mapped for grouping plots; Equipment live tracking and route optimization



Equipment Supply Enhancement: Bridging the equipment supply Gap and enhancing the access

- Donating of 20 ex-situ equipment sets to the government and 4 sets by CNH through NGOs
- Onboarding >5600 existing equipment owners
- Exploring leasing of equipment, fuel subsidies
- Engaging business sponsors and equipment manufacturers to contribute CSR funds in select districts



Solutions Deep Dive: IEC Activities - Raising Awareness on *health risks* and CRM Alternatives (1/2)



DDA flagging off cars that would be playing our audio clips & jingle on PA system



Audio clips were played to make farmers aware about the harmful respiratory effects of stubble burning



Jingle were played to nudge against stubble burning

WhatsApp forwards to ~3000 farmers

(Encouraging in-situ crop residue management using superseder & lucky seeders)



(Messages showcasing the ill effects of burning on health and the alternatives available to the farmers)

Interview given by DDA on FM 94.5



“Deloitte worked in collaboration with Department of Agriculture & farmers’ Welfare in Crop Residue management in Haryana which has resulted in reduction of Active Fire locations (AFLs) by more than 66%.”

Dr. Aditya Pratap Dabas,
DDA(Deputy Director, Agriculture)
on radio channel FM 94.5

Solutions Deep Dive: IEC Activities - Raising Awareness on *health risks* and CRM Alternatives (2/2)



**पराली है
कृषि की नई
जिवाली!**

Parivartan Prakash
Progressive farmer as a Mascot
promoting “Stubble as a new
source of livelihood for all
farmers.”



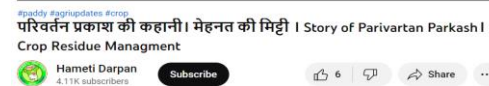
Calendars with special messaging regarding health risks and alternatives distributed in **door-to-door campaigns, farmer fairs & meetings**



Whatsapp messages **periodically** relayed to farmers

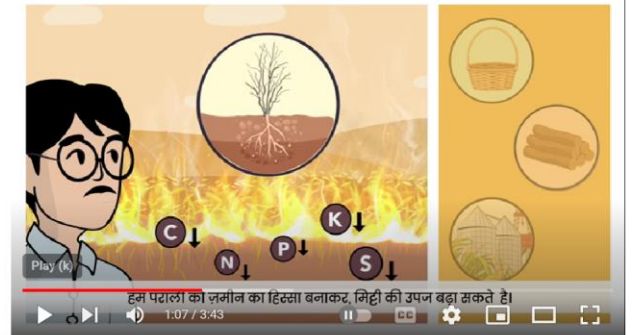


Videos showcased in Kisan Mela with & in **block/ village level** awareness meetings



Tote bags being delivered with **targeted messages** on nudging against stubble burning

Videos posted on YouTube channel of a state government institute (Haryana Agricultural Management & Extension Training Institute)



#paddy #फसल #धानकीखेती
परिवर्तन प्रकाश की कहानी | Harmful effects of stubble burning | Benefits of Crop Residue Management



Video on harmful health and environmental effects of stubble burning

Pilot and Scale up Programme: The scope and outcome

We first undertook the pilot in Karnal district in 2022; its success helped us validate our solution and scale up to 9 districts of Haryana in 2023

Pilot in Karnal in 2022



- 1 district (Karnal)
- 6 villages

Impact

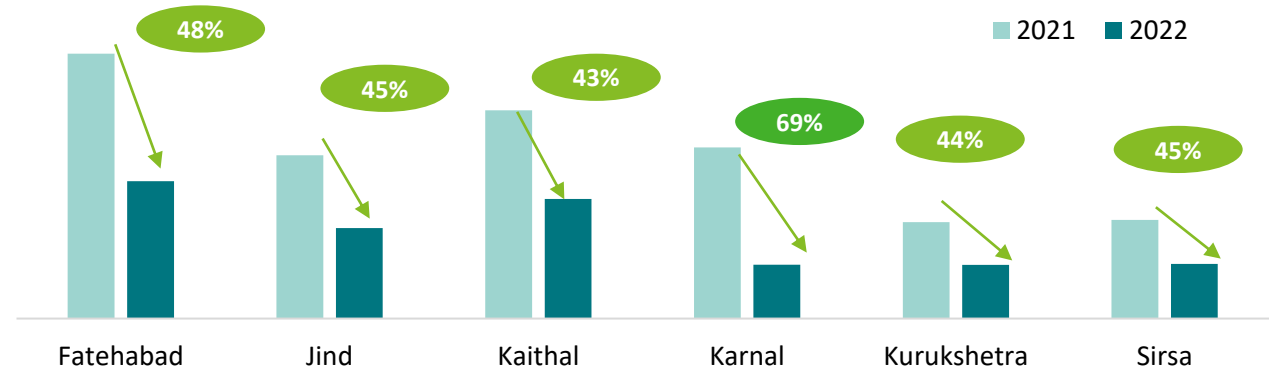


~2,400 lives saved



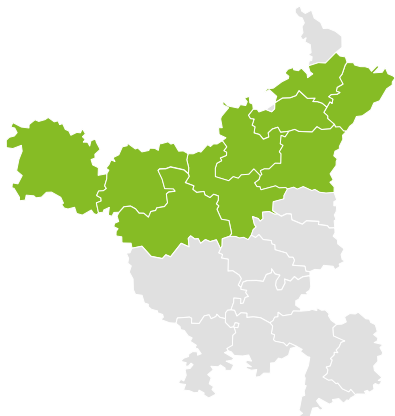
69% Decrease in the burning incidences

Highest drop in AFLs were observed in Karnal district (69%)



Source: Haryana Space Applications Centre (HARSAC), Department of Agriculture & Farmers Welfare (Karnal)

Scale up programme in 2023

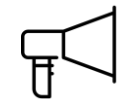


- 9 districts
- 666 villages
- 1.5 lakh farmers
- 12 lakh acres of paddy land

Impact



~4 lakh Disability-adjusted Life years averted (~5,500 lives saved)



Successfully conducted Health risk awareness camps in all 650 + fire prone villages



54% Decrease in the burning incidences in the target districts



Successfully completed 2 Lakh + Crop Residue management bookings

Estimated benefits of reduction in fires and GHG emissions contributed to SDG realization of Good health and well being



Media Coverage: The success of the CRM mission in Haryana

THE TIMES OF INDIA

Hry action against field fires near success

TIMES NEWS NETWORK

Karnal: The Haryana government's pilot project against field fires in some red-zone villages of this district has shown 69% success rate. This crop residue management will help reduce air pollution in the region.

The initiative involved using multilingual mobile application 'Krishi Yantra Sathi' to mobilise the farming communities and their private-sector partners. The app brought together local farmers, custom hiring centres (CHCs), and farmer producer organisations (FPOs). Haryana agriculture department director Narhari Bangar said: "We will take the proven concept and replicable model to eight districts — Fatehabad, Sirsa, Jind, Kaithal, Kurukshetra, Ambala, Yamunanagar, and Karnal — which account for 90% of the state's field fires." Karnal's deputy director of agriculture Aditya Paratap Dabas said: "Our diligence and proactiveness helped 702 CHCs and 3,860 individual farmers receive Rs 90 crore as subsidy for both off-side and on-site crop residue management since 2018. This year, we expect to give away Rs 18 crore worth of equipment subsidy. Every farmer of Karnal who adopts CRM will get a subsidy of Rs 1,000 an acre."

The DDA said: "The objective was to match the farmer's demand for equipment to manage the crop residue. The app allowed us to have economical and environmentally conscious use of stubble, while generating local jobs. The communication and awareness programme for the farmers of Karnal helped them use the government's schemes."

Deloitte India's partner and sustainability leader Viral Thakker said: "The burning of farmland between crop cycles is a pervasive problem across northern India. The unavailability of stubble removal equipment such as super-seeders and balers at the right time is one of the reasons. Deloitte helps small and marginal farmers bridge this equipment availability gap."

Haryana govt successfully completes pilot project to curb crop burning

By Sutanuka Ghosal, ET Bureau Last Updated: Mar 30, 2023, 01:10 PM IST

SHARE FONT SIZE SAVE

Synopsis

While this initiative included mobilising farmers, communities, and private sector partners, an important element of the outreach was a multilingual mobile application 'Krishi Yantra Sathi'. It was designed to bring together all the relevant stakeholders, including local farmers, various Custom Hiring Centers (CHC), and Farmer Producer Organisations (FPO).

THE ECONOMIC TIMES

Hindustan Times REGION

{ TARGETING RED ZONE } KARNAL VILLAGES

Haryana completes pilot project to contain farm fires

Neeraj Mohan
neeraj.mohan@hindustantimes.com

KARNAL: The Haryana government has successfully completed the pilot project to target stubble burning in villages of Karnal district which have been declared in the red zone for reporting a maximum number of farm fires in the past few years.

Earlier, the pilot project began in six villages under the red-zone category of Karnal district in 2022 kharif-harvesting season. Later, it was expanded to the entire district. The project has resulted in a 69% reduction in stubble-burning incidents bringing the number of farm fires to 301 in 2022 against 965 in 2021, claimed officials from the district agriculture and farmers welfare department.

"With the proof of concept and a working replicable model, we are planning to scale the initiative in the state to cover eight districts, namely, Fatehabad, Sirsa, Jind, Kaithal, Kurukshetra, Ambala, Yamunanagar and Karnal, which are responsible for approximately 90% of fires in the state," said Narhari Bangar, director, department of agriculture and farmers' welfare, Haryana.

The project is based on the crop residue management multilingual mobile application called the Krishi Yantra Sathi, he added. An innovative communication and awareness programme was also designed and implemented to educate farmers with a series of awareness-building initiatives like radio jingles, videos, and door-to-door awareness campaigns, periodical WhatsApp messages, videos on the 'Progressive Farmer Mascot-Parivartan Prakash', and distributing calendars and tote bags with targeted messaging.

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पराली जलाने की घटनाओं को शून्य पर लाने का लक्ष्य : कुट्टी

वायु गणवत्ता प्रबंधन आयोग के अध्यक्ष ने की पराली प्रबंधन की समीक्षा

दैनिक सवेरा

कुट्टी ने समीक्षा की। उन्होंने प्रदेश के सभी उपखण्डों व अन्य संबंधित अधिकारियों को निर्देश देते हुए कहा कि हरियाणा ने पराली प्रबंधन की दिशा में बेहतर कार्य कर वायु प्रदूषण को कम करने का काम किया है। लेकिन पराली में आग लगाने की घटनाओं को शून्य पर लाना है। इसके लिए जिला प्रशासन के अधिकारियों को इस दिशा में और अधिक मेहनत करने की आवश्यकता है।

इस विषय को लेकर कर्ण लेक पर आयोजित बैठक के दौरान समीक्षा के दौरान चेयरमैन एसएम कुट्टी ने जिलावार पिछले वर्ष पराली में लगी आग की घटनाओं के बारे में विस्तृत जानकारी दी। उन्होंने स्पष्ट किया कि इस बार 50 प्रतिशत के बजाए पराली में आग जलाने की घटनाओं पर शत-प्रतिशत रोक लगनी चाहिए। किसानों को आधुनिक कृषि यंत्र उपलब्ध करवाएँ ताकि पराली का सम्पुष्ट प्रबंधन हो सके। पराली प्रबंधन के लिए आइडोसरीएल पानीपत में लगाए गए एम्बेल्ड प्लॉट में आसपास के जिलों के किसानों को पराली पहुंचाने के लिए जागरूक किया जाए। पराली जलाने की बजाए करोड़ों के रूप में अगनाते के लिए किसानों को प्रेरित करें। औद्योगिक इकाइयों को भी पराली के प्रयोग के लिए प्रोत्साहित करें।

उपायुक्त अनिश यादव ने बताया कि जिले में वर्ष 2021 खरीफ सीजन के दौरान पराली जलाने की 957 घटनाएँ हुईं। वर्ष 2022 में यह 301 रह गई थीं। इस वर्ष भी प्रभावी तरीके से कार्य किया जाएगा। वायु गुणवत्ता प्रबंधन आयोग के सचिव अरविन्द नौटियाल, पर्यावरण विभाग के एसोएस चिनीत गर्ग, हरियाणा प्रदूषण नियंत्रण बोर्ड के चेयरमैन पी रावबेन्द्र राव, कृषि एवं किसान कल्याण विभाग के निदेशक नरेश चौगुड़ व प्रदूषण नियंत्रण बोर्ड के आरओ शैलेंद्र अरोड़ा मौजूद थे।

उपायुक्त अनिश यादव ने कहा कि कृषि एवं किसान कल्याण विभाग द्वारा डेलाइट इंडिया के सीएसआर फंड के साथ परदर्शी और प्रतिस्पर्धी बोली प्रक्रिया का पालन करने के बाद ट्रैक्टर, ट्राक्टर, बेस्टर, हब रोक, रोटरी स्लैशर्स और लकी रोडर्स के 15 सेट खरीदे गए हैं। डेलाइट इंडिया कंपनी के पार्टनर विल टवकर ने बताया कि उन्होंने रणनीति, प्रवाचार, ईएसजी और सामाजिक प्रभाव, स्थिरता, वैश्विक व्यापार सेवाओं सहित अन्य क्षेत्रों में काम किया है। देवाशीष ने कहा कि उन्होंने जलवायु परिवर्तन, रणनीति विकास, शहरी नियोजन सुधारों आदि

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