

## Alternatives to Open Burning in Ukraine

### Why move from agricultural burning towards no-burn alternatives?

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*"I have been practicing no-till for several years on some fields as an experiment but was only 50% convinced it was a good idea. Now that I have learned more and seen demonstration projects I am 80% convinced it is the way to go."* --Local farmer who participated in visits and seminars.

Open field and forest burning contributes to regional and global climate change by producing CO<sub>2</sub>, methane, and – of special interest near cryosphere (ice and snow) regions – black carbon (BC), which deposits on nearby snow and ice and also travels far on the prevailing winds, speeding melting. Open burning is the single largest source of black carbon globally, at 42% dwarfing all other sources. Russia is the source of the largest BC emissions reaching the Arctic, and Ukraine contributes more BC pollution to the Arctic than all the Nordic countries combined.

Open agricultural fires also often burn out of control, spreading and causing forest and grassland wildfires that release additional BC as well as greenhouse gases — including methane, CO, and CO<sub>2</sub>; damage nearby sensitive ecosystems; and cause loss of human life and infrastructure. Smoke from open burning also negatively affects human health, sometimes significantly.

Agricultural burning also impacts soil quality by compacting and destroying the humus and organic matter that make agricultural lands productive. This drastically decreases yields at a time when agriculture already is under stress from climate change, leading to ever-greater dependence on fertilizers and greater run-off of nutrients from burned soils.

Good alternatives exist, however, especially those that integrate low-till or no-till methods. Conservation agriculture entails keeping the soil covered all year. These methods such as direct seeding, preservation of stubble to hold moisture, cover crops and crop rotation, as well as alternative uses for crop stubble as bio-energy or livestock bedding and feed, all hold promise as win-win alternatives to burning.

Better practices can lead to a 50% reduction in BC emissions in a relatively short period of time without excessive capital investments. Indeed, Poland was able to end agricultural burning within five years in order to meet EU standards.

## Who are we?

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### International Cryosphere Climate Initiative (ICCI)

Formed in 2009 immediately after COP-15 in Copenhagen, ICCI is a network of senior policy experts and researchers working with governments and organizations to create, shape and implement initiatives designed to preserve as much as possible of the Earth's ice and snow regions, which is uniquely sensitive to climate dynamics. ICCI's open burning program has worked in Russia, where open agricultural burning impacts the Arctic, since 2010, as well as Southeast Asia and South America, where open burning impacts the Himalayas and Andes respectively. ICCI currently operates as two legal entities: ICCI, a 501(c)(3) non-profit organization in the United States that operates as the global organization and is based in Vermont, and ICCI-Europe, a charitable organization under Swedish regulation based in Stockholm, Sweden.

### Program Components

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The introduction of alternatives to burning will only be successful with a multi-pronged approach involving both carrots and sticks. No single approach will be successful. Necessary elements include:

- National and regional surveys of farmers to determine the nature and extent of burning—who burns what, where, when and why?
- Satellite mapping of burn patterns and time trends in pilot oblasts (Michigan Tech University). This can be done in conjunction with research counterparts in Ukraine.
- “Ground-truthing” of select areas to verify the accuracy of satellite mapping.
- Establishment of a project support group to shape and guide project development.
- Establishment of a working group of local and international farmers, officials, scientists, graduate students and environmental activists to inform policy and process.
- Work with local legislators to propose and promote appropriate legislation.
- Study tours to areas where alternatives to burning are widespread.
- Field Days (both in a "classroom" and on-site in the demonstration fields) in regions with international and local experts. Farmers look to other farmers for advice and results.
- Articles, publications and other media outreach specific to target audiences.
- Attendance at conferences and meetings to promote the program and successes.
- Preliminary work on developing a financing mechanism for appropriate technology.

### Program goal

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The challenge of the next phase of the program will be to develop a roadmap for the project. We hope to attract Ukrainian and other public and private sector interest and engagement in an open burning mitigation program in Ukraine. This will involve active participation by members of the Ukrainian working group as well as the staff of ICCI and other partner organizations.