

Burning Crop Stubble While Thinking About the End of Heaven and Earth

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The 17-syllable title for this paper is based on a haiku published in April, 2002 by Keiko Sanso in *That (Ao)* haiku journal. This research presents haiku that were composed on the theme of burning crop stubble. The haiku were organized according to the location where they were composed. A triangulation technique used in three-way debates helped to analyze the haiku according to three viewpoints. The results of this study are intended to add to the debate on whether crop burning should be carried out.

1. Background

The traditional agricultural practice of burning forests and wild growth to clear arable land as well as the annual burning of stubble from fields have a long history (Ahmed et al., 2020). The process of clearing and burning forestland in mountainous regions to create agricultural land while using the wood ash as natural fertilizer is referred to as slash-and-burn or swidden. Stubble burning is the practice of intentionally setting fire to the straw that remains after grains, such as rice and wheat, have been harvested. The technique was widespread until the 1990s, when governments in the U.S., E.U., and U.K. severely restricted its use. These farming techniques continue to take place in China, India, and parts of Japan, Australia, and Canada today. In Japan, the burning of waste and field-burning are prohibited due to concerns about dioxins and air pollution, nonetheless the traditional practice referred to in the Japanese language as *yakihata* continues (Seidel, 2017).

2. Previous Research on the Use of Haiku to Summarize Scientific Research

The Association for the Study of Literature and Environment was established in 1992. It has become a well-established body of environmental writing. Januchowski (2018) suggested that people love to read about science. But scientists, no matter how well-intentioned, can be difficult to understand when they attempt to communicate their research. Academics and teachers suggested that haiku poetry is a simpler way to better communicate science to the public. The idea may also be a novel option for anyone who's ever struggled to explain their line of work to classmates, friends, relatives, or at a Three Minute Thesis competition (3MT).

Since researchers often get stuck in the jargon specific to their fields, writing poetry can help to crystallize ideas. An oceanographer participating in the United Nations Intergovernmental Panel on Climate Change (IPCC) summarized a 2,000 page manuscript by composing haiku to communicate the essences of this important information for policymakers. Here is an example of his haiku that pithily summarize the recent history (1850 to 2013) section of the report. Johnson (2013) claims that haiku makes researchers focus and

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distil findings in easier to understand vocabulary rather than academic jargon.

Big, fast carbon surge:

Ice melts, oceans heat and rise.

Air warms by decades

* * *

Seas rise as they warm.

Rates quicken last century.

Melting ice joins in.

The seasonal almanac referred to as a *saijiki* is used by poets as an inventory or lexis of essential terms. UNESCO (2014) recognizes that these inventories are integral to the safeguarding of intangible cultural heritage because they can raise awareness about intangible cultural heritage and its importance for individual and collective identities. The process of codifying intangible cultural heritage such as almanacs with representative haiku and making those inventories accessible to the public can also encourage creativity and self-respect in the communities and individuals where expressions and practices of intangible cultural heritage originate. Inventories can also provide a basis for formulating concrete plans to safeguard the intangible cultural heritage concerned. This historical repository is important if traditional practices such as land-clearing and crop stubble burning are to be discontinued.

On one side of the raging debate on whether to stop crop-stubble burning and slash-and-burn farming techniques, traditionalists argue that it is a cultural agricultural practice that has been used for centuries. *Yakihata* is a Japanese form of swidden agriculture -- the process of clearing and burning forestland in mountainous regions to create agricultural land while using the wood ash as natural fertilizer (Kurata, 2013). In rural Japan, farms have fallen into disuse and former farmlands have fallowed from lack of human intervention. Claiming that traditional farming practices in Japan are carefully controlled and managed, Sato (2011) defended the burning of forestland. The viewpoint of the debate focuses on the suggestion that burning forestland in Japan is different than the slash-and-burn plantation development in tropical countries such as the Amazon in Brazil. Shimamura (2010) claims that it is a relic of the Jomon culture and has been a sustainable practice for several centuries in harmony with the forest ecosystem.

According to Shimamura (2010, p. 1) "schools often taught students that it was a crude farming method that harmed the environment" but scientists at the Tokyo Foundation for Policy Research defend the burning because it differs from "deforestation in Africa and elsewhere... around the mid-1960s... due to the influx of civil-war refugees from neighboring countries." In Niigata, Miyazaki, and Kagoshima prefectures the cycle can span several decades: A piece of land in a remote area is burned, planted, allowed to recover until the soil is fertile again and sufficient vegetation has grown to produce ash, then it is burned again.

3. Methodology

3.1 Procedure

A call for haiku related to the 26th annual United Nations climate change conference (COP26) and haiku with seasonal themes related to crop-stubble burning or slash-and-burn farming techniques was announced in the Asahi Shimbun and its related Facebook Twitter sites (McMurray, 2021). A priori, it was decided to triangulate the opinions of the participants. Haiku would be sorted according to three possible points of view for the debate: those who were against the practice, those who were for the farming procedure, and those who took a neutral stance and simply sketched what they saw happening in the farmers' fields where they lived. The haiku were also organized by geographic location to allow for a better understanding of attitudes towards crop-burning.

3.2 Participants

210 participants from 28 countries replied to the call for haiku and submitted a diverse range of haiku.

4. Observations

Burning of fields takes place in the spring in Hokkaido, high summer is the preferred season in Niigata, Kochi, and Kagoshima. Mid-August is considered the best time for burning because of lower precipitation. In Miyazaki, burning festivals take place in September. Weed cutting under the scorching summer sun is sweaty work. In Niigata fires are started at nightfall, and the beauty of the flames are spectacular according to Shimamura (2010). At dusk, the people pray to the mountain god for protection and partake of sacred sake alcohol (Figure 1). Weed cutting takes place both the day before and on the day of the burning. Weeds must be thoroughly removed along the perimeter of the site targeted to be burnt so that the fire does not spread to the surrounding forest (Figure 2). Nonetheless, burning in June takes place in paddies flooded with water in Kagoshima where there is higher precipitation during the rainy season (Figure 3). These traditional farming practices in Japan are carefully controlled and managed, however when the winds fluctuate fires can quickly engulf nearby communities (Figure 4).

4.1 Haiku Examples from Three Different Points of View

Murasaki Sagano posits that the strawman could be the judge of a debate in whether to allow the traditional practice of *yakihata* farming and burning crop stubble.

At sunset
 what is he thinking?
 the scarecrow

4.1.1 Affirmative position in the debate to allow stubble burning.

Smoke hangs low over fields
 In hushed spring air

Beaters slumped like wet sacks

--Sara P. Dias (Cape Town, South Africa)

* * *

Remembering

stubble burning on the farm

my eyes water

--Karen Harvey (Pwllheli, North Wales)

4.1.2 The negative rebuttal in the debate to allow stubble burning.

wood against wood

farmer invokes wild spirits

burning fields

--Ashoka Weerakkody (Colombo, Sri Lanka)

* * *

apples bake on trees

in climate's killing heat

forest fires

-- Meghan Elizabeth Jones (Calgary, Canada)

4.1.3 Neutral position in the debate.

Translated by Hass (1994), this hokku by the master poet Matsuo Basho squarely described winter as it looked. It is followed by a haiku composed by Margaret Chula and selected as a prize-winning haiku in 2009 and was printed on Itoen Ocha tea cans distributed in Japan.

winter rain--

The field stubble

Has blackened.

* * *

dusk settles

into the rice stubble

a sickle moon

5. Organization of the Collected Haiku According to Geographic Location

Haikuists from the springtime in South Africa to South America recount fire whirls on farms, whirling waterspouts on beaches, twirling winds in the desert, and twisting typhoons and circling cyclones in the oceans. When read together with poets on the Equator as well as in the fall of India, Japan, China, Europe, and North America, this haiku collection composes an alarming thesis of what the man-made climate crisis has ruined so far.

5.1 Africa

Sara P. Dias spun a tale of burning farmers' fields in Cape Town, South Africa.

Whirling fires, a windless day--
beans, then grains, then beans turn to ash
Nature spins on spring's graves

5.2 South America

Fires set to deforest areas in the Amazon have also dried-out coffee plantation flowers until they turned pink, shriveled and fell off. Extreme heat caused water-levels to recede along the Parana river in Argentina. The Jaime river, however, flows fresh and clear in front of Julia Guzman's parents' country home in the picturesque town of Salsacate in the Traslasierras valley. Robin Rich watched in awe as a large group of butterflies took flight. Gatalica watched as a field was burnt to make way for a new crop.

the sound of leaves
by the river bank--
a tasty piece of bread

* * *

arable farm
a rabble steal the sky
earth on fire

* * *

after a long day
burning farmer's field
in the silence

5.3 Equator

Christina Chin clarified that her eating utensils are made from grass, not trees, in Borneo. She explained that birds, as well as the insects and amphibians they feed upon, live in rice fields not only when they are flooded but also after the harvest in Kuching, Malaysia. Flooding rice fields prevents oxygen from penetrating the soil and encourages methane-emitting bacteria to grow.

bamboo grass
chopsticks protests
NGOs bark up the wrong tree

* * *

wintering white egrets
roost on the scarecrows

paddy fields

5.4 Indian Sub-Continent

Ashoka Weerakkody invoked a cosmic dance symbolizing rhythmic creation and destruction in Colombo, Sri Lanka.

dance of Shiva

farmer sets field aflame

holy fire

Heavy use of fossil fuels and burning chaff across India combined with the second-wettest monsoon ever this season. The synergetic effect prompted Mona Bedi to describe how polluted wailing winds roiled a thick black smog over burnt fields before the dusk descended in Delhi.

burning fields

bringing in the sunset

clouds of smoke

5.5 Japan

On the Kanto plains in Japan, extreme weather events such as swirling typhoons stripped trees of colored foliage. The trees are bare and the ground is dry now in Nagoya, but ever-hopeful Satoru Kanematsu remains optimistic that this is the best time to start coloring next spring (Figure 5). Masumi Orihara has heard farmers explain that burning restores the soil, but she countered their views by saying “on the contrary, our earth needs no more warming as it has been excessively heated.”

Seeds and bulbs

in his desk drawers

green-thumbed son

* * *

burning farmlands

warming no more

the creaky planet

Laurence Raphael Brothers drove from the lovely town of Soma to Iwaki, Fukushima, on a protected highway through the radiation zone, noting, “while nature had lushly overgrown most of the roadside buildings, there were huge stretches off to the horizon where farmland had been razed to prevent radioactive food crops from growing wild.” The final line in his haiku warns survivors of the fall of civilization away from such contaminated places (Figure 6).

ten years have passed
fertile fields burned black
this is not a place of honor

5.6 China

An extreme drought to the southwest of China combined with deforestation and encroaching farmlands caused elephants to wander away from their protective enclosures to find cooler and wetter climes further north. Chen Xiaoou hadn't anticipated they would migrate past his home in Kunming, China.

after-dinner stroll
extended to an epic journey
of 500 kilometers

5.7 Europe

Cloaked in black in Ettiswil, Switzerland, Helga Stania pondered the mysterious forces that are causing the universe to expand and unravel at ever-faster rates. Minko Tanev spotted a devilish flame twist up from intense rising heat near a stables in Sofia, Bulgaria.

Crows
a clue of dark
energy
* * *
bright aura
through the fire whirlwind
silhouette of a horse

Heavy rains drowned forests in Germany. Eva Limbach in Saarbrucken, and Pitt Buerken in Munster, respectively, took different sides in a heated debate about how to clear farmland.

slash-and-burn
the guilelessness of
a new dawn
* * *
stubble field
finally the straw is
burned off

Wieslaw Karlinski hopes to enjoy many more moonlit family evenings together in Namyslow, Poland. Marek Printer lost sight of the moon because of the smog over Kielce. Quails can survive winter's cold but not the heat from fires noted Tsanka Shishkova in Sofia, Bulgaria. Mircea Moldovan knows what's prowling around Jibou, Romania.

another full moon
granddaughter bakes her first
rice cakes

* * *

disappearing
over burning stubble
full moon

* * *

silent night
without the song of quails
burning stubble

* * *

burnt stubble
on the moon's dark side...
footprints of a coyote

Angela Giordano was awakened before sunrise by the smell of dry stubble burning in plowed fields.

scratches in the sky--
smoke from the stubble rises
in the autumn wind

Mirela Brailean shed tears for a Romanian farmer. Serhiy Shpychenko's lungs blackened in Kyiv, Ukraine. Dejan Ivanovic shrugged his shoulders in Lazarevac, Serbia. Keith Evetts lamented how long toxins can linger in the atmosphere in Thames Ditton, U.K.

burnt fields--
on the farmer's blackened face
streaks of sweat

* * *

smoldering conflict--
between neighboring estates
a scorched field

* * *

Sounds of sirens
indifferent, grandpa wraps
tobacco in paper

* * *

burning the fields
things our forefathers
failed to see

5.8 North America

Drought in the Canadian and American West prompted leaves to fall even before they had a chance to turn red. Germina Melius watched ballet-like movements at the floor of a naked tree in Castries, Saint Lucia. Bob Friedland savored the vestige of the season in Richmond, British Columbia. Lilia Racheva nostalgically recalled raking up a pile of leaves.

autumn dancers
wind lifts
the last leaf of an oak tree

* * *

Calvados, fiery
Spirit of apples we picked
Before the first frost

* * *

autumn wind--
the leaves await
my son's bicycle

Severe hot and dry weather slashed grain farmers' yields in half. Meghan Elizabeth Jones lamented the sudden loss of a whole village to wildfires in British Columbia shortly after temperatures soared to 50 degrees.

record heat
next day blazing fire
town of Lytton gone

In Marmora, Ontario, John Hamley used pruning shears to cut back the dead growth on a perennial that flowers feathery long plumes of creamy-white tiny stars. Kristjaan Panneman introduces himself as a Dutch poet who goes by the penname "Chevrefeuille" which alludes to goat's beard and honeysuckle flowers.

Old branches

black and ugly

goat's beard blooms

* * *

flares of smoke

hiding the secrets of the field

seeds to sprout again

In contrast to the drought, severe thunderstorms crisscrossed Texas where Melanie Vance decided to put on a tea cozy. JL Huffman hung a white smock out to dry. Anna Goluba watched a hurricane gather clouds.

saving tea

for the soaked scarecrow

showers at the pumpkin patch

* * *

doctor's scarecrow

warding off pandemic

lab coat talisman

* * *

Incoming storm

trembling shadow

scarecrow in the field

6. Discussion

Cobb (2001, p. 1) chided the “now illegal practice of stubble-burning after harvest... field workers set a torch to certain rows, leaving rows of stubble in between to be hunted down by those already on fire.” This poem contains a pun on the different meanings of stalks, which was meant to be humorous.

across the fields of stubble

flame stalks flame

Farmers in Kochi Prefecture, where *yakihata* farming is regularly practiced according to Shimamura (2010, p. 1), have a prayer for the safe escape of creatures such as snakes and insects that goes, “those who crawl shall crawl away, those who fly shall fly away.” In Kielce, Poland, this haiku by Marek Printer counters that opinion; he fears for ground-nesting birds. As does Padraig O’Morain in Dublin, Ireland, who distinctly remembers the horrors he faced as a child on the heath.

burning heath

somewhere in the distance

a pheasant's cry

* * *

burnt furze

I carry a frog to the stream

where it drowns

Sharma (2021) explained that because of political elections in India, burning stubble laws are not enforced and did not punish more than 10,000 farmers who were indicted. It is hoped that the spreading of awareness about crop stubble burning and its effect on the environment will encourage farmers to stop the practice. Punishments for crop residue burning were set to avert an expected spike in air pollution that brings smog every year during the low temperatures of winter. Hayashida (2021) scientifically confirmed that air pollution caused by large-scale post-harvest burning of rice-straw in October and November in the states of Punjab and Haryana in North-West India. Unfortunately, many farmers of the Punjab region were reluctant to accept that they were the main cause of air pollution in Delhi, and there was also disagreement among academic researchers.

7. Conclusion

Farmers, the conservation scientists, and environmental policymakers can benefit from listening to each other through poetry. Additional benefits to conservation science and practice derived from poetry integration could likely be elucidated through additional work on the topic raised in this study (Figure 7). Crop burning has a proven negative impact on regional air quality, affecting public health and wellbeing of hundreds of millions of people in India (Hayashida, 2021). The environmental scientists were unable to convince the farmers to halt the practice. The policymakers there had the ability to enact laws to prevent it, but due to political expediency the practice continues (Figure 8).

Xenia Tran lives in Scotland where one hundred of the two hundred 26th annual United Nations Climate Change Conference delegates pledged to reverse deforestation and cut methane emissions by 2030. Liz Gibbs didn't think these COP26 discussions will help to reduce temperatures in Calgary, Canada.

COP26...

small seeds are sown

to save the forests

* * *

climate conference

the room heats up

with conversations of change

Finally, Milan Rajkumar declared that his work is done. Tanev barbecued shish kebab. Henryk Czempiel

watched glowing lights in the sky after the sun dipped below the horizon. Mona Jordan set fire to her past (Figure 9).

end of the harvest . . .

talking about seasons past

scarecrows in a huddle

* * *

embers in the field

between peppers and onions

the skewered bacon

* * *

straw in the mouth

the twilight sky burns

behind her house

* * *

burnt fields

my life now takes

a new turn

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Appendix



Figure 1

Photograph: Burning stubble from sunset.



Figure 2

Photograph: Soot. A burnt thin path covered with soot between field crops in Ibusuki, Kagoshima. Setting fire to the earth is thought to stimulate green shoots by sterilizing the soil, eliminating pests and leaving behind a nutrient-rich ash to feed the seeds sown by farmers.



Figure 3

Photograph: Burning weeds in early June in Kagoshima.



Figure 4

Photograph: A firetruck was called to closely monitor the burning of fields close to the community.



Figure 5

Photograph: Weed burning in Kagoshima.



Figure 6

Photograph: A great environmental debate: solar panels versus crop burning.



Figure 7

Photograph: Organic farming in Kanoya.



Figure 8

Photograph: Nitric pollution harms the clean air breathed in Healthy Land, Kagoshima.



Figure 9

Photograph: Closer to home: Garden weed burning near IUK campus.