



Al Mezan Center for Human Rights



BRIEFING PAPER

Effects of Aerial Spraying on Farmlands in the Gaza Strip

GAZA, February 2018

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Introduction

This briefing paper is on the Israeli forces' chemical spraying of farmlands in the Gaza Strip. Spraying activities occur within the context of occupation and conflict. The practice affects the livelihood and right to food of the population, while also harming Gaza's fragile environment and decaying infrastructure. Despite the evident impacts on the population's human rights, the Israeli military authorities have rejected calls to end this practice or to be fully transparent about the chemicals used, timing of planned operations, and effects, which could enable civilians to mitigate some of the damage to their property, and possibly to the environment as well.

In July 2017, Palestinians in Gaza saw through the start of the tenth consecutive year of Israel's closure/blockade. The two million inhabitants have endured three major military assaults between 2008 and 2014, with much of the destruction not corrected. In an environment of perpetual closure/blockade—rooted in severely restricted movement of people and goods and marked by chronic lack of electricity, water and sanitation—Gaza's population is left with a limited amount of resources to engage local capacities.

Gaza's farming community experiences the force of Israel's policies and practices that keep in place the closure/blockade of the Gaza Strip. In accordance with these policies, the land within the Israeli-imposed access restricted areas, or "buffer zone", has been levelled, amounting to the destruction of 35 percent of agricultural land.¹ The access restricted areas—officially designated by Israel to encompass the lands within 300 meters from the border, but effectively extending up to 1,500 meters into Gaza's territory—is designated the "high risk" zone, where live fire is used to enforce unofficial movement restrictions.² In this area the farmers plant wheat, oat, melon, and low-growing, leafy vegetable crops, such as spinach, parsley, rocket and chard. This is precisely the area where Israel implements its aerial spraying of chemicals.

The Israeli authorities argue that the chemical spraying is conducted for security reasons.³ The spraying is reported to be creating a lasting change to the chemical composition of entire swaths of arable land, not just weeds, reaching up to 700 meters beyond the designated "buffer zone". Furthermore, the Israeli army's incursions in the area to raze weeds in order to increase visibility raises the question whether additional spraying is necessary, considering that the bulldozers already flatten the area. The consequences of these actions cause economic harm to farmers and the farming industry, and also severely damage the environment and public health, both of which are already in a precarious state due to the prolonged closure/blockade of the Gaza Strip.

This report highlights cases brought forward by Palestinian farmers living in the affected areas whose farmlands, access to food, and livelihoods have been harmed by the aerial spraying. In recognizing that the rights that have been violated in relation to these incidents cannot be viewed

¹ UN OCHA oPt, Special Focus, Aug 2010.

² UN OCHA oPt, One Year On, May 2015.

³ An Israeli military spokesperson confirmed to the magazine +972 in December 2015 that, "[t]he aerial spraying of herbicides and germination inhibitors was conducted in the area along the border fence in order to enable optimal and continuous security operations". Accessed online: <http://972mag.com/gaza-farmers-demand-idf-compensation-for-herbicidespraying/120545/>

in isolation, this report briefly outlines relevant issues faced by other communities in Gaza who are reliant on the land and sea for their livelihoods, as well as the applicable legal framework.

Overview of the practice of spraying and the affected area

Listed below are facts about the aerial spraying of agrochemicals conducted in Gaza's ARA that are based on Al Mezan's monitoring and documentation:

- In the years 2014-2017, spraying operations occurred at regular intervals, usually during two periods of the year, with spraying activities conducted in December/January, seemingly targeting winter crops, and then conducted in April, seemingly targeting summer crops.
- The planes used for spraying fly at low altitude along the border with the Gaza Strip, at a height of an estimated 400 meters above the agricultural lands. The spraying covers wide areas, between 700 to 1,200 meters in length, with wind strength and direction being important factors in the final impact range.
- According to reports by some farmers, prior to every incident of spraying in the access restricted area, the Israeli army burns a tire close to the fence in order to determine the direction of the wind on that particular day. Only when the winds are blowing inland to Gaza is the spraying commenced. This means that only Palestinian crops are harmed, not crops on the Israeli side of the border.
- Agricultural fields damaged by the spraying operations in January 2017 are estimated to expand to 2,848 dunams. The modern agricultural planes have the capacity to spray an area ranging from 400 to 800 dunams in one session. [Note: one dunam is equal to 1,000 square meters.]
- The spraying of agrochemicals poisons deforms some crops and visibly changes their color. This is easily observable on leafy plants, such as spinach, parsley, chard and rocket. Equally so, the dry soil—and beehives in which some farmers keep bees for honey production and plant insemination—easily absorbs the chemicals, altering the composition of the soil, and potentially causing additional damage to the cultivation of crops in the future.
- The spraying is conducted without full transparency as to the substances used, and therefore the extent of the damage caused to the crops and soil is largely unknown. While Israeli authorities confirmed that a herbicide called Oxygal is one of the chemicals used, Al Mezan's request to the authorities for a complete description of all of the chemicals was denied.
- The Israeli authorities assert that "security" is the reason for aerial spraying.⁴ The aim may be to eliminate tall plants growing close to the border for visibility reasons. The destruction of vegetation is also carried out when military tanks and bulldozers enter the border areas and flatten the soil and plants. In the years 2015 through 2017, 141 such incursions were documented.

▪ ⁴ Ibid, footnote 3.

- In order to avoid destruction of their property and produce, the farmers affirmed that the razing activities of the Israeli army in the border areas have forced them to plant crops no taller than 40 centimeters.

Instances of Aerial Spraying in 2017

In 2017, Al Mezan documented several incidents of aerial spraying in eastern Gaza Strip. While most incidents took place in January, two additional incidents were also documented in April. The damage incurred in January 2017 is estimated to have affected 2,848 dunams of arable land. However, in April farmers anticipated that another spraying would take place and grew crops mostly in greenhouses, or covered their plants with plastic sheets. In addition, on the specific day of spraying, the strength of the wind was low, therewith not carrying the chemicals too far into the farmlands.

Following are the spraying incidents documented by Al Mezan during in 2017:

- On 1 January 2017, at 6 am, Israeli planes sprayed chemicals in the vicinity of Al Tufah, eastern part of Gaza City. Based on available information, the spraying affected the area up to 300 meters inside Gaza. The surface of the affected farmlands is estimated at about 488 dunams, and belong to 42 farmers whose crops were all ruined. On the same day, at 6 am, Israeli planes also sprayed other farmlands stretching in parallel to the northern and eastern borders. Wael Thabet, General Director of the Plants Protection and Quarantine Directorate at the Ministry of Agriculture, said there was no assessment conducted because this second incident did not result in substantial damage to crops.
- 1–3 January 2017, at 6 am every day, Israeli planes sprayed chemicals over farmlands along eastern and northern borders of the North Gaza district, leading to partial damage of the crops.
- On 23 January 2017, at 7:30 am, Israeli planes flew on a low altitude along the Gaza-Israel border, beginning from the Kissufim crossing in Middle Gaza up to the north east of Khan Younis towards Abbasan. The planes further sprayed chemicals over Al Shouka in Rafah, about 400 meters into Gaza. On the following day, 24 January 2017, the same process was repeated. The farmers in the area relayed to Al Mezan's field workers that they saw three airplanes carrying out the spraying, affecting 15 farmlands with a total area of 882 dunams.⁵
- 24 January 2017, at 7:30, Israeli airplanes sprayed chemicals over the fields west of the border with Israel in Deir Al Balah, Al Maghazi, and Al Bureij. The spraying affected 111 dunams of farmlands, also causing damage to about 200 beehives that are usually kept on the farms.

⁵ The Ministry of Agriculture asked ICRC to try to find out more information about the type of chemicals being sprayed and when the spraying would be conducted in order to mitigate potential damages. The ICRC stated that the next aerial spraying would occur between 25 December 2016 and 15 January 2017, however, could not provide specific information about the type of chemicals that was to be used.

- 4 April 2017, at 7:00, Israeli planes sprayed chemicals north east of Khan Younis, about 400 meters deep into the Gaza territory. The farmers confirmed to Al Mezan's fieldworker that the spraying went on until 9:30 am.
- 4 April 2017, at 9:30, spraying of chemicals was conducted north east of Middle Gaza, reaching about 200 meters into the Gaza territory, affecting Deir Al Balah, Al Maghazi, and Al Bureij camps. Prior to the spraying, the farmers could see smoke coming from the Israeli side of the border. The smoke is likely used to identify the direction of the wind ahead of the spraying. On that specific day, the wind was not very strong and it did not carry the chemicals deeper into Gaza. In addition, the farmers had anticipated that the spraying was likely to happen, and therefore did not remove the plastic sheets that cover the crops for protection.
- 9 May 2017, at 6:50 am, Israeli aircraft sprayed chemicals over farmlands located 400 meters away from the eastern borders of Al Qarara town of Khan Younis, near Kissufim military site. A number of local farmers reported to Al Mezan's research unit that they had watched Israeli aircrafts spray chemicals over their aforementioned farmlands until 9 am before the aircraft moved more north to the Middle Area governorate. 720 dunams of farmland was affected.

Effects of the spraying on health and the environment

The closure/blockade restrictions on the movement of people and goods prevent the entry of experts, of both scientific and chemical backgrounds relating to herbicides/pesticides, and laboratory equipment that would enable Palestinians in Gaza to ascertain the full human and environmental impact of the chemicals used in spraying. To date, the Israeli authorities have not confirmed an exhaustive list of chemicals used. The findings listed below are mostly results of the testing conducted by the Palestinian Ministry of Agriculture—where the capabilities to test soil are limited.

- In the beginning of 2017, a sample of sprayed chard tested in the laboratory of the Ministry of Agriculture in Gaza showed high levels of a chemical substance known as Oxygal.
- Oxygal, composed primarily of oxyfluorfen, is a herbicide that suppresses the growth of certain plants. Any use of a herbicide containing oxyfluorfen worldwide must follow the strict Material Safety Data Sheet (MSDS) guide, i.e. the information about the exact toxicity of the substance, the way it should be handled, its storage methods, and instructions for use. The MSDS guide issued by the Israeli manufacturer of Oxygal indicates that the substance can cause severe irritation if it comes in contact with the skin or eyes and lists a toxicity degree of level four, "dangerous".⁶ There is a serious risk of harm for the farmers and their families who are unaware of the impending spraying operations of Oxygal by the Israeli forces.

⁶ Tapazol Chemical Works Ltd, (2011, August). Material Safety Data Sheet. Retrieved April 5, 2017, retrieved from: <https://goo.gl/DuFMDw>

- One of the effected farmers suspects that the consumption of grass sprayed with chemicals might have a strong impact on the reproductive health of sheep, making the sprayed areas where the animals dwell and eat dangerous.⁷ He gave the example of an ewe that gave birth to deformed lambs, some of which later died. A case of one miscarriage and one stillbirth of ewes in the spraying-affected area were also suspected to be due to the poisonous effects of Oxygal.
- Oxygal is of a representative field half-life of about 30 to 40 days⁸, making it moderately persistent in most soil environments and thus decreasing the quality of the soil for this period of time.
- A document obtained by health authorities in Gaza and shared with Al Mezan showed laboratory findings for tests performed on samples of sprayed plants on the fifth day after they were sprayed. The findings revealed the presence of about 0.08kg/mg of Oxygal. It was reported that the absorption of this amount of the substance affects both plants and humans. Consuming large amounts of contaminated plants, especially by sheep, can have long-term negative effects on animals, and indirectly on the humans who consume the meat. Sheep meat and dairy products are considered an important source of protein in Gaza, where their consumption is topped only by the consumption of beef.⁹

Impacts on the right to work and economic development

Since the closure/blockade measures started in 2007, Gaza's agricultural sector has sustained heavy losses. The movement restrictions have diminished the possibilities for Gaza's farmers to cultivate land, raise animals and to fish. These industries have been severely hit by a lack of investment, crippling constraints on exports and restrictions on fishing areas. The limited volume of aid that is provided by international donors is undermined by the need to acquire equipment and goods that aren't available in Gaza.

Cultivating land in Gaza requires steady investment, particularly in its irrigation systems, as Gaza's hot summers and porous soil dictate frequent irrigation with clean water. Marred by chronic electricity blackouts of between 12-20 hours per day, the existing and outdated irrigation systems are often ineffective.

The restrictions on the import of goods also affect the kinds of plants that can be grown in Gaza because only a limited number of seedling types are available. Some farmers reported that whereas 20 to 30 years ago their production was primarily focused on the cultivation of citrus trees, now they grow strawberries, melons and leafy plants.

The losses that farmers sustain from aerial spraying make it difficult to maintain production in the affected areas. Farmers have become very reluctant to continue cultivating their lands and are reducing the number of workers they hire. In addition, the aerial spraying has decreased the

⁷ Field interview by Basem Abu Jayy of a group of farmers in the Middle Area who work in lands in the east of Buriij refugee camp. (15 March 2017)

⁸ Tapazol Chemical Works Ltd, (2011, August). Material Safety Data Sheet. Retrieved April 5, 2017, retrieved from: <https://goo.gl/DuFMDw>

⁹ Interview of Wael Thabet, General Director of the Plants Protection and Quarantine at the Ministry of Agriculture, by Basem Abu Jayy. (27 February 2017)

amount of vegetation grown that is used as feed for cattle, which results in increased expenditure for cattle owners, who are forced to buy alternative feed.

The destruction of crops also undermines the international and local organizations projects aimed at helping farmers increase agricultural productivity.

Legal Framework

The Israeli military's aerial spraying of herbicides/pesticides constitutes a violation of both Israeli constitutional and administrative laws, as well as international humanitarian law (IHL) and international human rights law (IHRL).

According to the Fourth Geneva Convention (1949), to which Israel is a party, and additional protocols (1977), which are largely considered customary IHL, parties to a conflict must protect civilians and humanitarian interests during wartime and occupation, must refrain from causing harm or damage to civilian targets, such as agricultural lands, and must respect the right of protected civilians to access food. The Israeli military's spraying of herbicides/pesticides on agricultural crops, which serve as a basic food source, while also taking into account the ongoing closure/blockade of Gaza, constitutes a violation of Article 55 of the Fourth Geneva Convention.

Likewise, Article 43 of The Hague Convention (1907), which is considered to be customary IHL, provides that an occupying power, "shall take all the measures in his power to restore, and ensure, as far as possible, public order and safety."

International law obligates states that violate IHL and IHRL take positive measures, including, for example investigating the incident and, where relevant, prosecuting offenders; offering its victims fair and rapid remedy and reparations for damages caused; granting access to details on the methods by which the nature of such reparations are determined; recognition of and apology for damages caused; and assurances that the harmful acts will not reoccur.

Legal intervention on behalf of farmers

Since 2015, Al Mezan's Legal Aid Unit has been receiving complaints from farmers affected by aerial spraying and was granted power of attorney to initiate legal processes on behalf Gaza landowners and farmers. Al Mezan, Adalah—The Legal Center for Arab Minority Rights in Israel, and Gisha—Legal Center for Freedom of Movement, jointly sent requests for investigation and compensation to the Israeli authorities.¹⁰ Below is a timeline of Al Mezan's intervention on behalf of the farmers:

May 2015: A group of farmers submitted eight complaints to Al Mezan concerning crop-spraying by Israeli forces in the border area in the east of Khan Younis, particularly Al Zanna and Abasan Al Jadeda areas. The complaints comprised information that Israeli aircraft had sprayed agricultural crops in eastern Khan Younis with chemicals from 11-13 October 2014. The total affected land area according to the eight complaints amounts to 81.3 dunams, with the

¹⁰ The initiation of this legal action was covered in +972 Magazine, see "Gaza farmers demand IDF compensation for herbicide spraying" Available here: <https://972mag.com/gaza-farmers-demand-idf-compensation-for-herbicide-spraying/120545/> July, 2016.

farmers' immediate losses estimated at 155,919 ILS (approximately 45,825 USD), plus 71,487 ILS (approximately 21,010 USD) in water costs required for irrigation and replanting of the destroyed fields. The total affected population is 200 persons: the farmers, their families, and the lessors who are leasing farmers the land.

Between May 2015 and June 2016: Power of attorney was granted to Al Mezan, whereupon the Center built legal files of the documents and information concerning each farmer's case that can be used to seek compensation for the affected farmers from the Israeli authorities.

27 June 2016: Al Mezan, Adalah and Gisha filed the farmers' cases to Israel's Minister of Defense, Legal Advisor to the Israeli Government, and the Military Advocate General (MAG). The joint submission called for the opening of an investigation into the spraying of chemicals on farming lands near Gaza's eastern borders with Israel, disclosing information about the types of chemicals used, and providing compensation for the farmers.

31 July 2016: The MAG's office responded. The letter from the authorities included the following points (informal translation from original Hebrew text):

- Notification of receiving the complaint;
- Confirmation that the Israeli military sprays herbicides/pesticides occasionally, for security purposes and according to Israeli law;
- These herbicides include "Oxygal";
- No investigation would be opened for lack of unlawful acts; and
- Cases for compensation should be sought through the Ministry of Defense.

1 August 2016: Al Mezan, Adalah and Gisha issued a joint press release to bring more attention to the farmers' complaints.¹¹

6 June 2017: A new request for compensation was filed to the Insurance and Compensation Section of Israel's Ministry of Defense. On the same day, another request was submitted to Israel's military prosecution urging the launch of an investigation into the spraying of chemicals over farms in the border areas.

27 June 2017: The Insurance and Compensation Section of Israel's Ministry of Defense replied to the request by confirming receipt of the eight complaints and the requests for compensation for damages to crops.

15 October 2017: A reminder was sent to Israel's military prosecution to further urge the opening of an investigation.

16 October 2017: A reply was received from Israel's military prosecution that an operational investigation would be opened.

2 November 2017: The Insurance and Compensation Section notified Al Mezan of its decision not to provide compensation or reparations to the farmers.

¹¹ "Adalah, Gisha, and Al Mezan seek redress for Gaza farmers' losses due to Israeli military spraying of their land" available here: <http://mezan.org/en/post/21468>

Israel's evident unwillingness to hold itself to account and provide reparations in accordance with its international obligations points to persisting pattern of impunity. The authorities have recognized the Israeli military's involvement in the spraying; however, have not been transparent as to the full list of chemicals used or acknowledged the human and environmental health implications. The omission serves as a green light for violations of international law to be repeated, without legal repercussions.

The spraying of chemicals over farmlands has not been suspended. On Tuesday, 9 January 2018, Israeli planes sprayed chemicals onto farmlands to the east of Al Qarara town in Khan Younis at 7 am and onto farmlands near the eastern borders of the Middle Area district at 9 am.

Conclusion

Aerial spraying of chemicals presents a gross violation of human rights as it destroys private property, decimates vital natural resources, and obstructs sustainable development, while denying thousands of people their right to livelihood.

Within the context of the unlawful imposition of the access restricted areas and the methods employed by the Israeli military to enforce it, the aerial spraying of agrochemicals is unjustified. Yet, additional measures are imposed by the Israeli military, including restrictions on the size of the plants permitted in the area and the frequent leveling of land. This puts forward the serious question as to whether the aim of the aerial spraying is to undermine the viability of the agricultural sector and damage the environment as part of the punitive closure and blockade measures, and to add pressure on Gaza's population. The aerial spraying heavily constrains efforts to develop the agricultural activities in the access restricted areas, which constitutes about a third of all arable land in the Gaza Strip.

Al Mezan expresses its deep condemnation of the systematic violation of international law by the Israeli forces and calls on the international community to take effective measures to uphold the principles of international law, and demand cessation of the use of agrochemicals in Gaza.

The relevant international organizations and agencies, the World Health Organization and the UN Food and Agriculture Organization, must take necessary measures to stop aerial spraying of agrochemicals, and set up mechanisms that will help farmers manage their losses.

As impunity for serious violations of international law encourages the repetition of these violations, Al Mezan calls on the international community to actively work towards ensuring access to justice for the victims of chemical spraying.

Based on the above documentation, Al Mezan lays out the following recommendations:

- i. That the issues documented herein be addressed in upcoming reports to the UN Human Rights Council, highlighting the need for appropriate Israeli authorities to be held accountable for aerial spraying and for legal remedy and reparation to be made available to impacted farmers;
- ii. That relevant international actors call on Israeli authorities to immediately disclose information about:
 - a) All of the chemicals used for aerial spraying;
 - b) Locations around Gaza where aerial spraying takes place;

- c) Frequency of spraying;
 - d) Whether any health or environmental impact assessments (including assessments of potential spray drift and transboundary implications) have been done in relation to such spraying, and if so, whether copies can be obtained;
- iii. That relevant actors actively seek opportunities to undertake a visit to Gaza to speak directly with farmers, whose rights to food and livelihood are directly linked to the ongoing violence perpetrated by Israeli forces; and
- iv. That the international community call on Israel to immediately lift the closure/blockade on Gaza, particularly given the devastating impact on the rights to food, livelihood and life, and the corresponding lack of possibilities for remediation of land contaminated by toxic substances and wastes.