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Urban farmers in the Yamuna floodplains of Delhi: Villains or Victims in the discourse on environmental sustainability

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Abstract: Urban farmers in Delhi are often portrayed as 'villains' by central and state pollution control boards, the National Green Tribunal (NGT), land control agencies like the Delhi Development Authority (DDA), as well as to some extent by the scientific community. They are criticised for encroaching on floodplains, disrupting the natural ecosystem—local biodiversity, even the natural course of the river. Targeted for alleged contamination of the river through ecological malpractice and the release of pollutants, their contributions to the local food chain are frequently overlooked. There is a glaring need to understand that these communities are 'victims'. Trapped between tradition and modernity, they find it tough to adapt to sustainable agricultural practices, nor are they skilled enough to move on to other occupations. They are ill-equipped to handle the environmental pressures of climate change induced erratic rain, high temperatures and unpredictable weather patterns which affect crop production. There is little to no consideration to their plight as they suffer from displacement due to urbanisation projects in an ever expanding metropolitan Delhi—a factor which directly affects their livelihood. The central theme of this paper is to analyse the parallel discourses of victimisation and vilification of the community and to gauge a possible sustainable policy solution—incorporating the idea of 'sponge city' in Delhi, thereby aiding both the farming community as well as the environment.

Keywords: Urban farmers, sustainability, Yamuna, floodplains, political ecology, river pollution, climate change, Delhi, anthropogenic, urban agroecosystem, sponge city, carbon footprint.

1. INTRODUCTION

Delhi, the capital city of India, is today one of the fastest growing metropolises—spatially as well as demographically, and reputedly one of the most populated cities in the world. Historically, the city's two most significant geographical features; *one*, Aravali hills and forests and, *two* alluvial deposits of river Yamuna, have shaped the ever-growing human settlements in this sub-region. In recent decades, growing urbanisation of Delhi is part of a particular political economy wherein the urban sprawl is also due to the decline in the quality of economy in the rural parts of India that propels the magnetic pull of urban informal

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economy consistently attracting countryside migrants to the city fold. Among many others one such group of rural Indians migrating to Delhi are those who keep settling, unsettling and resettling on the floodplains of river Yamuna in Delhi. These floodplains have always been dynamic ecological spaces (Baviskar 2011). Their transient nature makes them appear, disappear and reappear consistently in tandem with the seasonal ebbs and flows of the river. Such characteristic of this ecosystem has also built a fledgling relationship between floodplains and people who reside near the banks, notably cultivators, pastoralists, fisherfolks etc. It is notable that burgeoning urban population and expansion of Delhi has also simultaneously accelerated demand for food here which in turn has shaped urban agroecosystem, especially on these floodplains, in the last few decades (Das 2024).

River Yamuna's stretch through Delhi which is merely 1% of the river's total journey is very important for the city's various ecological requirements, including as a crucial source of drinking water supplies to the city dwellers. With the rapid pace of urbanization and growing population, there are grim speculations about the overall city becoming environmentally unsustainable. Just to take river Yamuna's criticality within the Delhi stretch, it has been declared polluted beyond redemption in most of the serious and notable observations especially from the scientific community (National Green Tribunal 2020).

Yet, river Yamuna's floodplains in Delhi have various other unique offerings, including fertile deposits which cater to excellent cultivable and farming spaces. As the river meanders through Delhi it leaves behind 97 square kilometers of floodplains which subsequently also serve as "nature's thermostat for the Capital" (P.A.R.I. Report UNDP 2019). Fact also remains, that over the last two decades, the agricultural cover in Delhi is rapidly falling, primarily due to urbanization, resulting in the fall of agricultural income viz-a-viz the overall GDP of Delhi (*Economy Survey of Delhi 2018-2019*). Given such a situation, the dynamic socio-ecological relationship between urban farmers and the Yamuna floodplains within the 21st century urban riverscape of Delhi needs to be contextualized and analyzed from a newer perspective. In this renewed understanding these urban farming and farmers may be reviewed and reimagined in contrasting imageries such as stabilizers of climate change or as supposed Yamuna polluters and encroachers; or may even be seen as collateral victims of modernity, climatic changes and environmental pollution. It is pertinent because this riverscape is shaped by both the natural course of the river and anthropogenic forces.

While a very small percentage of land in the National Capital Territory of Delhi is currently being used for agriculture, one should not discount the complexities of food security, ecological & environmental challenges and contestations within the discursive domains of modernity and globalization. Urban development plans in postcolonial Delhi have historically marginalized Yamuna farmers and their

agricultural practices, yet there is a strong argument for their integration into the city's future (Follmann 2016, Bhatia & Kumar 2024). On one hand, urban projects are incrementally taking away land available for agriculture; on the other hand, globalizing forces have pushed influx of distressed farmers from rural regions to cultivate these diminishing fields (Kumar 2023). Such a paradox may, perhaps, be justified by availability of better markets (Diehl et al 2015). Access to markets, however, might not be the only cause for such migration. The allure of other facilities like easy availability of inputs, quick transportation facilities, basic amenities and educational opportunities for their children may be other causes (ibid.)

Structured in three parts, this paper deliberates on the tensions surrounding Yamuna floodplain farmers. Section one critiques their portrayal as anti-modern "polluters" in populist state and media discourse. Section two evaluates their systemic marginalization by urbanization, climate change risks, and water pollution. Section three proposes policy interventions for an inclusive, sustainable Delhi that safeguards agrarian communities.

2. AS VILLAINS

It has been appropriately argued and well documented that one of the major rivers of north India, the Yamuna has tragically transformed into one of the world's most polluted rivers in the 21st century. There are also irrefutable scientific evidences which clearly inform that the particular stretch flowing through India's capital city Delhi is the most polluted; a merely 1% of the river's total journey of 1200 kms across northern India (Sharma, M. et. al 2024). Yet, there are ambiguities when sources of this pollution are taken up in popular discourse and accordingly tried to be plugged. The media and judicial pronouncements are, quite often, projecting farmers in the Yamuna floodplains as primary collaborators in environmental degradation. Since 2015 National Green Tribunal (hereafter NGT) has been giving judgments, prohibiting agriculture in the floodplains despite pleas from farmers that they are merely using borewell water for irrigation, and that, farming is their sole means of livelihood. The tribunal contends that Yamuna water is highly polluted with heavy metals and other toxic pollutants and that vegetables produced in such floodplains are highly detrimental to human health. The production and consumption of such produce should be restricted till Yamuna is restored to its former health. This conclusion may be just one of the supposed allegations on the urban farming community. One may examine the allegations on the farming community in two aspects—one, farming practices as consciously or unconsciously detrimental to environmental sustainability, and second, farmers being opposed to modernity and sustainable agricultural practices.

2.1.As Villains to Environmental Sustainability

Urban farmers along the Yamuna floodplains are frequently portrayed as antagonists to environmental sustainability, accused of exacerbating monsoonal flooding, depleting wetlands, and polluting both; the air as well as the river.

Urban farmers have supposedly contributed to the loss of wetlands in Delhi. These wetlands help in maintaining the natural ecosystems and biodiversity in the area. Reports by several state agencies and scientific research suggest that agricultural activities reduce the soil's water absorption capacity, increasing flood risks. Also, cropland expansion—from 164 acres in 1989 to 303 acres in 2019—has been linked to wetland loss (Venktesh R. Subiksha 2020).

It should be noted that though this is merely one of the causes of reduction in wetlands along with concretization, release of waste and other encroachments, yet it cannot be denied that it contributes to environmental degradation. One must also look at competing research which demonstrates that industrial discharge and untreated sewage remain the Yamuna's primary pollutants; a fact underscored when COVID-19 lockdowns briefly restored water quality (Sharma, M. et. al 2024).

Stubble burning by farmers in Delhi, Punjab, and Haryana draws annual judicial reprimand (e.g., M.C. Mehta PIL 1985), though systemic solutions remain elusive as well as other major and significant polluters like motorized transportation, dust and debris from construction activities remain obfuscated (Goyal et al. 2025; Kaur, S. 2024). Pesticides from floodplain farms are blamed for heavy metals like lead in soil and crops as per a NEERI study conducted in 2019 yet industrial sewage remains the primary pollutant as per various other research (Economic Times 2019).

Farmers contest these narratives, arguing that industrial discharge and urban waste dominate Yamuna's toxicity (Kumar 2023). Even among agrarian communities, proximity to the river stratifies blame—distanced farmers accuse riverside cultivators of pesticide runoff. This blame game approach reflects broader tensions between agrarian livelihoods and elite environmentalism. The extent to which urban farmers should be held responsible for the pollution and contamination of Yamuna river water is still up for debate. The difficulty behind measuring the actual source of Yamuna's pollution often leads to a politics of shifting the burden of responsibility.

The Yamuna's pollution should be primarily ascribed to reduced freshwater flow in the river (thus limiting dilution of pollutants), untreated sewage, and industrial waste—not agriculture. During COVID-19

lockdowns, decreased industrial activity and riverside use temporarily improved water quality, underscoring that farming contributes minimally compared to urban and industrial sources. Floodplain crops suffer most from this contamination, rendering the water unfit for irrigation or consumption.

This paradox mirrors Delhi's broader ecological crisis: the disproportionate blaming of marginalized agrarian communities for damage done by unchecked urbanization and industrialization. A sustainable way forward must reconcile these dualities, addressing all pollution sources while redeeming farmers' historical ties to the floodplains.

2.2.As Villains to Urbanisation and Modern Organic Farming

The framing of Yamuna farmers as opponents of urban development and organic farming requires a relook. On one hand they are regularly portrayed as obstacles to urbanization and modern agricultural practices, and yet this narrative oversimplifies their constraints.

Mediatised and bureaucratic framework depicts farmers as resistant to organic farming. Field evidence suggests their reliance on pesticides stems from economic pragmatism, not as normative or ideological opposition. Organic farming techniques and methods, often cost-prohibitive, clash with consumer demands for year-round vegetable variety—a byproduct of urban demands from markets (Kumar, 2023). Aligned to this should be seen sowing of winter crops in monsoon-season which further incentivizes chemical use to meet productivity targets.

Similarly, farmers are vilified as encroachers in legal battles with the Delhi Development Authority (DDA), particularly under the Yamuna Riverfront Development Project. Cultivators from generations find their lands denotified from official records, thus turning them "unauthorized" and "illegal" overnight. Worse happens to tenant farmers, operating under informal tenures. They face abrupt evictions and crop destruction (Singhal 2023, Srivastava, 2024). These conflicts reveal a modernist bias against agrarian livelihoods in favor of urban biodiversity parks, framed in popular discourse as development and progress despite their displacement costs.

3. AS VICTIMS

Environmentalists, civil society activists and the farmers themselves, often focus on the flip side of the narrative, an alternative narrative where the urban farmers are victims. One may explore victimization in two aspects—one, as sufferers of climate change and water pollution, and second, as victims of the overpowering forces of globalization and modernity.

3.1.As Victims of Environmental uncertainties and Pollution

Another side of this farmers' predicament is that most tillers are not actual owners of these tracts of cultivable land on Delhi's Yamuna floodplains. Annually when monsoonal floods inundate this riverscape then tenant farmers report being excluded from crop failure compensation, if any, provided by the government. Moreover, the polluted and dilapidated Yamuna, destroys crops from both without (contaminated irrigation) and within (flood-borne pollutants) (Diehl et al., 2015). Where watermelons once were grown in abundance, blight and stunted growth now dominate (Tomar & Upadhyay, 2020). Follmann (2016) traces healthy cropping history on Delhi's Yamuna floodplain. He cites Punjab Gazette of 1912 and writes *'The cultivated crops include, but are not limited to, tomatoes, eggplants, cauliflower, pumpkins, melons, cucumber, carrots, onions, radish, spinach, coriander and other leafy vegetables. Maize is also common as kharif crop. Additionally, flower cultivation (e.g. roses and marigold) is found in some locations*'. Just about a hundred years later, as of today, the farmers unambiguously claim that the river that once sustained them now poisons their fields. Each year, during monsoonal inundation of floodplains, basic protections like flood evacuation systems and medical aid remain inadequate, reflecting systemic exclusion and institutional neglect of farmers and decline of urban welfare frameworks (Tabrez 2024). Farmers, caught between increasing climatic uncertainties and vagaries and institutional indifference, embody urban agriculture's silent crisis - their resilience weakening each season as megacity Delhi looks the other way.

3.2. As Victims of Urbanization and Modernity

Yamuna floodplain farmers in Delhi, struggle against burgeoning urbanization, biased government policies, judicial indictments and incessantly expanding modernity, often resulting in incremental land dispossession. Kumar (2023) describes this as "de-agrarianization," where over 2,000 hectares of farmland have been lost to urban infrastructure. In the last three decades such massive constructions have taken away floodplains like the Commonwealth Games Village, Akshardham Temple, promenades, parks, Delhi Metro rail tracks, yards and stations, Millennium Bus Depot, Delhi-Dehradun & Merrut Express highways and expanded road networks.

Among farmers too exist further inequalities, wherein small-scale farmers suffer disproportionately while bigger farmers access distant markets via motor vehicles, smaller ones rely on rickshaws, limiting their reach (Tabrez, 2024).

Municipal authorities and DDA have even bulldozed crops under "vegetation removal" drives, replacing them with compensatory afforestation—a wasteful cycle (Kumar, 2023). Farmers also allege corporate-government nexus, citing bans on sugarcane (despite its health benefits) favoring soft drink lobbies (PARI Report 2019).

Media mostly presents lopsided coverage which exacerbates farmers' struggles; sensational reports on "toxic" injected vegetables trigger price crashes, harming entire farming communities (Diehl et al., 2015). Thus, urbanization and modernity marginalize Delhi's farmers through policy, market shifts, and misinformation.

4. Conclusion: Bridging the Gap – Urban Farming as a Futuristic, Just, and Sustainable Vision

The above discussion brings forth that while urban farmers along the Yamuna are partially to be blamed for river pollution, the ethical burden disproportionately falls on them despite systemic neglect and economic uncertainties and precarity. Rather than displacing these farmers and farms, a more sustainable approach would integrate them into urban ecological planning.

Delhi can do much better if we look at recent and successful concepts like 'sponge city' and 'urban agro-parks' which have reimagined and turned around cities in different parts of the world and are proving that agriculture and urbanization can coexist. We must recalibrate our policies to understand and recognize urban farming as an asset, not an obstacle.

The 'sponge city' model—which prioritizes water-absorbing green spaces—complements urban agriculture by enhancing flood resilience and groundwater recharge. This model proves ecology and urbanity can merge. Delhi's Yamuna floodplains, if transformed into agro-parks, could absorb floodwaters better than concrete, can cut carbon emissions by localizing food production and significantly empower farmers instead of pushing them into poverty.

Much better and humane would be that rather than evicting farmers, policies should incentivize organic farming, provide training in sustainable techniques, and integrate agro-parks into urban planning. Examples can be seen in success stories which are fructifying across countries like China, Singapore, South Korea & Germany (Pradhan and Janu 2020).

Urban farming should not be relegated into past as some nostalgia but must be viewed as smart, just, and necessary for Delhi's future. Such an outlook could ensure social justice, food sovereignty, and ecological sustainability, transforming Delhi into a model for humane urban development.

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21. People's Archives of Rural India (P.A.R.I.) Report, United Nations Development Programme. Big city, small farmers, and a dying river. 19 December 2019 at Big city, small farmers, and a dying river (ruralindiaonline.org) iii the following mainstream print media stories provide a glimpse of how farmers are portrayed in populist state and media discourse

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