

From Prohibition to Regulation: Socio-Economic Determinants of Cannabis Production in Orakzai District, Khyber Pakhtunkhwa, Pakistan

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Abstract

Cannabis cultivation has been the backbone of the rural economy for decades in Orakzai District, Khyber Pakhtunkhwa (KP), Pakistan, despite it being prohibited. The region is moving towards regulated medicinal and industrial cannabis cultivation after the enactment of the Cannabis Control and Regulatory Authority (CCRA) Act 2024 and the KP Cannabis Cultivation Rules 2025. However, little empirical research is available on the local community response to this policy shift. This qualitative interpretivist study is guided by Rational Choice Theory and addresses the socio-economic factors influencing cannabis cultivation, barriers to the adoption of legal alternatives, and perceptions of government support. Sixteen purposively selected farmers, agricultural labourers, tribal elders, health professionals, policymakers and law enforcement officials were interviewed using semi-structured interviews. Data were analysed using Braun and Clarke's (2006) reflexive thematic analysis. Braun and Clarke's reflexive thematic analysis was used to analyse the data. Three themes emerged namely, cannabis cultivation as a rational livelihood strategy; structural constraints on the viability of legal crops; and institutional uncertainty due to limited awareness and implementation of the new regulatory framework. The findings indicate that legal reform alone is not sufficient to reduce illicit cultivation without access to licensing, rural infrastructure, livelihood support and effective community engagement. This study adds to our understanding of policy transition and illicit crop economies in marginalised rural settings.

Article History

Received 30 March 2026
Revised 14 April 2026
Accepted 24 June 2026
Published 24 June 2026

OPEN ACCESS

Keywords

cannabis cultivation,
rational choice theory,
Orakzai, alternative
livelihoods, cannabis
regulation, illicit crop
economies, Khyber
Pakhtunkhwa

Introduction

Cannabis sativa has been traditionally grown all around the Indian subcontinent since time immemorial, with evidence of its use found in the Atharvaveda as well as in local festive and medical traditions (Touwn, 2019). In Pakistan, the plant is called bhang locally, while its resins are referred to as charas; it grows wild in the majority of the territory of Pakistan's northwest region. In the province of Khyber Pakhtunkhwa (KP), the districts of formerly Federally Administered Tribal Areas (FATA): Orakzai, Khyber, Kurram, Mohmand, and Bajaur have historically been identified as the largest centers of cannabis cultivation in the country. The estimation made in 2021 in the survey carried out by the University of Peshawar together with provincial departments suggested that the area of approximately 35,000 acres was occupied by cannabis cultivation in these districts, with Orakzai alone covering 28,600 acres (Khyber Pakhtunkhwa Home Department, 2021). It is estimated that the informal cannabis industry in Pakistan

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generates annual revenue of nearly Rs 600 billion for people who lack any other economic opportunities (Shinwari, 2019).

This situation is far from being unique globally. It is estimated that the market for legal cannabis will grow from \$179.32 billion in 2024 to \$397.14 billion in 2029 (Fortune Business Insights, 2024), whereas illegal cannabis growing remains focused on mountainous areas with poor government control – a characteristic that fully describes Orakzai. Previously, for many years in Pakistan, illegal cannabis cultivation was addressed through the Control of Narcotic Substances Act, 1997, according to which production of cannabis was prohibited without addressing economic factors contributing to it. However, all this changed starting from September 2020 when, by the initiative of the federal government, cannabis cultivation under 0.3 percent of THC was legalized in Pakistan. In August 2024, the process of growing commercial cannabis plants for medical and industrial purposes became officially legalized. After that, in April 2025, KP provincial cabinet approved the regulation of the cultivation process, which includes licensing of nurseries, processing, laboratory testing, transportation, and sale of plants.

Orakzai District provides a clear example of the dilemma created by this shift in policy. The district covers an area of 1,538 square kilometres and has a population of approximately 254,356 (Pakistan Bureau of Statistics, 2018). It is mountainous, semi-arid and has well-established tribal societies. Due to several decades of war, militancy and displacement following the 2018 merger of the Orakzai agency into KP, the district lacks much-needed infrastructural development; however, cannabis production has become widespread due to its resilience and economic benefits (Khyber Pakhtunkhwa Home Department, 2021). In this way, the legal reforms expected in 2024-2025 bring the promise of integration into a regulated and taxed industry with potential profits from the USD 25 billion CBD market. However, there is also the threat that the legalisation of cannabis may not reach the small farmers who survived because of the illegal production of the drug.

Statement of the Problem

The persistence of cultivation of cannabis in Orakzai is not only about being an act of criminality but rather a deeply-rooted practice within socio-economic processes taking place in the area. Cultivators make their decision within the framework of the system of necessity for economic survival and lack of any other feasible livelihood options. Legal crops cultivated in Orakzai bring in meagre profits due to high costs of production, lack of irrigation, high volatility of crop prices and inadequate facilities for transport and storage of crops, while cannabis is believed to be resistant, low maintenance and to have existing informal market channels for sale.

Institutional deficiencies additionally contribute to this phenomenon. Inadequate law enforcement, weak governmental presence and lack of agricultural extension services and credit opportunities decrease not only the probability of risks connected to cultivation of cannabis but also the availability of alternatives. Also, socio-cultural factors influence the persistence of this practice – in many villages' cannabis cultivation is practised for a long time and there is no social stigma attached to it, while knowledge about implications of 2024 legislation changes is scarce.

Research Questions and Objectives

The research is based on three research questions:

1. What socio-economic factors contribute to the cultivation of cannabis in Orakzai District?

2. What problems do farmers encounter in alternative cultivation of cannabis; and
3. What is the role of the government in the management of cannabis cultivation to avoid misusing it?

Literature Review and Theoretical Framework

Global and Regional Context

Cannabis production around the world ranges from large-scale business operations to small-scale subsistence agriculture, and in developing countries – South Asia, North Africa and certain parts of Latin America, it is often associated with rural poverty and lack of economic alternatives (Paoli, Greenfield & Reuter, 2012). Millions of small farmers are believed to rely on illicit drug crops, including cannabis, for their livelihood according to UNODC (2019). The comparison of cases provides useful examples of similarities with the situation in Orakzai: the long-term transition of Morocco from an illicit economy existing for several centuries to legal medical and industrial cannabis cultivation (Transnational Institute, 2021) and the illicit cultivation of cannabis in Nigeria in conditions of poor statehood and rural poverty (Giommoni, 2019).

In South Asia, the UNODC (2022) reports that the production of illicit cannabis in India comprises approximately one-third of the total global production, whereas in Pakistan, north-western tribal areas produce large amounts of hashish, with national annual production ranging from 800 to 1,200 metric tons. Almost all South Asian countries, including Pakistan, have adopted a prohibitionist approach despite the cultural affinity of South Asia with the plant (Ahmad, Khan, & Hussain, 2021).

Cannabis Cultivation in Pakistan: From Prohibition to Regulation

However, cannabis production in FATA had developed outside the scope of state regulation. Federal narcotics law had not been implemented in the tribal regions before their 2018 merger with KP (Shinwari, 2011). It allowed cannabis production to be institutionalized as a custom. There have been fast policy changes since that time. Industrial use production was legalized in 2020 with an allowance of cannabis production below the 0.3 per cent THC content standard but without sufficient laboratory facilities in the rural areas to enforce it. The Cannabis Control and Regulatory Authority (CCRA) Act, passed in 2024, has created a federal licensing system including cannabis cultivation, processing, laboratory testing, and sales, with violations carrying fines of up to Rs 1 million to Rs 200 million. Nonetheless, up to February 2026, the authority had not been set up yet, and no licensing processes had begun, which was called "legalization without implementation" by one commentator. Nonetheless, KP had established itself as a leader in the country: the rules of cultivation issued there in April 2025 became the first to be adopted under the new federal law with a provision on registering the existing cultivators and not their elimination (Government of Khyber Pakhtunkhwa, 2025).

Theoretical Framework: Rational Choice Theory

Rational Choice Theory (RCT), as defined by Clarke & Cornish (1985), and elaborated by Becker (1968) and Hechter & Kanazawa (1997), serves as the foundation of the research. According to RCT, acts considered deviant in nature are rational and goal-oriented in the sense that individuals balance expected benefits with costs while making decisions and under circumstances of bounded rationality, which means making decisions in a situation when an individual does not have full knowledge or information and operates under conditions of cognitive limitations (Simon, 1957). If applied to Orakzai, the main hypothesis of the theory would be that

the reason why farmers choose to grow cannabis is not ignorance or a desire to commit a crime, but rather the fact that, for them, the economic gains from growing it always outweigh costs.

Alongside RCT, there are three other lenses through which individual decisions can be seen against the backdrop of structural realities in this study. The political economy of marginality approach looks at the cannabis plant as “a cash crop of last resort” for people living in communities that have been long excluded from access to legitimate economic means because of the neglect and wars conducted by the state. The Sustainable Livelihoods Approach considers the cannabis plant as an important part of the strategic livelihood’s portfolio compensating for the lack of financial, physical and human resources. The third framework used here, agrarian political economy, recognises the role of the illegality of the cannabis plant in protecting Orakzai’s smallholders from the land consolidation and mono-cropping characteristic of corporate agribusinesses.

Socio-Economic Determinants of Illicit Crop Cultivation

Numerous empirical studies show connections between poverty, unemployment, and drug cultivation. In Afghanistan, farmers said that “economic necessity” was their main motivation behind the production of opium (UNODC, 2018); similarly, coca production was concentrated in the poorest areas in Peru and Bolivia (Dion & Russler, 2008). In KP, Hussain (2015) noted that cannabis cultivation was the result of “chronic poverty, lack of employment opportunities, and no social security,” as farmers earned three to five times more per acre cultivating cannabis compared to wheat and maize. Moreover, land size intensifies this trend, as smallholders who work with marginal, rain-fed lands – typical for the Orakzai area – do not have the necessary economies of scale for the profitable cultivation of legal crops (Moreno-Sanchez, Kraybill, & Thompson, 2003; Shinwari, 2011), while cannabis is tolerant of bad soil conditions and low fertiliser.

Challenges to Alternative Cultivation and the Government's Role

In the literature, there are four persistent barriers identified against farmers embracing alternatives through the legal route, and these include economic barriers, such as low profitability and expensive inputs of seeds, fertilizers, and irrigation (Shinwari, 2011); infrastructural barriers, such as poor road infrastructure and lack of storage and processing facilities that make legal crops perishable and economically non-viable (Khan, 2016); social and psychological barriers such as the potential stigma faced by community members who shun an accepted practice (Paoli et al., 2012); and knowledge barriers resulting from lack of agricultural extension services (Hussain, 2015).

As for government interventions, the literature draws a distinction between punitive policies involving eradication, arrest, and imprisonment and alternative development (AD) programs consisting of agricultural assistance, investments in infrastructure, market linkages, financial and social services (UNODC, 2018). The evidence about the former is uniformly pessimistic – eradication without any viable alternative livelihood will only increase poverty, not cultivation (Mansfield, 2011). AD programs have had success whenever properly funded, such as the Thai Royal Project that replaced opium poppy with temperate fruits and vegetables in Golden Triangle region (Renard, 2001), whereas Pakistan’s own efforts at AD in former FATA have yet to take off.

Research Gap

Nevertheless, the Pakistani literature on cannabis has been dominated by works examining the use of cannabis for recreational purposes, the effects on public health, and the efforts of law enforcement agencies while largely ignoring the cultivation aspect and the economic angle, and even fewer studies have actually delved into the decision-making process of farmers (Ali & Khan, 2018). The application of Rational Choice Theory to cannabis farming in Pakistan has not yet been performed in any systematic manner, and no work has analysed the perception of the new laws passed in 2024-2025 in a specific district of the country.

Methodology**Research Design and Philosophy**

In this research project, there will be an application of a qualitative research design grounded in an interpretivist framework where the ontology is relativist and epistemology is subjectivist. Instead of defining the growing of cannabis as an objectively definable activity where there would be a single explanation for why it is grown and what it means to various people, the design is based on the idea that there will be different explanations from an impoverished farmer, a tribal elder, a health worker, and a state government officer, which will be considered legitimate data.

Study Area, Population, and Sampling

The study was conducted in Orakzai district, KP, which was chosen purposefully considering its known role in cannabis cultivation as well as its significance towards the regulatory policies of the province in 2025. Sixteen participants constituted a multi-stakeholder sample and were selected through purposive criterion sampling. They were divided into four groups, which included 7 cannabis cultivators and tenant farmers with at least five years of experience in cultivating and working with cannabis, 3 community leaders and tribal elders who belonged to the Jirga and had at least ten years of residence within the community, 3 health professionals consisting of a medical officer, traditional healer, and public health professional, and 3 policy makers and drug control personnel who were working within the domain of agricultural regulations or narcotics. Although sixteen participants were supposed to be used in the study, the operational limit of data gathering was data saturation, i.e., the point at which further interviews yielded no new theme or code (Guest, Bunce, & Johnson, 2006).

Data Collection and Analysis

The data were collected using semi-structured interviews lasting roughly 40 to 45 minutes, and which were mostly carried out in Pashto for farmers and tribal elders, while those for government officials and health practitioners were done in Urdu or English, depending on their preference. The interview guide that was built on three pillars consisting of baseline socio-economic profile, perception of pros and cons of cultivating poppy and the community reaction to the 2024 Act underwent a trial with two non-sampled participants, prompting the modification of legal questions into narrative form. The interviews were recorded with permission, while manual transcriptions were done where recording was not allowed due to fear of legal repercussions.

The reflexive thematic analysis framework used Braun and Clarke's (2006) six-phase approach involving familiarisation with translations of the interviews; coding the initial themes using NVivo software; searching for potential themes; refining themes based on the entire data set; definition and naming of themes; and writing up the analysis. Codes in the thematic analysis included deductive codes taken from Rational Choice Theory such as cost-benefit assessment and perceived legal risks, along with inductive codes reflecting unexpected themes like honour code among the tribes and psychological link to conventional agriculture.

Ethical Considerations and Limitations

With respect to the sensitivity and quasi-legal nature of the topic under investigation, the participants were made aware of the academic nature of the research, which is entirely unconnected with an enforcing agency, through informed consent. Any identifying information was stripped during the transcription process, and pseudonyms with alphanumeric codes were used instead. Geographic coordinates and sub-clan affiliations of tribes were also not disclosed to avoid re-identification of individuals, and the digital information was encrypted and password-protected. Three limitations need to be pointed out. One is that since the sample is based on purposive sampling involving sixteen people, the study can be considered transferable but not generalizable statistically. The second is that there could be a tendency on the part of some participants to misrepresent their actual income or compliance with regulations due to social desirability or recall biases, which have been minimised through anonymity and trust building via local gatekeepers.

Results and Discussion

Demographic Profile of Respondents

The sixteen participants formed a strategic stratification of the cannabis economy. The first group comprised six landowning farmers and one tenant farmer who had cultivated cannabis for eight to twenty-two years and were the key sources of micro-level economic stories that formed the core of this research. The second group comprised three social leaders – the Jirga leader, a local social influence leader, and a religious leader, providing information about the social and moral economy of cultivation. Three health practitioners (a medical officer, a traditional herbalist, and a community health nurse) formed the third group, while three officials from policy, administration, and law enforcement who are responsible for the regulation of agriculture and implementation of the CCRA Act made up the fourth group.

Theme 1: The Calculus of Survival

The first and the most common finding among the respondents is that cannabis serves the purpose of household survival as opposed to speculative activity or defiance. Regarding the farmer and labourer segment, the financial utility of cannabis is perceived to be completely incomparable to any legal alternative. This corresponds to the literature description of the so-called "survival algorithm" of asset-poor peasants, which presupposes that the primary goal is not profit-maximisation but survival. To illustrate, a tenant labourer from Lower Orakzai stated:

"Orakzai does not possess industrial or manufacturing facilities; our land is hard and infertile. I do not cultivate cannabis out of intention to defy the government but to make sure that my kids would not go to bed starving. If I am a poor fellow with no income, there is no other sensible thing to choose for me than a crop ensuring survival." — Tenant Labourer, Lower Orakzai

A second and closely related incentive is the ability of the informal market to provide liquidity quickly. As opposed to the legal crops, which have to be transported to distant cities' markets, sold through intermediaries, and await payment after purchasing by the government, cannabis is bought at the village

Theme 2: The Structural and Environmental Trap

Theme Two articulates the reason why farmers always feel that changing to legal crops is economically risky compared to being uninterested. For respondents from Upper and Central Orakzai, it became clear that the rugged geography and harsh environment of the district made growing water-intensive legal crops difficult, while cannabis grew well in the same environment. The response below illustrates this clearly:

"Our soil is hard and rock-infested, and water is scarce. We depend completely on unpredictable rain for irrigation. Most vegetables cannot survive more than a few days without rain falling at the correct time. However, cannabis is a tough crop; it withstands drought and requires minimal fertilisation. Why would I invest in wheat that may not survive?" – Landowning Farmer, Upper Orakzai

Secondly, there is almost no transportation infrastructure. Without paved roads and cold storage, perishable legal crops spoil on their way to urban centres such as Peshawar where they could be sold and earn profit. Dried cannabis crops can withstand long journeys over tough road networks and do not even need refrigeration. This is a direct quote from an agriculture department official stating that the cost of transport and fuel may exhaust the total value of legal crops in

A third and more recent concern specific to the post-2024 regulatory environment is what respondents characterised as a "regulation tax": smallholders fear that formal licensing fees, compliance costs, and taxation under the CCRA framework will erode the thin margins that currently make cultivation viable at all, making the informal market the comparatively rational choice even where legal cultivation is technically available. Table 1 summarises these cost–benefit dynamics as they emerged across the dataset.

Table 1. Rational Choice Calculus: Cannabis Versus Legal Alternative Crops in Orakzai

Factor	Perceived Benefit of Cannabis	Structural Cost / Risk of Legal Alternatives	Voice Codes
Environmental	High drought resistance; thrives in hard, un-irrigated soil with minimal care	High water dependency; high probability of total crop failure during dry spells	P-02, P-03, P-05
Economic	Low initial capital outlay; minimal or free seed cost; no dependence on bank credit	High cost of fertilizer, modern tools, and certified commercial seed	P-01, P-04, P-06
Logistical	Buyers collect directly from the farm; no transport or storage cost to the grower	Absence of regional cold storage; high transport cost over damaged roads	P-01, P-13
Market	Immediate village-gate cash liquidity; no payment delay	Volatile public market prices; lengthy delays in state procurement payment	P-04, P-06

4.4 Theme 3: The Information and Trust Deficit

Theme three covers how the respondents perceive the CCRA Act 2024. Most of the respondents were confused over the new legislation. While it had been done at the national level, no official of any government, agricultural, or regulating authority visited Orakzai to discuss the new regulation with the locals. The following quote reflects the institutional void felt by one of the community members:

"We get rumours from social media that the government passed a new cannabis law in 2024, but nobody from any governmental agency has visited Orakzai to make us understand that. We are still cultivating it in fear. As there is no licensing authority in our district, we will obviously continue to sell it to the informal market since we don't know how to join the legal one." – Community Leader and Local Influencer

Based on the Rational Choice theory, such information vacuum increases the "cost" of going legal in a new bureaucratic environment beyond the "cost" of staying in the informal market. A second related finding is that there is a strong desire on the part of the community leaders for the formal involvement of the local tribal Jirga in the licensing procedure.

Table 2. Comparative Perception of the Pre-2024 and Post-2024 Regulatory Environments

Dimension	Pre-2024: Illicit Status	Post-2024: Legal Status (Grassroots Perception)
Legal classification	Strictly illicit under the Control of Narcotic Substances Act, 1997	Legalized for licensed industrial and medicinal use, but widely misunderstood at the local level
Market type	Entirely informal, decentralized, hidden from state authorities	Formal licensing introduced, but perceived as inaccessible to small farmers
Role of the state	Punitive eradication, raids, and criminal prosecution	Regulatory licensing on paper; deep, historically rooted mistrust persists on the ground
Preferred oversight	Informal tribal norms and <i>Jirga</i> mediation	Strong, near-unanimous preference for formal <i>Jirga</i> co-regulation over centralized control

4.5 Synthesis: The Agricultural Transition Gap

Together, these three themes articulate the concept of the Agricultural Transition Gap defined in this study as the friction resulting from the macro-level objective of the state in regulating industrial use and medicinal cannabis cultivation and the micro-level anxieties of the farmers over taxation, licensing, infrastructural and institutional trust. Analysing the situation under the Rational Choice Theory, it becomes evident that the new Act of 2024 has thus far changed the status of cultivation without changing the cost-benefit considerations of the farmers, as the costs of regulation remain high while the benefits of the same seem low for small-scale farmers in comparison to the transaction costs incurred in the informal market. As long as the state does not address these structural costs of cultivation, informal cultivation should not be seen as an act of defiance against the law, but rather as a rational survival response.

Conclusion and Recommendations

Conclusion

The above analysis concludes that cannabis production in District Orakzai is indeed a rational response to socio-economic marginalisation, environmental constraints, and infrastructure deficit as opposed to being an irrational behaviour. Through Rational Choice Theory, the Orakzai cannabis producer can be viewed as a classic case of utility maximiser, where the net utility of immediate liquidity and resilience in the ecology always exceeds the financial risks, logistical issues, and the high dependence on water posed by other legal options. The Cannabis Control and Regulatory Authority Act 2024 is certainly a paradigmatic change in Pakistani agriculture policy, from banning to a state-regulated agribusiness system. However, this study proves that legalisation per se may not be enough to replace the informal economy, which, for decades, has been the only available form of livelihood choice for people there. Unless this shift happens under a strict bureaucratic and enforcement process, this new policy regime can end up alienating the very small-scale producers who were intended to be legalised through this process. For a successful shift, therefore, it will be necessary for the government to adopt the position of a development partner rather than the threat of enforcement.

Policy Recommendations

In light of the empirical results, the following recommendations may be made for policymakers and regional administrators.

- Fill the information gap with focused Pashto-language extension campaigns to clearly differentiate the legal industrial and medical cultivation permitted by the 2024 Act from illegal cultivation under prior drug control laws.
- Create localised license facilitation centres in Orakzai, instead of the current CCRA process centralised in remote provincial or federal capital cities.
- Incorporate the tribal Jirga and the local Maliks into the licensing framework as co-regulators charged with the responsibility of determining real smallholders and cultivation quotas.
- Fund rural development with investments in roads and cold storage powered by solar energy to ensure the commercial viability of legal agricultural produce.
- Make alternative crop varieties available to farmers along with infrastructure for irrigation such as drip or solar pumps (saffron, olive, or nut plants).
- Require inclusive provisions for contract farming in licensing schemes of corporations and pharmaceutical firms to avoid consolidation of land ownership and ensure fair deal for the tenants or smallholders.

Limitations and Directions for Future Research

The current investigation is a qualitative analysis based on purposive sampling of sixteen participants from one district, and therefore, the results are analytically transferable and not statistically generalizable; thus, the readers are advised to construe them as a detailed report of Orakzai's socio-economic environment and not a generalised representation at the national level. The following are three suggestions for future research that can be drawn directly from this investigation. First, there is a need for quantitative cost-benefit analysis to assess the exact net benefits of industrial **use** compared to legal alternatives under various taxation frameworks.

Second, there is a need for longitudinal analysis of the empirical impact of the CCRA Act 2024 in terms of rural poverty, police community relations, and compliance behaviour as the process unfolds. Third, interdisciplinary agronomical and ecological analysis is needed to determine which legal crop alternatives are feasible under Orakzai's rain-fed and degraded land environment.

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