



*Why Chinese Farmers Obey the Law: Pesticide Compliance in Hunan Province,  
China*

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# Summary

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*Pesticide Compliance in Hunan Province, China*

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The goal of this study is to analyze pesticide compliance in China. By doing so, this study seeks to provide a more comprehensive understanding of compliance and some feasible and adaptive suggestions for enhancing pesticide enforcement effectiveness in China. It seeks to benefit from both qualitative and quantitative methods, and uses a larger N qualitative approach which allows for systematic analysis and in-depth exploration.

Chapter 1 begins by describing the weak implementation of Chinese laws and rules, and emphasizes the necessity and importance of a compliance perspective in China that focuses on why the regulated actors obey or break the law. It reviews some recent compliance and pesticide compliance literature in both developed and developing economies. The theoretical and methodological relevance and innovations are presented by illustrating the gaps in the existing literature. Building on all these, this chapter proposes the main research questions.

The first one is: *what are the main factors and how do they interact to shape vegetable farmers' pesticide compliance or violation behavior in Hunan Province in China?* The second one is: *what are promising strategies to coordinate and strengthen pesticide regulation in China, with the aim to increase pesticide compliance?* The third one is: *what are the theoretical implications for regulatory compliance theory from the pesticide compliance study in the Chinese regulatory context?*

In order to define and understand pesticide compliance better, this chapter briefly introduces the background and legal context of the pesticide case, including the legal framework, and the regulatory divisions and responsibilities. Specifically, this study focuses on three aspects to measure vegetable farmers' pesticide compliance: use of types of pesticide, disposal of pesticide containers, and time interval between pesticide spraying and vegetable harvesting. It also concentrates on the county agricultural bureau responsible for enforcing pesticide compliance locally. The last two sections of this chapter deal with research limitations and an outline of the other chapters.

Chapter 2 presents the theoretical framework underlying this study. It operationalizes compliance into three aspects: definition, causality and measurement of compliance. It defines compliance and regulatory compliance, proposes compliance motivations, and explains how to measure compliance in a specific regulatory context. Specifically, compliance is understood here as the regulated actor's conformance with regulatory laws and rules. Eight individual compliance variables were examined: operational cost-benefit calculation, deterrence, descriptive social norms, morals, general duty to obey, procedural justice, ability to obey, and legal knowledge. These variables were classified into three broad categories: amoral calculation, legitimacy and capacity.

Subsequently, chapter 2 addresses the methodology by illustrating the process of case selection and case interview, the specific data measurement, and the coding method. This study employed a stratified sampling method for selecting respondents. Altogether, 119 vegetable farmers in ten villages in three counties of Hunan Province in China were selected, with complementary interviews with another 31 informants or insiders during the case interview period. Three specific case interview phases were done: the pilot study phase, the in-depth case interview phase, and the supplementary material and data analysis phase. The three phases coherently connect with one another, with the preceding phase preparing for and supporting the next. In the pilot study phase, some background information and a refined and structured interview question outline were prepared; in the in-depth case interview phase, a specific dialogical strategy was employed for conducting in-depth interviews with respondents, which enabled the interview to flow naturally; some supplementary materials were collected after the interview period. All the data collected were analyzed by means of

descriptive data analysis, texts and quotes. In addition, a specific crisp-set Qualitative Comparative Analysis method (referred to as csQCA) was employed to analyze how all the variables defined interact to produce compliance. Finally, this chapter examines the vegetable farmers' self-reported pesticide compliance behavior. The majority of them indicated compliance with rules on the use of types of pesticides, but fewer of them indicated compliance with rules on disposal and time interval.

Chapter 3 begins by exploring the first compliance paradigm: amoral compliance calculation. It seeks to examine how the vegetable farmers' perceptions of amoral calculation (including deterrence and operational cost-benefit calculation) affect their pesticide compliance behavior. In this study, the operational cost-benefit calculation analyzes compliance by looking at how the actors make rational amoral decisions on how to use pesticides based on their expected costs and their yields or gross return; deterrence analyzes compliance by examining how the regulated actors are motivated by the costs of threats in relation to punishments or legal sanctions. A subjective utility approach, built on a specific dialogical scheme, is employed to look at how the regulated actors perceive the amoral calculation elements.

Based on the collected data, this chapter concludes that, first, the operational cost-benefit calculation of compliance is almost always positively associated with the vegetable farmers' pesticide compliance, while deterrence has more mixed results, especially with quite a few compliant farmers reporting low deterrence. Second, both elements of amoral calculation were shown to be highly contextual, with clear differences among different vegetable farmers, showing the relevance of the idea of deterrability and the need for a subjective approach to amoral calculation. Some offenders (cooperatives or associations instead of individual vegetable farmers) and offences (use of types of pesticides instead of disposal and time interval) are more susceptible to deterrence. Other factors such as their geographic location, the nature of the vegetables they plant, and their knowledge and experience also contribute to variations in their subjective amoral cost-benefit calculation. However, this chapter finds that context is not everything as even very similar farmers can have different calculations, and thus more individualistic elements such as personality and individual preferences and knowledge may be involved.

Chapter 4 analyzes how the legitimacy of law is related to compliance. The vegetable farmers' perceptions of legitimacy elements, including descriptive social norms, morals, general duty to obey and procedural justice, as well as how such perceptions enable or hinder their pesticide compliance behavior are examined. Specifically, descriptive social norms assume that regulated actors are motivated by what most similar others do (social legitimacy), morals look at the regulated actor's intrinsic moral judgment (moral legitimacy); general duty to obey assumes that regulated actors' compliance behavior is shaped by their belief in the legitimacy of the state power of imposing regulations (systematic legitimacy); procedural justice examines the regulated actors' discernment of the enforcing officers' honesty, the enforcement authorities' procedural fairness, and the overall assessment of the enforcement agencies (procedural legitimacy).

Based on the collected data, this chapter concludes that, in general, there is situational compliance legitimacy. Except for procedural justice, the farmers' indicated descriptive social norms of compliance, morals, and general duty to obey are situational and circumstantial. The three elements of legitimacy are shown to be rather contextual and highly varied among different vegetable farmers in different settings. The variations might be explained by variables including the type of vegetable farmer, the geographic location, the nature of the vegetables they plant, their education level and pesticide training and knowledge, the local economic development, and their personal experience or other relevant experiences. In contrast, the farmers' perceived or indicated descriptive social norms of compliance or morals being positively related to their self-reported compliance behaviors is also a situational issue, in other words, vegetable farmers only report compliance when they focus on either of the two elements; there seems to be no obvious association between their indicated general duty to obey or procedural justice and their reported compliance behavior.

Chapter 5 deals with the third compliance paradigm: capacity. Capacity consists of two elements: ability to obey and legal knowledge. The former assumes that the regulated actors' compliance is shaped by their ability to obey the law; the latter analyzes compliance by looking at the regulated actors' knowledge about the relevant laws and rules. This chapter analyzes the vegetable farmers' indicated financial and technical abilities (using annual family gross income and subjective need of technology as proxies) as well as knowledge of pesticide

rules, and how the indicated capacity elements influence their pesticide compliance behavior.

Based on the systematic data collected from the 119 vegetable farmers, this chapter concludes that, first, there is a moderate relationship between the vegetable farmers' legal awareness and their compliance behavior, with those who indicate high awareness of legal rules more frequently indicating compliance. Moreover, the farmers' different sources of legal knowledge also influence their pesticide compliance differently, with those who indicate obtaining legal knowledge directly from the law or translated by the official source more frequently stating compliance. Second, the vegetable farmers' indications of capacity elements vary. For financial ability, such a variation could be explained by some circumstantial variables like the type of vegetable farmer, the geographic location, the local economic development and the local governmental policies; there is little variation in technical ability (using subjective need of technology as a proxy); the vegetable farmers also indicated varied legal knowledge. They also specified differing legal and extralegal actors who provide legal translation. Such variations could be largely explained by the type of vegetable farmer and the pesticide behaviors studied. Furthermore, vegetable farmers tend to choose legal translators by the trustworthiness and consistency of the sources. Third, no obvious association was found between the vegetable farmers' financial ability (using annual family gross income as a proxy) and their pesticide compliance behavior.

In contrast to the previous three chapters, which examined categorized compliance variables, Chapter 6 seeks to understand better how all the compliance variables interact to shape compliance. Building on csQCA logic and tools, this chapter explores the data in two ways: by discussing the interaction between all individual variables and seeking to explore a path(s) through which variables interact to produce compliance; and by discussing the interaction between the variables when grouped into the ideal types found in the existing literature: capacity, amoral calculation and legitimacy.

This chapter draws conclusions as follows: first, complex paths were found with plural and contingent combinations of variables leading to compliance; second, the csQCA data do not confirm the ideal typical approach. Plural constellations of the three broader categories rather than singular ones were seen. Nevertheless, the ideal typical approach could be used as a tool, to some extent, to simplify complex patterns and understand how variables interact to

produce compliance, as well as figuring out the possible underlying compliance dynamics.

Chapter 7 concludes the research. It starts by summarizing the results. Building on these findings, it presents some key theoretical, methodological, and policy insights. From the theoretical perspective, it concerns the significance of exploring how variables behave, the variation of key compliance variables, contextual and subjective explanations for variations of variables; variations of variables shape variations in compliance and many explanatory paths for compliance. From the methodological perspective, it consists of a larger N qualitative method which features both in-depth qualitative understanding and enlarged representativeness of the respondents, a subjective utility approach and a “dialogic” strategy, and the adoption of the csQCA method to analyze compliance.

After that, some regulatory and policy implications are discussed. In general, a case-based responsive regulation is suggested. Specifically, it should follow a case-specific enforcement strategy, combining a mix of regulatory approaches and engaging with a range of parties. Meanwhile, such combinations and engagement should particularly respond to the contextual and subjective conditions of the regulated actors.

Finally, some possibilities for future research are discussed, such as explorations of the influence of personality and individual preferences on compliance performance, explorations of the influence of much broader social and political contexts on compliance, focusing on a different perspective of pesticide regulators, and extensions of fsQCA logic and technique.