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he Impact of Externalities on  
Farmers' Planting Decisions

# 农户种植业决策的 外部性影响研究

杨志武◎著

现有的农户行为分析都建立在农户独立决策的基本假设上，但是本研究有理由认为农户的生产受限制于外部性而表现出一定程度的集体决策行为。基本的逻辑是，如果农作物生产存在比较强的外部性，即农户的种植方式选择可能是集体决策，连片种植的概率就比较大。江苏和黑龙江的实证研究表明：

(1)集体决策客观存在；(2)集体决策的主要原因在于作物生产的外部性和地块的面积。

 中国农业出版社

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## 序 言

中国农业领域的市场导向改革已经走过了 35 年的历程，与此同时，现代农业经济学的引进和发展也经历了 30 多年的历史。20 世纪 80 年代开始实施的家庭联产责任制赋予了农民生产经营自主权，而随之深入推进的市场导向改革基本实现了农户的独立决策者地位。因此，现代农业经济学基于农户独立决策的经济模型似乎也应当普遍适用。由于农户生产资源和人力资源的差异，现实生活中应当看到比较普遍的多样化种植。但是，现实生活中同一区域小农户连片种植同一种作物、采用同一种技术措施仍然是普遍现象，即同一农户拥有的不同田块可能分布在不同地方而且种植不同作物，但不同农户相邻田块却大多种植相同的农作物。因此，简单采用基于农户独立决策假设的实证分析模型可能不符合实际情况，并且可能导致有偏差的结果。

有一些研究者已经注意到这一现象，并且试图用传统习惯或从众心理加以解释。但是，还没有系统的实证研究来界定并验证传统习惯和从众心理的影响，更没有进一步界定和分析特定传统习惯和从众心理的形成机理和决定因素。杨志武博士提出，所谓“从众决策”的可

能解释之一是技术上的外部性制约了农户的独立决策，迫使不同农户在各自独立但互相连接的小块农田上连片种植同一种作物、采用同一种技术措施，以避免不同时灌溉排涝、施肥和喷洒农药可能造成的损失（外部负效应）。

美国的农场规模很大，一个农场的耕地通常几千亩甚至几万亩。对于这样规模的农户来说，正、负外部效应都可以忽略不计，他们是真正的独立决策者，即决策时无需顾及其他人的决策。中国的农户就不同了，不仅家庭经营的总规模平均只有 10 亩<sup>①</sup>左右，而且通常分割成互补相邻的若干块，不同农户的小块土地紧密相连，任何农户在自己小块土地上的生产活动都必然影响邻近的他人土地。因此，相邻地块的生产决策，包括作物和投入的种类以及各项作业的时间，都离不开必要的协调。这种协调可能通过市场交易，也可能通过某种非市场交易机制。由于交易成本取决于交易涉及的人数和交易物的标的大小，对许多小农大量细小地块形成的地域共同体来说，非市场化的协调机制也许交易成本更低。

杨志武选择这一问题作为博士学位论文的研究内容，并且取得了初步成果。在我看来，深入探讨基本理论的内核和边界，同时用实证的方法加以检验的研究方法更符合理论联系实际的原则，也更有利于全面掌握基

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<sup>①</sup> 亩为非法定计量单位，1 亩=1/15 公顷。——编者注

本原理。杨志武的这一研究仅仅是一个开始，还需要不断深入、完善。我希望杨志武在这一领域继续深入下去，不断取得新成果。

国务院学位委员会农林经济管理学科组组长  
南京农业大学经济管理学院教授、博导



2013年8月24日

## 摘 要

家庭联产承包责任制的实施不仅赋予农民生产经营自主权和独立决策权，而且形成农户承包田块分散、相互插花的分布特征。随着国家对农产品生产和流通的干预逐步减少，农户独立决策者的地位基本上已经得到实现，基于农户独立决策的经济模型似乎也应当普遍适用。因此，由于农户生产资源和人力资源的异质性，并且已有研究表明农户多样性种植可以充分利用相对过剩的家庭劳动力以增加净收入，现实生活中应当看到普遍的多样化种植，不同农户相互插花的田块也应当经常种植不同的作物。但是，在一定的地域范围内，小农户连片种植同一种作物、采用同一种技术措施仍然是普遍现象，即农户的田块插花，但相邻田块种植的农作物并不插花。

很多学者或者认为传统习惯影响农户的种植业决策或者认为农户间存在从众决策的现象，本研究认为所谓“从众决策”的可能解释之一是技术上的外部性制约了农户的独立决策，迫使他们在独立的小块农田上连片种植同一种作物、采用同一种技术措施。某些作物的生产技术措施如灌溉、施肥和喷洒农药对一定范围内的作物有强烈的外部影响，因而需要一定的最小生产规模；如果个别农户的田块面积达不到最小规模要求，就必须以某种方式统一相邻田块的生产决策。与市场交易行为并列并成为对照，某些非正式的相同决策也是农户的可能选择。显然，无论是生产决策外部性的制约强度，还是实现统一决策的交易成本，都取决于农户地块规模与最小经济规模的比例。毫无疑问，成百上千公顷的大农户是真正的独立决策者而不受决策外部性的影响；少数

几个较大的生产者也比较容易通过商业谈判达成一致决策。但是,对许多小农形成的地域共同体来说,非市场化的相同决策也许是交易成本更低的选择。

本研究关注的是农户之间种植决策相似的问题。农户相邻的地块之间连片种植同一种作物的原因是什么?这种种植决策的相似性是农户独立的趋同还是被迫的行为?影响农户之间种植决策相似的因素有哪些?这是本研究要回答的基本问题。

为了验证上述假说,必须要找到合适的研究对象。丘陵山区因地形分割造成的农地分散,种植决策的外部性影响很小;相比秋收作物,夏收作物的生产技术措施如灌溉、施肥和喷洒农药等,时间一致性要求相对较低,农户可能相对独立地做出自己的决策。与此相反,在人多地少、地块相连、无地形条件相隔的多种秋收大田作物种植区域,农户很可能无法独立决策。因此,本研究的目标是在后一种生产条件和农户规模下验证农户的种植业生产是否受限制于外部性而表现出一定程度的相同决策行为。基本逻辑是,如果农作物生产存在比较强的外部性,农户的种植方式选择可能是相同决策,连片种植的概率就比较大。

如果实证研究的结果支持这一判断,以往建立在农户独立决策基础上的农户生产行为分析结果就可能有偏差,今后农户生产行为的研究中应该区分农户决策是相同决策还是独立决策。本研究的结论还可以为实践中如何选择相同决策的形式、提高相同决策的效率提供理论基础。

本研究根据农学知识和经济学知识来构建研究框架,详细分析了影响农户种植决策相似的主要因素。通过实际调研,了解样本地区的作物种类,通过查阅相关书籍及通过农学专家处了解其生长的外部影响或要求,然后对样本地区的作物进行外部性排序,确定影响农户相同决策的因素。用种植相同作物的地块的数量占相邻地块总数的比例来衡量相同决策的程度。

通过对江苏和黑龙江共8个村民小组的实地调研数据的实证



分析，确立了连片种植的主要原因在于作物生产的外部性、地块面积、农户的个体及家庭特征、作物播种面积的比重，其中外部性和地块面积可能是主要因素。外部因素的制约迫使农户在一定条件下进行相同决策。实证分析的结果表明外部性越强的作物连片种植的概率越大，地块面积越小的地区，作物连片种植的概率也越大，这些地方很可能需要并存在某种形式的相同决策。

通过对纠正外部性问题方法的总结比较，认为市场或者法律的途径解决农户之间的纠纷是行不通。通过总结前人的研究及农村实际的案例探讨了相同决策的不同实现形式。农户生产决策的相似性取决于生产条件和市场条件的约束。形成相同或相近决策可能通过独立决策者之间的市场谈判，也可能通过某种权威的方式、非正式的协商方式或心照不宣的传统习惯方式；只要不是通过市场谈判，农户决策的相似性都可以归结为相同决策。本研究总结出目前以下几种非正式的相同决策形式：①指在一定条件下，人们长期形成的一种惯性较强的文化、思维和行为模式，具有强烈的内化作用，可以看成是一种自发秩序成为可能的规范性基础的传统习惯；②具有“血缘性、聚居性、等级性、礼俗性、农耕性、自给性、封闭性和稳定性”的特征的宗族；③代表大多数人的实际利益的科学的合理的政府行政干预；④民主选举出来的、代表村民利益的、国家权力的代理人的村委会；⑤村内文化程度比较高和有一定的经济实力、具有一定规模土地的、在村落中有影响和改变他人态度能力的能人。

相同决策是一定外部约束条件下的一种客观现象。只要存在特定外部约束，作为市场交易的替代，相同决策就可能以某种方式存在与现实生活中。不同地区的农村会有不同的相同决策形式，无论是何种相同决策的形式，都是一种民众参与的形式机构，都是民意的代表。

本研究结果表明，在研究农户行为时也许需要考察并确认农户独立决策的假设是否成立，所研究的具体问题是否涉及相同决

策现象；否则实证分析的结果可能有偏差。若使农民真正成为独立决策者，必须将农户大幅度减少并实现永久性的向城市转移，使土地真正向少数人手里集中，实现土地的规模化经营。

本研究提出进一步的研究方向：对于外部性比较强的决策而言，是否必须明确产权并且通过正规市场谈判或法律程序取得一致或妥协？在交易成本相对高昂的情况下这种正规谈判或法律程序是否可能降低社会总福利？与此相对，不基于产权的某种社会资本是否能更有效的处理生产和投资的相同决策问题从而保持或者提高总福利？两者的比较显然取决于交易成本的相对大小。在农户决策过程中，显然取决于农户的经营规模；农户经营规模越小，正规谈判和法律程序的相对交易成本越高，而社会成本则相对更加有效。

对一这问题的深入研究和全面回答有助于在市场经济导向的产权制度改革过程中，至少在农户的经营面积（规模）大幅度增加、外部效应基本内部化之前，避免过度强调与私有产权相联系的独立决策权，同时改善并充分利用适当形式的不基于经济产权的社会资本，既提高生产和投资决策的经济效率又降低其经济成本（社会资本对经济资本的替代）。

**关键词：**外部性；连片种植；相同决策；市场谈判；交易成本

## ABSTRACT

The implementation of household contract responsibility system not only gives peasants more autonomy and independent decision in production, but also makes the lands smaller, and forms special characteristics of mixing plants. Along with the government's intervening in agricultural product and circulation reduced, the position of peasants' independent decision - making has come true, and the economic model based on independent decision - making seems to be universally applicable. Therefore, the farmer's production and human resource heterogeneity and the existing research about plant diversity shows that farmers can take full advantage of relative surplus labor force to increase the net income of families, which should infer the plant diversity in the general cultivation in real life, the lands used for mixing plant should also be regularly growing different crops. However, in a certain geographical area, the small - scale farmers contiguous planting the same crop, using the same kind of technical measures is an ongoing phenomenon, that is, farmers will arrange different plants in one land, but the adjacent terraces for growing crops are not arranged different plants.

Many scholars think that the traditional practice of farmers or conformity among farmers has impact on peasants' decision - making, but this study suggests that one possible explanation of so - called "conformity decision - making" is that the technical

externality constraints farmers' independent decision - making, which force them using the same kind of technology to plant the same crop in a separate small piece of farmland. The technology of certain crops, such as irrigation, fertilization, and spraying pesticides on crops within a certain range has strong external influences, and therefore requires a certain minimum scale of production; if the farmland area of individual peasant couldn't reach the minimum scale requirements, it must team other farmers, who has the adjacent land, to making a unified decision - making in some way. So, comparing market transactions, some informal the same decision - making are also possible options for farmers. Clearly, both the constraints strength of externalities of the production decision - making and the transaction costs of unified decision - making are determined by the size of household plots and the smallest proportion of economies of scale. There is no doubt that large farmers with thousands hectares lands is truly independent decision - makers and they would not be impacted by the externality of decision - making; a small number of large producers will be easier to reach agreement through commercial negotiation. However, for many small farmers forming a geographical community, the non - market - oriented the same decision - making may be the choice of lower transaction costs.

The paper concerned is that the decision - making in cultivation is similar among farmers. Why the famers grow the same crop in the adjacent plots of land? Is the similarity the convergence of independent farmers or the action forced? What factors impact the similar decision - making in cultivation among farmers? This is the basic problem what this paper studied.

To test these hypotheses, we must find a suitable object for

studying. The external nature of the decision – making has little effect on the decentralized agricultural land divided by Hilly terrain. Compared to harvest crops, the time consistency requirement is relatively low by production technology measures on summer crops such as irrigation, fertilization and pesticide spraying etc. In contrast, farmers may be make their own decisions dependently , who is in the harvest field crops planted area with many farmers having a small, land – linked, non – topographic conditions separated land. Therefore, the objective is to verify whether the farmers' production is limited by the external nature and show a certain degree of the same decision – making behavior or not. The basic logic is that if there is relatively strong crop production externality, the probability of farmers choosing a same decision – making and contiguous cultivation is relatively large.

If the results of the empirical study support the judgment, the analysis result may have a bias in the household behavior in independent decision – making. Therefore in the future the household behavior study need to distinguish the household decision – making is collective or independent. This study conclusion also provides the theoretical basis in the practice on how to choose the form of the same decision – making and improve the efficiency of the same decision – making.

This research will build up a framework according to both agriculture knowledge and economy methodology, detailing the main sources that affect planting decision of farm household. Basing on field research and personal interview, this paper has referred to related professional books, and agri – experts, to get acknowledge about plant categories in sample district, rank

the plant categories in impressionable order, and find out the main sources that affect common decisions. This research will measure the level of common decisions according to ratio of fields that share the same plant to all the neighboring fields.

This research has defined eternity of plant production, field area, features of households and planting area ratio, as the sources that may affect common decision, out of which the former two are considered to be the main factors. Restriction of external factors forced households to share their common decisions. The research has proved that more eternity the plant production involved and less planting area would lead to a more chances that farmers share the same plants.

Comparing solution to correct eternity, this research proved that market or legislation power could not work. Common decision forms have been discussed basing on former researches and practical cases. Similarity of farm households depend itself on production restriction and market restriction. Forming a consistent or similar decision may need market negotiation among independent decision makers, or some authoritative way, or informal negotiation, or a traditional way; and all of the solution aside of negotiation on market, could be considered as market decision. The research concluded existing informal common decision forms as below:

(1) Some kind of traditional behavior or thinking pattern that people followed;

(2) A closet and stable clan that is hierarchical, self-supplied, majoring in agriculture, following a certain custom, living in a compact community;

(3) Rational administration intervention on behalf of most

people's interests;

(4) Administration council selected from the base, on behalf of the farmers, serving as proxy of national power;

(5) Capable man who has strong power over the whole countryside, mostly are rich in land and money, and more educated.

Common decision is a certain phenomenon under eternal restriction. As long as the restriction exists, common decision will exist as a substitute of market dealing. The form of common decision varies in different areas, but the essence doesn't change; whatever the form, common decision is always a mirror of people's willing.

This research demonstrated that empirical result would be deviated as a result of farmer's independent decision, which is opposite of assumption in most of existing research. It also found that would farmers be dependent deciders, farmers should decrease and migrate to urban, so that land would be concentrated into fewer people who could manage the land in a large scale.

This research also proposed a further question: As to decisions with strong eternality, whether they are necessary that a clear property and a regular market negotiation and legislation procedure? Whether they would decrease social aggregate welfare? On the contrary, whether some social capital could work it out in more efficient way without losing welfare? Transaction cost would give a clue: the smaller scale of famers' management, the higher it would cost them to resort to a regular negotiation and legislation.

A further research on above questions will help policy makers to avoid over - underlined independent decision related with

private property, and make a full use of social capital, in order to prove economic efficiency and decrease economic cost, in the process of property regulation reform, at least before farmers' management has been scaled up, and externality internalized basically.

**Key Words:** Externality; Contiguous plant; The same decision making; Marketing negotiation; Transaction cost



# 目 录

序言

摘要

ABSTRACT

第 1 章 导言 .....	1
1.1 问题的提出 .....	1
1.2 研究的目标与假说 .....	5
1.3 研究的结构安排 .....	7
1.4 研究方法、数据来源、技术路线 .....	8
1.5 研究意义 .....	11
1.6 研究可能的创新与不足之处 .....	12
第 2 章 文献回顾 .....	13
2.1 农户行为的经典理论 .....	13
2.2 农户种植决策行为研究 .....	14
2.3 土地规模与农户决策 .....	16
2.4 社会资本与农村发展 .....	18
2.5 评价与启示 .....	20
第 3 章 基本概念界定 .....	23
3.1 外部性 .....	23
3.2 相同决策 .....	24
3.3 相邻地块 .....	26