Mapping of land tenure institution rotating patterns in the highlands

N Mappa¹, D Salman², AR Siregar² and M Arsyad²

¹Muhammadiyah University, Makassar, Jalan Sultan Alauddin, No. 259 Makassar, 90222, Indonesia.
²Graduate School of Hasanuddin University, Jalan Perintis Kemerdekaan, Km. 10, 90245, Makassar, Indonesia.

E-mail: nurdin.mappa@unismuh.ac.id

Abstract. Tenure of farmers in each community has institutional. In general, land tenure institutions regulate the utilization permanently, but there are also institutions that regulate land tenure in rotation. This study aims to map the pattern of land tenure institution in rotation. The study used case study method, with case unit of a District in Gowa District, South Sulawesi Province, Indonesia. The result of the research shows that the institution of land cultivation in rotation is not single pattern but consists of various patterns. There are four patterns of land tenure in rotation found in Tombolopao sub-district, namely inheritance system, cultivation ownership system, management rights purchasing system and cooperation system purchasing of land. Each institutional land tenure rotates, has its own pattern characteristics.

1. Introduction

1.1 Background

The land tenure institutions found in the middle of the farming community are some forms of ownership, rent, capable (profit sharing), and pawning, where by property rights can be individually controlled, and in groups, while rent, pledge and profits result in the transfer of rights cultivation from landowners to others. This institution is a dynamic rural society [1].

The dynamic institutional character has created institutional change, especially in Indonesia after the green revolution, particularly on the field rice [2] institution. Institutional changes then result in changes in land tenure for farmers, due to the incentives for non-agricultural land use, such as industry, settlements, toll roads, which lead to land conversion that implication changes in agricultural production and unemployment due to decreased assets owned by farm households [3, 4]. Even inheritance has also contributed to the fragmentation of land, so the land is narrower, let alone land acquisition through inheritance, is the most common land acquisition, although this condition is still seen from the local level [5]. On the other hand, the availability of suitable land for paddy fields is also increasingly difficult to find, even if there is a need for very expensive investments [6].

In some countries, land tenure has evolved from communal to private parties in private, this is due to the migration of the population in the villages, resulting in private ownership tends to be higher [7], [8]. Specifically Indonesia changes in the use of wetland or wetland conversion have reached an alarming stage. The rate of conversion of agricultural land to non-agricultural land according to the Ministry of Agriculture of the Republic of Indonesia with reference to BPS data for 1998-2002 of about 110,000 ha year⁻¹. Wetland conversions are exacerbated by the adoption of RTRW by district / city governments that are less favorable to agriculture [9].
In general, the land tenure of agricultural land in Indonesia, especially Java within the village community has its own system in the division of land, one of the ownership system belongs to an individual hereditary derived from the land of inheritance, the system of land discovery and communal ownership, from the results of renting and the ability of others (gemeen bezit). While in Button, Southeast Sulawesi, land tenure system based on a local tradition known as parabola that is related to local leaders and rules of play in general agricultural management and land tenure in particular [10].

One of the land holdings that contribute to land fragmentation is the ownership of an individual derived from inherited land, which has resulted in land fragmentation, resulting in narrower land ownership for farmers, an inheritance system for, where inherited land is broken down and distributed to the heirs. This pattern causes land ownership from generation to generation narrower (marginalization of land ownership). Splitting of land ownership at a certain level of land is considered inefficient to be cultivated in agriculture so that farmers tend to sell it or convert it into housing [5]. Meanwhile, the income of farmers from various farming efforts that tends to decrease [11]. One reason is that the land managed by farmers is narrower, resulting in smaller farmer income, this is due to the development of ownership and control of land in the countryside, especially in the agro-ecosystem of dynamic movement and tends towards increasingly narrow land ownership, especially in villages dominantly paddy rice, this implies to the income of farmers who follow the pattern of land ownership [12].

Land tenure in the highlands of Tombolopao sub-district, Gowa regency has its own characteristic compared to other land tenure, which is land ownership of rotating pattern obtained through inheritance system, management rights purchasing system, cultivation system and capital joint land buying system. These four patterns of land tenure do not emphasize private ownership that tends to make the land fragmentation, so that the land in Tombolopao sub-district is not subject to size change (Stagnan), this implies on the economic scale of sustainable farming, furthermore it is expected that the land ownership rotate contribute to the sustainability of agriculture, especially on the economic dimension.

This research will focus on mapping of rotational pattern of land inheritance system, purchasing management rights system, ownership cultivation system, and land purchase relationship as well as institutional arrangement of rotational land tenure with economically sustainable agriculture.

1.2 Research Methods
The study used case study method, with case unit of a District in Gowa District, South Sulawesi Province, Indonesia. Data collection is done through in-depth interviews with landlords, farmers, community leaders, local government. The data obtained are then analyzed and then grouped into matrix in accordance with the required data, which includes data on the rotating pattern of land tenure system, and the production, income and income data that will be used to analyze the relationship of the rotational land holding pattern institution with the economical sustainability of agriculture.

2. Results and Discussion

2.1. Condition of Land Tenure in Tombolopao District
Tombolopao sub-district is located in Gowa District, with a stretch of 251 km² area. This area is partly used as agricultural land that is 4,996 ha which is divided into rice field 4,296 ha the remaining 700 ha is used for cultivation [13].

There are two forms of land tenure institutional in Tombolopao sub-district, which is permanent land tenure institution and land tenure institution in rotation. The institution of permanent tenure regulates private ownership derived from purchases or grants. Institutional land tenure rotating pattern of land ownership in rotation that is divided into four systems, namely land rotation pattern system, inheritance system, land tenure rotating pattern of ownership system obtained through cooperation between landowners and tenants, land tenure patterns rotate the purchasing system of rights acquired through the purchase of management rights to the owner of the right of management and land tenure rotating pattern of land acquisition system, acquired by cooperating in buying land.
2.2. Institutional Land ownership rotation of inheritance system

Rotating land ownership of the inheritance system is the acquisition of land acquired by a person from the inheritance of parents to their offspring, where the land inherited does not suffer from fragmentation, since the land is not divided but the share is the right of land tenure in rotation each year. The pattern of control depends on how many heirs, if the number of siblings is only 2 people then there is a 1:1 rotation pattern is the first year is managed by the first child, the second year is run by the second child, then back to the first child. This cycle continues, until they pass on the right of management, to the next heirs.

This case can be found in the case of Doda Anwaris which manages a land area of 20 acres. Derived from his grandmother named Cendang, then handed on the rotating management rights, to his three children, namely Damin, Racing and Naiman, Damin then passed down the rotating management rights to 10 of his children, Racing passed down his 3 children, and Naiman lowered to his two children. Case of Doda Anwaris being in Damin descent. The rotation pattern of land management is bali tallu taun (a three-year cycle), meaning that in the first year it is managed by Damin descendants, the second year is managed by Racing descendants, and the third year is managed by the descendants of Naiman. Among the descendants of the first offspring, land management rights were also excluded, so in the case of Doda Anwaris got management rights, in the 13th year in a cycle of rotating management. The structure of land tenure can be seen in figure 1 below:

![Figure 1. Rotation Structure of Land Mastery of Rotating Patterns of Inheritance System Case of Doda Anwaris](image)

In the rotation structure of land tenure rotating pattern indicates that the land comes from grandmother named Cendang, then passes the land to the three descendants named Daming, Racing and Naiman to be managed in rotation, even the right of land ownership in rotation of the system of inheritance has been passed down again to the children. so that those who manage the land are now in second generation.

2.3. Institutional Land Rights Mastery Purchase Rights Management System

The rotating land tenure system of the management rights purchasing system is the rotating land tenure pattern that a person acquires by purchasing the management rights of a person who has rotating management rights, which may be purchased management rights, derived from the owner of the management rights of the inheritance system, the ownership system or the derived from the purchase of land system. The case of controlling land tenure of the management rights, management system found by the researcher is the case of Puang Baso, who bought the management rights from Sapia who controlled the rotating land with his brother named Sangkala, so that the continuation of land holding in rotation is Puang Baso with Sangkala. The rotation pattern is bali taun which is one year managed by Puang Baso, one year managed by Sangkala. This pattern can be seen in figure 2 below:
2.4. Institutional Land Mastery Pattern of Cultivation and Ownership System

Institutional land tenure rotating pattern of cultivation and ownership system is the institutional governing land tenure rotating pattern between landowners and Cultivators. Institutional land tenure rotating pattern of ownership system, born as a result of cooperation between landowners and Cultivators. The landowner hands over the land to be managed to become a wetland to the tenants by agreement, after the land is managed to become a paddy field, landowners and tenants will manage the land in rotation. The rotation pattern of land ownership is determined by deliberation between landowners and land tenants, taking into account the difficulty level faced by the farmers when the land is managed, if the land is managed easily, such as land is not too tilted, the land is not too much vegetation to be cleaned then the pattern the rotating landlord is usually 2:1 two years managed by one-year owners managed by Cultivators, otherwise if land is difficult to manage then the pattern of land tenure becomes 1:1 one year managed by the owner of one year managed by cultivators. The provisions of this pattern will be maintained until they transfer the right of tenure to their respective heirs.

The case of land tenure rotating pattern of cultivation system and ownership can be found in the case of M. Saleh, who manages the land in rotation which originated from the cooperation between the landowner and the cultivator, rotating started from the cultivation of land owned by Muma ‘Ma’alang by his cousin named Bombang, then they made an agreement to manage the land that has been worked with the system of bali taun, one year worked by Muma ‘Ma’alang one year worked by Bombang (rotation cycle 1:1). The rights of land management were later handed down to their descendants, Muma Ma’alang lowered the management rights to his son named M. Pious, as well as Bombang lowered the management rights to Sunara, so that the current rotation between Sunar and M. Saleh. The pattern of land tenure structure M. Saleh can be seen in figure 3 below:

![Figure 2. Revolving Structure of Purchase Rights Management System In Puang Baso Case](image)

![Figure 3. Pattern of land tenure structure M. Saleh](image)
The owner of the land originally was Muma 'Ma'lalang then worked on by Bombang, after they had agreed to divide the two management ie one year managed by Muma' Ma'lalang one year managed by Bombang, rotation provisions remain valid after being handed down to their respective children M. Saleh and Sunar.

2.5. Land tenure institution, rotating pattern of land purchasing cooperation system

Land tenure institution, rotating pattern of land purchasing cooperation system, is a rotating land tenure system governing land tenure in rotation, on land purchased by means of sharing between two or more persons. Purchase of land in a joint, done in general because the land to be bought cannot be redeemed itself, so they invite other families, or close friends to share the freed of the land. The approved rotation pattern based on the contribution given, if the funding is 50%: 50% then the agreed rotation pattern, is bali taun (one year cycle) means the first party manages one year, the second one manages one year, if the contribution of the given fund compared to 75%: 25%, the agreed rotation pattern is 2: 1 means the contributing 75% will manage two consecutive years, then the third year is managed by the second party contributing 25%.

Land ownership case of land purchase cooperation system, can be found in the case of Budi, who share the purchase of land with his brother named Bonggole. They both contribute 50%: 50% of the total funds used are IDR. 2,000,000. Land cleared for 10 acres is owned by Jappari. The rotation pattern on Budi's is bali taun (one year cycle), ie the first year of land is managed by Budi, and the second year is managed by Bonggole. This pattern will continue to be maintained until they die and the land is inherited to their offspring. Structural Pattern Land tenure rotating buying system pattern in the case of Budi, can be seen in figure 4 below:

![Figure 4. Pattern of land tenure structure Japri](image)

In figure 4 above shows that Japri as the first landowner has no rotating land management pattern but after purchased by Budi share with Boggole, start the management of land is bred by the pattern of bali taun.

3. Discussion

There are two forms of land tenure institutions at the farm level, which are permanent, and not permanent. The institution of non-permanent land tenure is the tenure of land that is not permanently owned, but the rotation of the land, as a form of local wisdom, which has been passed down from generation to generation.

There are four rotational land holding institutions found in Tombolopao sub-district, namely the rotation of land ownership, the pattern of inheritance, the rotation of land ownership, the pattern of management rights purchasing, the rotating lid ownership institution, the ownership and cultivation pattern and the rotation of land ownership, the land purchase cooperation pattern. The four institutions of rotational land tenure, in each pattern have an equation, each of which spin the land to be managed, on communal members incorporated therein, and has been going on for generations, this is different from the institute found by [2] who found an institutional change, in rice paddy farming in Indonesia after the green revolution. The difference between these four institutions lies in the foundation base, as well as the structure of land tenure, the length of the rotation cycle (bali) depends on the agreement of communal members who have land tenure in each system. The pattern of land tenure is similar to land tenure in Java which is known as communal ownership such as what is conveyed by [14], but there is a difference side because communal ownership by [14] belongs to society in general and used the results for the public interest whereas in the control of land rotation pattern in Tombolopao District controlled only the rights of management and the owner is only communal members incorporated in the institutional, the result is enjoyed by the owner of the land.
ownership rights. Differences in land tenure can also be found elsewhere such as in Buton which has a local land-based holding institution called parabela. Where parabela is a leader of local leaders who are assigned to maintain the land but the management for the community as a result of farming is also for the people who manage [10].

4. Conclusion
The rotation of land ownership in Tombolopao sub-district can be mapped into four patterns, namely the institutional of rotational land tenure, the rotating land ownership pattern of the management rights, the rotating tenure ownership and the land ownership management. Each institution has its own pattern in spinning the management of land and has tangible rules of the game that prevailed from generation to generation and cannot be changed by anyone.

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