

## **Systems' Interaction in Relation to Marginal and High Potential Zones in Madaba Governorate - Jordan**

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### **Abstract**

Marginal and high potential zones in Jordan are the agro-ecological zones that contribute most to agricultural development. Most obviously there is a high pressure on resource use in the marginal zone. For sustainability reasons, linkages to high potential zones could be part of the solution to reduce the pressure. This paper tries to investigate the important socio-economic linkages between the two zones. The results show that the two zones are integrated through different forms of linkages, but the expected roles of most these linkages are still not able to fill out their goals owing to various social, economic, cultural and political hindrances.

### **Problems and objective**

Methods of privatisation, overuse and fragmentation of the marginal land, specially after Bedouins' settlement projects that have been practised over the last decades has resulted in land degradation and low farm income (AOAD, 1979, Nesheiwat, 1987, IFAD, 1993, Doppler 1995). Possibilities for improvement could arise through an effective interaction to high potential zone. The close distance between the two zones would be an advantage to that. Little is known about linkages between the two zones and their relevance to the socio-economic development of the farming systems and the sustainability of resource use. Therefore, this paper aims to investigate the various forms of linkages between the different agro-ecological zones with respect to farm families as well as farms needs.

### **Methodology**

The concept of Farming System Approach is adapted and the farm, household and family are considered as one unit. A survey of about 60 farmers from the marginal zone (marginal mountain areas and marginal rainfed plain areas) and 30 farmers from the high potential zone in Madaba governorate was carried out.

Madaba region was selected since it includes various ecological zones (marginal and high potential zones). The forms of linkages investigated in this paper are land market, water, off-farm work, labour, markets (input and output), financial institutions, research and extension services, and social services (health and educational services).

## Results

No doubt that external relations of the farming systems play a significant role for their continuation. Such relations are an outcome of the farm and household needs and decisions. On farm and household level, the families' decision-making processes are influenced by different external factors and oriented around different internal factors (Doppler 1991). Here, Linkages between the two zones are ranked and discussed below according to their relative importance.

### Land and water resources

*Land resource:* land and land management differ between the ecological zones. Results show that land market for renting in and out is more active in the high potential zone, where soil and climatic conditions are better, thus the risk of crop failure is lower. For this reason, terms of renting land are different in the two zones. In the high potential zone renting land on money base is the dominant, whereas farmers in the marginal zone rent on share base so they share the risk of crop failure. In high potential zone, 57.3% of the average total land used in the season 1993/94 is rented in compared to 16% in the marginal zone. Also, from the total owned land in high potential zone, 39% is farmed out compared to 9% in the marginal zone.

The need for more land is a deriving force for farmers in high potential zone to rent in land in the marginal zone. Also, there is a high tendency for selling land in the marginal to those outside the region. Most of these lands is used in establishing farms with fruit trees or for land speculation. In addition, the ongoing settlement projects for Bedouins in the marginal zone have put more pressure on land resource. Large areas in the marginal zone are under reclaim by Bedouin's tribe (Wajiha Ashairiah<sup>1</sup>). These lands are used for growing low productive crop, mainly barley, as a source of feed. Land for grazing purposes explains the farming systems' interaction. In spring time livestock owners (large flock's size) in the high potential zone move to the rangeland in the marginal zone. In harvest time, Bedouins in the marginal zone move to the high potential zone when land is available. At present, grazing process and movement of flocks, depend more on early agreements of selling grazing rights between livestock owners and crop growers. Therefore the movements of herds to the high potential zone become restricted since the economic criteria regulate the process.

*Water:* One of the reasons why Bedouin travel is the need for water. Exposed water sources in the area are limited and depends on the rainfall. Inter-zonal movement to procure water for agricultural activities is a necessity for farmers in the two zones, regardless the source and the price. Only few farmers in the marginal zone, have access to water sources. As for drinking water, insufficient water quantity from the main pipes is the main problem, therefore farm families in the marginal areas procure their needs from private wells located in the high potential zone. For this reason, developing water resources at micro level in the marginal zone is an essential step to reduce sufferance. Farmers in the marginal zone have a large number of roman wells, which could be a potential, but not fully utilised.

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<sup>1</sup> State lands which are located at the border of the private tribal land

## Off-farm opportunities

Off-farm income found to be an important issue for income stability of the families in the marginal zone. Forty-five per cent of the total farmers in the marginal zone are part-time farmers with off-farm jobs. While only 14.5% of the total family's members have an off-farm jobs, mainly in military services or public sector. Seventy-two per cent of them work outside their villages. From the later, 52.4% are residents. Opportunity to find off-farm job in the marginal zone is difficult in the absence of private investment or jobs that needs specific qualification. Also, the young people are less interested in working in the agriculture sector. Non of the farmers in high potential zone had an off-farm job in the marginal zone. The average off-farm income in the marginal zone amounted to 2800 JD<sup>2</sup> compared to 5145 JD in the high potential zone.

## Inputs and products markets

On the input side, farmers in the marginal zone procure most of their inputs from the high potential zone. Maurer (1995), pointed out that the input markets are found in an average distance of 10-50 km. Livestock owners in the marginal zone lack veterinary services. They get part of veterinary services from the government free of charge and the rest is bought from the private sector located in high potential zone. Feed input is provided by the government through distribution centres located in the marginal rainfed plain areas, but not in mountain areas where the farm families possess the highest numbers, so farmers procure the feeds from Madaba city.

On the products side, vegetable growers in the high potential zone (60.7% of the total farmers) sell their products at the wholesale market located in the capital Amman. For field crops, farmers in the marginal zone sell field crops either to the government or local traders. Some traders from high potential zone buy the products on farm. In the case of animal production, livestock owners with large flock size sell the milk to cheese makers, who are located usually near the villages. Live-animals are sold mainly in the livestock markets located in the high potential zone.

## Financial institutions and Research and extension services

Capital resource and Knowledge are main support to agricultural sector, but it seems that theirs expected roles are not totally fulfilled in the marginal zone.

*Financial institutions*, as a source of capital to farmers, are facing a problem. From the total farmers in the marginal zone, 56.7% were in debt. About 76.9% of them took credits from formal sources, either banks or from governmental institutions. These sources are located in the high potential zone. Among those who were not in debt, about 54% are due to religion consideration, 42% are either in good financial situation or they could manage their life without being in debit and only 9.6%<sup>3</sup> had no collateral. The informal credits still play a role in the marginal zone particularly for those with no access to credits or because of religion.

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<sup>2</sup> One Jordanien Dinar = 1.44 US\$.

<sup>3</sup> The per cent exceeds 100 since some farmers gave more than one reason

*Extension services:* Despite the efforts done by the extension services, the gap between the farmers and the extension people is still wide. According to FAO 1985, in Jordan most extension officers have good education but appear to lack experience in the field work. About 52% of the farmers in the marginal zone had no contact with the extension services. The reasons for that are summarised as follows: 1) forty-eight per cent claimed to have the confidence to work alone without assistance from the extension services, 2) twenty per cent do not want to have any contact with the extension services but gave no explanations, and 3) sixteen per cent is due to far Distances. On the other side, the needs for new knowledge and advice were the main reasons given by farmers who have contacts to the extension services.

## **Labour market**

Usually hired labours are found in labour markets inside the main cities. Labours in such markets are foreigners and characterised by high flexibility and easy mobility within the economic sectors. 'The foreign labour is an alternative which cannot depend on in agriculture sector owing to the continuous movement from one sector to another depending on the wage rate (Snober, 1991). In the study area, most of the labour force is located in the high potential zone. In crop production, about 76.7% of the farmers hire seasonal labour in peak periods. It is found that 40% of total farmers in marginal zone employ permanent labours, 91.7% of them are non-Jordanian. The majority work in the animal sector as shepherds. None of the farmers in the marginal zone worked as hired labour in the high potential zone, unless he rented and used the land for his own.

## **Social services**

The availability of good health and educational services is significant for improving family's standard of living. The marginal zone lacks adequate health and education services. Farm families need to travel to high potential zone (20-30 km) for medical treatment, since neither facilities nor qualified teams exist. Besides, the families that benefit from the medical insurance from the army need to travel to Amman (50-60 km) to receive their medical treatment. About 43% of the total families' members are involved in different educational stages. Students in some villages need to travel 5-6 km on foot or by transportation, when available, to reach their schools. Only few families sent their children to Madaba city to study in better schools.

## **Conclusion**

There is a clear evidence that the farm families in the marginal zone are, somehow, closely linked to the high potential area. This means that the external relations are essential for farming system's stability and thus would enlarge farmer's prospects for more developed systems. Each issue is a part of a whole and help in system's dynamism. However, various socio-economic reasons influence the shape and degree of these relations (for example religion, family members' composition, educational level, farmer-family attitudes, infrastructure and services, political issues, resource endowment on the farm or on the surrounding environment etc). Strengthening these linkages, in favour of family's standard of living, is a necessity for system's development. This can be done by tackling the causes of the weakness points, using proper methods that take into consideration the socio-economic and cultural

aspects of the farm families. A further investigation is needed to measure and quantify the impact of such linkages on the families standards of living.

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