

Full Length Article

Greenhouse Crop Production as a Poverty-alleviation and rural Regeneration regime in the Greater Dezful food bastion of Iran

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ABSTRACT

Greenhouse production is considered as a regime that controls and simulates appropriate environmental conditions required for enhancing crop growth. Intensive tillage and cultivation with a minimum of water use, maximum crop yield per unit area and comparatively higher economic returns, higher employment opportunity and improved environmental and eco-system integrity are obtained. The aim of this paper is to investigate the effects of this innovative regime on economic well-being and prosperity of peasant community in the Ghebleei parish area of the Greater Dezful region in south-western Iran. The methodology involves a comparative analysis of socio-economic conditions of greenhouse and traditional producers. Questionnaires are used to survey a statistical sample, consisting of 258 traditional and greenhouse producers, selected systematically randomly, and using the SPSS and Excel for data analysis and interpretation. Results show that the economic returns and as such, the scope for social development of greenhouse producers are relatively greater and faster than their fellow conventional counterparts. Results further suggest that wholehearted support by respective stakeholders particularly the government and sustainable development of this innovative regime by producers that is environmental-friendly, is the most effective poverty-alleviation approach for the highly-unemployed workforce in rural community.

Keyword: greenhouse production, rural development, ornamental plants, Greater Dezful

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INTRODUCTION

Rapidly-developing urban centers in developing countries of the post-war era have not been without their disbursement for rural communities. The 'zero-sum' legacy of such mushroom-growing style of urban expansion has led to a marked decrease in rural population which led to erosion of their living standard, significant socio-economic inequality between urban and rural communities, and erosion of capital investment in traditional agrarian system of crop-production [1].

The major problems faced by agricultural sector in many of crop-producing communities are principally rooted in unequal resource allocation [2-4].

The rural and urban regions should be considered as both sides of the same socio-economic and cultural development coin, the relationships of which are often intertwined for reciprocal and synergistic effects [6]. In other words, sustainable improvement in the quality of urban life and their general welfare is to a great extent, indebted to, and invariably depends on the prosperity of rural community [7]. For this reason, national development plans, have to consider the rural development as one of their major priorities in policy formulation.

Policies aimed at facilitating effective interactions between rural-urban populations, can become instrumental in producing fundamental changes in socio-economic relations that govern the two

communities. Such approach is bound to yield a 'win-win' situation for both communities. It is on such premises that, development theorists support the argument that the 'urban prosperity train' should pass through rural regions and duly stewarded by such communities. This suggests an inevitable role that the rural community should play in the success of such developmental process [8]. More egalitarian approach to inter-community resource allocation in this development plan therefore becomes inevitable [1, 9]. As the rural economic infrastructure is based on agrarian-related production works, and since the end-products are mainly marketed and consumed by urban population, economic prosperity of the latter is a pre-requisite to rural welfare. All of these point at the need to foster a sound bilateral rural-urban economic relationship that is complementary, synergistic and mutually-supporting [9].

Agriculture sector in general, and rural system in particular, make a major contribution to the GDP, the sustenance of which can ease the dependency of this deprived community on national economy and state subsidies. It could also significantly close the prevailing socio-economic and cultural gulf between two incompatible and dissimilar communities.

Rich and diversified natural ecological systems, consisting of a whole variety of ornamental plants and flours, such as Persian Tulips, Hyacinth and Lily as well as vigorous fruity dwarf trees and shrubs of all kinds, render the Greater Dezful region as one of the prime place of paramount importance for developing greenhouse production in Iran. Despite such resourcefulness, little efforts have so far been made by the agricultural planners to lay the necessary hardware and software infrastructures, to encourage investors to commit themselves to such an innovative and prosperous production regime. This is the case, given the potentials that these rural infrastructures could tap, not only to be competitive nationally, but also emerging as a viable production system with qualities comparable to its international counterparts.

The main greenhouse production potentials are concentrated in the Senjar, Jaateh, Bonvaar Hossain and Qalayeh Towq estates, all along the River Dez that irrigates the greater Dezful region. The latter, has a natural disposition and a unique geographical location in the northern Khuzestan, with an easy access to the northern coastal waterways of the Persian Gulf in the south. The region, also borders Iraq on the west, and is located along the main national trunk road that links it to major cities of Iran in the north. These, coupled with a moderate regional climatic condition, render a whole variety of greenhouse crop production, like roses, flours, peppers, strawberry, tomatoes, cucumbers, aubergine, seedlings and nursery products economically viable. This is made possible with a minimum of energy requirement in winter, during which such activities in most parts of Iran, would be prohibitively costly to contemplate.

Greater Dezful has a second national ranking for production of Maryam flour and third for roses. That, together with exceptionally-cheap production and transportation costs, would place the entrepreneurs in an advantageous place to compete successfully in this potentially-lucrative export market. Based on such considerations, efforts to facilitate sustainable greenhouse development, can have a synergistic, reciprocating and mutually-enhancing economic benefit and prosperity for urban and rural communities involved in the enterprise. As has been the case with their traditional crop-producer counterparts, any measures to encourage and enhance developmental successes in this domain of activities, is bound to bring about a local "green revolution" that can become an agrarian blueprint and prototype model for other regions with similar potentials to tap.

Development can be considered as a multi-dimensional concept that can be fostered through a purposeful strategy aimed at improving the socio-economic and cultural well-being of urban and rural communities [10]. Because of its contribution to the national economy, any developmental policy in agricultural sector of agrarian societies is bound to improve job opportunity, general welfare and quality of life of rural community [11, 1].

Various rural development and regeneration theories, aimed at poverty-alleviation, have been presented following the Industrial Revolution. These theories have consequences for many agrarian societies like the "Green Revolution". They comprised of economic, social, and skeleton-spatial and comprehensive approaches. From such perspectives, rural development theorists have adopted appropriate policies that meet socio-economic and political circumstances of communities involved. Rural policies in the forms of land reform, land consolidation and on-farm modernisation that are considered as the main pre-requisites for "Green Revolution", are a few examples of rural development strategies aimed at poverty-alleviation through community empowering and general economic regeneration and welfare improvement [12, 13].

As the bulk of the Iranian population live in rural areas, it makes sense to focus development on these relatively underprivileged, if not deprived community. It goes without saying that emphasis has to be made on the whole processes involved in agricultural production right along the post-harvest provisions, transportation and handling, storage, marketing, insurance and financing. It would be through such approaches that the full-potentials of greenhouse production can be tapped to ensure sustainable jobs

that can in turn alleviate poverty, foster economic prosperity, and culminate in social justice and resource egalitarianism [12, 1].

The labour-intensive nature of greenhouse production system is quite suitable for the prevailing labour-abundance in rural areas, most of whom seek any type of employment to maintain a decent livelihood. That can handsomely be exploited by various stakeholders, mainly the government agencies and potential investors, whose interests would be best served by low energy and labour costs. The high return on invested capital would ensure production sustainability, job security, higher reinvestment on new technologies, higher productivity and minimum environmental impact are a few examples of the legacies this new production system can have for agrarian communities.

Despite holding to the traditional production system, greenhouse crop-producing regime in the Greater Dezful agricultural zone, takes the advantage of mild winter climate, low-labour costs, minimum energy requirement and much lower irrigation water requirements to produce some of the finest quality products. Its minimum crop water requirement, place greenhouse production renders it a unique system because it depends on a very little amount of available scarce fresh water resources, the availability of which has recently become challengeable by emerging climate change [Mezhkin Nezhad et al 2014]. This has also been made possible with a great saving on the otherwise on-farm operations and tillage associated with conventional crop-production methods. The establishment of greenhouse production system can therefore, be considered as a viable means of mitigating the effects of mass-immigration of 'employment-seeking' rural communities toward urban centres [14, 15].

It is for the aforementioned reasons that any policies initiatives that encourages and supports innovative greenhouse production system can help maintain considerable numbers of the would-be immigrants in their own home villages. This would effectively reverse the positive entropy that could otherwise have deemed the system unsustainable. The negative entropy on the other hand, ensured by the establishment of greenhouse production system, in the most deprived communities, could chain-start a series of developmental cycles. That is bound to foster fundamental socio-economic improvements in rural areas that could in turn, encourage more 'job-creation capital investments'. Success in these domain of activities, could lead to a sustainable growth, secure employment, improved welfare and social security system.

The aim of this paper is to investigate the influence of greenhouse production system on employment opportunity generated by rural development and prosperity of the Greater Dezful agrarian region.

MATERIALS AND METHOD

The methodology involved administering survey questionnaires, making random observations and conducting selective interviews of respective stakeholders including growers, agricultural experts and academics. The statistical sample consisted of tradition and greenhouse growers, randomly selected from the community who engage in farming around the villages in southern part of Greater Dezful, along the River Dez, agricultural and horticultural experts and some research academics. The traditional growers were selected as control group and the greenhouse producers as the test groups. These were then complemented by secondary data obtained from the literature and official records. These were then analysed and interpreted within EXCEL and SPSS analytical frameworks to test the hypothesis.

Increase in the household income from greenhouse production and its job-creation potentials were considered as the economic indices. These, together with social indices related to job satisfaction and educational-cultural gains of the community involved, were taken as the criteria for testing the hypothesis. For this purpose, using Cochran formula, the statistical sample of 258 household heads, representing the community under investigation were selected. Eighty eight of these samples were consisted of greenhouse producers whereas the remaining 170 were among the traditional crop growers. The mean age of the experimental group (80% of greenhouse producers) was significantly lower (less than 40 years) than their control group.

RESULTS AND DISCUSSION

Greenhouse production and job prospect

Results show a significant statistical difference between job creation potentials of greenhouse production regime, compared with their traditional crop production system [table 4]. Given a fixed man/hour/hectare of about 2 in traditional crop-production system, compared with an equivalent of 1874 required in greenhouse regime, then the labour-intensive nature of the experimental group serves well for a community, whose members desperately seek employment for a minimum livelihood. The job-creation opportunity per unit area in greenhouse crop production regime, and therefore, its potential in

enhancing household's earning and the manner in which it alleviate and assuage poverty and destitution, is significantly higher than those in the control group.

Table 4, number of necessary labour force/ha/crop

Crop type	No of permanent workers	No of seasonal workers(day's work)
roses	2	896
maryam	2	1330
Wheat and Corn	0	6

Greenhouse production efficiency and economic return

Results show a significant statistical difference between the performances per unit area for the experimental group, in terms of return on investment compared to those achieved by the control group (Table 5). It was found that the former have a much better remuneration and income for what they do and still more satisfied with their work condition and quality of life that comes with it.

The findings further indicate a greater potential of the unconventional and nonconformist crop-production regime, in fostering conditions necessary for fulfilment of the National Economic, Social and Cultural Development Plans, which successive governments have conscientiously and scrupulously tried to achieve. Results also show that greenhouse production system has a better chance in contributing to the attainment of the Iranian Twenty-Years Plan than would be possible by the orthodox system of grain farming. On top of its economic potentials, the proposed system is also considered as environmentally-friendly crop-production model with significantly less hazards to soil and water resources, on which too little demand is made.

Table 5. Mean net income, costs and net income from crops in question harvested by sample population (Toomans).

costs and income status(Toomans)	conventional	greenhouse
Gross income	33,207,100	55,588,100
Costs	9,357,200	37,611,950
Net income	23,849,900	17,976,150
Net income/unit area(hectare)	2,908,524	8,560,071

Greenhouse production and job satisfaction

Results show a direct linear relationship between those who are actively-engaged in greenhouse production and personal gratification and satisfaction they derive from doing their jobs. There is a statistically significant difference (65.89% for greenhouse workers relative to 13.5% for conventional crop producers) concerning job satisfaction between the two sets of experimental and control groups respectively. It can be implied that the satisfiers in their work settings, are more likely to hold on to their jobs, and as such, try scrupulously to perform with higher efficiency and work consciousness to preserve the quality and yield required to enhance their job security and tenure.

These results were verified by "Cramer's V" test with a less than 0.05 test result. It can be interpreted from these results that the positive psychological satisfaction and gratification the greenhouse production workers get from their job are the right attributes to make them have a sense of belonging to their work setting and as such, to enhance their tenure in the workplace. If that hold, it can be argued that greenhouse production would be a favourable employment for the army of unemployed in rural areas, which is bound to improve the general welfare of the most vulnerable members of society.

Table 6. Job satisfaction of two sets of growers from the population sample

Job satisfaction	Greenhouse producers		Conventional producers	
	Frequency	percentage	Frequency	percentage
Very low	0	0	0	0
low	0	0	68	40
average	29	33	79	46.5
high	58	65.9	23	13.5
Very high	1	1.1	0	

Greenhouse production and educational and cultural improvement

Results show a direct and significant relationship between introduction and institutionalisation of the greenhouse production system and the educational levels of the growers and their households (table7). It demonstrates that relatively higher educated workforce is attracted to the greenhouse production system, as they should have sufficient technical and scientific knowledge for tending a capital-intensive production regime. It further indicates a reciprocal relation between the educational standard of the workforce and the type of cultivating system. It shows synergistic effects of the workforces' educational levels and job sustenance in the greenhouse production, which is verified by the "Cramer's V" tests.

Table 7. Correlation coefficients for experimental and control groups

Correlations	quantity	Significance
Coefficients	0.388	0.000
Kramer coefficient	0.388	0.000
Number of sample population	258	-

Greenhouse production and rural population

Results show that in addition to its economic, social and cultural influence, it has also had a significant impact on the family planning system of the households engaged in greenhouse crop production. Data show a marked fall in the average household population, from average 7 people in conventional crop-producer's household to 5 in nursery workers. This was verified by the Spearman's correlation coefficient (-0.610), which suggests a very close correlation between the two variables of educational and technical competence of the greenhouse workers and the household population number. It further shows an inverse relationship between the educational levels of the growers (as independent variable) and the number of children they are prepared to nurture.

Analysis of data suggests that the per-capita income in the smaller-than-conventional size of the peasant household would markedly improve their welfare and quality of life. It vividly shows a synergistic relation between higher educational level and smaller family size which are mutually-enhancing and mutually-supporting. This spiralling developmental relation is bound to encourage sustainability in the socio-economic and cultural relationships of the peasant community that has to grow and be preserved for macro-development in agrarian societies like Iran.

It can be generalised from this study that introduction of a technology like greenhouse production regime, as an unconventional, unorthodox and innovative agricultural practice, aimed at economic regeneration in deprived regions of the third-world, can have a two-prong effects. It can lead to marked improvement in the living standards of its producers that enhances their purchasing power in a whole variety of social, economic and cultural domains. These are bound to alleviate poverty in the most deprived and vulnerable of all communities. It can lay a sound foundation and appropriate infrastructure for prospering trade between rural and urban communities that can in turn, triggers economic regeneration. If such a process is supported by influential stakeholders, this technology-based, labour-intensive, and innovative production mode, has a great potential in making a significant economic contribution to the GNP [11, 16]. The establishment of such rural infrastructural framework can be instrumental in attracting lucrative investment in regions endowed with a plenty of cheap labour force that would rather remain in their rural communities than flooding the already congested, overcrowded and precarious shanty towns in search of livelihood which is becoming ever so harder than before. It can be a burgeoning and thriving enterprise with holistic legacies that are likely to enhance a cohesive socio-economic and cultural bound between rural and urban communities of the Greater Dezful agricultural grange and food-production silo.

CONCLUSIONS

Greenhouse production regime is shown to have a vast potential in affecting various socio-economic, technical and cultural domains in rural community. The major social attributes of the greenhouse workforce are their younger age, higher educational and technical competence, and their general tendency to adopt innovations relative to their traditional crop production counterparts. This is also coupled with a much improved general welfare as a major attribute of smaller household population. It is on such premises that the children of greenhouse workers have a better disposition and opportunities to flourish and prosper, even in the limited socio-economic and cultural domains of their community. That would in turn, place them in a better position to enjoy the urban privileges, which were hitherto denied. Such positive features can fundamentally change the socio-economic relationships of the rural community and bridge the gap between the haves and have-nots and encourage more investment in a production domain with high potentials for further development and profitability. It is on such grounds

that the innovative technology can be universally used as a modern means of production aimed at enhancing rural employment and subsequent economic regeneration and social egalitarianism.

Another legacy of greenhouse production system is the handsome economic returns on investment it can yield for its producers. This is to do with much higher efficiency and productivity per unit area in greenhouse system, relative to conventional system. It is for these reasons that the findings seem to support the innovative nature of the greenhouse production which while ensures a much improved economic return, it is also considered as an environmentally-friendly enterprise that can be sustainable and prosperous. This is made possible by the appropriate climatic conditions particularly low-energy-demanding moderate winter months, plentiful workforce, and easy access to road, rail and air communication networks that would support sustainable production and economic development.

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