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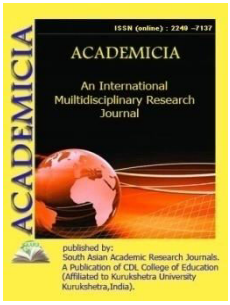

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A REVIEW ON RESOURCE CONSTRAINTS DUE TO RAPID POPULATION GROWTH

Dr. Saurabh Tyagi*; Dr. Alpana Joshi; Dr. Sachin Kumar*****

[1,2,3]School of Agriculture Technology and Agriinformatics,
Faculty of Engineering and Technology,
Shobhit Institute of Engineering and Technology,
(Deemed to be University), Meerut, INDIS
Email id: [1]saurabh.tyagi@shobhituniversity.ac.in, [2]alpana.joshi@shobhituniversity.ac.in
[3]drsachin.kumar@shobhituniversity.ac.in

ABSTRACT

The management of population growth is a heated issue in different nations, since population increase has an impact on the availability of resources to the people. Population increase has not only restricted the utilization of existing resources, but it has also posed a threat to the country's overall development. Furthermore, it places additional strain on the country's agricultural industry. Many nations across the globe are experiencing fast population expansion, necessitating the immediate implementation of rules for food security. However, there are certain limitations that must be addressed before the rules for food security can be implemented. Aside from that, fast population expansion causes one nation to become reliant on another for food exports. This article was prepared to investigate the issue of food shortage as a result of population expansion as well as agricultural development in order to boost food production and make the nation self-sufficient in food resources.

KEYWORDS: *Agriculture, Employment, Population Growth, Rapid Growth, Scarcity of Food.*

1. INTRODUCTION

The world's population has not been constant, fluctuating by a little or large margin depending on the circumstances. These circumstances change from time to time. The population growth rate was not as great 20 to 30 years ago. Many years passed during which population growth was negative and the average number of births per year was fewer than the average number of deaths. The cause for this was the human race's technological exposure. In reality, medical facilities

were not very adequate at the time, and more people died as a result of the absence of them. Medical facilities have improved throughout time, and therapy for many incurable diseases has been discovered, which has shown to be beneficial in saving people's lives[1]–[3].The realization that the world is on a reasonably smooth road to a near-stationary civilization has an impact on the debates over population, development, and sustainability. The notion that the trend toward ever-increasing population, termed "population explosion," presents a danger to our health and lives is losing hold with the general public. The implications of demographic shifts toward low fertility and population collapse have been a point of contention. These ideas are meant to be the most common developing flaws that will ultimately appear everywhere.

By raising the rate of food grain consumption, population expansion causes food grain shortage. This is an issue that has to be addressed with zeal. It is self-evident that steps should be taken to curb population expansion while also assisting farmers in increasing output in order to meet the impending food grain shortage. Leaving aside the broader topic, one may ask whether these worldwide demographic predictions indicate that agricultural issues linked to the "population boom" are losing a lot of their relevance. The rise in population and scarcity of food grains can be addressed by a concerted effort by various governments, as it is clear that the problem of agriculture and population growth is not a local issue, but rather a global one that requires collaborative action from various governments around the world. For a number of reasons, the basic response is that these issues are still extremely relevant. The idea that many civilizations, many of which have inadequate food intake levels, will be able to sustain rapidly growing populations for a long period is especially significant.

Figure 1: Cyclic Relationship between the Income, Food and Living Standard of an Individual

Figure 1 depicts the connection between a person's diet, income, and level of life. In many developing nations, the difficulties connected with population expansion will continue to outweigh those associated with fertility declines below replacement levels. The nations impacted have a lot of control about how they cope with the reductions. Of course, it's also important to note the advantages to the nations affected by these reductions, as well as the environment as a whole, such as decreased environmental impact and urban congestion.Many of the nation's presently experiencing population growth have poor agricultural infrastructure or skills that are difficult to utilize because to geographical remoteness from population centers, insufficient infrastructure, high disease incidence, or other reasons. Agriculture plays an important role in their ecosystems, accounting for a substantial percentage of their GDP and exports, as well as a significant number of their population. Those countries will be doomed to a life of poverty if future population increases at the same pace as projected by demographic projections, and urbanization or mass migration to other countries provides no more outlets than indicated by demographic forecasts. The names of the nations considered for the review may be found in Table 1.

For the last 50 years, the 18 nations with the highest population growth rates have been studied. The average annual growth rate has been determined to be 1.8 percentage points or slightly higher. The 1.8 is regarded the limiting criterion for population growth, since growth rates more than 1.8 are considered large, while growth rates less than 1.8 are considered low. In addition to socioeconomic factors, the demographic features of the chosen nations have been linked to food security. According to historical statistics, at least 14 nations have failed to meet the goal of perceived food grain consumption in the previous four decades. A male's daily calorie need is 2500 kcal, whereas a female's requirement is 2200 kcal. Natural crop scarcity in some of these countries does not speak well for agriculture's capacity to reach its full potential and maintain even currently inadequate levels of nutrition. For example, a research finds that the food security situation in Ethiopia is likely to deteriorate despite their positive predictions, and that "the population environment agriculture nexus in Kenya seems to have fallen under the sustainability thresholds."

It is debatable if the projected population increase and ever-increasing rural population of these nations can be sustained. This implies that the assumptions behind the population forecasts (rates of change in fertility, mortality, and, in particular, internal and external migration) will need to be reviewed. There is a significant need to combine the demographic forecasts' theoretical assumptions with additional factors that show the difficulties many of these nations have in maintaining populations that are multiples of their present population size. The focus is on finding apparent discrepancies between demographic projections and improving agronomic potentials, which are essential for development [4]–[6].

2. Characteristics of Agriculture-Dependent Countries with High Rates of Population Growth

18 nations' demographics are projected to increase by a factor of at least 2.6 (Ethiopia, Iraq) and up to just over fivefold in the five decades running up to 2050. (Uganda). Naturally, not all of them are confronted with the prospect of having to depend on their own agriculture for food security and development. A country's capacity to develop is not limited by its ability to produce soil. Japan and many emerging nations with mineral riches are two examples of countries with

low agricultural resources but sufficient food consumption and nutrition levels. Several countries in the Middle East and North Africa are among the latter, where oil is the basis for most of the economic growth that has driven food consumption, as well as the resources to fund large increases in food imports to meet that need.

Yemen, a country with little natural resources and one of the world's fastest-growing populations, relied largely on emigrant remittances to finance huge increases in food imports. However, a case could be made for 12 of the 19 countries in the upper part of the graph that, at this stage in their development, they have insufficient choices and must rely solely on their individual agriculture to increase incomes, food supplies, and provide a foundation for their wider economic growth. Their dependence on agriculture for financial support surpasses 33% of GDP, which sets them apart from the rest of the world. Due to their wealth of natural resources, the other six nations are considerably less dependent on agriculture[7].

The following qualities may be found in these 12 countries:

- They had a high incidence of malnutrition and a low or extremely low per capita food consumption.
- They all score poorly on the Human Development Measure (HDI), a composite index that considers factors including income, life expectancy, and literacy.
- Non-agricultural assets, such as ores and reserves, as well as fuels, do not generate substantial rents.
- They are mostly landlocked, which is a big disadvantage when assessing growth possibilities and potentials.
- They are all classified as Least Developed Countries (LDCs) by the United Nations.
- Agriculture accounts for 30 to 56 percent of gross domestic output in these countries.
- A significant part of the population lives in rural regions. Furthermore, their rural populations are projected to grow, with the rural populations of certain nations more than tripling between 2000 and 2030. These two variables suggest that, barring unforeseen circumstances, the nations' total growth and poverty reduction will be heavily reliant on rural particularly agricultural development. As a consequence, in view of anticipated fast population increase, I consider whether their agricultural resources are sufficient to sustain output growth rates compatible with improved food security.

3. AGRICULTURE-RELATED CONSTRAINTS TO ATTAINING FOOD SECURITY

Examining the nations' water resources, which have the capacity to produce crops under both rainfall and irrigation circumstances, provides a preliminary look. Estimates of these possibilities are based on Food and Agriculture Organization (FAO) and Ecological Zones studies, as well as FAO's irrigation potentials. On a national basis, most nations are still a long way from reaching their agricultural boundaries. However, it's essential to note that national forecasts implying no increased resource scarcities may coexist with severe scarcities at the local level serving as effective development restrictions. Local scarcities are difficult to overcome even when resources from other areas of the nation are available. Chad and the Democratic Republic of

Congo (DR Congo) both have ample land resources in relation to their current and projected populations. Despite the fact that a significant part of this land is covered in forest (closed forests comprise 50% of the nation's total land area), the latter country has classified 195 million hectares (or 82 percent of its total land area) as suitable for producing rain fed crops in various degrees.

These findings suggest that, even if the Congo DR's population more than triples to 177 million by 2050, agricultural scarcity will not be a barrier to the country's severe food security problems. Demographic change will continue in agricultural growth when the capacity for doing so exists if it is consistently followed by poor possibilities for other sources of output, as has been the case in the past. The enormous mineral resources of the nation, of course, offer other development possibilities, decreasing the country's dependence on agriculture[8].Countries with high rates of population growth and a high dependence on agriculture will have a distinct future. Burundi has the lowest land-to-population ratio. Niger's agricultural growth potential is similarly restricted, a situation that would rapidly deteriorate if the projected population increase of 2050 happens and no other sources of demographic pressure on agriculture are found. Only approximately 13 million hectares (12 percent of the country's total land area) are suitable for rain-fed agriculture, with 45 percent being moderately suitable.

Local agriculture will struggle to provide food, employment, and profits for such a large population while also encouraging general development due to Niger's low agrarian resources and severe agro-ecological environment. Alternative growth options, on the other hand, that would significantly reduce dependence on agriculture are rare, as the country's poverty-reduction plan acknowledges. Niger's uranium-producing industry aided expansion in the 1970s, but development stopped when export prices fell and agriculture was damaged by recurrent droughts. Niger is classified as a "Low-Income, Severely Indebted" country by the World Bank. We'd need a more accurate predictor if we were to use agro ecological capabilities as a proxy for assessing the compatibility between population predictions for nations on the list and the development potential of their natural crops. The closest we can come to such an estimate is to devote each country's land, apart from water contributions, toward future food crop growth. Because it comprises of culturally homogeneous food crops, the cereals group (wheat, coarse grains, and milled rice) lends itself to this role as a yardstick (grains).

Cereals are an essential component of an individual's diet; cereals are also the most significant food intake for children aged one and above, since their increasing age need more food and energy in addition to breast feeding. It has been showing the projected development of possible dairy products in 2050 based on two assumptions: (a) cereals will occupy the same percentage of total farmland suitable for agricultural production as they do now, and (b) crop harvests in 2050 will be double that of today. The development of these dependent characteristics over the past four decades may also be used to determine the validity of these theories. Only two of the 10 nations with data saw yields almost double, with the other seven seeing little to no increase and Niger seeing a decrease. As a consequence, although a doubling in the next 50 years is a bold forecast, it is well within the realm of technical feasibility based on present technology. The theoretical capacity of land available for grain production seems to be great in certain nations, moderate in others, and non-existent in others.

As a consequence, even the most optimistic forecasts show that four nations will not be able to maintain their present per capita production levels in 2050. Given the significance of cereals in their diets, this inability presents a serious danger to Afghan and Niger grain output. In Burundi and Uganda, where vegetables account for just 22–26% of calories while cassava, sweet potatoes, plantains, and mushrooms account for the bulk of the remainder, it may be less important. The other seven nations, on the other hand, have the potential for higher per capita demand, which is likely to be far above any potential per capita consumption in 2055. It's astonishing to see how much manufacturing potential exists in nations where food security is a problem and agriculture is mainly semi-arid and susceptible to weather fluctuations. This result supports a more in-depth examination of the data, in addition to the assumptions that were used to estimate production potential.

Naturally, many nations' inability to improve land productivity in the past does not preclude them from doing so in the future. The agriculture sector's cornerstone has been yield development, which has resulted in increased agricultural output in most countries that have completed this evolution, particularly those with significant land limitations. Supportive policies, particularly those that supported the age group and technical advances, as well as laws or other circumstances that provided economic incentives for their adoption, seem to be at the core of such achievements. The availability of agro-ecological circumstances (e.g., the capacity to expand irrigation) that enabled for the genetic potential of high yielding crops arising from agricultural progress to be utilized was, of course, a worthy contender.

It is unclear because any kind of synthetic or endogenous “Bose up consequence” of maintainable intensification will play a major role throughout levitation agricultural output at rates directly associated with the challenge posed by fast-growing populations in the absence of substantial even use and agro ecological potentials. The data, particularly from the literature, is divided when it comes to resource depletion and soil deterioration as a consequence of economic pressures in rural regions. Existing research indicates that a plethora of other factors, such as infrastructure development, marketplace access conditions, and supportive policies, play a role in determining whether or not increasing population pressure is related to long-term increases in land production success or disappointment.

Johnson referred to a "political Bose effect." Apart from policy-supported deepening, this provides as a connection between the ideas of endogenous and policy-supported deepening. He argued that rising population densities prompt politicians to place a greater emphasis on agricultural research, with the outcomes leading to better agricultural production. It was attempted to verify this hypothesis, and it was found that rural population numbers and national agricultural research system investments in plant breeding had very positive correlations. His findings for Sub-Saharan Africa, on the other hand, apply to the whole continent.Given the significant difficulties in creating yield-increasing genetic innovations appropriate for dryland agriculture in areas with sometimes low and variable rainfall, it's impossible to say if they'd apply equally to the agro-ecological conditions of most of the nations examined here. It's no wonder that crops suited to these conditions are often referred to as orphan crops owing to the lack of attention they've received via traditional farmer support networks. This isn't to argue that properly focused plant breeding efforts can't assist impoverished regions achieve significant improvements in food security. In Nigeria and Ghana, the effectiveness of enhanced high

yielding cassava cultivars in increasing food consumption is instructive. At the same time, the ability of contemporary biotechnology to overcome agro-ecological limitations is well acknowledged.

Concerning property, significant concerns have been expressed that the land area identified in the FAO/IIASA research as having rainfall-fed agricultural production potential is overstated and/or will not be able to be farmed in the near future. It has been suggested that land having agronomic promise but not yet under cultivation is being systematically exaggerated. As the severe difficulties with settlement and transmigration systems in Ethiopia and elsewhere have demonstrated, land accessibility, illness prevalence, and socio-political variables are possibly more important concerns. The widespread cultivation of moderately suitable and crop failure regions in Ethiopia, as well as recurrent food shortages even during boom crop years, would lead one to assume that the issue is mainly caused by a severe national land scarcity. In the lowlands, however, there remain huge swaths of unused land that may be developed. “There are places where basic infrastructure is missing, presenting significant health risks”. Extreme land shortages on a local level, as previously documented, are difficult to address[9]–[11].

4. DISCUSSION

Because of the very restricted development potential offered by their agricultural resource endowments, population projections for almost all of the republics examined here predict increased issues with insufficiency in addition to food insecurity. The assumption that agriculture must be a major mover in overall development for nations with a high reliance on agriculture lies at the core of the alleged incompatibility between demographic purpose and agricultural capital. It was discovered that there is widespread consensus in underdeveloped nations that this is a good concept. The issue of agrarian resource capabilities, which will sustain such an agricultural stance, is often overlooked in both underlying research. It comes to the conclusion that, at the very least in roughly countries with rapid population growth, reserve scarcities may offer significant obstacles to farming's capacity to perform such a role.

5. CONCLUSION

Agriculture's contribution to growth, in any scenario, is dependent on its capacity to produce revenue rather than simply providing food essentials. Any tree cash crop may potentially fill the gap. The issue with these other tropical cash and export harvests is that they consume only a portion of the market's destructive marketing potential: coffee and cocoa, for example, are primarily consumed in manufacturing republics with limited growing potential due to virtually stagnant populations and current resource consumption levels. Palm oil, on the other hand, has been a standout performer in global markets, thanks to rising demand from other emerging nations. As a result, a wide viewpoint is required when choosing crop pattern methods that are compatible with the issue of food shortage while also providing enough income to farmers to sustain them in their daily lives.

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