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## **Morocco: Time to Go Yellow?**

In the center of Casablanca, Morocco, it is almost impossible to understand why Morocco is considered a third world country. Casablanca is a bustling metropolis, the economic capital of the country. Tall skyscrapers, centers for trade and industry, frame the wide streets stuffed with traffic and people. In another part of Casablanca, there is the Marche Central, a Moroccan market, which offers crates and crates of seafood, fruits and vegetables and meat to hungry passersby. With all the food and prosperity, it is hard to imagine that one would need to multiply the approximate population of Casablanca by 264 to reach the number of people who go to bed undernourished in the developing world. These undernourished individuals will consequently be unhealthy, more easily lose energy and not able to develop properly. Out of three of these undernourished people, one will prematurely die or have disabilities ([www.bread.org](http://www.bread.org)). Why is this happening? Is there not enough food being produced in the world to feed its people? No. Hunger is nearly always caused by poverty. In 2004, approximately one billion people lived below the poverty line, earning less than one dollar a day ([www.bread.org](http://www.bread.org)). One continent that is a major contributor to these one billion people living below the poverty line is Africa.

Africa is, of course, a vast continent, and it would be impossible to effectively focus on the hunger issues in such a broad area. To get anything accomplished, specialized solutions need to be made for every country. The African country of Morocco, which is located in the northern part of the continent, has many hunger issues of its own. The average annual income in Morocco is \$1,520 (Lonely Planet's Morocco, 46). While that may seem like a lot more money when compared with the usual drastic poverty expressions of "a dollar a day" or "making ten cents an hour," 1,520 dollars is not enough to satisfy basic human needs, let alone pay for education or any extra luxuries. In order to make that money, Moroccans have to dedicate most of their days to their work. About half of all Moroccans live in rural Morocco, and about half of those individuals make their living in agriculture (Morocco, 70). Most of these farmers are just raising enough food to feed their own family. In the very best case scenario, Morocco is able to raise enough food to feed two thirds of Moroccans (Morocco, 71).

Morocco has a culture which places much importance on the family. Families in Morocco are generally extended with a few generations all living under the same roof. As for children, the average number of births per woman in Morocco is a little over 2.7 (Lonely Planet's Morocco, 47). Marriage is incredibly important in Moroccan culture with marriage ceremonies lasting for over a week. The Berbers, an important ethnic group in Morocco's cultural makeup, have "fiancée fairs" where the important and difficult task of choosing a partner begins. Once a Moroccan woman becomes a wife, her life is very separate from that of her husband. He is usually involved with working outside the house to bring in money and food, while such tasks as cooking generally fall to the wife. The average diet of Moroccans is high in fiber. Common foods used in cooking are fava beans, chick peas, lentils, almonds, figs and cereal crops such as wheat and barley. A popular dish in Morocco is couscous, a type of coarsely ground pasta that is usually eaten with sauces, meat or vegetables placed on top of it. The facts and figures about the education of Moroccans, while vastly improved, are still somewhat alarming. Morocco is a very young country – only 4% of the estimated three million people in Morocco are over 65 years old. Half of the population is under the age of twenty! (Morocco, 87) This means that it is very hard for the country to establish enough schools or find enough teachers to properly educate the large youth population. The literacy rate of Morocco is about 50%, but that is mostly comprised of men; only about 32% of Moroccan women can read (Morocco, 88). Children in Morocco are required to go to school until they are fourteen years old, but many Moroccan children have to drop out of school and work because of the extreme

poverty levels of their families. For kids in rural parts of Morocco, that means that they help out on the family farm.

Only 20% of the land in Morocco is cultivated, which gives a good picture of the difficulties of the terrain (Encarta 2001). Therefore, family farms tend to be minimalist, small plots of land on which farmers try to grow enough food to feed their own families and hopefully some cash crops. The principal crops of Morocco are cereal crops, root crops, vegetables, fruit and sugarcane. More specifically, almonds, figs, walnuts, fava beans, wheat, barley, oats, potatoes, corn, onions, garlic, tomatoes, peppers, green beans, lettuce, peas, lentils, chick peas and various herbs are all grown in Morocco. Wheat and barley are the most widely grown. In 1999, Morocco produced 3.8 million metric tons of those two crops (Encarta 2001). The average annual rainfall in Morocco is 340 mm, but the number can be deceiving. Because over 50% of that rainfall is concentrated on only 15% of Morocco's land, much of Morocco receives little rain ([www.fao.org](http://www.fao.org)). On top of the already scarce amount of water, climate changes have caused the rainfall amounts to lessen even more. Because of the lack of water, irrigation is an important factor of Moroccan farms. Just because it is important, however, does not mean that irrigation is provided for every bit of land. If a piece of land is irrigated, the farmers will plant the crops that are highly dependant on rain. The rest of the land, the land that may or may not get water, is planted generally in grains, and all the farmers can do is hope for rain that will allow the crops to grow. If the land is irrigated, it is mostly through the spate irrigation method. Spate irrigation involves providing water to the land before the crops are planted. The most prominent rivers in Morocco have been equipped with dams so that water can be saved for the periods in which rainfall is minimal. Still, for the average Moroccan farmer, water isn't easily accessible. It is often necessary for farmers to haul water from distant water sources. This creates another laborious job for the farmers and is a barrier to their productivity. Another barrier to productivity is a lack of education and resources to implement changes. While the farmers are very competent and have been farming the land for centuries, they are not very informed about new irrigation practices or the use of pesticides and fertilizers.

Clearly, educating family farmers about how they can increase their agricultural yield, and providing them with the tools to do so will greatly increase the quality of life for the people of Morocco. Without education, farmers aren't able to adapt to the changes that the Moroccan climate is facing. The Ministry of Agriculture is the major agency working to help farmers. The Ministry mostly involves itself with improving crop yields through invasive species management and improvement of the soil. They are able to accomplish this through the help of Peace Corp volunteers. The volunteers work closely with the farmers to teach them improved farming methods. If only a small percentage of the land is able to be farmed, it is essential for Moroccan crops to be as bountiful as possible so that they are able to feed their people, which is the first goal. Also, Moroccan farmers need to be educated by governmental institutions because the practices they are currently using are greatly depreddating the environment. Deforestation is the largest of these problems. Deforestation, which is the depletion of tree growth on the land, in Morocco is caused by many factors. First, the farmers overgraze, causing forest degradation. Second, tree limbs are harvested to feed the animals. Once the trees are harmed, it is hard for them to regrow because of the lack of rain and the poor soil. Another problem in Morocco that could be solved through education is soil depletion. The farmers overwork their land and don't return important nutrients back to the soil. With education, farmers can learn about the uses of green manure and fertilizer. The Ministry of Agriculture needs to supply the farmers with fertilizer as well. Education and availability of resources would significantly improve the quality and amount of crops that the farmers could harvest, which would mean more food to feed themselves, and more food to sell or use in other ways.

One important "other way" in which the excess crops could be used is biofuels. Biofuel production is potentially very good for agriculture in Morocco. Not only would there be a high demand for crops, farmers in Morocco would no longer need to spend their small amount of money on kerosene for agriculture and domestic fires. As a community, they could distribute and use the biofuels to that end.

However, there are cons to biofuel production in Morocco. If Moroccan farmers are not updated on how they may improve crop yield, but there is a high biofuel demand for their crops, the situation will only grow worse. Moroccan farmers still won't have enough food to feed their families, and in order to keep up with the demand for food and fuel, they would overwork their land to an even greater extent. With the shadow of poverty over the people, concerns for the environment would have to be put on the back burner, which is detrimental in the long run. Biofuel production would also be negative for Morocco if it meant attempting to introduce a new crop. If biofuel production is going to happen, it has to be done with a crop that will be easily assimilated for the average Moroccan farmer. One option that has been introduced is growing pine and castor seeds as biofuel crops, because both of them are resistant to drought.

Biofuel production has to be a second priority. Before Morocco can concern itself with biofuel crops and research, the food problem must be solved. The government of Morocco needs to first focus on improving agricultural techniques. Moroccan farmers need to be educated about modern irrigation, and fertilizer needs to be accessible. This way, Moroccan farmers will be able to increase their crop yield and preserve their land for years to come. When these steps have been taken, then the Moroccan government can begin to devote more time and money to biofuel research and production, especially in alliance with Brazil. (Steps have already been taken by Morocco to this affect – establishing a partnership with the Brazilian Agricultural Research Corporation. When Morocco is ready for biofuel production, this will be an important alliance, as Brazil is a major biofuel pioneer, and can help Morocco move to biofuels efficiently).

Hunger relief is not an easy problem, and it doesn't have easy answers. Before progress can be made, old problems need to be fixed. Agriculture in Morocco needs to be brought into the 21<sup>st</sup> century, and 100% of its population needs to be fed instead of 66% (Morocco, 71). Agriculture yield in Morocco can be improved through education, but it's important not to oversimplify the problem. Other factors such as research, environmental protection and better foreign relations need to be addressed to reduce poverty and hunger in Morocco and across the world. Morocco is a youthful country with a unique culture and much potential. With hard work, that potential can be fulfilled.

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