

Autumn Moore, PA School for Excellence in the Ag
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Italy: Sustainable Agriculture & Food Security Barriers

Located in southern Europe, Italy is a Mediterranean country and founding member of the European Union (EU). The estimated population of Italy is 60.4 million people, and the total land area is 116,348 square miles. Uniquely, Italy is bordered by three seas: the Ionian Sea (South), the Adriatic Sea (East), and the Tyrrhenian Sea (West), as well as four countries (France, Austria, Switzerland, and Slovenia), and two enclaves (Vatican City and San Marino) (Kiprop, 2018). Mountains and hills dominate four-fifths of Italy's land area, and while the Italian landscape is beautiful and the climate is agreeable for people, the mountainous terrain is largely unsuitable for farming (Essential Italy, 2018). As a result, Italy will necessarily benefit from continued improvements to sustainable agriculture and food security.

In order to understand Italy's challenges surrounding sustainable agriculture and food security, it is helpful to consider the Italian economy, family structure, culture, and lifestyle. After World War I and World War II, Italy morphed from an agricultural system into an industrial system. This has had a huge impact on Italian society (World Atlas, ND). Despite the changes that have occurred, Italy's economic sector is still largely dependent upon agriculture and farming, which accounts for around 2.1% of GDP (Gross Domestic Product). According to the Foreign Agriculture Service (FAS), Italy is the third-largest economy in the euro-zone (privacyshield.gov, ND). In the last 100 years, the Italian family structure has also changed. Previously, Italian families were relatively large and patriarchal, but today, the average size of an Italian family is quite small--2.4 people (ESRI, ND). Since women have careers outside of the home, there is also more equality within families themselves. In addition, the rate of ageing citizens in Italy is increasing and is considered the fastest in growth worldwide (PRB, ND). While the dynamics have been impacted, family life remains one of the foundations of Italian culture, and as such, a typical Italian family is very close-knit and loyal (Life in Italy, 2018). Extended families often live together in Southern Italy, but in the North, it is more common to simply find nuclear families. In both cases, grandparents are actively involved in helping with childcare, especially when both parents are working.

As for education in Italy, it is compulsory and provides a diverse and inclusive environment to all children. There are five different levels in the Italian educational system for children ages

3-18. During this time, students have the option to focus on a particular interest or vocational area, and then many obtain further education and training at a University (education.stateuniversity, ND). Surprisingly and according to data provided by the World Population review, Italy's healthcare is ranked number two in the world, while the United States' is at number thirty-seven (World Population Review, ND). Italians have access to a regionally based health care system that provides citizens and residents with universal coverage that is largely free of charge (Allianz Care, ND). Adding to health, an Italian diet usually consists of fruits, vegetables, meat, grains (such as pasta), wine, olive oil, and dairy products. Food is an important staple in the Italian lifestyle, because it is common for extended family and friends to partake in a daily meal together.

Surprisingly, only 30% of Italy's residents live in the countryside (tradingeconomics, ND). While most Italian city dwellers live in apartments, the people residing in the country typically have single family homes. Italy has approximately 1.6 million farms and of these, 98.9% are small family farms (called "smallholdings"). The average size of an Italian farm is quite small, only 7.2 hectares which is equivalent to approximately 18 acres. Consequently these small, mainly family operated farms cultivate 89.4% of the total utilized agricultural area (FAO, 2019). Italy's Mediterranean climate, which is hot and dry and with distinctive soil variation, greatly impacts Italian regional food production options, but also enables production of certain crops that cannot be grown in other parts of the continent (USDA, ND). Italy grows and produces a variety of products and crops, however the northern and southern regions are the most cultivated and agriculturally inclined. Northern Italy specializes in grains, dairy products, soybeans, and meat (mainly fish and poultry), while the south primarily produces durum wheat (used for pasta), fruits (grapes, cherries, apricots, and nectarines), olives/olive oil, grapes/wine and vegetables. Animals, including dairy and beef cows, sheep, goats, and chickens are also raised for consumption (privacyshield.gov, ND). Soil conditions in northern Italy are more favorable than those of the regions in the south.

In general, the barriers facing a typical Italian family are expected and similar to other agricultural food-producing countries. Most Italian families are gainfully employed (9.7% unemployment according to Eurostat), and accessing food markets is not cost prohibitive. For example, according to the USDA Economic Research Service, only 14.2% of a typical Italian income is spent on food compared to countries such as Russia and Pakistan, which are 29.4% and 41.4% of income, respectively (Plumer, 2015). Food markets are common, and because the food is relatively inexpensive and fresher, most Italians purchase groceries daily. The Slow Food Movement began in Italy, and its purpose is to encourage people to purchase local food (Throp, 2012). Italy is one of the largest agricultural producers and food processors in the European Union (privacyshield.gov, ND). Still, only 49,467 square miles are designated to the Italian agriculture industry and farming employs about 3.9% of Italian workers (Rechner, 2018). In addition, most raw materials and ingredients are imported to Italy because the country's economic strength is in the processing and the manufacturing of goods (privacyshield.gov, ND).

A relevant topic in all agriculturally-minded countries is Sustainable Agriculture, and in particular, its relationship to food security: Italy is no exception. Sustainable Agriculture addresses a society's present food and textile needs and sustains farmers, communities, and resources by promoting farming practices and methods that are profitable and environmentally friendly. It is also important for sustainability to occur without compromising the ability for current and future generations to meet their needs (UC Davis, ND). In recent years, sustainable agriculture specialists have started integrating three main objectives into their work: "a healthy environment, economic profitability, and social and economic equity" (UC Davis, ND). Growers, retailers, consumers and other roles in the food system are all involved in ensuring a growing sustainable agricultural structure.

Since 1951, Italy has served as the host country for the Food and Agriculture Organization (FAO, 2019) headquarters which is a special United Nation's agency. The FAO's mission is to contribute to sustainable development, to prioritize the environment, to improve agricultural productivity, to address food security, to maintain and boost natural resources to ensure global nutrition, and to reduce poverty through financial support and expertise. Italy has been an integral partner in the FAO's mission and the organization's history.

According to a report from BCFN (Barilla Center for Food and Nutrition) that summarized statistics from the Foreign Service Institute (FSI), Italy is a top performer in sustainable agriculture among the 34 ranked countries (Srouf, 2018). While this data is noteworthy, it also indicates that sustainable agriculture is a colossal problem around the world and that Italy is navigating somewhat unknown territory by seeking to improve further. Italy's main strength is that it has embraced sustainable agriculture and food security by focusing on supporting rural areas, producers, smallholder farmers, and women's empowerment (FAO, 2019). As such, Italy's Sustainable Agriculture and Food Security plan is considerably more established and developed than other countries. As a remarkable example, Italian agriculture holds a leading position in organic fruit and vegetable production and has the largest area of organic cropland in the European Union (roughly 1 million hectares) (FAS, ND). Italian farmers have largely and successfully refrained from extraneous chemical usage and the implementation of controversial GMOs (Genetically Modified Organisms). Another interesting point is that, unlike other countries in the European Union, Italy does not currently have any legal or uniform sustainability requirements. Instead, Italy has largely allowed farmers to self-govern their production by providing financial incentives for the farmers and businesses who act responsibly and apply sustainable farming practices (FAS, 2013).

In the last few years, however, the country's sustainable agriculture trend has been somewhat stagnant. While there are long-term plans for enhancements and improvements, sustainable agriculture has been a side consequence in agricultural and production policies in Italy (USDA, ND). To expand the current system and to forward progress, Italy must take innovation risks that continue to focus on food quality and environmental protection. Further exploring and implementing techniques such as integrated pest management, heirloom crop varieties, soil health, reducing tillage, integration of plant and animal systems will propel Italy to the forefront of agricultural sustainability (UCSUSA, 2017).

Italy has been an advocate for sustainable agriculture, but food security is not guaranteed. The U.S. Department of Agriculture (USDA, ND) defines food security as having assurance to acquire and access nutritionally adequate foods consistently in order to maintain a healthy and active life (USDA, ND). Food security must supply everyone with economical, physical, and public access to nutritious and adequate food and also must provide individuals with a way to obtain products that meet their preferences and dietary requirements in order to maintain a healthy and active lifestyle (IFPRI, ND).

Italy's first food security problem is the disparity between imports and exports. Italy's landscape creates challenging conditions for farming and cultivating crops, and as a result, Italy's agricultural economy necessarily relies on imports. Arguably, Italy has made the best of its environmental limitations through its emphasis on sustainable agriculture and choosing to focus on product quality and not the quantity. In other words, Italy is more adapted to intensive rather than to extensive agriculture. The weakness to this approach is that Italy cannot adequately feed itself without external support. For example, nearly half of Italy's meat-supply is foreign produced (Nations Encyclopedia, ND). This can be attributed to the fact that nearly 70% of Italy's agricultural friendly land is designated to arable and permanent crops (FAS, 2013). Only one sixth of the land in use is designated to pastures, and because of this, meat production in Italy is traditionally weak. Italy faces a negative balance of trade (BOT) when it comes to agricultural products (Encyclopedia Britannica, ND). Italy spends \$16.2 billion on animal product imports each year, while exports only a value of \$6.37 billion (OEC, ND). Fruits and vegetable production is considerably more self-sustaining, though it is notable that in 2017, 25% of Italy's imported agricultural commodities consisted of the modern agricultural staples wheat, corn, and soybeans.

Decreasing Italy's reliance on food imports is a complicated concern that involves both sustainable agriculture and food security. Perhaps the most comprehensive way to reduce Italy's need for imports is to focus on crop varieties and rotations that are ideally suited to

Italy's unique climate and terrain. Some of the benefits to this would include increased land productivity, soil fertility, crop yield, drought resistance, and a decreased amount of forage waste and invasive plants. Since one of Italy's biggest disadvantages is poor soil quality and lack of land, utilizing the practices of crop variety and crop rotations could be a turning point for Italy's sustainable agriculture and food security.

With regard to Italy's meat demand, a possible solution is to consider multi-species rotational grazing systems for animals. Having a diverse range of livestock such as beef cattle, sheep, goats, pigs, and poultry together in one pasture is not looked upon favorably by most industrial agriculture models, however having two or more grazing species on a pasture-based system together can increase efficiency and forage utilization. Joel Salatin, an American farmer in Virginia, has implemented this practice on his own land, Polyface farm, and the results and benefits are quite remarkable. Multi-species rotational grazing promotes the resistance and control of pests, diseases, and bacteria, benefits soil and pasture health, contributes to better livestock and human health, generates ways for farmers to manage and adapt to the effects of climate changes and extreme weather conditions, and improves ecological resiliency in general (RTB, ND). In many ways, rotational grazing proves to be a quicker and more appealing way to improve the terrain and specifically soil and crop conditions. According to an article by Cornell University, studies have shown that allowing sheep to roam with a cattle herd can add roughly 20 to 25% greater productivity and carrying capacity to cattle and 8 to 9% to sheep (Rinehart, 2019). This, in turn, results in increased meat yields and revenue, both of which are especially important to Italy's small-farm sustainability and food security. Rotational grazing is an economical solution. It costs very little to implement and will provide a positive return on investment within a few years.

A second serious issue facing Italian food security in the future is a workforce that is willing to take over the task. In an Interpress Service News Agency article entitled, "Italy has the 'Greenest Agriculture' in Europe, but It Is Not Sustainable" (Srouf, 2018). The author highlights that an aging workforce is the biggest risk to Italian agriculture. Italy is lacking younger individuals who are prepared and interested in starting or taking over the jobs in the Italian agriculture industry. Increasing responsibilities, lack of training, challenging work conditions, and variations with income are some of the factors preventing younger individuals from pursuing a career in agriculture and farming.

Ensuring that a new generation of farmers and farmworkers are well-prepared for the undeniably critical task of taking over farm operations is of utmost importance. As it stands now, the future prospects for youth entering agriculture are not ideal. This must change, and soon. One solution is to spread agriculture awareness throughout communities and especially to the youth. Italy's current

agriculture team (including all facets of the industry from farmers to processors to governmental entities that regulate agriculture) must commit the time to invest in youth. Education and incentives would help to promote and encourage youth to take an interest in agriculture and the food that they are consuming by providing access and exposure to the agriculture industry. Offering school programs that educate students about agriculture and why it is important, optional farm visits, and guest speakers would give the students attainable and exciting options from which to learn. Schools could utilize outdoor spaces to set up and establish small working farms and greenhouses, where students would glean first hand farming experience, students could sell the cultivated produce to community establishments, and the profits could be used to fund youth scholarships for those who choose agriculture educational programs and career paths. If youth interest and involvement in agriculture increases, Italy would be on its way to maintaining and eventually improving its current sustainable agriculture practices and food security concerns.

Now, and since Italy's brush with pandemic-induced volatility, maintaining sustainable agriculture and food security is more important than ever. In fact, with the arrival of the coronavirus, it is arguable that sustainable agriculture and food security have become the most pressing and significant concerns of the entire global community. The agriculture sector is one section of Italy's economy that has been permitted to operate at full force even during the lockdown. Even so, the agriculture industry and production in Italy and across the world is suffering to stay afloat under the weight of the global pandemic. Estimates suggest that, due to COVID-19, 57% of Italian companies in the agriculture industry have faced an alarming decrease in their sales; and 14% of Italian companies had difficulties in finding raw materials (Coppola, 2020). Long-term impacts to Italian, and world-agricultural remain to be seen; however, in the short-term, Italy's exports have already been affected. (Xinhua, 2020).

Food security and sustainability issues, including a reliance on imports and potential upcoming workforce shortages, must be monitored and managed. Two possible solutions are crop rotations of carefully selected plant varieties and multi-species rotational grazing; both of which could optimize Italy's use of agricultural land and boost crop and livestock production to reduce the need for imports. Education and incentives could bring in a new generation of farmers. Despite Italy's positive agricultural reputation, the country must not underestimate any short or long-term challenges related to sustainable agriculture and food security, and it must strive towards continued improvement.

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