Rice Production in the Philippines

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Rice is both a large staple in Asian culture and cuisine as it is widely planted across Asian nations. In the Philippines, generations have created rice dishes that span traditional white rice to rice noodles eaten breakfast through dessert. The crop is also highly susceptible to climate change’s rising carbon dioxide as well as its increasing vulnerability to irregular weather patterns due to the fact that the crop demands more water than other cereal crops¹, such as corn, wheat, etc.² The Philippines is an archipelago consisting of multiple mountain ranges across the three provinces of Luzon, Visayas, and Mindanao; these mountains dictate when and which areas receive their dry and wet seasons.


Among the islands, 5.4 million hectares of arable lands area available for farming and as of 2010, 4.4 million hectares was used for rice farms; thus making the Philippines about 84.9% rice farms. Almost 70% of the rice produced in The Philippines is irrigated and found in the country’s rice bowl, the central plain of Luzon, where the other 30% is still rain fed and located upland, meaning located on rolling to steep land varieties. With their bountiful arable lands, the Philippines is the eighth largest producer of rice in the world, however, very little if any rice harvested is actually exported to other nations.³

Despite foregoing added fertilizer or pesticides to potential rice yield, rice production in the Philippines have grown in the last decade possibly related to gaining quality seeds, such as hybrid and certified seeds, from the International Rice Research Institute (IRRI)⁴, based out of Los Baños, Philippines.⁵

⁴ Ibid
Climate change is rising sea levels for areas similar to the Philippine Islands; with sea level rising adds vulnerability to typhoons for the Philippines. Increasing water temperatures and decreasing area between developed farm land and housing and sea create more favorable conditions to the typhoons hitting the Philippines from the Pacific Ocean. These storms add to the already constraints on rice production from a growing population, declining land area, and poor irrigation techniques which challenges both the quality and quantity of rice output. In the 30% of farms not continually irrigated, rice crops are controlled by when and how much rain it receives, which therefore creates an uncertainty of crop yield because of possibly droughts or floods.6

On November 6th, 2013, Typhoon Yolanda made landfall in Eastern Visayas in the area of Tacloban City. Yolanda spoiled about $110 million worth of rice and killed at least 500 people in its track. In order for the nation’s farmers to quickly replant and harvest all before the next planting season starts in December, they must clean out irrigation channels and repair damaged agricultural lands. The farmers that cannot salvage any of his/her harvest will lose income and add to a rice crisis as some of the population will not have access to rice and therefore starve.7 Three years later, three typhoons, Sarika, Haima, and Nock-Ten, barreled over

![Graph of rice production, yield, and available land area in the Philippines across the years 1961-2014.](Riceapedia.org/Philippines)

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6 See note 3
the Luzon region between October 16th and Christmas Day devastating 350,000 hectares of rice farms during the most productive part of the rice production year. After the three storms, the

United States Department of Agriculture estimated that 43% of the destroyed rice lands would not be able to fully recover. The hardest hit rice crops during the events of the three typhoons were in the Bicol region and were in their advanced growth stages, and after receiving high water amounts and were destroyed under, at most, the 115mph winds by Nock-ten will be completely lost for harvesting after the new year. After the three typhoons, harvested areas in the Philippines dropped to 4.6 million hectares from years prior; however, estimated harvest is projected to be
above-average, around 3.97 tons per hectare due to increased rainfall that benefitted farm lands throughout the islands.\textsuperscript{8}

Also originating from the Pacific Ocean, El Niño Southern Oscillation (ENSO) events effect weather patterns across the planet. ENSO, in Virginia create colder and wetter conditions, but in the Philippine Islands drought like conditions are experienced. During the most productive season for rice farming, October through December, ENSO events produce less rain with warmer temperatures which take a toll on the rice production and yield for the country.

\textbf{EL NIÑO CLIMATE IMPACTS}

\textit{Figure 5} El Niño Southern Oscillation (ENSO) impacts on the world during two separate seasons, December-February and June-August.

Going through El Niño cycles in 2008 and then one later in 2016 allowed for no true bounce back from weak rice production yields; the rice crisis originated after the ENSO cycle in 2008 increased the amount of citizens starved and placed in poverty. This negative impact effected the poor as rice prices increased, which ultimately pushed more Filipinos under poverty levels and challenged the nation’s Millennium Development Goal (MDG) of cutting the amount of poor and starving citizens. During the 2008 rice crisis, rice prices increased from around P30/kg (69 cents/kg) to upwards around P51/kg ($1.19USD/kg) which only caused more strain on Filipino families. It was estimated that each family spends 60% of its income on purchasing food which include its high dependency on rice dishes.\(^9\) Whereas in America, it was estimated in 2013, that the average family household spent 10% of its income on its total at home food expenses, which includes eggs, milk, bread, meats, etc.\(^{10}\)

In 2016, the El Niño that occurred caused similar damage on rice cultivation and food security within the Philippines. However, prior to the three typhoons that hit Luzon between October to December months was an ENSO event beginning in 2015. Resulting in another but more severe rice crisis orchestrated riots between poor farmers and police officers, in southern Philippines, as demand for rice went unmet due to low rice production and prices increased.\(^{11}\)

With a dependence on the natural resources for productivity, farmers and fishermen, remain the poorest groups in the Philippines because of the sporadic rainfall, droughts, flooding, and typhoons interrupt crop harvesting and fish collection.\(^{12}\)

In order to reduce the probability of a rice crisis after weather events, such as typhoons and El Niño Southern Oscillations, that devastate Philippine rice harvests, country ran organizations such as National Food Authority (NFA) in Manila, maintain a buffer stock of rice to feed citizens for 30-days after a shortage occurs.\(^{13}\) In order to build the buffer stock, organizations offer to buy from Philippine farmers; however, private sector businesses offer upwards of P25/kg (50 cents/kg) topping the NFA’s offers of around P7/kg (14 cents/kg).\(^{14}\) In order to make up the deficit of rice in its buffer stock, the NFA pushes for increased rice imports; however, President Duterte denies their request as he urges the NFA to buy from local farmers\(^{15}\) to reduce the Philippines reliance on imported rice.

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Implications of damaged rice harvests in the Philippines caused by weather events that are intensified by climate change and sea level rise, expand further than just empty shelves at the grocery stores. Susceptible to strong weather patterns also challenge the nation’s food security as well as human security levels since the nation’s poverty levels are only increasing. Since 2008, the Philippine government has been challenged with achieving the goal of decreasing poverty. Which would result in a decreased amount of citizens suffering from malnutrition. Without advancements in rice production, such as better irrigation techniques, improved fertilizer, and crop management, the Philippines will be subjected to its rice cultivation’s continued vulnerability to drought and massive rainfall. In order to alleviate the poor Philippine masses, the country must be able to become self-sufficient in rice and increase rice yield upwards of 3 tons/hectare.\textsuperscript{16} After increasing rice yield, the amount of money spent by Filipinos on rice can decrease from the 60\% from 2008, as rice prices also decrease.

Despite climate change, increasing populations also cause strain on rice production through the Philippines. Last recorded in 2013, the rice consumption was 1,305,636,000 tons among a population around 100,000,000 Philippine citizens. Educating Philippine families on adequate and accessible contraceptives would lower family sizes, allowing families to have more spending money for other expenses. Additionally, having smaller families allow for those lower income families who are dependent on white rice, which has a higher glycemic index, the ability to seek alternative grains that reduce the occurrence of type 2 diabetes.\textsuperscript{17}

With an ever increasing Philippine population, the International Rice Research Institute (IRRI) is determined to better rice production for the country’s food security and increase the competitiveness between the Philippines and other countries’ rice yield. In order for further involvement in the international trade of rice, the Philippines and IRRI must research ways physically possible to implement within its poorer rice farming industry. IRRI have begun researching labor and mechanization costs, including transplanting and harvesting expenses, which are far higher than other nations that are able to export their rice yields. In order to prepare for floods and droughts and secure rice production for the country, the IRRI is focusing advancements through the Philippine Rice Information System (PRISM) which produce detailed maps of rice areas as well as unbiased flooding and drought damage assessments. Ultimately, the IRRI is developing next-generation rice varieties in order to withstand changing climate variables to produce rice yields to feed the nation’s large population as well as become a contender in the international rice trade.\textsuperscript{18}

\textsuperscript{16} See note 3 
Bibliography


