

# Annotated Bibliography

## Primary Sources:

*American Agronomist Norman Borlaug, Advises Indian Farmer on Wheat Development Programs.* 1971. The Times of India Group, Bombay. *TimesContent*. Comp. Bennet, Colman & Co. Web. 3 Mar. 2014.

Norman Borlaug was a devoted advocate for the rights of the farming communities. He believed that the only effective way to successfully integrate new technologies into agriculture was to focus his work directly with local farmers. In fact, this was one of the factors which contributed to his high success in developing nations. Thus, I found this photo in particular useful, as it allowed me to see Borlaug in a hands on setting, collaborating with an Indian farmer. This image perfectly captured the humble humanitarian within Borlaug, showing him working alongside the people, approaching the situation not as a dominant figure of authority, but as a teacher. All in all, this photograph is primary as it remains in the original format in which it was taken, and was documented by a credible archival website.

Belair, Felix, Jr. "Farming Revolution in Poorer Lands Is Held Near." *The New York Times* 14 May 1968, Special ed.: 8. *ProQuest Historical Newspapers: The New York Times (1851-2009)*. Web. 2 Feb. 2014.

This article was extremely helpful in assessing the conditions of southern Asia prior to the introduction of Borlaug's wheat, and the comprehending the rising anticipation as the Wheat Revolution drew near. Published the year Pakistan reached self-sufficiency in cereal production, this primary source was beneficial in that it provided a public perspective of the conditions both prior to and succeeding wheat improvement, as well as foresight of future hunger relief in nations historically plagued by starvation.

Borlaug, Norman. "Acceptance Speech." Speech. The Nobel Peace Prize 1970. The Norwegian Nobel Institute, Oslo. 10 Dec. 1970. *Nobelprize.org*. Nobel Media AB. Web. 23 Nov. 2013.

Being the very speech written and presented by Dr. Borlaug in his acceptance of the Nobel Peace Prize, this source was of significant value in my research. Borlaug clearly highlights the agricultural progress that has been made despite dire predictions, as a product of his innovative wheat. This source also aided my understanding of Borlaug's determination and sense of moral obligation. Though he acknowledges significant progress within his speech, Borlaug continues to strive for the eradication of all hunger and emphasizes this point throughout the vast majority of his speech. Overall, this primary speech maintained in its visual and audio recording as well as in its transcribed state, was of high value to understanding Borlaug's opinion regarding his work.

Borlaug, Norman. "An Abundant Harvest: Interview with Norman Borlaug, Recipient, Nobel Peace Prize, 1970." Interview by Mary Gray Davidson. *Common Ground*. Common Ground Network. CPN, New York City, NY, 12 Aug. 1997. Radio. 12 Dec. 2014. Transcript.

In this primary interview, Norman recounts his time in Mexico, India, and Pakistan, and stresses the importance of his work to pressure governments to support and improve national agriculture. His fundamental belief in the moral right to food holds a strong presence in his words throughout the interview, and was helpful in connecting my thesis to this year's theme.

Borlaug, Norman. "Biotechnology and the Green Revolution." Interview. *Actionbioscience*. American

Institute of Biological Sciences, Nov. 2002. Web. 30 Dec. 2013.

Within this particular interview, Norman Borlaug addressed the controversial topic of biotechnology, and its role in the Green Revolution. This source informed me of the exponential benefits of Norman Borlaug's technologies in contrast to former conventional methods of farming. By knowing the benefits in addition to the supposed consequences, I was able to better understand how the risks of biological alteration could be outweighed by the lives of millions. Overall, I was able to gain from this source a new appreciation for the profound advancements Borlaug's varieties applied to the agriculture in developing nations.

Borlaug, Norman. "Dr. Norman Borlaug- Mexican Program." Interview. *Wessels Living History Farm*. The Ganzel Group of Communications, 2007. Web. 29 Jan. 2014.

In this primary interview, Dr. Borlaug specifically accounts his time in Mexico, the necessary breakthroughs in agricultural practices needed for self sufficiency, and the struggles and experiences he went through in order to get Mexico to that point. This source was particularly helpful as hearing the improvement process from Borlaug personally, gave me perspective into his work in Mexico.

Borlaug, Norman E. "1980 Interview with Dr. Norman Borlaug Life, Population, and Food." Interview by Petr Kosina. *Internet Archive: Digital Library*. OurMedia, 2001. Web. 30 Dec. 2014.

This primary source became valuable as from it I was able to document excerpts from Dr. Borlaug's interview to incorporate into my website as support for my key points, and overall theme. Additionally, I collected a valued perspective from this video, pertaining to Borlaug's opinion on his accomplishments within developing nations.

Borlaug, Norman E., and W. Q. Loegering. *Contribution of International Spring Wheat Nursery to Human Progress and International Good Will*. Tech. no. CAT31126211. Vol. 34-46. Beltsville: United States Department of Agriculture, Agriculture Research Service, March 1963. ARS. *Internet Archive: Digital Library*. Web. 31 Dec. 2013.

In this source, Borlaug reviews his work with the IRN (International Spring Wheat Rust Nursery) program and the progress made in Mexico as of current, by way of developing the rust resistant dwarf wheat varieties. I found this source extremely valuable, as it contains the reflections and observations Borlaug made at that time pertaining to current wheat production and sustainability. Overall, this source was significant, and had increased value in my research as it was within its original and unaltered state.

Borlaug, Norman E. *Field Notebooks and Appointment Books, 1948-2000. Field Notebooks. Sonora Wheat. 1972-1973. Mixed Material*. University of Minnesota Libraries, University Archives, Twin Cities (Minneapolis and St. Paul).

This artifact was incredible to see as a researcher, as it contains Borlaug's primary unaltered notes, comments, observations, and thoughts pertaining to his work in the developing nations. This source was considerably beneficial in that it allowed me to see Borlaug's clear perspective, and insight pertaining to his work, as well as enabled me to better interpret the situations in which he worked and results he yielded.

Borlaug, Norman E. "Green Revolution: For Bread and Peace." *Bulletin of the Atomic Scientists* Vol. 27 (June 1971): 6. *EBSCOHost*. Web. 2 Nov. 2013.

Norman Borlaug's Nobel Peace Prize address is reproduced in this primary article, in which his

words are unaltered and original. Through this document and personal account, I was also able to identify crucial aspects of Norman Borlaug's lifelong work. Subsequently, I was able to better understand his intentions, and the impact of Borlaug's role in the green revolution.

Borlaug, Norman E. "Interview with Dr. Norman Borlaug about Aspects of Life." Interview. *Internet Archive: Digital Library*. OurMedia, 1980. Web. 30 Dec. 2013.

This interview conducted in a plot of dwarf wheat, featured Borlaug reflecting on the current government policy of most developing nations, and the reforms required in order to benefit the local farmers and thus boost production where it was desperately needed. Through viewing this interview, the actions Borlaug took to ensure a progressive and improved agriculture for developing countries became more defined. The role of governmental responsibility being mentioned as a recurring factor in Borlaug's plans for a progressive agriculture was helpful in relating Borlaug's work to my thesis.

Borlaug, Norman E. "Norman Borlaug Interview- Ending World Hunger." Interview. *Academy of Achievement: A Museum of Living History*. American Academy of Achievement, 12 May 2006. Web. 23 Nov. 2013.

By far, this primary interview of Norman Borlaug was one of the most beneficial to my research. In this interview, Borlaug shares his personal experience working in Mexico, and the challenges he faced not only in his research, but also in dealing with the governments of the developing nations he visited. This interview allows me to comprehend the enormity of Borlaug's research and the vast effect it had on agriculture.

Borlaug, Norman E. *Subject Files 1950-2006. People and Miscellaneous Topics. Forestry Club, University of Minnesota*. Twin Cities (Minneapolis and St. Paul): University of Minnesota Library, University Archives, 1969. Mixed Materials. 14 Apr. 2014.

I used this compilation of Borlaug's Personal notes, and papers, to review his summaries of the current circumstances in those countries in which he worked, as well as see his written notes of the effects. This source is indisputably primary as it compiles the written and personal notes of Dr. Norman E. Borlaug.

Borlaug, Norman E. *Subject Files, 1950-2006. People and Miscellaneous Topics. Wheat varieties used in breeding programs. 1974. Raw data*. University of Minnesota Libraries, University Archives, Twin Cities (Minneapolis and St. Paul). 14 Apr. 2014.

I found this raw recording of data to be beneficial in my understanding of the cross breeding process, as seeing the innumerable amount wheat crosses that lined the pages of Borlaug's notebook, allowed me to comprehend the extremity of Borlaug's determination. With the tedious work this was, Borlaug undoubtedly had a vast amount of determination, which these records helped me interpret. Finally, this source is most definitely primary, as it contains initial results and data, and well as primary verification by Borlaug himself.

Borlaug, Norman E. "The Green Revolution: Past Success and Future Challenges." 34th Convocation Indian Agricultural Research Institute. The Indian Agricultural Research Institute Auditorium, New Delhi. 9 Feb. 1996. Address. 12 Jan. 2014.

Within this convocation address, Borlaug primarily addresses his time spent in India, and the subsequent effects at present of his involvement in the Green Revolution. This source, in addition to providing an assessment of India's agricultural development since the 1960s, highlighted the

importance of government responsibility within in agriculture. Borlaug relays the processes he underwent while attempting to make this known to agricultural officials in Indian government. Thus, I was able to draw a connection to the responsibility aspect of my thesis. Additionally, as Norman Borlaug is personally addressing his experience, and thoughts on the development of Indian agriculture, this source is primary.

Borlaug, Norman. "The Green Revolution, Peace, and Humanity." Lecture. Nobel Lecture. Auditorium of the Nobel Institute, Oslo. 11 Dec. 1970. *Nobelprize.org*. Nobel Media. Web. 10 Dec. 2014.

Written by Norman Borlaug, this speech addressing his primary concerns and attributions as an agricultural leader was a pivotal introduction to my understanding of the humanitarian Dr. Borlaug was. From this source, I was able to collect crucial quotes, and helped me develop my initial correlation to theme.

Borlaug, Norman. "India and Pakistan." Interview. *Wessels Living History Farm*. The Ganzel Group of Communications, 2007. Web. 29 Jan. 2014.

I found this filmed oral interview beneficial in that Borlaug uses specifics to explain his approach in India and Pakistan towards agricultural improvement. In his own words, Borlaug describes the effects of this approach, helping me to see the effects in detail.

Borlaug, Norman. "Interview with Dr. Norman Borlaug about CIMMYT's Roots and Personal." Interview by Petr Kosina. *Internet Archive: Digital Library*. International Maize and Wheat Improvement Center, 1987. Web. 30 Dec. 2013.

An interview with Dr. Borlaug, this source explores his time in Mexico to a great extent, while also explaining Borlaug's participation in the creation and expansion of the International Maize and Wheat Improvement Program (CIMMYT) founded in Mexico. Additionally, this source was created during the time when Borlaug was continuing to make improvements in agriculture and is therefore primary.

Borlaug, Norman. "Letter from Dr. Norman E. Borlaug." Letter to Dr. A.H. Boerma. 3 Nov. 1970. *Report of the Conference of FAO*. Rome: Food and Agriculture Organization of the United Nations, 1970. N. pag. FAO Conference. *Food and Agriculture Organization of the United Nations*. FAO. Web. 29 Dec. 2013.

In this letter, Borlaug lists the improvements his research has yet made, while highlighting the continued need to educate young agricultural students from developing countries, and pressure the governments of those same countries to support agriculture.

*Dr. Norman Borlaug and Students in Mexico*. 1964. Photograph. Rockefeller Foundation, Mexico. *Wessels Living History Farm*. Comp. CIMMYT. Nebraska State Historical Society. Web. 9 Dec. 2013.

In this primary photograph, Norman Borlaug is seen teaching his researching students in Mexico. This was beneficial to my project, as it helped me develop a better understanding of the program (CIMMYT) through which Borlaug was working at that time, and his objective to educate young scientist from developing nations in the responsibilities of agriculture, in hopes they would return to their country's to become influential in improving their agriculture.

Ehrlich, Paul R. "Prologue." Preface. *The Population Bomb*. 1968 ed. Jackson Heights: Rivercity, 1968. 1-201. A Sierra Club-Ballantine Book. *University of Washington*. University of Washington, 24 Sept. 2007. Web. 23 Jan. 2014.

In the 1960s, the general outlook for overpopulation in to correlation to food production was

dismal. Such is reflected in the words of Dr. Ehrlich, as he analyzes current conditions in 1960, within his book *The Population Bomb*, as well as his predictions concerning India's agriculture in years to come. This primary source was important as it allowed me to understand historically the conditions in which Borlaug's innovations were taking effect. Regarding its authenticity and credible author, this source adds additional value to my research, allowing me to review a professional analysis of the critical conditions of world food production at that time in history.

"Expert Finds Apathy in Fertilizer Crisis: \$7-Billion Needed A Fight All the Way." *The New York Times* n.d., Special ed., Periodicals sec.: 11. *ProQuest Historical Newspapers: The New York Times (1851-2009)*. ProQuest LLC. Web. 16 Nov. 2013.

A primary article, this source highlights Borlaug's fight for government cooperation in the production of fertilizer and its distribution to farming communities. In this way, this article aided me in the responsibilities portion of my project as it emphasized Borlaug's determination to educate governments of their necessary role in improving agriculture. Additionally, as it was written during a time where Borlaug was still working to convey this message of importance, I would classify this article as primary.

Gray, George W. "Blueprint for Hungry Nations." *The New York Times* 1 Jan. 1950: 8+. *ProQuest Historical Newspapers: The New York Times (1851-2009)*. Web. 6 Jan. 2014.

I found this primary article to be very helpful in reviewing the state of Mexican agriculture prior to Borlaug's arrival, and the conditions of Mexican agriculture of 1950. Within the article the research produced by Borlaug and his colleague (allowing for the swell of bean, corn, and primarily wheat production) are reviewed. Further, the prospect for future integration of such crops into the agriculture of struggling nations throughout the world is discussed. Essentially, this article relayed that Borlaug's research was already being recognized a catalyst with which the agriculture of developing nations (many of them comparatively worse than Mexico's pre-Borlaug state) could flourish. Inevitably, Borlaug's developments did just that, and thus, this article was valuable in providing insight as to circumstances of current.

Jillette, Penn, and Michael Goudeau. "Norman Borlaug Interview." *Penn Radio*. CBS. Las Vegas, Nevada, 15 Aug. 2006. *The World Food Prize*. The World Food Prize Foundation. Web. 28 Dec. 2013.

I used this audio recording of a primary radio interview with Dr. Norman Borlaug, to increase my knowledge of Borlaug's career overall, as well as the founding of the World Food Prize. An award which he created with the intention to push humanitarian efforts within food production, to continue into the future.

Kaplan, Morris. "A U.S. Foundation Aids Latin Farms." *New York Times (1923-Current File)* 1956 dec 09: 137. Web. 31 Dec. 2013.

This source states how Borlaug helped to initiate other programs similar in objective to those of the Rockefeller Foundation in 1943. Thus conveying the responsibility Borlaug upon himself to provide developing countries with sound agricultural methods with which to advance their agriculture. Further, as this newspaper reflects on the development of such programs it is primary, for it is reporting progress at the time in which it occurred, notably from a primary perspective.

Lionaes, Mrs. Aase. "The Nobel Peace Prize- Presentation Speech." Speech. The Nobel Peace Prize Award Ceremony. University of Oslo, Oslo, Norway. 10 Dec. 1970. *Nobelprize.org*. Nobel Media. Web. 21 Jan. 2014.

In this speech, the Nobel committee assesses Borlaug's contributions worldwide, as benefactions

of peace. Through viewing this primary speech, I was able to see not only how Dr. Borlaug's work saved the lives of billions, but in the process initiated the means for peace amongst nations. Additionally, this source emphasized Borlaug's moral belief in the human right to food, and the actions he took to ensure this right was upheld by the governments of developing countries, and ensured by the continual development of progressive wheat strains.

Meiller, Larry, prod. "Garden Talk"- Interview With Leon Hesser On The Battle to End World Hunger." *Wisconsin Public Radio*. Ideas Network. WPR, Wisconsin, 15 Sept. 2006. *The Man Who Fed The World*. Leon F. Hesser, 2006. Web. 8 Feb. 2014.

After having read Mr. Hesser's biography of Norman Borlaug, this interview was especially contributonal as I was able to hear not only of his vast knowledge and personal relationship with Borlaug, but also his primary account of implementing Borlaug's wheat within Pakistan in the 1960s. As a majority of my sources pertaining to the Wheat Revolution in Asia focus in detail on India, this primary account of effects in Pakistan was a whole new perspective. Additionally, this source is primary as it is a firsthand interview with a witness account of Borlaug's green revolution.

Nervard, Jacques. "Hunger Grows in India: Major Crisis in the Nation Is Feared as Population Growth Outpaces That of Food Production." *The New York Times* 2 Aug. 1964, Special ed.: 132. *ProQuest Historical Newspapers: The New York Times (1851-2009)*. Web. 1 Feb. 2014.

I found this article useful as it captured the food situation in India prior to the implementation Borlaug's technologies. As this article was primary, it depicted the perspective agriculture of India at that point in history, as well as reviewed the short-term solutions that the government had taken to relieve hunger; however as this article, and other sources show, short-term change was not a viable option for the improvement of India's hunger crisis.

*Norman Borlaug Addresses Farmers*. N.d. Photograph. Norman Borlaug Personal Collection, Mexico. *Academy of Achievement*. Comp. Norman Borlaug. American Academy of Achievement, 20 Aug. 2008. Web. 9 Dec. 2013.

In this image, Borlaug addresses a crowd of Mexican farmers gathered to educate themselves on the use of his newly developed wheat varieties. This demonstrates the beginning of Borlaug's integration of the varieties into the crops of local farmers, and his hands on approach in working directly with the farmers versus surpassing them for authority figures. Believing the only way to make a difference was for his work to begin at the base of the problem. Ultimately, this source captured a crucial stepping stone in the path which lead to Mexico's eventual self sufficiency in wheat.

Norman Borlaug. "CIMMYT." Letter to Dr. Eugene E. Saari. 5 Jan. 1970. N.p.: n.p., n.d. N. pag. *100 Years: The Rockefeller Foundation*. The Rockefeller Foundation. Web. 29 Dec. 2013.

In this primary letter addressed to a inspired associate, Borlaug encourages India to become apart of the CIMMYT (International Maize and Wheat Improvement Center) program, created for visiting scientists from developing countries to become educated in agricultural skills. He also discussed the improved wheat conditions in India at that time. Thus benefiting my understanding of the time frame in which Borlaug's work was gaining momentum.

*Norman Borlaug Prepares Seeds for Cross Pollination*. N.d. Photograph. CIMMYT Archives. Freedom from Famine. Comp. CIMMYT. Courter Films and Associates. Web. 30 Dec. 2013.

Borlaug carry's out the process of crossbreeding in this primary photo. This image allows me to

view the required preparation and necessary skills in order to breed one wheat variety with another. Foremost, this photo helped understand exactly how painstaking the process of crossbreeding is, and the devotion Borlaug possessed in order to tirelessly crossbreed thousands of varieties with the hope of a successor.

*Norman Borlaug with Seed Shipment*. 1965. Photograph. International Maize and Wheat Improvement Center, India. *Academy of Achievement*. Comp. CIMMYT. American Academy of Achievement, Nov. 2009. Web. 30 Dec. 2013.

This primary image features Borlaug examining the shipment of wheat seeds imported from Mexico in a massive attempt to avoid the approaching famine and end grain shortages. As I was able to view this significant event in India's agricultural advancement, my research benefited in that I was able to see the preventative steps against famine, in documented form, at the moment they were occurring.

Olson, Clarence. "Norways Doomsday Vault." Ygdrasil Norwegian Society. Norwegian Society, Madison. 12 Jan. 2013. *Prepared Lecture Copy for Presentation at Ygdrasil Norwegian Literary Society*. N.p.: n.p., n.d. 1-8. Print.

I received this written copy of Clarences lecture without written correspondence, and it has proven to be useful both in providing a necessary background on Borlaug and in relating his work to current global food struggles, rust epidemics, and exploring modern biotechnology. This source is secondary as it was written by a secondary account to Borlaug's work, and consists largely of a modern viewpoint on world hunger.

Olson, Clarence. "The Agricultural Innovations of Dr. Borlaug." Telephone interview. 7 Feb. 2014.

In attendance at one of Borlaug's preliminary lectures concerning the circumstances of Mexican agriculture, Clarence Olson was a extremely intelligent and informed interviewee. The former Dean of Agriculture at the University of Minnesota, Clarence was articulate in describing the impacts of Norman Borlaug's research. Furthermore, listening to his firsthand account of Borlaug's awareness lecture pertaining to population growth and its effect on the current agriculture in developing nations provided both perspective and insight concerning the state of food production at that time. From this interview I was able to increase my comprehension of Borlaug's ambition for a progressive future, in relation to all that he inevitably did accomplish. In addition to personally interviewing Clarence, I was able to exchange a written interview with him through email that was helpful when recording specific quotes to use in my research. Briefly, I was also able to meet him personally, which truly impacted the personal value and importance of his words. Overall, this source was contributinal as it allowed me to gain perspective and historical context from the account of a student witness to a Borlaug lecture.

Onis, Juan De. "Developers of High-Yield Grains Report a Victory Over Drought and Disease." *New York Times (1923-Current File)* [Mexico City] 1969 sep 16, Special to the New York Times ed.: 10. Web. 1 Jan. 2014.

Not solely a primary article reflecting the positive outcome of Borlaug's extensive cross- breeding, this article was as well significant in conveying the strong connection Borlaug made with the local farmers of those regions. From it, I was able to conquer that Borlaug's methods succeeded, because he was able to reach beyond the government official to work with local farmers. In this way, he was able to work directly with the issue at hand and improve the conditions at their source.

Pett, Saul. "Norman Borlaug: Making Green Revolution." *The Robesonian*[Lumberton] 4 Apr. 1971, sec. A: 8. *Access Newspaper Archive*. Web. 15 Apr. 2014

I found this article truly helpful in that it allowed me to see Borlaug's unyielding devotion to the battle against hunger, and the ever present struggles he endured. Lastly, I would categorize this article as a primary source due to its publishment around the time which Borlaug was receiving recognition for the Nobel Prize, and was continuing to expand his efforts Globally.

"Relief Demands Submitted." *Pharos Tribune* [Logansport] 19 July 1932, Final City Edition 3 ed., sec. A: 1. *Archives*. Archives.com. Web. 13 Mar. 2014.

Reading this article published amidst the height of the Great Depression, aided my understanding of historical context in regards to Borlaug. For I was able to comprehend the experiences and sights Borlaug underwent as a young man in college at this time, and also helped me get a better understanding as to why the fight against hunger became such a strong and personal motivation to him. Furthermore, this article would be primary as it documents the current food and job shortages at that present time in history.

"Revolutionary for Peace." *The New York Times* 22 Oct. 1970: 45. *ProQuest Historical Newspapers: The New York Times (1851-2009)*. ProQuest LLC. Web. 19 Oct. 2013.

This source announces Norman Borlaug's receipt of the Nobel Peace Prize and reveals optimism for future progression in the population increase - food production crisis. Since this piece was released during the time in which Borlaug's work was showing effect, and receiving recognition, I would categorize it as primary. For it portrays the current views of Norman Borlaug's work at that time.

Rickerby, Art. *Norman E. Borlaug*. 1970. Photograph. Time & Life Pictures. *Gettyimages*. Getty Images. Web. 30 Dec. 2013.

I used this image in which Norman Borlaug holds up two newly developed dwarf wheat varieties to examine the short, stocky and stiff structure of such high yielding wheat developed by Borlaug, in comparison to the previously tall, thin and susceptible wheat prior to Borlaug's crossbreeding innovation. This allowed me to visually compare and assess the alterations he made to the architecture of the wheat strand. Moreover, this source is primary as it has not been altered from its original state.

"Rockefeller Fund Help to Mexico, Greatly Increases Nation's Food." *New York Times (1923-Current File)* 1950 mar 16: 38. Web. 1 Jan. 2014.

Reporting the drastic improvements in Mexican food production this source displays the magnanimous effects Borlaug's wheat had on the agriculture of Mexico. I would also cite this source as primary for the fact that it contains a firsthand perspective reflecting the results Borlaug's work from the views of the public at that time.

Schmeck, Harold M., Jr. "Critical 3 Years for Grains Is Foreseen: Drop in Rain Production Plant Capacity." *The New York Times* 14 Apr. 1974: 39. *ProQuest Historical Newspapers: The New York Times (1851-2009)*. ProQuest LLC. Web. 16 Nov. 2013.

Addressing the struggles Borlaug faced in providing enough food for Pakistan and India's growing population, this source was valuable to understanding the controversy Borlaug confronted, particularly pertaining to his use of biotechnology to increase food production. In addition, this



article is primary in that it was written while Borlaug was still working to produce results and effect change in developing countries.

Siegel, Robert, and Michele Norris, dirs. "Interview: Norman Borlaug Discusses the Green Revolution and Challenges to the Use of Inorganic Fertilizers." *All Things Considered*. National Public Radio (NPR). NPR, 26 Mar. 2004. *Student Research Center*. EBSCO Host. Web. 28 Dec. 2013. Transcript.

By reviewing this primary radio interview of Dr. Borlaug, I was able to better understand how my topic involves controversial views relating to the wheat Norman developed which brought about the green revolution.

Siegel, Robert, dir. "Father of 'Green Revolution' Derides Organic Movement." *All Things Considered*. National Public Radio. NPR, Wisconsin, 26 Mar. 2004. *Npr.org*. NPR, 2004. Web. 4 Feb. 2014.

I utilized this source for the direct quotations from Dr. Borlaug that it provided, in referral to the reasoning behind his internal motivation in his cause to battle hunger. Furthermore, this interview, conducted with Norman Borlaug in the CIMMYT research center in Obregon, Mexico, was primary in that it is Dr. Borlaug's personal account of his work.

Trumbull, Robert. "Millions Face Starvation as Hunger Supplies in India Fail:." *The New York Times* [Special] 26 Oct. 1947, E5 sec.: E5. *Proquest Historical Newspapers: The New York Times (1851-2009)*. Web. 1 Feb. 2014.

This article explains how in just three months of its independence, India is already a place of mass starvations and turmoil. This was important to my research in understanding the background of Indian agriculture, so as to more accurately comprehend the effects and revolution Borlaug's wheat brought to Indian agriculture, the famine they fought to suppress, and the millions of lives Borlaug as an individual saved. This source is primary as it was written during the time period in which the hunger concerns in India were taking place

UN Economic and Social Council. "General Comment No.12: The Right to Adequate Food (art. 11)." *United Nations Committee on Economic, Social, and Cultural Rights*. Proc. of United Nations Committee on Economic, Social, and Cultural Rights, Geneva. CESCR, May 121999. 1-10. Twentieth Session. *United Nations Human Rights; Office of the High Commissioner for Human Rights*. OHCHR. Web. 2 Feb. 2014.

The closest, most detailed record affirming the universal human right to food, this document was extremely beneficial in that it explained how the freedom to food partakes in the life of an individual, and overall, its importance as a fundamental human right. Additionally, this source was valuable in that it accented the need for individual and government responsibility in order to ensure this right is met. I used this source to connect to both aspects within the NHD theme; therefore, this source was of tremendous value. As a last remark, this source would be primary, for it is the original document containing the "official declaration" of the human right to food unaltered from its original format.

United States of America. Department of Agriculture. Foreign Economic Development Service. *Norman Borlaug, Hunger Fighter*. By Don Paarlberg. Virginia: U.S Government Printing Office, 1970. *Hathi Trust: Digital Library*. Web. 13 Feb. 2014.

I used this publishing to gain historical accuracy as to the conditions of Mexican agriculture prior to the 1940s. From this source, I was also able to record many statistics, and it highlighted the emphasis of peace as a means to battling the threat of an increasingly malnourished world population. Lastly, this source is primary, as it analyzes of the direct results of Borlaug's

improvements by a witness to such improvements.

Uphaus, Charles. "Norman Borlaug: 1914-2009." *Bread for the World Institute*. Bread for the World Institute, 14 Sept. 2009. Web. 29 Dec. 2013.

This primary account of the effects Norman Borlaug's work had in India during the late 1960s to early 1970s was composed by a Peace corps agricultural extension worker who witnessed Borlaug's new wheat varieties drastic improvement on Indian agriculture during their time in effect. This was important to my project as it provides an additional perspective of the conditions in India during its agricultural reforms.

## Secondary Sources:

Abrams, Irwin. "1970 Norman Borlaug (1914- )." *The Nobel Peace Prize and the Laureates: An Illustrated Biographical History, 1901-1987*. Vol. 3. Boston: G.K. Hall, 1988. 198-200. Print. Ser. 11. 5 Dec. 2013.

This source highlighted Borlaug's work in Mexico and explained how the results of which aided both Pakistan and India in their struggles with food production. Thus, from it I learned of his extensive research to produce dwarf wheat which could aid malnourished nations in becoming self sufficient and agriculturally progressive. Lastly, this short biographical is secondary as the information which the author displayed was produced after the Green Revolution and the time frame in which Borlaug's work had been implemented within those suffering nations.

Anderson, Alan, Jr. "The Green Revolution Lives." *The New York Times* 27 Apr. 1975: 15+. *ProQuest Historical Newspapers: The New York Times (1851-2009)*. ProQuest LLC. Web. 16 Nov. 2013.

This source touched on the effects of the ongoing Green Revolution at the time, and the necessary advances in agriculture required for its sustainment. Additionally, Borlaug's effect on government officials was a key component in this article, and as it was one of my earlier sources, it was helpful when outlining the framework of the responsibility aspect of my topic. Lastly, though it featured an interview with Dr. Borlaug, the basis of this article was secondary. As it was written after the Green Revolution had taken effect.

BorlaugLEAP. "Biography." *Norman E. Borlaug Leadership Enhancement in Agriculture Program*. United States Agency for International Development, n.d. Web. 21 Jan. 2014.

I found this source to be extremely valuable in connecting my project to the responsibilities aspect of this year's theme, in coming to recognize Borlaug's acts of assuming responsibility for those who could not do so for themselves. Additionally, this source is secondary as it was written as an analysis of Borlaug's contributions.

Borlaug, Norman E. "How to Help Africa Grow: The Next Green Revolution." *The New York Times* 11 July 2003, A17 ed.: n. pag. *ProQuest Historical Newspapers: The New York Times (1851-2009)*. Web. 15 Jan. 2014.

This secondary document is a true reflection of Borlaug's humanitarian drive to help those who do not have the means to help themselves. Using his credible knowledge, this article informed me of Borlaug's ideas for implementing sufficient methods of agricultural growth in Africa, and his sincere belief in the individual's right to adequate nourishment.

Easterbrook, Gregg. "Forgotten Benefactor of Humanity." *The Atlantic Monthly* 279.1 (1997): 75-82. *The Atlantic*. The Atlantic Monthly Company. Web. 28 Dec. 2013.

This secondary source was useful in providing an overview of Norman Borlaug's research and contributions as well as their effect worldwide on the lives of billions. Further, it is secondary as it was written in the formative years after the effects of Borlaug's work.

FAO. "Borlaug - a Towering Benefactor of Humankind." *Food and Agriculture Organization of the United Nations*. FAO, 14 Sept. 2009. Web. 28 Dec. 2013.

This brief article summarizing Borlaug's overall impact on the agriculture of developing countries and his continuing work to in Africa, was helpful while learning of Borlaug's all around achievements. Secondly, this is a secondary source as it has been written by a witness to Borlaug's work around the world.

FAO, comp. "Wheat Yields in Selected Countries 1950-2004." Chart. *The Evolution and Contribution of Plant Breeding to a Global Agriculture*. N.p.: International Seed Federation, n.d. 19-29. Session 1. *FAO*. Web. 14 Oct. 2013.

This graph displays the effects of Norman Borlaug's developed wheat varieties on the annual wheat yields in Mexico, Pakistan, and India (the three countries in which his research was based and initially effective). By visually seeing this data, I was able to comprehend the profound impact Borlaug wheat varieties had on agricultural growth. Moreover, this source itself would be secondary, as the data it contains has been arranged into graph form to relay the statistics in a more convenient visual for understanding.

*Freedom From Famine - The Norman Borlaug Story*. Dir. Philip Courter. Prod. Gay Courter. By Gay Courter. Perf. Norman Borlaug. MMIX Courter Films & Associates, 2009. Online Video. *Internet Archive: Digital Library*. Community Video, 23 Apr. 2013. Web. 31 Dec. 2013.

This documentary film accounting Borlaug's life work and story was significantly valuable, interviewing Borlaug, his colleagues and acquaintances, and incorporating knowledge of his astound contributions to the malnourished developing countries in which he so tirelessly worked to bring the Green Revolution to fruition, this source was of use in understanding the many components of Borlaug's impact. Additionally, though this source includes components of primary sources, in total it would be secondary as the information being relayed has been developed from a secondary perspective.

Gillis, Justin. "Norman Borlaug, Plant Pathologist Who Fought Famine, Dies at 95." *The New York Times*. The New York Times Company, 14 Sept. 2009. Web. 12 Nov. 2013.

A valuable secondary source that evaluates the importance of Dr. Borlaug's work as it benefits the undernourished population, I found this article useful in analyzing the criticism and challenges that Borlaug faced in working with biotechnologies, despite the cause he was working towards.

Hesser, Leon, comp. "Norman Borlaug Recognition." *The Man Who Fed The World*. New ed. New York: Park East, 2010. 129. Print. 15 Feb. 2014.

While reading through the pages of an extremely beneficial biography, I stumbled upon this cartoon image. I found its depiction of Borlaug, and the issues he combated, intriguing, and it provoked me to deeper thought. I was able to use this source and the embedded symbolism to comprehend the immense challenges Borlaug had to face. I found this cartoon additionally useful as it allowed me to apply Borlaug's achievements to a worldly scale, not solely limited to the agriculture of Mexico. Lastly, for I cannot be completely certain this cartoon was not edited or

cropped to size when incorporated into the book, I must cite it as secondary.

Hesser, Leon F. *The Man Who Fed the World: Nobel Peace Prize Laureate Norman Borlaug and His Battle to End World Hunger: An Authorized Biography*. New ed. New York: Park East, 2010. Print. 3 Feb. 2014.

Written by a former agronomist who worked in Pakistan introducing Borlaug's wheat varieties and technology to the government and farming communities, I found this biography (foreword by Jimmy Carter) to be one of the most valuable secondary sources I documented. Within this source, the significant contributions Borlaug made in food production are explained in detail, along with the subsequent effect of one of his innovations onto the other. Along with the vast explanation of Borlaug's research, achievements, complications, and his overall drive to constitute growth; this source included portions of primary speeches, letters, and documents, in addition to a multitude of quotes which were highly contributive to gaining perspective into my topic. Altogether this source helped me understand the humanitarian Borlaug was, and his continual strive for the human right to food.

"Institute for Plant Genomics & Biotechnology." *Institute for Plant Genomics Biotechnology*. Texas A&M Agrilife Research, n.d. Web. 29 Dec. 2013.

As Dr. Borlaug formerly taught at the University of Texas A&M, this source was useful in identifying the legacy Borlaug left to the minds of many agricultural students around the world, and the role he plays in their active involvement to take responsibility for agricultural needs. Lastly, this source is secondary as it does not contain any firsthand information on Norman Borlaug and his work.

McLaughlin, Kathleen. "A New Dwarf Wheat Is Helping in Pakistan." *The New York Times* 4 June 1967, F1 sec.: 1+. *ProQuest Historical Newspapers: The New York Times (1851-2009)*. Web. 2 Jan. 2014.

This article focused on the impact of Borlaug's wheat on agriculture specificity within Pakistan. This helped in my researching process as it played a role in my understanding of Borlaug's effect on separate countries, and their individual populace. Additionally, although this source is secondary, it was written during the time that major improvements in Pakistan's agriculture were taking place, thus it was a valuable source of perspective.

Miller, Henry I. "The Father of the Green Revolution." *Defining Ideas: A Hoover Institution Journal* (2012): 1-4. *Hoover Institution Stanford University*. Stanford Junior University, 17 Feb. 2012. Web. 29 Dec. 2013.

This article was helpful in that it highlighted the most significant aspects of Borlaug's work, briefly summarizing and connecting each to the consequent Green Revolution. Moreover, this source is secondary as it is a scholarly journal publishing tracing the effects of Norman Borlaug's work to present.

Morrison, Deane. "A Tribute to Norman Borlaug." Online Posting. *UM News*. The University of Minnesota, 13 Sept. 2009. Web. 29 Dec. 2013.

This tribute to the memory of Norman Borlaug was helpful in emphasizing not only Borlaug's contributions to agriculture, but also those he made towards the education of young individuals, influencing them to effect change. I find this source to be secondary as it was written as a secondhand account on Borlaug's impact.

*Norman Borlaug: A Lifetime Fighting Hunger*. Prod. World Food Prize. *YouTube*. Google, 14 Apr. 2009. Web. 29 Dec. 2013.

While watching this informative video of Borlaug's life work, I was able to gather both statistics, valuable information, and quotes which helped with the development of my project. Furthermore, this source is secondary as it was produced and created about Borlaug from a non primary perspective.

"Norman Borlaug - Biographical". *Nobelprize.org*. Nobel Media AB 2013. Web. 3 Nov 2013.

I used this secondary source to aid my research of Norman Borlaug's commendable work in agriculture, particularly, his efforts in Mexico and his research in wheat variation. I found the previous helpful while developing my initial background of Borlaug's relation to the responsibility concept of this year's theme. Lastly, this source is secondary as it is not a primary documentation of Borlaug's achievements.

*Norman Borlaug & The Green Revolution*. Prod. Phil McClean. By Bree Reetz. Dir. Shane Reetz. Perf. Christina Johnson. *BeanCAP*. Common Bean Coordinated Agricultural Project, 27 Jan. 2012. Web. 27 Dec. 2013.

I used this secondary video accounting Norman Borlaug life work, to increase my knowledge of his achievements specifically pertaining to Mexico, as well as to recognize the conditions both before and after Borlaug arrived.

"Our History." (*CIMMYT*) *International Maize and Wheat Improvement Center*. International Maize and Wheat Improvement Center, n.d. Web. 29 Dec. 2013.

This source provided me with a time frame for the basis of Norman Borlaug's major developments and breakthroughs. Additionally, this source explained in detail the founding of the CIMMYT, lead by Borlaug as a wheat specialist. This source is also secondary as it was published recently and does not contain primary accounts.

Phillips, Ronald L. *Norman E. Borlaug 1914-2009*. N.p.: National Academy of Sciences, n.d. Print. 12 Dec. 2013.

Through this source, I was able to make deeper connections relating Norman Borlaug's work to this year's theme. I was able to account what I learned of his work with nations to confront and act on their responsibilities within agriculture, to Borlaug's humanitarian drive. Additionally, I learned about the specific wheat varieties he developed and their individual contributions to increased food production in impoverished countries. Lastly, this source is secondary as it is a biographical memoir written by a scholarly acquaintance of Dr. Borlaug's.

Quinn, Kenneth M. "Full Biography." - *The World Food Prize*. The World Food Prize Foundation, n.d. Web. 30 Oct. 2013.

This source summarized Dr. Borlaug's life, highlighting his achievements, and prominent impact on worldwide agriculture. I used this summary to develop an understanding of his work and accomplishments, and apply them to my thesis. Overall, this source is secondary as it is derived from a non primary account.

"Quotes by and about Norman Borlaug Father of the Green Revolution; an Agricultural Model That Fed Much of the World." *Science Heroes.com*. 94W Holdings Inc., n.d. Web. 19 Oct. 2013.

I used many of the quotes within this source to get a better understanding of Borlaug's overall impact, as well as the views of others in relation to his monumental accomplishments. This source

is secondary as the quotes were taken out of their original context.

Rensberger, Boyce. "Science Gives New Life To The Green Revolution: Scientific Research Provides New Spark of Life to the Green Revolution." *The New York Times* 3 Sept. 1974, Special ed.: 1+.

*ProQuest Historical Newspapers: The New York Times (1851-2009)*. Web. 7 Jan. 2014.

The objectives of the CIMMYT program Borlaug founded were outlined and explained within this article. Moreover, the dedication Borlaug applied to developing this program into a functioning and efficient educational resource was highlighted. Lastly, this source assessed the current world food situation which was useful in examining the progression Borlaug's innovations have induced. Finally, this source is secondary as it was written as a non-primary narrative of current agronomical situations, and was created after Borlaug's work had made its larger impacts.

Rockefeller Foundation. "Agriculture: Mexico." *100 Years: The Rockefeller Foundation*. The Rockefeller Archive Center, n.d. Web. 29 Dec. 2013.

This website page exhibited Borlaug's work in Mexico and its positive correlation with increased crop yields within Mexican agriculture. This source explained the process through which the Rockefeller Foundation's improvement program in Mexico, lead by Dr. Borlaug, brought Mexico to self sufficiency in wheat production. Lastly, this source is secondary as it was published after Borlaug's time in Mexico.

Samuelson, Orion, Steve Alexander, Diane Montiel, and Gloria Samuelson. "Norman Borlaug and Harold Brock." *You Can't Dream Big Enough : The American Farmer's Best Friend for over 60 Years*. Chicago, IL: Bantry Bay Media, 2012. 232-37. Print. 8 Dec. 2014.

This secondary account of Norman Borlaug's life achievements was published and written by an admiring farming acquaintance. In that it allowed me to see Dr. Borlaug's work from the perspective of another agriculturally involved individual this source was useful. Allowing me to see the accomplishments Borlaug made not only impacting and influencing developing nations but also the agricultural farmer.

"Scientist of the Fields." *The New York Times* 22 Oct. 1970, Periodicals sec.: 18. *ProQuest Historical Newspapers: The New York Times (1851-2009)*. Web. 7 Jan. 2014.

A secondary source written about Borlaug from a non-primary perspective, this article provided an overview of Borlaug's work, the names of specific dwarf varieties which were most significant to agricultural reforms within Mexico and later in India and Pakistan, as well as a section concerning his vast influence on the international students he educated in agriculture.

Shenker, Israel. "'Green Revolution' Has Sharply Increased Grain Yields but May Cause Problems." *New York Times (1923-Current File)* 1970 oct 22: 18. Web. 1 Jan. 2014.

This article provided many statistical readings of increased crop yields in varying countries due to Borlaug's developed wheat strains, and such were valuable in calculating Borlaug's innovations on a numerical scale. This source would be secondary as it uses secondhand information and data to draw conclusions.

UN Food and Agriculture Organization, comp. "World Cereals Production and Yields." Chart. *Food and Agriculture Organization of the United Nations*. FAO, 2001. Web. 19 Oct. 2013.

Through a compilation of recorded data, this graph enabled me to visually see the increase in wheat yields and production through the primary years of the Green Revolution as the land needed for production remained neutral. Seeing these projections helped me recognize just how beneficial

Borlaug's dwarf varieties were in improving agriculture without increasing the amount of land needed for production. In addition, I found this graph to be secondary as it has been altered from the arrangement of its previous form.

United States. Cong. Senate. Committee on the Judiciary. *S.Res.272*. Comp. Tom Harkin. 111th Cong., 1st sess. S Res. 272. N.p.: GPO, 2009. *Congress.Gov; United States Legislative Information*. Library of Congress, 16 Sept. 2009. Web. 29 Dec. 2013.

This source accents both the rights and responsibility aspect of my thesis, and provides a detailed overview of Borlaug's innovative research and developments. Being secondary, this source was released many years succeeding Borlaug's admirable deeds.

University of Minnesota College of Agriculture, Food, and Environmental Sciences. "Political Aspects of the Green Revolution." *AgBioWorld*. AgBioWorld Foundation, n.d. Web. 09 Feb. 2014.

Significantly beneficial to understanding the political effects and obstacles that Borlaug faced, the source was influential in the development of my project. This secondary source was a beneficial in analyzing the political barriers Borlaug had to overcome in order to succeed in improving and advancing agriculture throughout Asia.

Vietmeyer, Noel. *Our Daily Bread: The Essential Norman Borlaug*. Memorial Edition ed. Vol. 4. Lorton, VA: Bracing, 2011. Print. Borlaug Ser. 19 Nov. 2014.

My first source, this book provided a detailed "story esque" narrative of Norman Borlaug's research, the challenges he faced, and the devotion he poured into creating a high yielding, resistant wheat varieties. Additionally, the author provided a thorough explanation of his separate accomplishments in Mexico, Pakistan, and India, as well as within other developing Asian countries. Also included in the book were personal accounts of Borlaug which helped me reference his opinion on the matters of economic policy population increase, and food shortage in developing countries. Overall, I would categorize this book as secondary, as the information was collected and accounted on by a colleague of Dr. Borlaug's, in this re-telling of Borlaug's life from a second hand perspective.

Woodward, Billy, Joel N. Shurkin, and Debra L. Gordon. "Norman Borlaug- Over 245 Million Lives Saved." *Scientists Greater than Einstein: The Biggest Lifesavers of the Twentieth Century*. Fresno, CA: Quill Driver, 2009. 143-71. Print. 24 Nov. 2013.

This Book provided me with information on Borlaug's work in Mexico, India, and Pakistan by summarizing the effects his developed dwarf wheat varieties and work with government policy had on their agriculture. Mainly, this secondary source highlighted the humanitarian aspect of Norman Borlaug's work, the subsequent result: millions of lives saved.

Zeyen, Richard, Carol Ishimaru, Marty Dickman, and Christine Richardson. "Norman Borlaug: Plant Pathologist/Humanitarian." *APSnet*. The American Phytopathological Society, n.d. Web. 29 Dec. 2013.

This scholarly secondary source written by four professors, both of agriculture and plant pathology, proved useful in developing an understanding of shuttle breeding and crossbreeding, as well as emphasizing the significance of Dr. Borlaug's work to the populace of malnourished nations. Lastly, this source is secondary as the authors have no direct connection to the information they relay, and summarize their understanding based on the study of primary information.