

The Greatest Challenge Facing Agriculture Over the Next 5 Years

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Agriculture and the agricultural industry provide the basic fundamentals of human needs; food, shelter and clothing. Without the contributions of the agriculture industry, our quality of life would be adversely impacted. The greatest challenge facing agriculture over the next five years is climate change and related policies aimed at mitigating adverse effects. The Environmental Protection Agency (EPA) defines climate change as any significant change in the measures of climate lasting for an extended period of time, which can cause major changes in temperature, precipitation, or wind patterns. In recent weeks, Hurricane Sandy served as an example of how weather can be affected due to climate change, resulting in significant damage and loss of life. The most critical climate change factors; water, air/ temperature, and the availability of renewable energy sources, will pose most significant challenges to the agriculture industry in the coming years. These influences can have moderate effects to detrimental consequences.

Consider water, the single most important factor in agriculture and life. Humans, plants and animals need water to live. Climate change significantly influences precipitation and rainfall. The availability and quality of water now and in the near future continue to serve as a pivotal factor negatively impacting the quality of human life, with the increased demand for food notwithstanding. The potential impacts of climate change include increased flooding and drought, poor water quality and ecological impairment, decreased annual rainfall: as well as increased air temperature which results in higher stream and lake temperatures. Each of these components has the potential to negatively impact multitudes of agricultural commodities, bringing about severe economic consequences.

Another determinate factor of the impact of climate change is increasing temperatures. This factor can influence growing seasons, production cycles, field rotation, and yields, all of which negatively affect the quality, quantity and nutrition factors of agriculture products. Natural resources will also be impacted by climate change. It will adversely influence drilling, production and burring conditions which have a negative impact to the safety of workers. If industry conditions are unfavorable, they can manifest into decreased food security and hazardous conditions which can drive costs upward, both domestically and internationally. Furthermore, the temperature of the environment can potentially threaten biodiversity, which can have deleterious effects to the entire ecosystem, especially air quality.

Additionally, the use of fossil fuels plays a key role in the area of climate change. Energy serves as an indispensable component in our daily lives as well as to the agriculture industry. Energy and energy sources are used to carry out vital function such as irrigation, production, and transportation. There is a major emphasis in government to explore alternative and sustainable energy sources. Alternative and renewable energy sources; wind, solar, hydro and biofuels stand to be utilized as potential mitigations to climate change. Renewable energy sources play a role in providing energy services in a sustainable manner.

In summary, climate change and its implications to agriculture undoubtedly serve as one of the greatest challenges we face within the next five years and beyond. Climate change threatens to disrupt the well-being of our global society, undermine economic development and alter the natural environment, making it one of the key policy concerns of the 21st century. The challenges we face in future years as agriculture professionals should seek to mitigate damages done by climate change while improving processes and policies to reduce these impacts in the future.

As a graduate student and citizen, it is important for me to continue to seek knowledge and gain understanding on how the actions of individuals, agriculture industry professionals and government leaders impact our day to day lives. Upon completion of my graduate education, I intend to pursue a career in regulatory affairs and science policy. It is my sincere desire that my career contributes to the betterment of our society, the environment and public health. My skills in plant biotechnology research, nutritional sciences and toxicology coupled with legislative and international experiences afford me a unique opportunity to gain invaluable knowledge through my participation in the 2013 Agriculture Outlook Forum. Through this dynamic opportunity, I hope to gain insight and explore trends, challenges and risks in an effort to identify solutions for the agriculture industry in the 21st century.