

To: LWVSJC Members

From: Ag Study Subcommittee

Date: Week between Christmas and New Years,

Re: First Forum – Saturday Jan 11, 2014 : 9:30 – Noon

The LWVSJC Ag Study Committee, chaired by Jane Wagner-Tyack, has been busy coordinating and organizing our League's participation in this LWVUS Study. We believe that updating the LWVUS Agriculture Position is important to California and especially to San Joaquin County. Our county is part of the "bread basket of the nation" and thus makes the issue of agriculture and all its components critical to us.

Since there is a massive amount of information surrounding the broad topic of Agriculture, our committee broke the study into three parts each with its own forum. On Saturday January 11, 2014 from 9:30 – noon we will begin the study with the topic of GMOs (genetically modified organisms). Those who attended the Sept, 2013 Kick-off heard Pamm Larry speak. Pamm was the initiator of Proposition 37 on labeling foods which contain GMOs. This Proposition failed in the November, 2012 election by a slim margin.

Our committee believes we need in-depth information regarding the subject of GMOs in order to respond from a knowledge base to the Ag Study consensus questions. We have two speakers for our Forum on January 11. Their brief bios are below:

Charity Kenyon, a retired attorney, now works with Slow Food Sacramento, Slow Food California, and Slow Food International on GMO labeling and policy issues. Slow Food favors transparency and opposes the spread of GMO crops, seeds and food; and

Dr. Kent J. Bradford, Professor of Plant Sciences and Director of the Seed Biotechnology Center at UC Davis. Dr. Bradford supports genetic engineering of crops and addresses the concerns of consumers.

Background Information: (excerpted from the website noted in footer of this document)

The term GM foods or GMOs (genetically modified organisms) is most commonly used to refer to crop plants created for human or animal consumption using molecular biology techniques. GMO plants have been modified to enhance desired traits such as increased resistance to herbicides or improved nutritional content. Conventional hybridization of plants to enhance desired traits can be time consuming, they can take generations to evolve, and they are often not accurate. Genetic engineering, on the other hand, can create plants with the exact desired trait very rapidly and with great accuracy, e.g. plant geneticists can isolate a gene responsible for drought tolerance in one plant and can force that gene into the genetic structure of a different plant. The new GM plant will gain drought tolerance as well. Also genes from non-plant organisms, such as bacteria, can be transferred into plants to provide a desired trait, e.g. the insertion of a B.t. gene (a naturally

occurring bacterium) in corn and other crops enables the corn to produce its own bacterial pesticide against insects.

What are some advantages of GM foods? GM proponents state that the world population is predicted to double in the next 50 years. GM foods promise to meet the food needs for the world by:

- a. *Pest resistance*: Crop losses from insect pests can be staggering resulting in devastating financial loss and possible famine in some countries. Farmers typically use many tons of chemical pesticides annually resulting in potential health hazards in the water supply and causing harm to the environment. Growing GM foods such as B.t. corn can help eliminate excessive use of pesticides.
- b. *Herbicide tolerance*: For some crops, it is not cost-effective to remove weeds by tilling so farmers spray large quantities of herbicides to destroy weeds. This application requires great care in order to not harm the crop plant nor the environment. Crop plants genetically engineered to be resistant to powerful herbicides, such as Roundup – Ready soybeans engineered by Monsanto, only require one application of weed-killer rather than multiple applications.
- c. *Disease resistance*: There are many viruses, fungi and bacteria that cause plant diseases. Genetically engineered plants might be developed to resist those diseases.
- d. *Cold tolerance*: Unexpected frost can destroy sensitive seedlings and be a huge monetary loss to farmers. An “antifreeze gene” from cold water fish has been introduced into tobacco and potato plants enabling those plants to tolerate cold temperatures that normally would kill those seedlings.
- e. *Drought tolerance/salinity tolerance*: As the world’s population increases, farmers need to cultivate crops in areas previously unsuited for plant cultivation. Creating plants that can withstand long periods of drought or high salt content in soil will enable food to be grown in those unusual locations.
- f. *Nutrition*: Malnutrition is common in third world countries. Often staple foods such as rice do not contain adequate amounts of all necessary nutrients for healthy lives. Genetically modifying those staple crops to contain additional vitamins and minerals could alleviate those deficiencies.
- g. *Pharmaceuticals*: Medicines and vaccines often are costly to produce and often require special conditions not available in third world countries. Genetically modifying plants to provide edible vaccines through vegetables such as tomatoes or potatoes would make those vaccines accessible for many.

What are some of the criticisms against GM foods:

Most concerns about GM foods fall into four categories: environmental hazards, human health risks, economic concerns and violation of farmers' and consumer rights.

- a. *Unintended harm to other organisms:* A laboratory study in 1999 showed that pollen from B.t. corn caused high mortality rates in monarch butterfly caterpillars. Monarch caterpillars consume milkweed plants, not corn, but the fear is that pollen from B.t. corn blown by the wind onto milkweed plants in neighboring fields could result in caterpillars eating that corn and perishing. Toxins in GM plants kill many species of insect larvae indiscriminately. Other GM crops that contain toxins might unknowingly destroy beneficial insects, birds, and other life that contribute to the health and well-being of our food supply
- b. *Reduced effectiveness of pesticides and herbicides:* As has been observed, some populations of mosquitoes have developed resistance to the now-banned pesticide DDT. Many people are concerned that insects, weeds and other harmful pests may become resistant to GM crops which are modified to produce their own pesticides. This could result in stronger and stronger pesticides being used in greater amounts to kill those "super bugs" or "super weeds" and leaving increased toxic residue on the food we eat. The increased use of stronger pesticides and herbicides increases the risk of water and environmental toxic pollution.
- c. *Gene transfer to non-target species:* The cross-pollination of GM crops with non GM crops has occurred as noted by Monsanto's patent infringement lawsuits against farmers. The farmers claim that their non GM crops were contaminated through wind, birds, or other natural migration of pollen from adjacent or nearby fields. Monsanto claims that these farmers used Monsanto-licensed GM seeds without paying royalties to Monsanto. Many GM plants have been patented. Consumer advocates are worried that patenting these new plant varieties will raise seed price too high for small farmers and third world countries, particularly if GM seeds are the only kind available for purchase, or if GM seeds are only viable for one growing season requiring new seeds to be purchased each year.
- d. *Allergies:* Many children in the US and Europe have developed life-threatening food allergies. There is a possibility that introducing a gene into a plant may create new allergens. Extensive testing of GM foods may be required to avoid the possibility of harm to consumers.
- e. *Unknown effects on human health.* There is a growing concern that introducing foreign genes into food plants may have unexpected and negative impact on human health. To date there has been only one full study of GM foods related to human health. Further study is required to ensure the safety of GM foods. It is clear that one study on only one type of GM crop is not sufficient. Each GM crop for human

consumption, whether directly or through animal products, needs to be independently analyzed for safety. Up to this time, the studies have been voluntary and have been mainly under the control of the industry.

- f. *Labeling of GM foods*: This issue is quite contentious and both legislation and voter initiatives have been put forth in various states including California to mandate labeling of foods which are fully GM or which contain GM ingredients. Agri-business industries believe that labeling should be voluntary and influenced by the demands of the free market. Some consumer groups contend that the free market can only work if buyers know what they are buying and therefore transparency in labeling of GM foods is critical.

There are a variety of articles and websites that provide much more information on the topic of GMOs. We encourage you to visit those on your own and to attend the Forum on January 11 to hear our speakers and to have an opportunity to ask questions.

Other Resources:

<http://www.responsibletechnology.org/>

<http://www.psmag.com/health/scientific-debate-gm-foods-theyre-safe-66711/>

Know Your Farmer is a site supported by USDA in their effort to inform the public about local food systems (what they are, how they can be promoted, resources available to consumers and farmers, etc.). A good place to enter this website is the “tools and resources” page, from where you can navigate to other parts of the website: http://www.usda.gov/wps/portal/usda/usdahome?navid=KYF_RESOURCES

The National Sustainable Agriculture Council supports the promotion of “sustainable” agriculture as defined by U.S. Code Title 7, Section 3103. Although the materials on their website do support their mission, we find that their articles are well documented and do a good job of following Farm Bill legislative efforts that would help or hinder the sustainable agriculture movement. We suggest that you enter their website via the page that defines sustainable agriculture and then navigate to other topics of interest. <http://sustainableagriculture.net/about-us/what-is-sustainable-ag/>

The “Food Dialogues” website is a creation of the U.S. Farmers and Ranchers Alliance and brings together thought leaders and practitioners from all points of view for moderated, civil webinar discussions. It could be characterized as presenting the “farmer/rancher” point of view; but in moving around the site it becomes clear that there is no “single” farmer/rancher point of view. This is the most difficult of the websites to navigate and caution must be taken to select a variety of webinars and views to get a balanced picture on issues covered. Starting at the home page of this website gives you an opportunity to link to some of the recent topics discussed on their Facebook page: <http://www.fooddialogues.com/>. From the home page you can also click on the “learn about agriculture/food sources” tab which brings you to links addressing a number of issues that will be covered by the Update.

The third document is a short article from Scientific America entitled *Will Organic Fail to Feed the World?* The article presents a summary of a recent analysis of 66 studies comparing conventional and organic methods for 34 different crop species. There are numerous live links providing definitions of terms and additional reading. <http://www.scientificamerican.com/article.cfm?id=organic-farming-yields-and-feeding-the-world-under-climate-change&page=2>

<http://www.csa.com/discoveryguides/gmfood/overview.php>

