

# MONTEREY COUNTY



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January 3, 2011

Supervisor Dave Potter  
Monterey County, Fifth District  
1200 Aguajito Road, Ste 001  
Monterey, CA 93940

Re: Response to referral to consider enacting a moratorium on Genetically Modified Organisms in Monterey County (Referral No. 2009.19)

Dear Supervisor Potter:

The Agricultural Commissioner, in consultation with the Director of Environmental Health, conducted a thorough research analysis to provide a detailed summary of issues surrounding Genetically Modified Organisms (GMOs) in Monterey County.

In response to your referral, attached is the *Report on Genetically Modified Organisms in Monterey County, California*, which will help provide the Supervisors with a foundational understanding of biotechnology, and more specifically, genetically modified (GM) crops.

The issues surrounding GMOs are highly complex, on both regulatory and scientific levels. Concerns about the potential environmental and human health impacts have been and continue to be studied extensively. Due to the complexity of the regulatory and scientific issues surrounding GMOs, our analysis relies on peer reviewed scientific publications that provide review and summary of the larger body of primary literature. However, regulatory and scientific complexities aside, GMOs also bring about a level of emotional, ideological, and political complexity that must also be carefully considered. In Monterey County, the issue of GMOs has been considered in the public process since 1985; a history of local GMO activity and regulation is provided in the *Report on Genetically Modified Organisms in Monterey County, California*.

The findings of our research and analysis raise key questions about the *actual*, versus *perceived*, benefits of enacting a local moratorium on the cultivation of genetically modified organisms, particularly GM food crops, in Monterey County. Importantly, our findings also indicate that there is a key opportunity

for the Monterey County Board of Supervisors to weigh-in on and take action that could influence federal-level GMO regulation. Below we provide you with an overview of the findings of the Agricultural Commissioner and the Director of Environmental Health, including:

- (A) Summary of Issues & Findings;
- (B) Response to Specific Questions in Memorandum from Supervisor Potter; and
- (C) Staff Recommendation

## **A. SUMMARY OF ISSUES & FINDINGS**

This summary is intended to be a brief overview of our research findings relative to the main issues commonly raised in the discussion of GMOs; this summary is not intended to replace the full *Report on Genetically Modified Organisms in Monterey County, California*.

### I. Human Health

Concern has been raised about the potential human health affects of eating GMOs. Scientific publications reviewed for this report indicate that genetically modified foods currently available on the international market have passed risk assessments and no adverse human health effects have been observed resulting from the consumption of such foods. The potential for unknown health effects, however, remains a concern among GMO-Free advocates. GMO-Free advocates also have specific concern about the potential allergenicity of GMOs. No allergic effects have been found relative to GM foods currently on the market and in some cases, bioengineering has been used to reduce the allergenicity of certain foods. Nevertheless, there remains concern by GMO-free advocates of the unknown potential health affects that may not yet be detected by science.

It is very important to consider that the concerns raised about the *consumption* of GM food would not be directly addressed by enacting a moratorium on the *growth and cultivation* of genetically modified organisms, specifically GM crops, in Monterey County.

### II. Environmental Health

Concern has been raised about the potential environmental impacts of GMOs. The environmental concerns center on the potential gene flow from a genetically modified crop to a distinct, but compatible, species in the wild. Gene flow will occur when compatible (flowering) plants are present and share reproductive cells. However, our research found little scientific evidence that GMOs pose significantly more threats of gene flow and environmental drift than do conventionally bred crops.

GMO-Free advocacy groups may likely be more concerned about gene flow from GM crops than from conventional crops. If so, of particular interest to Monterey County are both the types of crops grown here and the likelihood of establishment in the wild and/or cross pollination with wild species. Many crops grown in Monterey County are not wind pollinated and are typically harvested before flowering. These considerations are very important when evaluating the actual (and perceived) risk of gene flow from GMOs to natural ecosystems.

Recent studies indicate that the use of GM crops with insect and herbicide resistance traits has resulted in cumulative reductions in chemical usage (particularly for some of the harsher pesticides

and herbicides), resulting in decreased impacts to farm workers, consumers, and the natural environment. Please refer to the full *Report on Genetically Modified Organisms in Monterey County, California* for a more detailed discussion of the documented environmental benefits of GM crops.

Decision-makers are charged with the difficult task of considering both real and perceived risks. Where risks do exist, the context and level of risk is also important; the actual risk of GM crop establishment in natural ecosystems for example, is far less than invasive, non-native, and non-GM weed species currently infesting sensitive ecosystems throughout Monterey County. Such considerations are important, particularly when evaluating potential regulatory programs (and relative benefits thereof) that would require additional budget allocations. The regulatory bodies and framework within both the United States and European Union support thorough, science-based, and case-by case review (of the environmental risk associated with GM crops), at the Federal, or EU level, respectively.

### III. Conventional Crop Health & Potential Farmer Liabilities

Serious concern about crop contamination (or gene flow) from GMO fields into non-GM crops and organic fields have been raised and a body of scientific literature exists on the topic. Our research found little evidence that GMOs pose significantly more threats of unintentional gene flow than do conventionally bred crops. Crop type is also an important consideration here; wind pollinated crops (like corn and wheat for example) have demonstrated cases of gene flow. However, such crops are not commonly grown in Monterey County. It is important to note that the concern about potential gene flow may be much greater for GMOs than for non-GMOs (regardless of crop types and the likelihood of actual gene flow), due to ideological concerns with GMOs.

There are well-founded and well documented concerns about farmer liabilities for unintentional crop contamination that has been associated with wind pollinated seed crops. In practical terms, the loss of market from GM material contamination has been minimal for both organic and conventional growers. Importantly, in California, AB 541 became law in 2008 and protects growers who may have crops contaminated with *de minimus* amounts of GM material from patent-holder lawsuits. Also of importance, in the United States, pursuant to the National Organic Program rules, the unintended presence of GM material in an organic field does not threaten the organic certification of a crop. Also of importance to Monterey County are the types of crops grown here and the low potential risk of cross pollination, as discussed above.

Our research indicates that GMOs are decidedly ubiquitous in the global food system and that maintaining a food supply completely absent of GMOs has proven impossible. The European Union, Japan and Australia/New Zealand do allow foods labeled and sold as non-GMO to contain threshold values of approved GM ingredients as long as they contain less than 0.9%, 5% and 1%, respectively.

Our research and analysis indicates that there is very little risk of crop contamination, loss of organic certification, and farmer liabilities associated with the growth and cultivation of GMOs in Monterey County. However, some concern about this issue remains, and that concern likely stems from ideological opposition to GMOs generally, and conditions quite distinct from Monterey County specifically.

#### IV. Super Weeds

Concerns have also been expressed, and a substantial body of science has been established, on the topic of weeds that develop tolerance to herbicides, otherwise known as “super weeds.” Our research found that problems with herbicide-resistance weeds are very real, but not new. In actuality, herbicide resistance arises from single herbicide overuse and can occur with both GM and non GM varieties. There is, however, disagreement amongst scientists about both how widespread a problem weed resistance is and whether or not weed tolerance in relation to GM crops could eventually negate the observed benefits of GM crop’s decreased herbicide usage.

#### V. Regulatory Oversight & Complexity:

The United States Department of Agriculture Animal and Plant Health Inspection Service (APHIS) opened its regulatory framework for public participation in 2008 and 2009; comments received are currently under review. The National Research Council and, separately, the Government Accountability Office have both identified key areas for improvement in the federal agency coordinated regulatory framework. In addition, on the state-level, findings of this report indicate that States generally seek a collaborative relationship with federal agencies in both initial approval decisions and compliance oversight. Due to limited technical, financial, and scientific capacities, States do not appear to support the development of duplicative scientific review capacities and regulatory processes.

Though the responsibility, authority and regulatory framework (as well as the associated expertise) lie at the federal level, and to a limited degree at the state level, there are opportunities for improvement that have been identified and that the Board of Supervisors may wish to consider further. Clearly, local jurisdictions do not have the resources, expertise or in many cases legal authority (e.g. labeling) to fully address public concerns and intelligently regulate GMOs. In the absence of greater transparency and responsiveness at the federal level to citizen concerns, local jurisdictions will continue to expend limited local resources and attempt to address what is ultimately a federal issue requiring state coordination.

Two specific recommendations emerge for improving the regulatory framework at the federal level:

- Improve the process and transparency for reviewing, approving and continued monitoring of new GM products via the Federal Coordinated Regulatory Framework for Biotechnology
- Incorporate the recommendations of scientific and regulatory consensus bodies for improvements in the Regulatory Framework

### **B. RESPONSE TO MEMORANDUM QUESTIONS FROM SUPERVISOR POTTER**

Supervisor Dave Potter’s Memorandum dated April 14, 2009 requested that the Agricultural Commissioner and the Director of Environmental Health evaluate the following concerns regarding the consideration of a moratorium on the growth and cultivation of genetically modified crops:

1. What is the potential impact to the health of the residents in Monterey County due to GMO’s being produced in Monterey County and in the marketplace?
2. How would we balance the interests of agriculture, research, agricultural workers and the citizens of Monterey County?

3. What tools and resources would the Ag Commissioner and/or Environmental health need in order to implement an ordinance if adopted?
4. Is it appropriate for the County to enact and enforce such an ordinance?
5. Is this issue better addressed at the federal or state level?
6. What would be the time involved in staff time to research issue? What would the cost be for the time necessary to conduct this research?
7. What would be involved to do a thorough public process? What would the cost be for the outreach and public review process?

What follows is a brief response to those specific questions. More detailed information on the scientific and regulatory issues surrounding genetically modified crops is contained in the *Report on Genetically Modified Organisms in Monterey County, California*.

**1. What is the potential impact to the health of the residents in Monterey County due to GMO's being produced in Monterey County and in the marketplace?**

Concern has been raised about the potential human health affects of eating Genetically Modified Organisms; below is a summary of both the discussion above and the information contained in the *Report on Genetically Modified Organisms in Monterey County, California*. Scientific publications reviewed for this report indicate that genetically modified foods currently available on the international market have passed thorough risk assessments and that no adverse human health effects have been observed resulting from the consumption of such foods. GMO-Free advocacy groups also have specific concern about the potential allergenicity of GMOs. No allergic effects have been found relative to GM foods currently on the market and in some cases, bioengineering has been used to reduce the allergenicity of certain foods. Nevertheless, there remains substantial concern by GMO-Free advocates of the unknown potential health affects that may not yet be detected by science.

It is very important to consider that the concerns raised about the *consumption* of GM food would not directly addressed with a moratorium on the *growth and cultivation* of genetically modified organisms, specifically GM crops in Monterey County.

In addition, there is concern about the possibility of contamination of food or feed crops by undesired GM materials. Examples of select contamination occurrences exist, but in all cases the existing regulatory process has located the problem, responded effectively and prevented any detriment to human health. In 2002 the National Research Council (NRC) committee encouraged special regulatory consideration associated with the development of nonfood technologies for GM plants. In 2004 the NRC committee recommended a series of actions to be taken at the federal level to insure the health and safety of foods containing genetically modified material. Since then, the Coordinated Framework for the Regulation of Biotechnology (and the individual federal agencies charged with regulation) have modified and improved their processes and oversight of GM plants. In addition, a growing body of public and private research exists to determine, on a crop by crop basis, effective agronomic practices to minimize the risk of contamination of non-GM crops and seed sources with GM material. A local moratorium on the growth and cultivation of GMOs is not likely to result in any greater protection of human health than already in place with the federal regulatory framework.

## **2. How would we balance the interests of agriculture, research, agricultural workers and the citizens of Monterey County?**

Staff recommends that a thorough, science-based approach is the best mechanism to balance the interests of agriculture, research, agricultural workers and the citizens of Monterey County. Issues surrounding GMOs are highly complex scientifically, and often that complexity results in fear, misunderstandings and misrepresentations of GMOs by advocacy groups in the public process. Consequently, GMOs have become an emotional issue of great importance to some residents in Monterey County.

We recommend that the Board of Supervisors utilize the best available science to evaluate real, rather than perceived, risks associated with GMOs and carefully evaluate whether a moratorium on the growth and cultivation of GMOs would result in greater protection of human and environmental health. The full *Report on Genetically Modified Organisms in Monterey County, California* is intended to provide Board with science-based, foundational understanding necessary to do so.

Economic development, including the creation of jobs and the sustainability of our local economy, is also an important factor in balancing the needs of the workforce, research sector, agricultural industry, and the public. The Overall Economic Development Committee of Monterey County action plan calls for the creation of a wider diversity of employment opportunities and support of key industries, like agriculture, to help businesses remain competitive, innovative and profitable and to encourage the diversification the region's job base. Biotechnological research and innovations offer a significant potential to help Monterey County achieve these goals.

Please refer to the full *Report on Genetically Modified Organisms in Monterey County, California* for a more detailed discussion of the benefits of GM crops. Monterey County is the third largest agricultural producing county in California. Importantly, GM crops have the potential to increase the sustainability of our agricultural economy while reducing agricultural impacts associated with pesticide exposure among farm workers and also reducing pesticide-related contamination of environmental resources. In addition, biotechnology may become a key resource for developing local crop cultivars adapted for climate change.

As decision-makers weigh both the benefits and concerns of GM crops in Monterey County, several questions about a potential moratorium emerge for further consideration, including:

- What goals would a moratorium on the growth and cultivation of GM crops achieve?
- What specific benefits would a moratorium serve for residents and businesses of Monterey County?
- Would a moratorium be applicable to all GM crops, or only certain crops?
- Would a moratorium include the opportunity to review and evaluate new crops on a case-by-case basis?
- What are the potential unintended, negative consequences of a moratorium?

## **3. What tools and resources would the Agricultural Commissioner and/or Environmental Health need in order to implement an ordinance if adopted?**

The tools and resources needed to implement an ordinance are largely unknown and would be dependent upon the specifics of the ordinance adopted. At a minimum, it is advisable that highly trained staff in the fields of both biotechnology and agronomy would be retained during the development/public process

phase of the ordinance. High caliber staff should be available as a resource to the public and would certainly be critical to ensure the policy outcome is sound and science-based. Absent such expertise, the ordinance development and implementation would lack scientific integrity and credibility.

The staff time necessary to implement the ordinance is unknown and dependent upon the specifics of the ordinance. Budget for analytical testing is unknown; testing services would require a professional Services Agreement with one or more companies that provide analytical services. Resource needs for implementation could change based on external factors, including but not limited to new crops, diseases, pests and changes in agricultural business conditions.

#### **4. Is it appropriate for the County to enact and enforce such an ordinance?**

A number of California counties have addressed or attempted to address the issue of GMOs through Board of Supervisor resolutions and/or a vote of the people. As of 2008, county voters and/or Boards of Supervisors throughout California had taken action or considered taking action on GMOs, as listed below:

- ✓ 4 counties voted on and passed anti-GMO ordinances
- ✓ 4 voted on and rejected anti-GMO ordinances
- ✓ 10 previously considered GMO ordinances (but no action was taken)
- ✓ 12 passed pro-GMO resolutions
- ✓ 2, including Monterey County, are presently considering GMO ordinances.

If the actions, or inactions, of other counties are to offer a guide, clearly it is appropriate for the County to consider whether or not to enact and enforce such an ordinance. However, staff recommends that the more appropriate question to ask is whether such an ordinance would effectively address stated concerns of GMO-Free advocacy groups and whether such an ordinance would offer any real benefit to the residents and businesses of Monterey County at large.

It is also important to note that the California Supervisors' Association of California adopted a *Resolution in Support of Life Sciences and its Contributions to World Health and Agricultural Improvements* on June 2, 2005. The Resolution is included as Appendix 12 of the *Report on Genetically Modified Organisms in Monterey County, California*.

#### **5. Is this issue better addressed at the federal or state level?**

The existing system to regulate GM crops has been in place for nearly two decades and has effectively prevented detriment to human and environmental health. To date, GM technologies have yielded significant improvements to human and environmental health. As biotechnological applications of genetic engineering in crops continues to grow, it is paramount that the regulatory system anticipate and adapt to these changes. GM technology and its applications is complex and the effective and intelligent regulation of this technology requires a very specific, high caliber understanding. This highly technical expertise does not currently exist at the local level; procuring such resources would be difficult from a budgetary standpoint and would largely be duplicative of the federal resources already in place. For a more detailed discussion of the considerations associated with local level regulatory frameworks, please refer to *Report on Genetically Modified Organisms in Monterey County, California*.

By way of comparison, it should be noted that in 2010, the European Food Safety Authority published a guidance document on the environmental risk assessment of genetically modified feed and food crops. This document provides guidance for assessing potential environmental effects of GM plants and further outlines the methods and data requirements for a comprehensive environmental risk assessment. The European Panel on Genetically Modified Organisms recommends that GM crops should be evaluated on a case-by-case basis and in a step-by-step approach. It is of particular importance to note that in Europe, GMO regulation is handled at the European Union (EU) level. In practice, the EU recognizes that the issues surrounding GMOs require a scientifically rigorous evaluation that is better handled by the EU, rather than individual countries within the EU. Evaluating potential environmental and human health effects, as well as developing and implementing regulations, associated with GMOs are not done effectively or efficiently on the local level.

**6. What would be the time involved in staff time to research the issue? What would the cost be for the time necessary to conduct this research?**

Staff has prepared a detailed *Report on Genetically Modified Organisms in Monterey County, California*, which is the culmination of over a year of staff time. Additional staff time that would be required for any potential local ordinance or moratorium would require highly trained and experienced staff in the fields of agronomy and biotechnology, if a science-based research approach is chosen.

**7. What would be involved to do a thorough public process? What would the cost be for the outreach and public review process?**

A comprehensive public process should take into account a number of considerations. First, the goal of the process should be clearly articulated, understood, and agreed upon. A public process must include a thorough public education component. Public perception of biotechnology and genetic engineering is often misconstrued and does not include a sound understanding of science and risk; any public decision regarding this technology should be based in a solid understanding of science. Properly educating the public and local officials about GM technologies and in particular GM crops will require an extensive outreach effort and technically competent staff.

Importantly, there are emotional and ethical questions associated with GM technology that cannot be reconciled through science, or through a public process, but would need to be heard. A public process must also be able to identify all ideological views about GM technology and be prepared to acknowledge that some, if not most, of these views also cannot be reconciled.

Staff reviewed the public processes established in other counties. Below is an outline of what such a process could look like in Monterey County.

*Establish Genetically Engineered Organism Ordinance Committee (6-10 members)*

- > County staff would organize and facilitate the committee
- > Membership would include biotechnology/science professor, key federal and state agencies with a regulatory jurisdiction (USDA-ARS, CDFA), key local agencies (Agricultural Commissioner, County Health/Environmental Health), local research institutions (University of California Cooperative Extension), conventional grower representative, organic grower representative, environmental representative.



### *Hold GMO Public Education Workshops*

- › County staff to organize and facilitate
- › Genetically Engineered Organism Ordinance Committee members must attend to hear public comments
- › Academic and governmental presenters to present facts of GMOs as currently understood and regulated
- › Public questions & comment following presentations, to be considered by Genetically Engineered Ordinance Committee when developing recommendations

*Develop consensus-based recommendations:* Committee would develop a consensus report for the Board of Supervisors to consider. As was the experience in Lake County, consensus may not be achieved, due to the diversity of committee representatives and the polarity of the issue. In the case of Santa Cruz County, the recommendation of the committee was based on majority vote, not consensus, and there was a minority report developed and delivered separately.

The cost is unknown, but would largely be dependent upon the amount of staff time required. It is important to note that the cost of such a process would not be born only on the County of Monterey, but also on other agencies and organizations with the expertise we would require and rely upon.

As discussed in greater detail in the *Report on Genetically Modified Organisms in Monterey County, California*, GMOs have been vetted in the public since the 1980s in Monterey County. It is particularly important to note that in other counties, the public processes established to consider anti- (or pro-) GMO ordinances have had little, if any, impact on political decision-making; rather, it appears that the political leanings of the decision-making body itself, rather than the public process, has overwhelmingly determined the outcomes of the GMO decisions. Recent activities in Lake County demonstrate the significant challenges associated with relying on public processes to develop practical, scientifically sound local regulations that adequately meet stakeholder needs. In Monterey County, it is unknown whether a public process would have any tangible, measurable, and effective contribution to the consideration and/or development of a GMO ordinance. It is, however, likely that a public process would spark significant interest among the agricultural industry to develop and promote the adoption of a pro-biotechnology ordinance.

### **C. STAFF RECOMMENDATION**

In evaluating the development and consideration of an ordinance, the Board of Supervisors is charged with the difficult task of evaluating both the potential risks and benefits of GM crops in Monterey County. While research indicates that there are no health impacts from eating GM crops, GMO-Free advocates remain concerned about potential health impacts yet unknown to science. This concern is not unique to Monterey County residents, and is in fact expressed by GMO-Free advocates throughout the State and country. Staff believes that this concern should be properly addressed, and would be most effectively addressed, by the federal regulatory process. Unfortunately, this important issue, along with other issues raised by GMO-Free advocates (and discussed in greater detail above) would not benefit by a local moratorium on the *growth and cultivation* of GM crops in Monterey County.

Local jurisdictions do not have the resources, expertise or in many cases legal authority (e.g. labeling) to adequately address public concerns and intelligently regulate GMOs. Resources and expertise aside, attempting to regulate GMOs at the local level, with relatively little quantifiable benefit to the public, raises important questions about local government efficiency and accountability, as well as duplication of effort with federal jurisdictions. However, in the absence of greater transparency and responsiveness at the federal level to citizen concerns, local jurisdictions will continue to expend limited local resources to address what is ultimately a federal issue requiring state coordination. As discussed above, Staff's research led to two specific recommendations for improving the regulatory framework at the federal level:

- Improve the process and transparency for reviewing, approving and continued monitoring of new GM products via the Federal Coordinated Regulatory Framework for Biotechnology.
- Incorporate the recommendations of scientific and regulatory consensus bodies for improvements in the Regulatory Framework.

It is not practical or efficient to duplicate regulatory frameworks or institute ineffectual local-level regulations. The findings of our research indicate that the potential benefits of GM crops substantially outweigh the concerns; our findings further indicate that the proposed moratorium on the growth and cultivation of GM crops would, in actuality, do little to resolve the concerns raised against GM food.

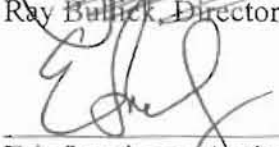
Accordingly, staff recommends that the Board of Supervisors not consider a moratorium on the growth and cultivation of GM crops in Monterey County. Staff recommends that the Board of Supervisors instead focus resources and energy on improving the federal regulatory process to better address and respond to concerns from citizens throughout the State and country. Specifically, staff suggests that the Board of Supervisors consider submitting a letter to federal legislators outlining recommendations for improving the federal GMO regulatory process and framework that increases transparency, responds adequately to citizen concerns and removes undue pressure and burden on the local level.

We hope that our response to your referral, including the detailed *Report on Genetically Modified Organisms in Monterey County, California*, provides a foundational understanding of the breadth and complexity of issues surrounding GMOs. We also hope that we provided sufficient detail and analysis of the benefits and relative risks associated with the cultivation of genetically modified organisms necessary for your thoughtful consideration and decision-making purposes.

Sincerely,

  
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Lew C. Bauman, County Administrative Officer

  
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Ray Bullock, Director of Health

  
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Eric Lauritzen, Agricultural Commissioner