

CLIMATE CHANGE AND CALIFORNIA

AGRICULTURE

U.S. Agriculture, along with most U.S. citizens, is beginning to come to terms with the fact that our climate is indeed changing – that the world is getting warmer. The accumulated evidence – temperature records, melting glaciers, sea-level rise, increased frequency of weather events (including droughts) --- has become too great to ignore. The argument today is between those that believe in man-made-global-warming (MMGW) and those that believe that we're in a natural cycle. If man contributes to global warming, then remedies, including an unpopular carbon tax, could help, although it could be argued that such a tax is "too little, too late". Those that believe we're in a natural cycle feel that it would be foolhardy to attempt to change something that cannot be changed.

Most nations have pledged to reduce carbon emissions (the Paris Agreement) by reducing fossil fuel consumption and emphasizing renewable energy sources, mainly solar and wind. A carbon tax designed to reduce fossil fuel consumption in the U.S. has elicited significant opposition from many businesses, including agribusiness. With the appointment of Scott Pruitt, a climate change denier from the oil state of Oklahoma, to head the EPA (if confirmed) and the likelihood of fellow climate deniers (if confirmed) occupying most or all of the cabinet posts in the incoming administration, backed by a president who believes that MMGW is a "hoax", look for a big increase in fossil fuel consumption in the coming years. Supporters of a carbon tax argue that such a tax is like buying insurance against a possible catastrophic event --- that even if we may have already passed the point of no return to reduce global warming it's worth doing everything possible to avoid the projected losses that would occur should temperatures continue to rise at their current rate. Home owners spend billions of dollars annually on fire insurance against the very unlikely event (one in a thousand?) your house burns down. Even a MMGW skeptic might think it prudent to purchase insurance against potential devastating losses.

Insufficient chilling from the warm winter of 2013-2014 devastated California's 2015 cherry and pistachio crops, giving a glimpse of what could happen to the future of crops that depend on cold or even normal winters. Overall, California has far more to lose from global warming than other states -- here's why: warm winter storms mean less water for our major water bank, the Sierra snow-pack. Perhaps more ominous is a predicted rise in sea level of 1.5 to 6 feet by 2100, pushing more seawater into the delta. Several options, all less than ideal, are available to keep seawater at bay (the San Pablo Bay): install expensive gates and barriers (some are already in place) to hold back seawater; send massive amounts of precious river water to the delta (water intended for ag) in order to, literally, stem the tide (the current preferred practice but dicey in drought years) or allow salty water from the delta to flow to the San Joaquin Valley via the state aqueduct, threatening thousands of acres of salt-sensitive almonds (salt tolerant crops like and cotton and pistachios would probably survive); this saline water would eventually reach and contaminate our already fragile groundwater reserves. More salt water in the delta means big problems for California ag. And, if an earthquake destroys levees in the delta, all bets are off as to what happens.

Farmers in the Midwestern states are not that concerned about MMGW. A good case can be made -- and has been made -- that a warmer climate would benefit the Midwestern farm belt by increasing the length of the growing season. A longer growing season would allow for more double-cropping and for increased diversity of crops, including those currently grown in California (almonds in N. Dakota?). If global warming crippled California farms via diminished snow-packs and salt water intrusion from the Pacific, the Midwestern states would be more than happy to take up the slack. The CA Farm Bureau, to their credit, recognizes the reality of climate change and the consequent possibility of recurring droughts; the CAFB supports increasing water storage to hold projected increased snowmelt runoff during warmer

springs. Both the national and the California Farm Bureaus oppose a carbon tax, but California farmers might want to reconsider their position in light of the dire consequences that could occur as the planet warms. California farmers might consider an amicable (and hopefully temporary) divorce from their mid-western brethren on the carbon tax issue until the issue is resolved.

With much of their country below sea level, the Netherlands has battled seawater intrusion for over 100 years and has spent billions on protective gates and barriers. The Dutch certainly realize their increased peril from global warming and are currently under Court order to reduce carbon emissions by 25% by 2020. Environmental groups in the U.S. are up in arms about the total lack of concern for the environment and even the promotion of maximum fossil fuel consumption by the incoming administration. Don't be surprised if one or more groups of U.S. citizens, united to combat global warming, file a lawsuit to force the EPA to curb carbon emissions. Because California farmers have more at stake in the Climate game than the average U.S. citizen, a case can be made that California farmers should participate in such a lawsuit (if they are able to endure the raised eyebrows from some of their neighbors). It's not all gloom and doom on the global warming front – the switch to renewable energy, esp. solar, has been faster than many thought possible. In 2015, 26% of California's retail electricity came from renewable sources, a huge leap in just 5 years. Here's UC scientist Kurt Cuffey: *"You absolutely don't want to be defeatist. If we reduce the rate that we are sending carbon fossil fuel into the atmosphere, we could probably limit further warming to a degree"* (California Magazine, Winter, 2016).

As with any issue, politics is involved in global warming discussions. Most MMGW skeptics are Republicans, believers Democrats. The Republican party line (with strong support from the fossil fuel industry) is that cheap energy from fossil fuels is vital and that a carbon tax would cripple our economy, including our ag economy. Democrats argue that the consequences of a warming planet are too dire to ignore – that we should be good stewards of our planet for future generations. The fossil fuel industry spends millions of \$ supporting congressional candidates who fear being "primaried" if those \$ went to a new kid on the block – one that toes the fossil fuel line.

California farmers that might favor purchasing some degree of climate insurance in the form of a carbon tax would need California congressmen, including Kevin McCarthy, to get on board. This would be an uphill battle, fighting headwinds (and oil money) all the way since straying from the party line could end an office-holder's career. As politicians age, most start thinking in terms of "legacy" (see *Brown, Jerry*) and it is here where Republicans could be vulnerable to carbon tax arguments. If the chances of dire consequences from global warming are only one in a hundred, a good argument could be made that it would be wise to purchase insurance against such consequences rather than face the possibility that in 2100, our great grandchildren will ask why we did nothing to cool our planet years ago. Who would want their legacy to be that they were on the wrong side of what could well be the most important issue that the world, and California agriculture, has ever faced?

Joe Traynor, December, 2016