



Finally, thank you to all of our wonderful volunteers. The *Applegater* could not survive without the countless efforts that all of you provide. A special thank you to Daena Tougher for designing our tickets and posters!

The Applegate River Lodge & Restaurant has graciously offered to make this an annual event, so we hope to see you all again next year. A good time for a great cause!

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Photos clockwise from top left:

—Janeen Sathre enjoys the scrumptious BBQ offered by the Applegate River Lodge.

—Official greeter, editor JD Rogers, chats it up with long-time *Applegater* contributor, Chris Bratt.

—Duke Davis & Friends band, including father Richard Davis, entertained the crowd all afternoon.

—The fundraiser crowd enjoyed a day of sunshine in the Applegate.

—There was an abundance of unusual auction items.

Photos: Barbara Holiday



## OPINION

### Ethanol fuel

BY JOHN CRABTREE

Tasha Knowlton brought up a bunch of very good points about the use of ethanol in gasoline (*Applegater*, Spring, 2009, p. 15) and I feel we need to address these points in more detail. As an engineer, I had to stand by as elected leaders around the country jumped on the ethanol bandwagon as they were told to do so by the ethanol industry. On the engineering side, there are some problems. They are not insurmountable, but there are some problems to consider.

Ethanol absorbs water. Like adding water to a glass of Scotch, the ethanol accepts the water readily. In a storage or fuel tank, the ethanol component of gasoline literally draws moisture out of the air. In a desert climate this is not much of a concern but in a cool, wet climate where moisture condenses into fog, this is the same as squeezing out a sponge into the fuel tank. Because the water becomes part of the fuel thanks to the way ethanol bonds to it, it is rare to get stratification and separation in a tank but a cold engine on a cold day getting fuel containing water can be difficult to start. Once running and with a low enough concentration of water in the fuel, this can actually help combustion as any WWII Pacific flyer whose plane used water injection can confirm. Yet, water entrained in fuel is never the best solution or a great idea.

In hot weather, ethanol vaporizes, causing "vapor lock" even in cars with electric fuel pumps. If you have a 1975 BMW with a mechanical fuel pump as I do, you are in for some interesting times when the temperature reaches 100F.

There are ways around these and other technical problems, but let us

also consider a few others. The State of California considers some emissions from the burning of ethanol to be carcinogenic. The EPA does not monitor for these compounds, so officially they do not exist. Also, ethanol contains far less energy per unit of volume than gasoline. This is why mileage decreases with the use of ethanol fuels. The whole idea behind ethanol and other "oxygenating" additives is to slip in some oxygen to fool the car's oxygen sensor into leaning out the mixture. This idea has largely been discredited because as this additive and MTBE cut emissions, we have to burn more fuel to do the same amount of work and thus, we negate the benefit.

About a year ago the British newspaper *The Economist* published a story about ethanol and how Brazil got it right and how we in the US got it wrong. Brazil runs virtually all of its vehicles on pure ethanol which is sourced from a surplus crop of sugar cane. The sugar cane grows without major depletion of the soil and can be harvested, squeezed of the sugar-bearing juice and the remaining stalks are then dried, ground and used as fuel to fire the stills which distill the alcohol after fermentation. Nothing is wasted and this means the final product has been produced in as much of an environmentally-friendly manner as possible. In the US, ethanol is not produced based on a government plan but rather, by the large agribusiness firms like Cargill, ADM and Con-Agra. As part of then VP Dick Cheney's top secret energy policy, these companies receive taxpayer subsidies to plant corn which depletes the soil and to turn that corn into ethanol. They get paid before we buy it at the pump and then they get paid the

second time. Thanks to environmental laws, refiners are required to blend in ethanol, so the agribusiness companies have a ready market for the product.

As anyone who has grown anything knows, corn (maize) depletes the soil at a fast rate, requiring either massive amounts of fertilizer or long fallow cycles. To keep the stills going, many of these companies, which have run family farms out of business, use chemical fertilizers and waste from massive pig barns to keep corn growing without fallow cycles. The jury is still out on what this will do to wide swaths of the Midwest over long periods of time but many environmentalists are cautioning against environmental disaster and another "dust bowl" period if we keep this up. Further, in the US, ethanol is distilled by burning natural gas to run the stills. So we burn one fuel to create another. Anyone who passed high school physics knows that since our universe cannot be 100% efficient, there is a significant loss in this process. We would be far ahead to run vehicles directly off of that natural gas than to use it to distill alcohol at a loss. If the federal subsidy were not in place, these plants would probably shut overnight because of the losses they would run up.

So we have technical and political problems in the way of using ethanol. I am in no way suggesting we should throw up our hands and give up and go back to gasoline. Quite the opposite. We need to be looking for true green energy in the forms of wind and solar power. Once we have true green energy, then pure electric cars will make a lot of sense. Charging them with power generated by burning coal, oil or gas only transfers pollution with a horrible loss in efficiency. Going directly from sun or wind to the grid will give us clean power, produced efficiently and will eliminate many of the losses along the

line. Then, pure electrics will be practical for some uses and will help cut carbon emissions. We will always have a need for liquid-fueled vehicles on land and in the air and we need to keep looking for ways to make them operate as cleanly and efficiently as possible.

It is a little known fact that the petroleum refining industry used to blend some of its waste back into finished gasoline in order to get rid of it. That is why in 1977 when unleaded gasoline first appeared in wide use, it was brown and still looked a lot like the old leaded "regular". In recent years, that crud has been taken out and we can all breathe better because of it. Look at a container of gasoline today and it is virtually clear. That's a big help and this set of problems must be approached through many different small solutions.

We will hear a lot about carbon tax legislation in the next few months. The EPA just last week classed greenhouse gasses as health hazards. We are moving toward carbon taxes which will offset the gap between conventional carbon-based energy and green energy. If our various government entities don't go nuts and try to tax us into a solution but rather use these taxes as incentives to build new, green energy infrastructure, the USA can become not only energy self-sufficient but an exporter of energy, trading electricity to our NAFTA partners for what carbon fuels we still require. The solutions are here, right now. This isn't a dream to be achieved through some miracle of technology. We have the means to begin weaning ourselves off imported oil and the political problems this outbound flood of our money create for us here at home. Ethanol is one small part of a bigger picture but to make sense it will have to be produced efficiently and responsibly. Currently, it is neither.

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