

NexSteppe
Comments to the California Air Resources Board

On the Low Carbon Fuel Standard
Concept Paper and ILUC Revisions
April 10, 2014

NexSteppe Inc. (NexSteppe) appreciates the opportunity to submit comments on the Low Carbon Fuel Standard (LCFS) Concept Paper and ILUC revision. NexSteppe, headquartered in South San Francisco, California, is a developer and producer of high performance sweet sorghum and high biomass sorghum hybrids. Our sweet sorghum hybrids are grown as feedstocks for advanced ethanol and cellulosic ethanol on a worldwide basis.

We commend the collaborative nature of CARB's rulemaking process. We have reviewed the recent LCFS Concept Paper and ILUC Revisions and wish to provide comments at this time, in response to specific issue areas highlighted within the two drafts.

We are commenting in large part to emphasize some of the differences between grain sorghum, sweet sorghum and high biomass sorghum; both on an agronomic basis as well as the pathways used to convert these feedstocks to fuels.

Unlike grain sorghum, high biomass sorghum is a non-food crop grown principally for cellulosic conversion to ethanol. It also differs from forage sorghum—which is grown for animal nutrition—in that it has typically has significantly lower moisture at harvest (reducing transported water weight), is less palatable to animals and has higher C5 and C6 sugar levels. High biomass sorghum has several marginal land applications: (a) it can be grown on marginal dry land acres due to high biomass sorghum's drought tolerance and (b) it has performed well in other marginal land acres like swine effluent discharge fields.

Sweet sorghum is a non-food crop grown to provide inexpensive sugars for fermentation much like sugarcane. In Brazil, which presents one of the largest markets for this crop, sweet sorghum will largely be grown on otherwise fallow cane acres that have been taken out of cane production between cane plantings. Cane acres are taken out of production on average every 5 years—so in any year approximately 20% of the cane acres in Brazil are fallow (or customarily planted with an erosion-control crop) and available for planting in any given year. We anticipate that additional marginal acres may also be brought into production as sweet sorghum is established as a commercial crop in Brazil.

We do not anticipate that either high biomass sorghum or sweet sorghum will displace high-value food crops from high-yielding acres in any geography due to feedstock cost pressure from ethanol mills (both cellulosic and sugar mills). We believe that this will steer sweet sorghum and high biomass sorghum to marginal acres with low yields in grain crops, fallow acres that are not appropriate for other crops due to low water availability, poor soil or other relevant agronomic conditions but that can provide compelling energy crop yields and acres that are being converted from water intensive crops like cotton those more resistant to drought like sorghum. This pattern has been shown in other dedicated feedstock crops and we believe will be followed in the case of sweet sorghum and high biomass sorghum.

Location of processing facilities may also play a significant role in driving which acres, including marginal acres, are put into high biomass sorghum or sweet sorghum production. In places with established processing infrastructure (e.g. Brazil) we anticipate that fallow cane land will be the principal initial location for sweet sorghum crops. Cellulosic processing plants focused on crop residues must be located in areas with high densities of available residues—frequently corn or wheat. In these areas high biomass sorghum will be pushed to acres that are low yielding in the principal crops. New build cellulosic facilities focused on dedicated energy crops (high biomass sorghum, switchgrass, miscanthus) will be situated, we believe, in areas where there is good availability of fallow land or low-yielding cropland.

As the sweet sorghum and high biomass sorghum markets develop we would also suggest that ARB continue to evaluate the criteria for characterizing marginal lands. Shifts in usage

driven by crop insurance considerations, water availability and processing infrastructure will impact which acres are marginal for the purposes at issue here and as these trends develop we will work to update ARB.

We hope that you find these initial comments useful and we are available to discuss them at your convenience if that would be helpful. As the markets for our products evolve and we gather additional field and market data we look forward to engaging with ARB in more detail on these topics.

Sincerely,

NexSteppe

By: John Van de North

Its: Vice President