

## Liquid Production, Use and Implementation Considerations

Various considerations of infrastructure, set-up, and implementation to support successful brine production, blending and liquid use.

### Water Supply

- ¾" vs 1 ½" or 2" supply line...in general:
  - Garden hose = 400 gph
  - 1" line = 1,800 gph
  - 1.25" line = 3,000 gph
  - 2" = 6,000 gph
- Separate water meter to avoid sewer charges
- Load requirements on wells
- Use of reclaimed water or captured runoff
- Salt
  - Standard gradation with few impurities
  - Fine salt prohibits circulations and promotes lumping
  - Impurities negatively impact production
  - Treated salt – automated systems that use conductivity for measuring brine concentration cannot work correctly with treated salt due to the conductivity properties of the additives. When using treated salt for brine production measure concentration by density.
- Filling – consider ease of access and use and amount of time to fill
  - Size of filling hoses - Line size in most applications a minimum of 2", 3 " preferred
  - Connections - Industry standard couplers such as "Banjo" fitting's etc.
  - Line connections – Avoid 90-degree elbows for less friction of movement of the liquid through the lines (using 90 degree sweeps and/or 45-degree bends in your delivery system)
  - Pump size and capacity - pump output is important, what is the expectation of time to fill a tank, can you physically fill the tank with the pump capacity (and diameter of hoses),
    - For example: A pump capacity of 120 gallons per minute with a 2" hose
  - Receptacle or application tanks plumbed correctly with matching fittings and vents in the receptacle tanks to allow the displaced air to escape

- Receptacle or application tank filling intake – consider height at “between waist and chest height” to support safety. For agriculture blended products filling from the bottom of the receptacle tank is recommended to prevent excessive foaming.
  - Easy to understand controls, directions, and training on how to use the fill mechanisms
- Blending Agriculture Products
  - Foaming issues are common with organics, need to use an anti-foaming additive for blending and to lubricate the full hoses
  - Splash blending is an option when automated blending is not available
- Facilities
  - Consider corrosive nature of salt on electrical components and overhead doors
  - Protection of storage containers and components from accidents
  - Collection and containment of spills or leaks
  - Maintenance of valves and fittings
- Storage
  - Secondary containment may or may not be required in your area but is a good practice for managing spills and leaks
  - UV inhibitor for outdoor tanks
  - Additional weight of brine (2 lbs/gal more than water)
  - Potential need to circulate product (if storing blended brine or other products)
  - Tank Inspection Program – for storage tanks and transport tanks
- Transport
  - Surge Protectors
  - CDL Requirement – Tanker Endorsement
- Safety
  - Training
  - PPE- rubber gloves, eye protection
- Planning and Procurement
  - Shared resources with others can provide affordable options
  - Plan for short-term and long-term needs, goals and objectives with production and application equipment (your program this year, 5 years out and 10 years out)
  - Consider serviceability for repairs, parts, and maintenance

Source: Industry Experts