Proper system planning and design is essential to Irrigation Water Management (IWM) and requires the thoughtful consideration of many elements. Selecting a system must include the following major items: Management, water, soil, and crops.

1. **Management** – The irrigator and planner need to collaborate in order to develop the best plan. The discussion of desired system type needs to include an understanding of management, operation, and maintenance requirements.

2. **Water** – The source, whether surface or ground, and the quantity, quality, availability, and flow rate, are needed to determine the type of system that is appropriate. Most sources of ground water require power, no matter which type of system is planned. With microirrigation, a ground water source might only need an inline screen to clean the water while a surface water source would require a sophisticated filtration system. Some sources, due to high salinity (EC), may not be suitable for sprinkler irrigation. A microirrigation system works best with a constant source while a surface system can operate on a longer interval between water applications. A surface system, in turn, requires a relatively high flow for most efficient application, while sprinkler or microirrigation systems can function well at a lower rate of application.

3. **Soil** – Many soil qualities are important when planning an irrigation system. Soil texture is a good indicator of water holding capacity (whc), permeability, and transmissivity. Whc is particularly important when considering a surface system, due to intervals between irrigations. Permeability plays a key role in surface system design, and to a lesser extent, sprinklers. Transmissivity, the ability of water to move through the soil, is important when considering a point source of irrigation, such as with drip emitters. The water needs to be able to move into and through the root zone.

4. **Crops** – Selection of crops to be grown can be limited due to water quality and quantity. High salinity (EC) can cause yield reduction and even crop failure, depending upon the crop planted.

Other important considerations should include growing season and location.

1. **Growing season** - The length of growing season is important for crop selection and also is important for justifying the expense for any system planned

2. **Location** - System structures and hardware must be able to withstand climate extremes of temperature, humidity, precipitation, or wind. Proximity to wildlife, cattle, and humans also suggest necessary precautions to con

3. **Proper planning can help ensure that the best system will be installed.**