

**IMPACTS OF IRRIGATION MANAGEMENT  
ON POTATO TUBERS AND PLANTS**

**IRRIGATION MANAGEMENT IN FOUR STAGES**

|                                | <b>STAGE I:<br/>EARLY<br/>GROWTH</b>   | <b>STAGE II:<br/>TUBER<br/>FORMATION</b>  | <b>STAGE III:<br/>TUBER<br/>ENLARGEMENT</b>  | <b>STAGE IV:<br/>TUBER<br/>MATURATION</b>   |
|--------------------------------|--|---|--|---|
|                                | <ul style="list-style-type: none"> <li>Length: 40-50 days</li> <li>Seed planting to beginning of tuber formation.</li> <li>Uniform moisture is needed</li> </ul>                                     | <ul style="list-style-type: none"> <li>Length: 7-14 days</li> <li>Period of tuber formation</li> <li>Moisture requirements are critical</li> </ul>                                | <ul style="list-style-type: none"> <li>Length: Up to 60 days</li> <li>Tuber "bulking" or enlargement stage</li> <li>Moisture requirements vary throughout this period</li> </ul>   | <ul style="list-style-type: none"> <li>Begins with the onset of natural vine senescence</li> <li>Water use declines rapidly</li> </ul>  |
| <b>Deficient Moisture</b>      | <ul style="list-style-type: none"> <li>Affects seed piece healing</li> <li>Predisposes seed to decay</li> <li>Leads to poor stands</li> <li>Slows root growth</li> <li>Slows plant growth</li> </ul> | <ul style="list-style-type: none"> <li>Affects tuber number</li> <li>Affects tuber quality</li> <li>May lead to sugar ends, malformed tubers, increased scab infection</li> </ul> | <ul style="list-style-type: none"> <li>Slows tuber development</li> <li>Leads to reduced yields</li> <li>Fluctuating soil moisture interrupts tuber growth and leads to growth cracking, knob formation and scab infections</li> </ul> | <ul style="list-style-type: none"> <li>Tuber dehydration</li> <li>Increases tuber susceptibility to black spot bruising during harvest</li> <li>Affects proper "skin set"</li> </ul>              |
| <b>Excessive Moisture</b>      | <ul style="list-style-type: none"> <li>Increases seed decay</li> <li>Leaches nutrients</li> <li>Limits root development</li> <li>Detrimental to development</li> </ul>                               | <ul style="list-style-type: none"> <li>May lead to initiation of brown center, and development of hollow heart. May increase incidence of verticillium wilt</li> </ul>            | <ul style="list-style-type: none"> <li>May lead to late season hollow heart, vine rots, late blight and mold development</li> </ul>  | <ul style="list-style-type: none"> <li>Leads to enlarged lenticels</li> <li>Promotes "pinkeye"</li> <li>Increases tuber susceptibility to shatter cracking during harvest</li> </ul>              |
| <b>Irrigation Requirements</b> | <ul style="list-style-type: none"> <li>Moderate, but as uniform as possible</li> </ul>   | <ul style="list-style-type: none"> <li>Moderate, but very uniform</li> </ul>  | <ul style="list-style-type: none"> <li>Should be adequate for plant needs (high at beginning of stage and decreasing as tuber matures)</li> <li>As uniform as possible</li> </ul>  | <ul style="list-style-type: none"> <li>Requires constant adjustment due to shorter days, lower temperatures, reduced transpiration</li> <li>Soil remains wet for longer period of time</li> </ul> |