

# Scouting for Winter-kill of Bermudagrass

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# What is winter-kill?

- Winter-kill – part or all of a grass plant or turfgrass stand dies during the winter.
- It's a relative term, can apply to just a single plant or to the stand-level.
- Can be from drought during winter or low temperature injury or the combination of both

# Areas Most Susceptible to Winter-kill

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- North facing slopes
- Heavily shaded areas
- Poorly drained areas
- Droughty sites
- Areas planted with poorly adapted cultivars
- Areas trafficked during winter
- Areas of substantial soil compaction
- Areas with deficient levels of soil potassium (K)
- High spots, especially if sandy

North



- Winter-kill is often more severe on north-facing slopes. In many years, green-up is simply delayed on north facing slopes due to less incoming sunlight, and slower soil heating.

- Low cutting height, traffic, soil compaction and shade interacted to pre-dispose this bermudagrass tee box to winter-kill.



North



**Tifway winter-killed in what perhaps was the freeze/thaw zone over several days. Perhaps the area in the center was protected by snow cover.**



Truckster drove over slush pile, traffic triggered mechanical/freeze injury to bermudagrass. A single event.



Traffic on path interacted with snow/ice to cause winter-kill



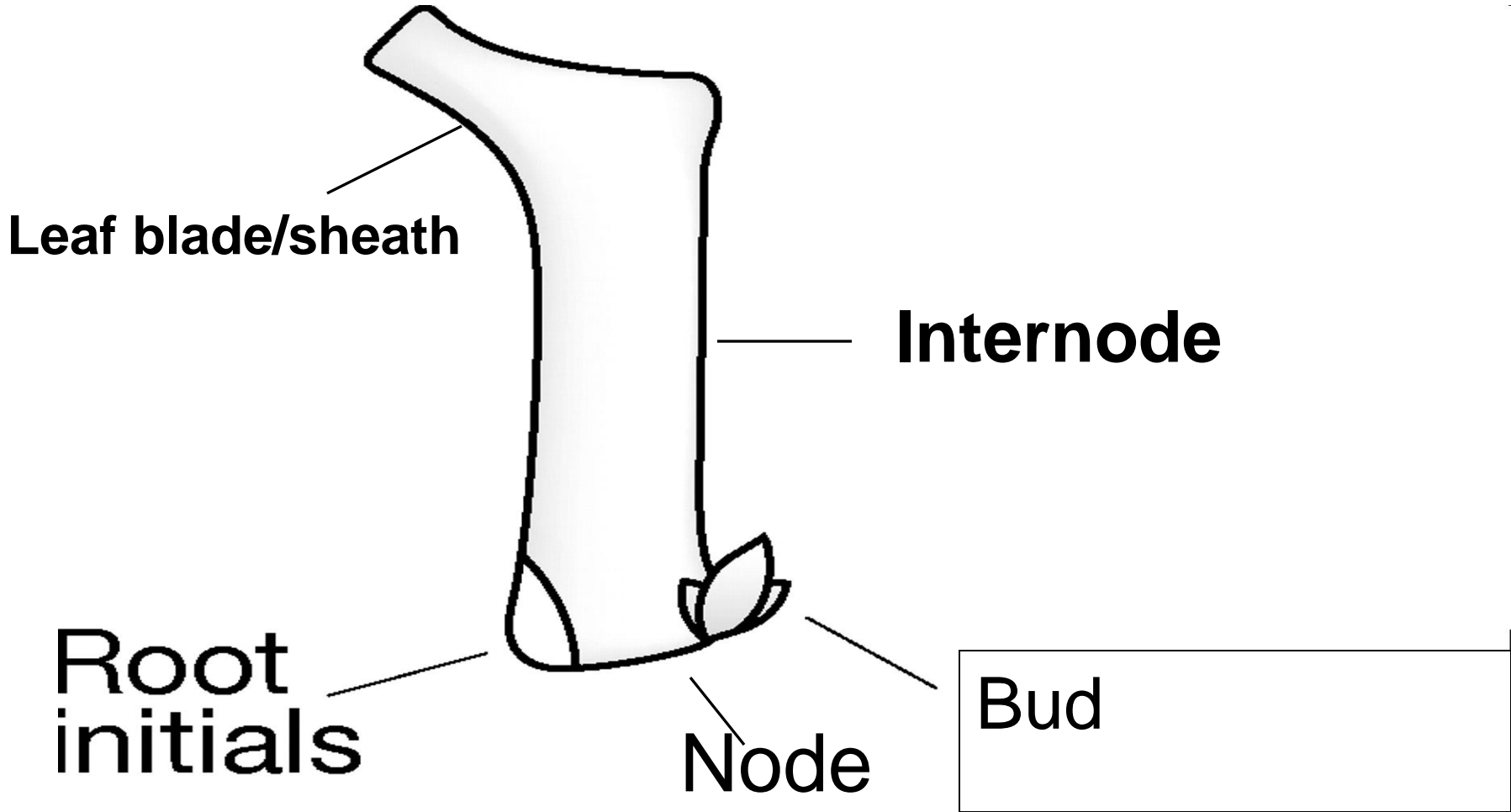




**Green shoots in  
spring are produced  
from lateral buds that  
were dormant at nodal  
areas that survived  
the winter**

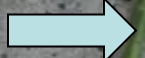
# Diagram of a Barley grass phytomer. The basic building block of the grass plant.

(Image courtesy of B. P. Forester and others, Annals of Botany 2007 100(4):725-733)

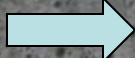


Orange arrows indicate the location of nodes. There is a bud at each node.

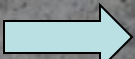
Vertical aerial shoots



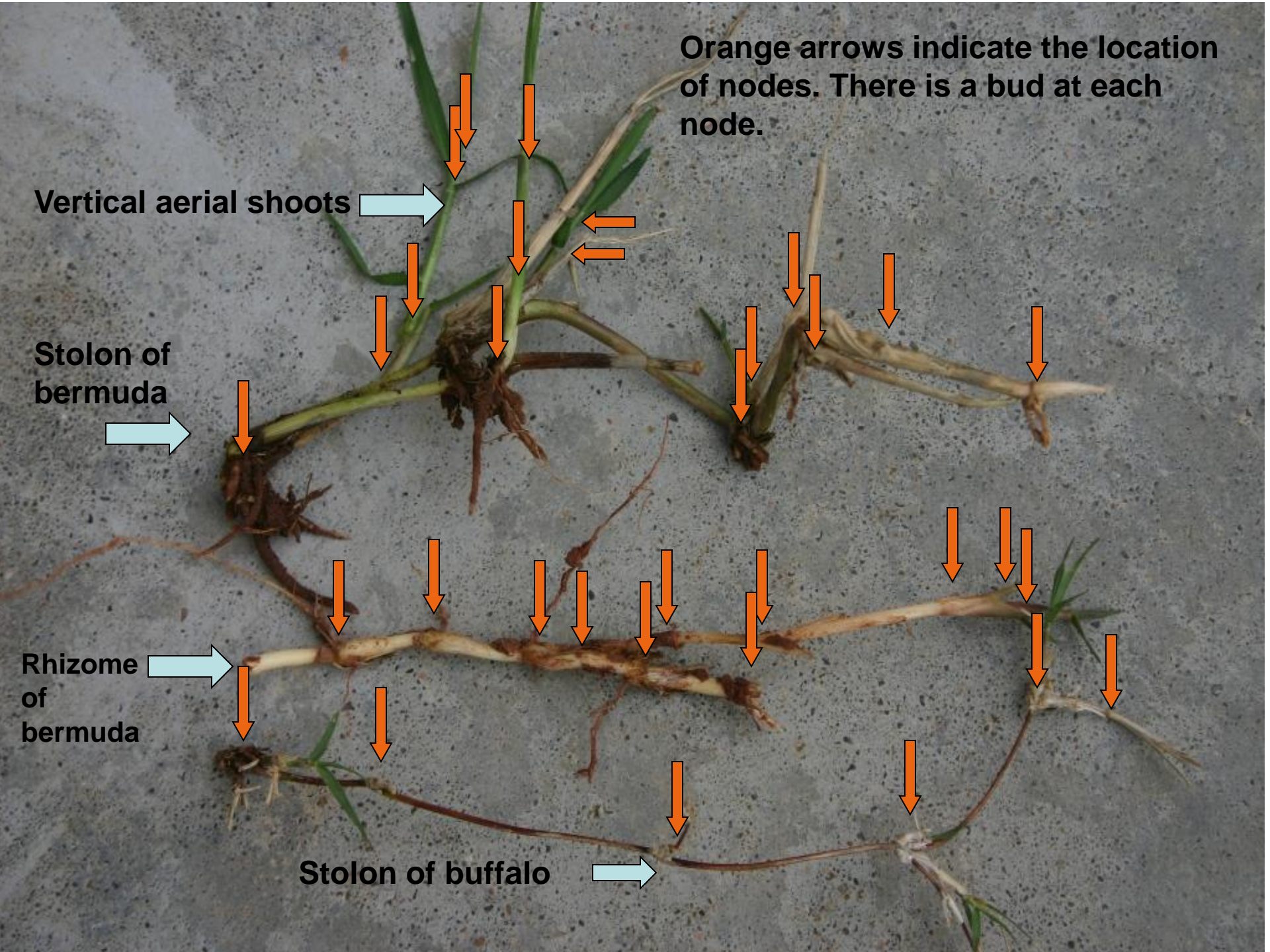
Stolon of bermuda



Rhizome of bermuda



Stolon of buffalo



In winter, can you tell if the aerial shoots, stolons and rhizomes are alive or dead?



- Example: Jan 25, 2010 canopy brushing reveals high number of green aerial shoots in Buffalograss



Firm, Green, White, Red or Purple internodes are Good!  
Soft, mushy, brown or only straw tan internodes are Bad News!

These 4 stolons are alive!



This one is dead

**Canopy brushing and close examination revealed no surviving vertical aerial shoots or stolons in the area of common bermudagrass. If little to no survival of aerial shoots is found, wash soil from plug and look for live white rhizomes**



- **Plug of common bermuda extracted, look for live, firm white rhizomes. Washing soil from the plug can be helpful.**





- Several large, firm, white rhizomes have survived (see Arrows). This stand had delayed greenup due to loss of aerial shoots to winter-kill but regenerated rapidly from the rhizomes



# **Window Sill Method of Assessing Damage During Winter**

In the winter, prior to green up, take a plug, no smaller than 3 inches in diameter by 3 inches deep and place in a dish on a warm (70F or above), sunny window sill. Keep soil moist. Watch for regrowth and sources (origin of the shoots) over next 3 to 4 weeks.

# Questions?

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