## Steve Fransen

Chapter 11: Livestock Management Amendments. This is an important chapter in the series focused on Nonpoint Source Plan. I think we need to omit Figure 1 on page as this could be confusing and lead to incorrect decisions as based on when nutrients could or should be applied to WA grasslands. PNW 699 and 708 Pasture Calendars highlight the Growth Periods of perennial grasses, grown for pasture, silage or hay, statewide. In the design of these Calendars, we used Calendar Figure 1 in both publications because, as based on our latitude, perennial cool-season grasses have similar but also different growth and environmental challenges for sustainable growth and quality. Winter Growth Period is notably different from the Westside to the Inland side as perennials must survive during this period where plants depend on stored sugar reserves for survival and prepare for the spring greenup growth period. Grass roots are the foundational component plus storage of fructan sugars in the stubble and crown regions of these perennials. Our Calendars recognize different environmental zones or areas in the PNW. We used USDA-NRCS Ag Handbook 290 description of Major Land Resource Areas (MLRA's) to differentiate common and / or expected grass growth stages within an MLRA, as shown by the actual calendars within both bulletins. Because both 699 and 708 cover the entire state, I'd suggest using these in Chapter 11 rather than Figure 1 on page 72. These provide specific guidance within an MLRA on expected pasture and hayland growth. Additionally, I think we should add a new definition term "Avoid". We used Avoid to provide 'caution', 'shun', 'refrain from', and 'evade' rather than "do not apply" or as shown on page 72 where "Storage Holding Period" or " Land Application Period", were used. Our Calendars clearly discuss what will happen and why if excess nitrogen is applied in Growth Periods 3. That is why we want producers and others to 'avoid' application during this time BUT if they must or do apply nitrogen then the risk of grass winterkill can dramatically increase. Other nutrients, e.g., P, K, S, etc. will not have the stimulating effect on grass and pasture growth during Periods 3a and 3b, as we discuss in Calendar Essentials. Please note PNW 699 was published in 2017 and 708 was published in 2024. I think the better approach for Chapter 11 is to cite these Calendars, use the Calendar Tables showing the Growth Periods and MLRA regions statewide. We then base the recommendations based on actual specific locations of ag operations, plant growth and reduced risks plus always being good stewards of our common environment.