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# Stocking Small Pastures Using AUM's – Part 2

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In the Summer 2010 issue of *Backyards and Beyond* we defined an animal unit month (AUM) as the amount of forage required by an animal unit (AU) for one month. The forage demand by the grazing animals is half of what you need to know in order to determine the grazing capacity and proper stocking rate for your land. Grazing capacity or stocking capacity are terms synonymous with carrying capacity, which is defined by the average number of livestock and/or wildlife that may be sustained on a management unit compatible with management objectives for the unit. The proper stocking rate will depend on forage demand by the grazing animals compared to forage productivity of the pasture. Stocking rate is the number of animal units, multiplied by the number of months divided by the area being grazed. Stocking rates can be expressed several ways. On Arizona rangelands it is not uncommon to describe stocking rates as animal units per section per year. On smaller units of land or pastures in complex grazing management scenarios, units such as animal days per acre (ADA) may be used.

So how do you determine the grazing capacity and appropriate stocking rate for an area of land? There are two basic approaches to estimating grazing capacity, the forage inventory approach and the stock and monitor approach. Most rangelands should be managed by the "stock and monitor" approach. Under this scenario, range managers measure the impact of actual stocking levels over time on utilization and utilization patterns, vegetation composition, plant vigor, soil cover, animal condition and other factors to see if changes in stocking and/or management are needed.

On smaller parcels of land, especially homogeneous pastures associated with irrigated production systems, a forage inventory approach may provide land owners an initial estimate of grazing capacity or a method to compare the relative capacity among small pastures. This concept requires a determination of the amount of forage production on a defined area. Normally these estimates are done during the peak in forage production, known as peak standing crop. On

native rangeland in southern Arizona this is usually sometime in mid-September and mid to late summer on most irrigated pastures.

There are many methods to estimate peak standing crop, but most require plant harvest through clipping, drying and weighing vegetation. This can be done various ways by placing a quadrat frame at various locations throughout the pasture and then clipping all plant material that occurs within the sample frame. The clipped forage is then bagged, dried and weighed. Drying is usually done in special drying ovens but for general purposes, air dried samples, especially those dried in the hot Arizona sun will suffice. Don't forget to tare the bag (determine bag weight) when calculating forage sample weights. A standard quadrat frame (used to delineate the area) size is 0.96 or 9.6 ft<sup>2</sup> because sample weights are easily converted to pounds per acre by multiplying grams times 100 or 10 converts to pounds per acre. Typically 10 or more randomly placed quadrat frames should be clipped, bagged, dried and weighed. The average value of these samples can then be used to compare to forage demand by your grazing animals. The number of quadrats that should be clipped to provide an adequate sample depends upon how homogeneous and dense the forage conditions are in the pasture. However there will be variability associated with any estimate of forage production so use caution when applying results to stocking levels and closely monitor forage disappearance over time.

Because of the variability associated with estimating forage production and the seasonal shifts in diet and habitat selection, this approach is not generally useful as a ranch management approach to setting stocking. Grazing capacity estimates based upon one-point-in-time rangeland inventories do not produce results of sufficient accuracy to be the sole basis for adjusting time of grazing or stocking rates on specific grazing units. Grazing capacity should instead be based on impacts of historical and current stocking rates, grazing management, and weather. Adjustments in stocking levels should be made through monitoring over time and in response to yearly and seasonal weather.