FEED/FODDER

NPARR 5(2), 2014-0108 Suppressive fodder plants as part of an integrated management program for Parthenium hysterophorus L.

Parthenium hysterophorus L. is an alien invasive weed in both Australia and Pakistan infesting rangelands, reducing fodder biomass and causing significant livestock production losses. Previous studies have identified a number of introduced and native fodder species that can suppress the growth of P. hysterophorus in glasshouse trials. These species can also provide an adequate fodder biomass for livestock production. In this study 11 of these fodder species were sown at the recommended rates into P. hysterophorus infested field sites at Injune and Monto, Australia while an additional five species were sown into similar infested field sites at Islamabad and Mardan, in northern Pakistan. Measurements taken on dry shoot biomass production of the fodder species were used to determine their P. hysterophorus growth suppressing ability and fodder biomass production. In Australia, all of the fodder species suppressed the growth of P. hysterophorus with Setaria incrassata, Cenchrus ciliaris, Clitoria ternatea, Themeda triandra and Astrebla squarrosa (Injune field site), and Chloris gayana, C. ciliaris, Dichanthium sericeum, Clitoria ternatea and Bothriochloa insculpta (Monto field site) all suppressing growth by >62% and producing at least 329 g m⁻² of dry fodder biomass. In Pakistan, all of the fodder species suppressed the growth of P. hysterophorus with Sorghum almunum, C. ciliaris and C. gayana suppressing growth by >73% and producing at least 622 g m⁻² of dry fodder biomass. Some species such as S. incrassata performed well at just one field site, while others (C. ciliaris and C. gayana) performed well at all the four field sites, indicating that such plants could be considered as part of a new integrated weed management system for P. hysterophorus in both Australia and Pakistan [Naeem Khan*, Asad Shabbir, Doug George, Gul Hassan and Steve W. Adkins (The School of Agriculture and Food Science, The University of Queensland, St Lucia, Brisbane, Queensland 4072, Australia), Field Crops Research, 2014, 156, 172–179].

NPARR 5(2), 2014-0109 Potential of Moringa oleifera L. as livestock fodder crop: a review

Dairy and meat production in dry regions is very complex due to low quality and shortage of fodder, especially in dry periods. Livestock scientists are eager to explore and investigate good-quality fodders that can boost milk and meat production in an organic and economical way. Some organic meals like soybean, cotton seed cake, and range grasses are being utilized to overcome the fodder shortage. These have some limitations, however, like unavailability in December through May as currently green fodder is least available after wheat, alfalfa, brassica, and maize harvesting. This leads towards reduced livestock production and low-quality milk and meat products. At the same time, the rapid increase in human population is increasing the food requirements, which is in turn threatening environmental conservation and enlarging the gap between the availability of resources and the meeting of human necessities. People are fulfilling their requirements for food and shelter by depleting natural resources. Plant scientists are exploring the types of plants that can fulfill the life necessities of both human beings and livestock but can also be used as growth enhancers for main crops without natural resources degradation. Over the last few years, underutilized crops and trees have captured the attention of plant scientists, nutritionists, and growers. Moringa oleifera is one of those plants that has been neglected for several years but now is being investigated for its fast growth, higher nutritional attributes, and utilization as a livestock fodder crop. It can be grown as a crop on marginal lands with high temperatures and low water availability, where it is difficult to
cultivate other agricultural crops. The present review article gives a detailed discussion on the nutritional quality of moringa parts and their palatability for livestock, fish, and poultry, as well as suitable growing conditions and cultural practices [Wasif Nouman*, Shahzad Maqsood Ahmed Basra, Muhammad Tahir Siddiqui, Azra Yasmeen, Tehseen Gull and Maria Angelica Cervantes Alcayde (Department of Forestry, Range & Wildlife Management, Bahauddin Zakariya University, Multan, Pakistan), *Turkey J Agric For, 2014, 38, 1-14].

*NPARR* 5(2), 2014-0110 **Fodder yield and quality of oats fodder (Avena sativa) as influenced by salinity of irrigation water and applied nitrogen levels**

An experiment consisting of four irrigation water salinity levels (good quality water (0.69 dS/m), 2 EC, 4 EC and 6 EC water) and four N levels (0, 50, 100 and 125% recommended dose of N) was laid down in a factorial RBD to find out the effect on green fodder yield and quality of fodder oats. Salinity of irrigation water up to 4 EC did not influence fodder yield. The levels of proximate principles except those of total ash, organic matter and ether extract at 2nd cut were not affected significantly by irrigation salinity up to 6 EC compared to good quality water. Application of 100% recommended dose (150 kg ha⁻¹) of N (RDN) significantly increased the yield and quality of oats green fodder. N application did not significantly affect hemicellulose, neutral detergent fibre at 2nd cut and acid detergent fibre at 1st cut. The treatment involving 125% RDN decreased NDF content significantly while ADF and total carbohydrate content decreased significantly using 50% RDN. Crude protein content also increased significantly using 50% RDN [Kumari Alka*, Kumar Parveen, Ahmad Eajaz, Singh Magan, Kumar Rakesh, Yadav R.K., Datt Chander and Chinchmalatpure Anil (Indian Central Soil Salinity Research Institute, Karnal-132 001, Haryana, India), *Journal of Animal Nutrition, 2014, 31(3), 266-271].

*NPARR* 5(2), 2014-0111 **Development and identification of high grain and fodder yielding pearl millet [Pennisetum glaucum (L.) R. Br.] hybrids suitable for scarce rainfall regions**

An attempt is made to develop and identify the best pearl millet hybrid for grain yield and fodder yield suitable to grow under low rainfall situations of scarce rainfall regions when compared with the best existing cultivars at AICPMIP, ARS, ANGRAU, Ananthapuram Center. The material for the experiment was developed during rabi 2011–12. A total of 67 single cross hybrids of pearl millet were developed in three sets. In the first set, 18 crosses were developed by using single female parent (ICMA 96444) and 18 different restorer lines derived from segregating populations of ICRISAT provided material. In the second set, 16 crosses were developed by using single female parent (i.e., ARL-1) developed at Agricultural Research Station, Ananthapuram. Further in third set, a total of 33 crosses were developed by using 21 female parents (A lines) of ICRISAT origin and single restorer line (i.e. ARL-1) developed at Agricultural Research Station, Ananthapuram. The total experimental materials (67 newly developed single crosses along with nine popular hybrids as checks) were planted in completely randomized block design in four replications during kharif 2012 at two locations i.e., in Field No. 3 and Field No. 12 at AICPMIP, ARS, ANGRAU, Ananthapuram Center. Data were recorded on 10 different morphological characters viz., days to 50% flowering, plant height (cm), productive tillers per plant, panicle length (cm), panicle diameter (cm), days to maturity, seed set under bagging (%), 1000-grain weight (g), grain yield per plot (kg) and fodder yield per plot (kg). Results revealed the higher values of GCV, PCV, heritability and genetic advance for characters
grain yield and fodder yield. Based on association studies, the characters plant height, panicle diameter, panicle length, seed set under bagging and 1000-grain weight were identified as prime important characters, while going for selecting high grain and fodder yielding genotypes as they expressed significant positive association with grain yield and it was in turn positively related with fodder yield. From this study, it was found that the restorer line i.e. ARL-1 could be better utilized as good restorer parent on wide range of female parents based on the observation i.e. among three sets of top crosses, highest mean values for five characters (days to 50% flowering, plant height, days to maturity, 1000-grain weight and grain yield) were recorded in the second set of crosses and along with the better performance in maximum number of cross combinations for maximum number of characters studied where the common male parent (ARL-1) was used on different female parents of ICRISAT origin. Based on per se performance, out of the 67 single crosses evaluated, the two hybrids ICMA 96111 x ARL-1 and ICMA 96444 x 245 are identified as best dual purpose medium maturing and late maturing single cross hybrids, respectively, which are suitable to grow under scarce rainfall region with more than 40% yield superiority over the best check 86 M 64. For further evaluation, these two hybrids can be recommended for multi-location testing [Shanthi P.*, Rao M. Subba and Reddy B. Sahadeva (Scientist (Plant Breeding), ANGRAU, Perumallapalle, Tirupati-517 505 (A. P.), India), Research on Crops, 2014, 15(4), 755-784].