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| **Fodder cropsIntroduction**The fodder crops in agriculture are very important because of the fact that regular supply of adequate and nutritious fodder is essential for the promotion and development of livestock, which is one of the crucial factor of our economy. In Pakistan mainly two types of livestock production practices are prevailing i.e. rural household where animals are closely integrated with the rural subsistence economy using grown fodder and crop residues for livestock feed; and large herds kept in rangelands. More than half of animal feed is coming from fodders and crop residues, 1/3rd from grazing of rangelands, wastelands, canal bank, road sides and other crops and their by products (Table 1).**Table 1. Contribution of different sources to feed livestock in Pakistan.**

|  |  |
| --- | --- |
| **Sources** | **Contribution (%)** |
| **Fodder and crop residues** | **51** |
| **Forage/grazing** | **38** |
| **Cereal by-products** | **06** |
| **Post harvest grazing** | **03** |
| **Oilcakes, meals, animal protein** | **02** |

Fodder production is the major limiting factor for livestock production in our country. In terms of total Digestible Nutrients (TDN) we are short by about 25.65 million tons and in terms of Digestible Protein (DP) about 1.58 million tons. Major fodder crops grown during winter include berseem, lucerne, vetch, oats barley and mustard; while during summer these comprise maize sorghum, miller and cowpeas. These crops cover 16 to 19% of the total cropped area in the country. Over time, the area remained more or less stagnant, but production of these crops have increased due to Research and Development (R & D) efforts undertaken in the country. The relevant data from 1975-76 to 1997-98 are given in Table 2. The area with minor fluctuations increased from 2603 thousand hectares in 1976-77 to 2680 thousand hectares in 1997-98. However, total production in the corresponding years increased from 45097 thousand tones to 61300 thousand tones. Similarly, yield per unit area also increased from 17.4 t/ha to 22.9 t/ha i.e. about 31.6% increase as a result of the concerted R&D efforts made by the fodder research scientists through the development of improved production technologies. Another problem being faced by the farmers is short supply of fodder during the months of May-June and December-January. However due to recent R&D activities in the field of fodder crops in the country, growing of fodder crops like S.S. hybrids, winter cereal and legume in mixture and Mottgrass can fill this gap.**Table 2. Area (000ha) and production (000 tons) of fodder crops in Pakistan.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Area** | **Production** | **Average yield (t/ha)** |
| **1976-77** | **2603** | **45097** | **17.4** |
| **1980-81** | **2684** | **50708** | **18.9** |
| **1983-84** | **2795** | **54313** | **19.4** |
| **1984-85** | **2817** | **55199** | **19.6** |
| **1985-86** | **2774** | **54483** | **19.6** |
| **1986-87** | **2717** | **54214** | **19.9** |
| **1987-88** | **2666** | **53122** | **19.9** |
| **1988-89** | **2818** | **55400** | **19.7** |
| **1989-90** | **2789** | **56871** | **20.4** |
| **1990-91** | **2827** | **57714** | **20.4** |
| **1991-92** | **2628** | **56825** | **21.6** |
| **1992-93** | **2654** | **56797** | **21.4** |
| **1993-94** | **2644** | **57104** | **21.4** |
| **1994-95** | **2736** | **60082** | **22.0** |
| **1995-96** | **2709** | **60342** | **22.3** |
| **1996-97** | **2651** | **60518** | **22.8** |
| **1997-98** | **2680** | **61300** | **22.9** |

**Source: Planning Cell, Ministry of Food and Agriculture, Government of Pakistan.****The province wise area and production of fodder crops in Pakistan for the year 1997-98 are shown in Table 3. The Punjab province produces 77.26 percent of the total production of fodder crops in the country, followed by Sindh, NWFP and Baluchistan, which respectively produce 15.31, 4.85 and 2.58 percent in total.****Table 3. Province wise area (000ha) and production (000 tones) of fodder crops in Pakistan, 1997-98.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Province** | **Area** | **Production** | **Percentage** |
| **Punjab** | **2114.7** | **47358.5** | **77.26** |
| **Sindh** | **376.0** | **9388.9** | **15.31** |
| **NWFP** | **140.4** | **2972.5** | **4.85** |
| **Baluchistan** | **49.0** | **1579.8** | **2.58** |
| **Total** | **2680.1** | **61299.7** | **100.00** |

**The National Cooperative Research Prorgam on Fodder at NARC has developed various packages for improving fodder production. (Table 5).****Table 5. Package of improved production technology for better fodder yield.**

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| --- | --- | --- | --- | --- | --- |
| **Crops** | **Seed rate Kg/ha** | **Sowing time** | **Method of sowing** | **Fertilizer    N-P-Kkg/ha** | **Green fodder yield (t/ha)** |
| **Berseem** | **20-25** | **21st Sept- end of Oct.** | **Broadcast in standing water.** | **22-115-00** | **125-150** |
| **Lucerne** | **10-12** | **Mid Oct.- mid Nov.** | **45 cm apart in lines.** | **22-115-00** | **110-125** |
| **Oats** | **75-100** | **21st Sept.-** | **30 cm apart in lines.** | **75-50-00** | **60-80** |
| **Sorghum** | **75-80** | **March-Aug.** | **-do-** | **60-60-00** | **50-60** |
| **S.S. hybrid** | **25-30** | **Mid Feb.- mid Mar.** | **45 cm apart lines in good moisture** | **-do-(60kgN/ha after each cut)** | **120-130** |
| **Millet** | **12-15** | **April-Aug.** | **30 cm apart in lines** | **60-60-00** | **40-60** |
| **Guar** | **40-50** | **April-July** | **-do-** | **22-60-00** | **30-40** |
| **Cowpeas** | **30-35** | **March-July** | **45 cm apart** | **22-60-00** | **30-40** |

**The National Cooperative Research Prorgam on Fodder at NARC has also prepared a shedule of sowing and harvesting of fodder crops under irrigated conditions for year-round green fodder availability has been worked out (Table 6).****Table 6. Schedule for year-round green fodder availability under irrigated conditions.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Crops** | **Sowing time** | **Harvesting time** | **Fodder Production (t/ha)** |
| **Sorghum** | **From 3rd week of March to mid- September.** | **June to December** | **50-70** |
| **Sorghum + Cowpeas** | **From 3rd week of March to mid- September.** | **June to December** | **40-60** |
| **Millet** | **From 3rd week of March to mid- September.** | **June to December** | **45-65** |
| **Millet + Cowpeas** | **From 3rd week of March to mid- September.** | **June to December** | **40-60** |
| **Maize** | **From 3rd week of March to mid- September.** | **June to December** | **50-70** |
| **Maize + Cowpeas** | **From 3rd week of March to mid- September.** | **June to December** | **50-70** |
| **Sorghum Sudan grass hybrid** | **From mid- Feb. to mid-March** | **Mid-April to December** | **100-120           (Total of 4-5 cuttings)** |
| **Mottgrass** | **From mid- Feb. to August** | **Mid-April to December(Perennial crop)** | **80-150 (Total of 5-6 cuttings)** |
| **Berseem** | **From September to November.** | **Mid-December to mid-May.** | **80-100          (Total of 5-6 cuttings)** |
| **Berseem + Oats** | **From September to November.** | **Early December to mid-May.** | **100-120(Total of 5-6 cuttings)** |
| **Lucerne** | **From December to November.** | **Perennial crop available around the year.(Total of 6-7 cuttings)** | **65-90** |
| **Lucerne + oats** | **From Sep. to            November.** | **Perennial crop available around the year** | **70-100 (Total of 6-7cuttings)** |
| **Oats** | **From Sep. to            December.** | **From Early Dec. to end of April.** | **60-8** |

**NOTE:****Multi-cut improved varieties of fodder crops like B. N. hybrid, S. S. hybrid, Elephant grass, Lucerne, Oats and Berseem have been identified and promoted for general cultivation to cover fodder deficit periods.** |

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