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Impact of organic manure and crop residue management on Production and soil fertility status in Pigeonpea based intercropping system

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An experiment was conducted at Pulses Research unit, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (Maharashtra) during kharif season of 2013-14 on medium deep black soil to find out influence of organic manure and crop residue management on growth, yield and soil fertility in pigeon pea based intercropping system. The experiment was laid out in split plot design with three replication consisting three cropping system (Pigeonpea + greengram, Pigeonpea + blackgram, Sole pigeonpea) and three levels of organic manure (FYM + phosphocompost, Pigeonpea stalk + phosphocompost, RDF alone).

Significantly highest grain yield (1601 kg/ha) of pigeonpea was recorded in sole pigeonpea followed by pigeonpea + blackgram (1151 kg/ ha) and lowest with pigeonpea + greengram (1125 kg/ha). Whereas in blackgram and greengram were 859kg/ha and 608 kg/ ha respectively. The significantly highest pigeonpea equivalent yield was computed in pigeonpea + blackgram intercropping system (2002 kg/ha), followed by pigeonpea + greengram intercropping system (1725 kg/ha) and lowest with sole pigeonpea (1601 kg/ha). Available NPK 182.8, 22.5, 431.8 kg/ha respectively, soil microbial biomass carbon (222 ug/g soil), microbial count (fugal 8.22 104 cfu g-1soil, bacterial 54.33 10^7 cfu g^{-1} soil and actinomycetes population 35.33 10^6 cfu g^{-1} soil respectively) was recorded highest and soil pH (7.97), electrical conductivity (0.15 dSm^{-1}) and bulk density (1.30 g cc^{-1}) was lowered under pigeonpea + blackgram intercropping system. Among nutrient management through application of inorganic fertilizer recorded highest seed yield of pigeonpea (1330 kg/ha), pigeonpea equivalent yield (1832 kg/ha). Combine application of organic manure (FYM) with phosphocompost significantly reduced bulk density (1.29 g/cc), soil pH (7.96) and electrical conductivity (0.14 dSm^{-1}) and also improved soil fertility status (183.9, 23.4, 431.9 kg/ha NPK respectively, biological indicators (fugal 8.22 104 cfu g^{-1} soil, bacterial 54.33 107 cfu g^{-1} soil and actinomycetes population 35.67 106 cfu g^{-1} soil respectively) and soil microbial biomass carbon (180.54 ug/g soil).

In crux for getting higher seed yield and improvement in soil fertility status pigeonpea + blackgram intercropping system should be grown under rainfed condition.

Keywords: Organic manure, crop residue, NMR, B: C ratio.

Biography

Ravindra K Nagar completed his MSc (Agronomy) at the age of 23 years from Dr Panjabrao Deshmukh Krishi Vidyapeeth Akola (Maharashtra).

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