

THESIS ABSTRACTS
2017

Agronomy

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| | | |
|------------------------|---|--|
| Title | - | Effect of secondary and micronutrient application on growth, yield and quality of soybean (<i>Glycine max</i> L.) |
| Researcher | - | Gaikwad, J.M. |
| Research Guide | - | Kausalye, S.P. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 1724 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810033251 |
| Abstract | - | |

The field investigation entitled “Effect of secondary and micronutrient application on growth, yield and quality of soybean (*Glycine max* L.)” was conducted at college farm, Department of Agronomy, College of Agriculture, Latur. The experimental field was leveled and well drained. The soil was clayey in texture, low in nitrogen, medium in phosphorus and high in potassium with alkaline in reaction. The environmental conditions prevailed during experimental period was favorable for normal growth and maturity of soybean crop.

The experiment was laid out in a randomized block design with eight treatments and three replications. Sowing was done on 23th June, 2016 by dibbling the seeds at spacing 45 cm x 5 cm. The recommended cultural practices and plant protection measures were undertaken. The recommended dose of fertilizer (30:60:30 NPK kg ha⁻¹) was applied at the time of sowing through Urea, DAP and MOP. The crop was harvested on 1th October, 2016. The treatments were T₁: Control, T₂: RDF (30:60:30 NPK kg ha⁻¹), T₃: RDF + S @ 20 kg ha⁻¹, T₄: RDF + MgSO₄ @ 20 kg ha⁻¹, T₅: RDF + FeSO₄ @ 20 kg ha⁻¹, T₆: RDF + ZnSO₄ @ 20 kg ha⁻¹, T₇: RDF + CuSO₄ @ 10 kg ha⁻¹, T₈: RDF + Borax @ 10 kg ha⁻¹.

Treatment T₃ receiving RDF + Sulphur @ 20 kg ha⁻¹ to soybean crop recorded significantly highest growth parameters, yield attributes, seed yield (kg ha⁻¹), straw yield (kg ha⁻¹), oil yield (kg ha⁻¹) and protein yield (kg ha⁻¹) over rest of the treatment except found at par with RDF + ZnSO₄ @ 20 kg ha⁻¹ (T₆) and RDF + FeSO₄ @ 20 kg ha⁻¹ (T₅). Also significantly highest gross monetary returns ₹ 78486 ha⁻¹, net monetary returns ₹ 44362 ha⁻¹ and B:C ratio 2.30 were recorded in T₃ which was followed by treatments T₆ and T₅ over rest of all treatments.

On the basis of above findings it may be inferred that for getting maximum seed yield, net returns and B:C ratio, application of RDF with Sulphur @ 20 kg ha⁻¹ or ZnSO₄ @ 20 kg ha⁻¹ or FeSO₄ @ 20 kg ha⁻¹ was found effective in increasing production of soybean.

| | | |
|------------------------|---|---|
| Title | - | Effect of topping and fertilizer levels on growth and yield of pigeonpea (<i>Cajanuscajan L. Millsp.</i>) |
| Researcher | - | Ware, Baba Pralhad |
| Research Guide | - | Suryawanshi, V.P. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 1727 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810033256 |
| Abstract | - | |

An experiment was conducted during kharif season of the year 2016-17 at Experimental Farm, Agronomy Section, College of Agriculture, Latur, to study the effect of topping and fertilizer level on growth and yield of pigeonpea. The experimental plot was clayey in texture, low in available nitrogen ($185.00 \text{ kg ha}^{-1}$), phosphorus (8.17 kg ha^{-1}) and high in potassium ($372.50 \text{ kg ha}^{-1}$). The soil was moderately alkaline in reaction ($8.13 \text{ P}^{\text{H}}$).

The experiment was laid out in a Factorial Randomized Block Design with 9 treatment combinations consisting of three topping treatments *viz.*, and T₁- No topping, T₂- Topping at 45 DAS and T₃- Topping at 60 DAS and three fertilizer levels *viz.*, 75% RDF (R₁), 100% RDF (F₂), 125% RDF (F₃) replicated three times. The gross plot size of each experimental unit was 6.3 m x 4.2 m and net plot size was 4.5 m x 3.8 m respectively. Sowing was done by dibbling method on 22nd June 2016. The fertilizers are applied as per treatments before sowing. The recommended cultural practices and plant protection measures were under taken as per recommendation.

Among three topping treatment of pigeonpea, topping at 60 DAS (T₃) recorded significantly higher growth and yield attributes, yield, gross monetary return, net monetary return and B : C ratio over the treatment of no topping and topping at 45 DAS.

The application of 125% RDF (F₃) recorded higher growth and yield attributes, yield, net monetary return and B : C ratio, which was significantly superior over 75% RDF and found at par with 100% RDF.

| | | |
|------------------------|---|---|
| Title | - | Production constraints analysis of niger in(<i>Guizotiaabyssinica</i>) vertisol |
| Researcher | - | Krishna, S.K. |
| Research Guide | - | Suryawanshi, V.P. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 1728 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810033258 |
| Abstract | - | |

A field experiment was conducted during *kharif* season of 2016 Experimental Farm of Agronomy section, College of Agriculture, Latur to identify and analyse the constraints in niger production. The soil of the experimental site was low in available nitrogen (225.64 kg ha⁻¹), medium in available phosphorus (21.74 kg ha⁻¹), high in available potassium (490.36 kg ha⁻¹) content and alkaline in reaction with pH of 8.1. The experiment was laid out in Randomized Block Design with seven treatments were replicated thrice. The treatments were T₁: Full package of practices, T₂: T₁ - Fertilizer, T₃: T₁ - Thinning, T₄: T₁ - Weeding, T₅: T₁ - (Fertilizer + Thinning), T₆: T₁ - (Fertilizer + Weeding), T₇: T₁ - (Thinning + Weeding). Sowing was done by dibbling by using seed rate 2.5 kg ha⁻¹. The gross and net plot size was 5.4 x 4.2 m² and 4.8 x 3.6 m² respectively. The recommended dose of fertilizer was (40:20:00 kg NPK ha⁻¹).

The results indicated that adoption of full package of practices was recorded significantly higher seed yield (483 kg ha⁻¹). Among the various single production constraints fertilizer was found to be most crucial factor caused yield losses up to 26 % followed by weeding 25 % and thinning 7 %. Regarding the combination of two factor production constraints, fertilizer + weeding was resulted in reduction in niger yield by 45 % and found to be as a major resource constraints in niger production followed by thinning + weeding and fertilizer + thinning caused yield losses up to 39 % and 33 % respectively.

Title - **Effect of phosphorus and biofertilizer on growth, yield and economics of pigeonpea (*Cajanuscajan L. Millsp.*) under rainfed condition**

Researcher - Ade, Umesh Kailas

Research Guide - Kalegore, N.K.

Department - Agronomy

Subject - Agronomy

Degree - M.Sc

Thesis No. - 1729

Krishikosh link - <http://krishikosh.egranth.ac.in/handle/1/5810033259>

Abstract -

The field investigation entitled “Effect of phosphorus and biofertilizers on growth, yield and economics of pigeonpea (*CajanuscajanL. Millsp.*)underrainfed condition” was conducted at Experimental Farm, Agronomy Section, College of Agriculture, Latur. The experimental field was leveled and well drained. The soil was medium and black in colour with good drainage. The soil was clayey in nature and slightly alkaline (7.8) in reaction, low in nitrogen, medium in available phosphorus and rich in available potassium. The environmental conditions were favorably congenial for normal growth and maturity of pigeonpea crop.

The experiment was laid out in Factorial Randomized Block Design with two factors and replicated thrice. Whereas first factor comprises levels of phosphorus *viz.* 0 (control), 40 , 50 and 60 kg P ha⁻¹, second factor comprises seed inoculations with biofertilizerviz. alone inoculation of *Rhizobium* @ 6 ml kg⁻¹ seeds, alone inoculation PSB @ 6 ml kg⁻¹ seeds and dual inoculation *Rhizobium* + PSB each of @ 6 ml kg⁻¹ seeds. The experimental site having gross and net plot size was 5.4 x 4.5 m² and 4.2 x 3.9m² respectively. The recommended dose of fertilizer was applied at time sowing (25:50:00 NPK kg ha⁻¹ where P applied as per treatments). The sowing was done on 22nd June 2016 by dibbling and harvested on 3rd January 2017. All the cultural practices were followed by as per package of practices. The yield data for seed and straw yield for all plots were collected at the end of experimentation. Processed seed sample were digested and N was determined by micro kjeldahal method as advocated by Piper (1966). Protein content was calculated by multiplying N content by the factor 6.25.

The application of phosphorus @ 60 kg ha⁻¹ given significantly higher growth and yield attributes, gross monetary return, net monetary return and B: C ratio over the rest of the levels of phosphorus. Whereas NMR was remained at par with 50 kg P ha⁻¹. Among three biofertilizer treatments, dual seed inoculation with *Rhizobium* + PSB was recorded higher growth and yield attributes, gross monetary return, net monetary return and B: C ratio than the individual seed inoculation of *Rhizobium* or PSB.

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|------------------------|---|---|
| Title | - | Effect of foliar application of agrochemicals on growth and yield of soybean (<i>Glycine max</i> (L.) Merrill) |
| Researcher | - | Bangar, KalpanaDagadu |
| Research Guide | - | Kalegore, N.K. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 1739 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810033325 |
| Abstract | - | |

The experiment was conducted during *khari*fseason of the year 2016 at Experimental Farm of Agronomy section, College of Agriculture, Latur, to study the effect of foliar application of agrochemicals on growth, yield and economics of soybean. The experimental field was levelled and well drained. The soil was clayey in texture, low in available nitrogen (108 kg ha^{-1}), low in available phosphorus (8.18 kg ha^{-1}), very high in available potassium (430 kg ha^{-1}) and slightly alkaline in reaction (7.45 pH).

The experiment laid out in Randomized Block Design consisting ten foliar application of agrochemicals at different growth stages *viz.*, Control (T_1), Water spray at 30 and 45 DAS (T_2), Thiourea spray @ 0.1 % at 30 DAS (T_3), Thiourea spray @ 0.1 % at 30 and 45 DAS (T_4), Urea spray @ 2% at 30 DAS (T_5), Urea spray @ 2% at 30 and 45 DAS (T_6), KNO_3 spray @ 1 % at 30 DAS (T_7), KNO_3 spray @ 1 % at 30 and 45 DAS (T_8), 19:19:19 spray @ 1 % at 30 DAS (T_9) and 19:19:19 spray @ 1 % at 30 and 45 DAS (T_{10}) replicated thrice. Sowing was done on 21st June 2016. The seed of soybean variety MAUS- 71 was used for sowing. The soybean crop was harvested on 30th September 2016. The recommended dose of fertilizer was 30:60:30 NPK kg ha^{-1} .

The application of thiourea spray @ 0.1 per cent at 30 and 45 DAS (T_4) was recorded higher plant height, number of functional leaves plant^{-1} , leaf area plant^{-1} , number of branches plant^{-1} and dry matter accumulation plant^{-1} . The maximum pod yield plant^{-1} , seed yield plant^{-1} , number of seeds plant^{-1} was obtained with the application of thiourea spray @ 0.1 per

cent at 30 and 45 DAS (T₄). Maximum seed, straw and biological yield were obtained due to the application of thiourea spray @ 0.1 per cent at 30 and 45 DAS (T₄). The maximum gross and net monetary return with higher B: C ratio was obtained with the application of thiourea spray @ 0.1 per cent at 30 and 45 DAS (T₄). Application of thiourea spray @ 0.1 per cent at 30 and 45 DAS (T₄) was produced higher protein and oil yield. This treatment was followed by Thiourea spray @ 0.1 % at 30 DAS (T₃), KNO₃ spray @ 1 % at 30 and 45 DAS (T₈) and 19:19:19 spray @1 % at 30 and 45 DAS (T₁₀).

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|------------------------|---|---|
| Title | - | Response of hybrid sunflower (<i>Helianthus annuus</i>L.) to micronutrients in <i>kharif</i> season |
| Researcher | - | Kawade, Manjushri Babanrao |
| Research Guide | - | Kalegore, N.K. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 1740 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810033327 |
| Abstract | - | |

One of the main reasons of low yield of the sunflower is the deficiency of micronutrients. The use of essential micronutrients as per the requirement of the crop is the key to boost and sustain crop productivity. Among micronutrients deficiency, B, Zn and Fe deficiency is most dominant problem in the world, which are involved in the reduction of sunflower yield. Therefore, a field experiment entitled “Response of hybrid sunflower (*Helianthus annuus* L.) to micronutrients in *kharif* season” was planned to find out the requirement of micronutrients to sunflower and to calculate the economics of micronutrient application to sunflower crop.

An experiment was conducted at Experimental Farm of Agronomy, College of Agriculture, Latur during 2016. The experimental plot was laid out in a Randomized Block Design with ten treatments replicated thrice. The treatments were T₁ - RDF (90:45:45 NPK kg ha⁻¹), T₂- RDF + ZnSO₄ @ 10 kg ha⁻¹, T₃- RDF + ZnSO₄ @ 20 kg ha⁻¹, T₄- RDF + ZnSO₄ @ 30 kg ha⁻¹, T₅ - RDF + FeSO₄ @ 10 kg ha⁻¹, T₆ - RDF + FeSO₄ @ 20 kg ha⁻¹, T₇ - RDF + FeSO₄ @ 30 kg ha⁻¹, T₈ - RDF + Borax @ 2.0 kg ha⁻¹, T₉ - RDF + Borax @ 3.5 kg ha⁻¹ and T₁₀ - RDF + Borax @ 5.0 kg ha⁻¹.

The data of the present study revealed that the sunflower crop grown in *kharif* season produced significantly higher growth parameters i.e., number of functional leaves, leaf area, total dry matter accumulation, stem girth and head diameter plant⁻¹ with the application of RDF + Borax @ 5.0 kg ha⁻¹ (T₁₀) followed by the application of RDF + ZnSO₄ @ 30 kg ha⁻¹ (T₄). This treatment also recorded maximum number of seeds head⁻¹, test weight, per cent of filled seeds and seed yield plant⁻¹. The significantly higher oil content as well as oil and protein

yield of sunflower was obtained due to the application of Borax @ 5.0 kg ha⁻¹ along with RDF (T₁₀). Application of RDF + Borax @ 5.0 kg ha⁻¹ (T₁₀) produced higher seed yield and lower stalk yield which has contributed to obtain higher gross and net monetary return with higher B:C ratio.

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|------------------------|---|---|
| Title | - | Effect of nutrient management on growth and yield of niger (Guizotia abyssinica L.) |
| Researcher | - | Ghuge, Rameshwar Sheshrao |
| Research Guide | - | Gokhale, D.N. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 1745 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810033341 |
| Abstract | - | |

The field investigation entitled “Effect of nutrient management on growth and yield of niger (*Guizotia abyssinica* L.)” was conducted at experimental research farm, Department of Agronomy, Vasant Rao Naik Marathwada Krishi Vidyapeeth, Parbhani. The experimental field was leveled and well drained. The soil was clayey in texture, low in nitrogen, medium in phosphorus and high in potassium with alkaline in reaction. The environmental conditions prevailed during experimental period was favorable for normal growth and maturity of niger crop. The experiment was laid out in a randomized block design with five treatments and four replications. The treatments were 100 % RDF (T₁), 100 % RDF + one foliar application of 2 % urea at flowering (T₂), 100 % RDF + Two foliar application of 2 % urea at flowering + capitula formation (T₃), 75 % RDF + one foliar application of 2 % urea at flowering (T₄), 75 % RDF + Two foliar application of 2 % urea at flowering + capitula formation (T₅). Sowing was done on 28th June, 2016 by dibbling the seeds at spacing 30 cm x 10 cm. The recommended cultural practices and plant protection measures were taken. The recommended dose of fertilizer (20:40:00 NPK kg ha⁻¹) was applied at the time of sowing through Urea and DAP. The crop was harvested on 29th September, 2016.

Application of 100 % RDF + Two foliar application of 2 % urea (T₃) to niger crop recorded significantly higher values in growth attributes and seed yield (549 kg ha⁻¹) as well as straw yield (4359 kg ha⁻¹) followed by the treatment T₂ i.e. 100 % RDF + one foliar application of 2 % urea at flowering. In case of monetary returns, the treatment T₃ recorded significantly higher

gross monetary returns (GMR) ₹ 22227 ha⁻¹, net monetary returns (NMR) ₹ 9194 ha⁻¹ and B:C ratio 1.71 with same trend followed by the treatment T₂.

On the basis of above findings it may be inferred that, for getting maximum seed yield, net returns and B:C ratio, application of 100 % RDF with two foliar application of 2 % urea at flowering and capitula formation (T₃) was found to be effective in increasing production of niger crop.

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|------------------------|---|---|
| Title | - | Response of <i>hirsutum</i> cotton to high density planting and nutrient management under rainfed condition |
| Researcher | - | Pathrikar, VinodBhanudas |
| Research Guide | - | Khargkharate, V.K. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 1747 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810033344 |
| Abstract | - | |

The field investigation entitled “Response of *hirsutum*cotton to high density planting and nutrient management under rainfed condition”was conducted at experimental farm, Department of Agronomy, College of Agriculture, Parbhani. The experimental field was leveled and well drained. The soil was clayey in texture, low in nitrogen, medium in phosphorus and high in potassium and alkaline in reaction. The environmental conditions prevailed during experimental period was favorable for normal growth and maturity of *hirsutum*cotton.

The experiment was laid out in a split plot design with three main plot treatments of plant density viz., S₁- 1,66,666 plants ha⁻¹ (60 x 10 cm²), S₂- 1,11,111 plants ha⁻¹ (60 x 15 cm²), S₃- 55,555 plants ha⁻¹ (60 x 30 cm²) and four sub plot treatments of nutrient management viz., F₁ – 100 % RDF, F₂ – 150 % RDF, F₃ – 100 % RDF + foliar spraying of 2% MgSO₄ and 1 % ZnSO₄ twice during flowering to boll development stage, F₄ – 150 % RDF + foliar spraying of 2% MgSO₄ and 1 % ZnSO₄ twice during flowering to boll development stage. All the treatmentswere replicated three times. Sowing was done on 27th June, 2016 by dibbling the seeds. The recommended cultural practices and plant protection measures were undertaken. The crop was harvested on 2nd Jan. 2017.

The plant density of 55,555 plants ha⁻¹ (60 x 30 cm²) recorded significantly higher number of functional leaves, leaf area, monopodial and sympodial branches, dry matter, root length, picked boll and seed cotton yield plant⁻¹ as compared to plant density of 1,11,111 plants ha⁻¹ (60 x 15 cm²) and 1,66,666 plants ha⁻¹ (60 x 10 cm²). The maximum plant height was observed with plant density of 1,66,666 plants ha⁻¹ (60 x 10 cm²). The seed cotton yield, straw

yield (kg ha^{-1}), net monetary returns (Rs ha^{-1}) and B:C ratio were recorded significantly higher with plant density of 1,66,666 plants ha^{-1} and followed by 1,11,111 plants ha^{-1} as compared to 55,555 plants ha^{-1} . Significantly higher nutrient uptake was recorded with higher plant density of 1,66,666 plants ha^{-1} as compared to lower plant densities. The plant densities did not evident significant impact on quality parameters *viz.*, ginning percentage, earliness index, seed index, 2.5 % span length, uniformity ratio, fibre fineness and bundle strength.

All the growth parameters, yield attributing characters, seed cotton yield (kg ha^{-1}), cotton stalk yield (kg ha^{-1}), net monetary returns (Rs ha^{-1}), gross monetary returns (Rs ha^{-1}) and B:C ratio as well as nutrient uptake were found significantly higher with the application of 150 % RDF + foliar spraying of 2% MgSO_4 and 1 % ZnSO_4 twice during flowering to boll development stage (F_4) as compared to all other treatments but followed by application of 150 % RDF (F_2). Nutrient management treatments did not evident significant impact on quality parameters.

On the basis of above findings it can be concluded that the adoption of higher plant density of 1,11,111 plants ha^{-1} ($60 \times 15 \text{ cm}^2$) and application of 150 % RDF + foliar spraying of 2% MgSO_4 and 1 % ZnSO_4 twice during flowering to boll development stage, for obtaining higher seed cotton yield of *hirsutum*cotton (NH- 615) and found productive, remunerative and profitable under rainfed condition of Marathwada region.

| | | |
|------------------------|---|--|
| Title | - | Studies on different fertility levels of NPK with split application of nitrogen for maize (<i>Zea mays L.</i>) under <i>rabi</i> season |
| Researcher | - | Gavhane, Kailas Narayan |
| Research Guide | - | Pawar, S.B. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 1750 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810033368 |
| Abstract | - | |

The field investigation entitled “**Studies on different fertility levels of NPK with split application of nitrogen for maize (*Zea mays L.*) under *rabi* season.**” was conducted on experimental farm of National Agricultural Research Project, Aurangabad during *rabi* season 2015-16. The experimental field was levelled and well drained. The soil was clay loam in texture, low in available nitrogen, low in available phosphorus, high in available potassium and moderately alkaline in reaction. The environmental conditions prevailed during experimental period was favourable for normal growth and maturity of maize crop. The field experiments were laid in factorial randomized block design with twelve treatments viz. four NPK levels viz., F₁ (125:62.5:62.5 NPK kg ha⁻¹), F₂ (150:75:75 NPK kg ha⁻¹), F₃ (175:87.5:87.5 NPK kg ha⁻¹) and F₄ (200:100:100 NPK kg ha⁻¹) at a three split application of nitrogen i.e. S₁ (Two splits of N 50% as a basal dose + 50% at 30 DAS), S₂ (Three splits of N 25% as a basal dose + 50% at 30 DAS + 25% at 60 DAS) and S₃ (Three splits of N 33% as a basal dose + 33% at 30 DAS + 33% at 60 DAS) and replicated thrice. The gross and net plot sizes of each experimental unit were 5.4 m x 6.0 m and 4.2 m x 4.8 m, respectively. Sowing was done on 10 November 2015 by dibbling method. Seed treatment, pest and disease management, irrigation and fertilizer management is done as per recommendation to all treatments. The grain yield ha⁻¹ as influenced by different fertility levels revealed that highest grain yield was recorded by F₄ (200:100:100 NPK kg ha⁻¹) (4892 kg ha⁻¹) followed by F₃ (175:87.5:87.5 NPK kg ha⁻¹) and F₂ (150:75:75 NPK kg ha⁻¹) and found to be significantly superior over F₁ (125:62.5:62.5 NPK kg ha⁻¹). The highest grain yield (4705 kg ha⁻¹) was recorded in S₃ (Three splits of N 33% as a basal dose + 33% at 30 DAS + 33% at 60 DAS) followed by S₁ (Two splits of N 50% as a basal dose +

50% at 30 DAS) and significantly superior over S₂(Three splits of N 25% as a basal dose + 50% at 30 DAS + 25% at 60 DAS). The highest net monetary returns (33431 ₹ ha⁻¹) was recorded in F₄(200:100:100 NPK kg ha⁻¹) followed by F₂(150:75:75 NPK kg ha⁻¹) and F₃(175:87.5:87.5 NPK kg ha⁻¹) which was found significantly superior over F₁ and highest B : C ratio (1.98) was recorded in F₂(150:75:75 NPK kg ha⁻¹). The highest net monetary returns (33429 ₹ ha⁻¹) and B: C ratio (1.99) was recorded with the S₃(Three splits of N 33% as a basal dose + 33% at 30 DAS + 33% at 60 DAS) followed by S₁(Two split of N 50% as a basal dose + 50% at 30 DAS) which was significantly superior over S₂(Three splits of N 25% as a basal dose + 50% at 30 DAS+25% at 60 DAS). Thus, for securing higher grain yield and net profit, maize crop should be fertilized with 150 : 75 : 75 NPK kg ha⁻¹ with three equal split of nitrogen three splits of N 33% as a basal dose + 33% at 30 DAS + 33% at 60 DAS.

| | | |
|------------------------|---|---|
| Title | - | Studies on response of pigeon pea(<i>Cajanascajan L. Millisp.</i>) on drip irrigation |
| Researcher | - | Lahase, RajuUkhards |
| Research Guide | - | Jadhav, K.T. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 1751 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810033456 |
| Abstract | - | |

Present investigation entitled “**Studies on response of pigeon pea [*CajanuscajanL. Millisp.*] to drip irrigation .**” was carried out at Agriculture Research Station, Badnapur situated at 19° 52’00” North latitude and 75° 44’00” East longitudes at 498 m altitude above mean sea level on clayey soil with moderate in nitrogen ,low in phosphorus, high in potassium. Rainfall received during experimental period was 671.5 mm with 29 rainy days during *Kharif* 2016.

The experiment was conducted in factorial randomized block design with two factors viz., spacing (three levels: S₁-120 cm x 30 cm spacing, S₂-120 cm x 45 cm spacing, S₃-120 cm x 60 cm) and irrigation levels (irrigation at 50% Epan through drip (I₁), irrigation at 75% Epan through drip (I₂), irrigation at, 100% Epan through drip (I₃), supplemental irrigation at 50% flowering through furrows (I₄) with 12 treatments combinations. Each experimental unit was repeated three times 9.60 X 3.60 m² size in gross plot and in net plot 7.20 m x 2.40 m for 90 x 30 & 30 x 60 cm, 7.20 m x 2.70 m for 90 x 45 cm . Sowing was completed on 2nd July 2016. The fertilizer dose of 25:50:00NPK kg ha⁻¹ was applied after sowing.

Amongst, spacing 120x45 cm spacing recorded maximum seed yield (2391kg ha⁻¹) and net monitory returns (84565kg ha⁻¹) than wider spacing 120 x 30cm and 120 x 60 cm, respectively. Amongst irrigation levels, irrigation at 75% Epan through drip recorded maximum seed yield (2674 kg ha⁻¹) and NMR (96995Rs ha⁻¹) followed by irrigation at 100% Epan through drip, irrigation at 50% Epan through drip and irrigation at 50% flowering through furrows, respectively. Highest water use efficiency was observed under irrigation at 50% flowering

through furrows ($32.15 \text{ kg ha}^{-1} \text{ mm}^{-1}$) followed by irrigation at 50% Epan through drip ($7.76 \text{ kg ha}^{-1} \text{ mm}^{-1}$), irrigation at 75% Epan through drip ($6.98 \text{ kg ha}^{-1} \text{ mm}^{-1}$) and irrigation at 100% Epan through drip ($4.30 \text{ kg ha}^{-1} \text{ mm}^{-1}$).

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|------------------------|---|---|
| Title | - | Effect of sowing date on growth, yield and oil quality of safflower (<i>carthamustinctorius</i> (L.) genotypes |
| Researcher | - | Barla, Ashok Kumar |
| Research Guide | - | Kote, G.M. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 1760 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810033472 |
| Abstract | - | |

Safflower is an important *rabi* oilseed crop. Safflower have a superior adaptability to scanty moisture conditions. It has been under cultivation in India either for its colored florets and much valued oil. Productivity of safflower needs to be increased as this is a cash crop of small and medium holding farmers. There is urgent need to develop suitable management practices and genotypes to make safflower cultivation a successful proposition under marathwada region of vertisols.

In view of the above, it was felt necessary to study the effect of sowing time and suitable genotype under irrigated conditions. The present investigation has been implemented during *rabi* season of 2015-16 at experimental farm of AICRP on Safflower, Vasant Rao Naik Marathwada Krishi Vidyapeeth, Parbhani. The experiment was laid out in split plot design comprising nine treatments with three main plots i.e. 15th October (D₁), 30th October (D₂) and 15th November (D₃) and 3 sub plots i.e. Annigiri-1 (V₁), NARI-6 (V₂) and NARI-57 (V₃). All the treatments were replicated four times. Sowing of safflower on 15th October and 30th October recorded significantly highest plant height, no. of branches, no. of functional leaves, leaf area and total dry matter per plant than sowing of safflower on 15th November. The yield attributes *viz.*, no. of capitula per plant, weight of capitula, no. of seeds per capitulum, no. of seeds per plant and seed weight per plant were observed significantly highest in sowing date D₁ and D₂ than D₃. Sowing of safflower on 15th October recorded highest seed, straw, biological yield, GMR and NMR which was found at par with 30th October and both found significantly superior over 15th November sowing date.

In case of genotypes, Annigiri-1 and NARI-57 recorded significantly highest plant height, no. of branches, no. of functional leaves, leaf area and total dry matter per plant, yield attributes *viz.*, no .of capitula per plant, weight of capitula, no. of seeds per capitulum, no. of seeds per plant and seed weight per plant, seed, straw and biological yield than NARI-6. The significantly highest GMR and NMR were produced in A-1 and NARI-57 than NARI-6.

| | | |
|------------------------|---|---|
| Title | - | Efficacy of different herbicides on weed dynamics and productivity of turmeric |
| Researcher | - | Desai, M.M. |
| Research Guide | - | Shinde, V.S. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | Ph.D. |
| Thesis No. | - | 1761 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810033473 |
| Abstract | - | |

The present field experiment entitled, "Efficacy of different herbicides on weed dynamics and productivity of turmeric (*Curcuma longa* .L)" was conducted at AICRP on Weed Management farm, VasanttraoNaikMarathwadaKrishiVidyapeeth, Parbhani (MS) during *Kharif* season of 2012-13 and 2013-14.

The experiment was laid out in Randomized Block Design (RBD) with 12 treatments *viz.* T₁ : Metribuzin 0.7 kg ha⁻¹ as PE *fb* 2 hoeing at 9 & 12 WAP, T₂ : Metribuzin 0.7 kg ha⁻¹ as PE *fb* Fenoxaprop 67 g ha⁻¹ + Metsulfuron 4 g ha⁻¹ at 9 WAP, T₃ : Metribuzin 0.7 kg ha⁻¹ as PE *fb* straw mulch 10 t ha⁻¹ at 9 WAP *fb* 1 HW at 12 WAP, T₄ : Pendimethalin 1.0 kg ha⁻¹ as PE *fb* 2 hoeing at 9 & 12 WAP, T₅ : Pendimethalin 1.0 kg ha⁻¹ as PE *fb* Fenoxaprop 67 g ha⁻¹ + Metsulfuron 4 g ha⁻¹ at 9 WAP, T₆ : Pendimethalin 1.0 kg ha⁻¹ as PE *fb* straw mulch 10 t ha⁻¹ at 9 WAP *fb* 1 HW at 12 WAP, T₇ : Atrazine 0.75 kg ha⁻¹ as PE *fb* 2 hoeing at 9 & 12 WAP, T₈ : Atrazine 0.75 kg ha⁻¹ as PE *fb* Fenoxaprop at 67 g ha⁻¹ + Metsulfuron 4 g ha⁻¹ at 9 WAP, T₉ : Atrazine 0.75 kg ha⁻¹ as PE *fb* straw mulch 10 t ha⁻¹ at 9 WAP *fb* 1 HW at 12 WAP, T₁₀ : Glyphosate 1.23 kg ha⁻¹ at 10 DAP *fb* 1 HW at 12 WAP, T₁₁ : Weed free and T₁₂ : Weedy check with three replications. The gross plot size was 6.00 m x 4.50 m and that of net plot size was 4.50 m x 3.90 m.

The results revealed that, application of metribuzin 0.7 kg ha⁻¹ as PE *fb* straw mulch 10 t ha⁻¹ at 9 WAP *fb* 1 HW at 12 WAP reported significantly higher values for growth attributes, yield attributes, growth function values (*viz.* AGR for plant height and dry matter, RGR, NAR,

CGR, LAD, LAR, LAI and BMD *etc.*), and turmeric yield (tha^{-1}) as compared to rest of the treatments.

The yield loss due to different weed control treatments *i.e.* weed index with weed free treatment was significantly lowest as compared with rest of the treatments during 2012-13, 2013-14 and in pooled mean. The application of metribuzin 0.7 kg ha^{-1} as PE *fb* straw mulch 10 t ha^{-1} at 9 WAP *fb* 1 HW at 12 WAP reported significantly higher weed control efficiency, while numerically, higher value for phytotoxicity was reported with the use of metribuzin 0.7 kg ha^{-1} as PE *fb* straw mulch 10 t ha^{-1} at 9 WAP *fb* 1 HW at 12 WAP as compared with rest of the treatments in turmeric at 15 DAP. The weed free and weedy check treatments reported numerically lower values for soil micro flora *viz.* bacteria, fungi and actinomycetes *etc.*, however, the experimental herbicidal treatments reported numerically, the higher value for soil microflora during both the years.

The weed free treatment recorded significantly higher magnitude for gross monetary returns, while, among the herbicidal treatments, application of metribuzin 0.7 kg ha^{-1} as PE *fb* straw mulch 10 t ha^{-1} at 9 WAP *fb* 1 HW at 12 WAP reported significantly higher net monetary returns and benefit cost ratio in turmeric.

| | |
|------------------------|--|
| Title | - Effect of land configurations and foliar sprays on Soybean (<i>Glycine max</i> (L.) Merrill) + pigeonpea (<i>Cajanuscajan</i> (L.) Mill sp.) intercropping system under rainfed condition |
| Researcher | - Lewade, AakashDilip |
| Research Guide | - Narkhede, W.N. |
| Department | - Agronomy |
| Subject | - Agronomy |
| Degree | - M.Sc |
| Thesis No. | - 1764 |
| Krishikosh link | - http://krishikosh.egranth.ac.in/handle/1/5810033560 |
| Abstract | - |

The field investigation entitled “ Effect of land configurations and foliar sprays on Soybean (*Glycine max* (L.) Merrill) + Pigeonpea (*Cajanuscajan* (L.) Mill sp.)intercropping system under rainfed condition” was conducted at farm, AICRP on Integrated Farming Systems, VNMKV, Parbhani (M.S.). The experimental field was leveled and well drained. The soil was clayey textured, low in nitrogen, medium in phosphorus and high in potassium with slightly alkaline in reaction. The environmental conditions prevailed during experimental period i.e. rainfall, minimum and maximum temperature, relative humidity etc. were favourable for normal growth and maturity of soybean and pigeonpea crops.

Sowing was done on 25th June, 2016. The recommended cultural practices and plant protection measures were undertaken. The recommended dose of fertilizer (30:60:30 kg NPK ha⁻¹) was applied at the time of sowing through Urea, SSP and MOP. All the intercultural operations were performed and plant protection measures were carried out. The soybean and pigeonpea were harvested on 13th October, and 24th December 2016 respectively. The experiment was laid out in split plot design with two factors i.e. land configurations and foliar sprays as main and sub factors respectively and treatments were replicated thrice.

Among land configurations, soybean + pigeonpea intercropping system was tried with 2 ratios i.e. L₁ and L₂ (Flat Bed & Ridges and Furrow) with 4:2 soybean + pigeonpea intercrop ratio and L₃ (Broad Bed Furrow) with 2:1 soybean + pigeonpea intercrop ratio. In BBF layout at the center of 120 cm top bed a line of pigeonpea was sown and on both the sides of pigeonpea at

45 cm distance soybean row was sown. In case of foliar sprays, 4 treatments i.e. F₁, F₂, F₃ & F₄ (Water, Kaolin @ 6%, KNO₃ @ 2% and MgCO₃ @ 5% respectively) were taken for the study. The foliar sprays were applied at 45 and 65 days after sowing. The size of gross plot was 6.3 x 5.4 m². Net plot size for Ridges & Furrow and Flat Bed layout was 5.4 x 4.0 m² and for Broad Bed Furrow it was 3.0 x 5.4 m².

Both the crops grown on BBF with 2:1 intercropping ratio performed good in growth and yield attributing characters and in yield also. BBF planted soybean and pigeonpea recorded numerically higher harvest index (%). And in case of foliar sprays, application of 2% potassium nitrate recorded superior results in terms of growth and yield characters as well as seed, straw and biological yield. It also recorded higher harvest index (%).

Among the land configurations, treatment L₃ (BBF) with 2:1 intercrop ratio produced higher soybean equivalent yield (3286 kg ha⁻¹), gross monetary returns (94.36 x 10³ ₹), net monetary returns (57.80 x 10³ ₹) and B:C ratio (2.6). In case of foliar sprays application of KNO₃ 2% produced higher soybean equivalent yield (3266 kg ha⁻¹), gross monetary returns (93.80 x 10³ ₹), net monetary returns (65.30 x 10³ ₹) and B:C ratio (3.3). Because of high cost of MgCO₃, it incurred more cost of cultivation, thus low net monetary returns and benefit : cost ratio recorded in this treatment.

| | | |
|------------------------|---|---|
| Title | - | Yield maximization of soybean (<i>Glycine max</i> (L.) Merrill) under high fertility levels |
| Researcher | - | Chavan, PravinSuryakant |
| Research Guide | - | Karle, A.S. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 1765 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810033561 |
| Abstract | - | |

The field investigation entitled “Yield maximization of soybean (*Glycine max* (L.) Merrill) under high fertility levels” was conducted at Experimental farm, Department of Agronomy, VNMKV, Parbhani. The experimental field was leveled and well drained. The soil was clayey in texture, low in nitrogen, low in phosphorus, rich in potash and alkaline in reaction. The environmental conditions prevailed during experimental period was favorable for normal growth and maturity of soybean crop.

The experiment was laid out in a Randomized block design with twelve treatments and 3 replications. Sowing was done on 29th June, 2016 by dibbling the seeds at spacing 45 cm × 05 cm. The recommended cultural practices and plant protection measures were taken. Fertilizer *viz.*, nitrogen, phosphorus and potassium were applied to respective plots as per the recommendations by using the urea, DAP and muriate of potash uniformly in the lines opened for sowing as per the treatment.

The crop was harvested on 17th October, 2016. The treatments were **T₁**- Control, **T₂**- RDF (30:60:30 NPK kg ha⁻¹), **T₃**- RDF + S @ 20kg ha⁻¹, **T₄**-RDF + S @ 20kg ha⁻¹ + Zn @ 20kg ha⁻¹, **T₅**- 150% RDF + S @ 20kg ha⁻¹, **T₆**- 150% RDF + S @ 20kg ha⁻¹ + Zn @ 20kg ha⁻¹, **T₇**-200% RDF + S @ 20kg ha⁻¹, **T₈**- 200% RDF + S @ 20kg ha⁻¹ + Zn @ 20kg ha⁻¹, **T₉**-As per soil testing report.

Application of 200% RDF + S @ 20kg ha⁻¹ + Zn @ 20kg ha⁻¹ (**T₈**) recorded significantly higher growth attributes, yield attributes, seed yield, oil yield Kg ha⁻¹, protein yield

Kg ha⁻¹ contributing characters and GMR followed by application of 200% RDF + S @ 20kg ha⁻¹ (T₇), 150% RDF + S @ 20kg ha⁻¹ + Zn @ 20kg ha⁻¹ (T₆) and 150% RDF + S @ 20kg ha⁻¹ (T₅) and T₅ was significantly superior over the rest of the all treatments. The significantly lower growth attributes, yield attributes and seed yield of soybean was observed in control (T₇). The higher net monetary returns was recorded with the application of 150% RDF + S @ 20kg ha⁻¹ (T₅) and followed by T₆, T₇ and T₈ treatments. The lower net monetary returns were recorded with control (T₁). The higher benefit: cost ratio was recorded with the application of 150% RDF + S @ 20kg ha⁻¹ (T₅) and the lower benefit: cost ratio was recorded with control (T₁).

On the basis of above findings it may be inferred that for getting maximum net returns and B: C ratio, application of 150% RDF *i.e.* 45:90:45 NPK kg ha⁻¹ along with Sulphur @ 20kg ha⁻¹ (T₅) was found effective in increasing production of Soybean crop.

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|------------------------|---|---|
| Title | - | Effect of seed rate and fertilizer levels on growth and yield of niger (Guizotiaabyssinica Cass L.) |
| Researcher | - | Tekale, Rani Shivkarn |
| Research Guide | - | Awasarmal, V.B. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 1766 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810033563 |
| Abstract | - | |

Niger (*Guizotiaabyssinica*Cass.) is one of the important oilseed crop of India belonging to family compositae. It is very important oilseed crop in terms of oil content, quality and potentiality. The important feature of this crop is that it gives reasonable seed yield even under poor growing condition. In India, it is cultivated on 232.1 thousand ha with the production and productivity of 76.2 thousand tonnes and 328 kg ha⁻¹, respectively. In Maharashtra, it is grown on 16 thousand ha with production and productivity of 3 thousand tonnes and 188 kg ha⁻¹, respectively.

A field investigation entitled “Effect of seed rate and fertilizer levels on growth and yield of niger (*Guizotiaabyssinica* Cass)” was conducted during *Kharif* 2016 at Experimental Farm, Department of Agronomy, VNMKV, Parbhani. The experiment was laid out in factorial randomized block design with three replications, where in main plots were assigned to three seed rates viz., 2 kg ha⁻¹, 3 kg ha⁻¹ and 4 kg ha⁻¹ and sub plots to three fertilizer levels viz., 10:20 N, P₂O₅ kg ha⁻¹ & 20 kg S ha⁻¹, 20:40 N, P₂O₅ kg ha⁻¹ & 20 kg S ha⁻¹ and 30:60 N, P₂O₅ kg ha⁻¹ & 20 kg S ha⁻¹. The soil was clayey in texture, poor in nitrogen, medium in available phosphorous and organic carbon, high in available potash and slightly alkaline. Sowing was undertaken on 29th June, 2016. From the experimental result, it can be concluded that the seed rate of 3 kg ha⁻¹ was found productive and profitable as compared to other seed rates. Application of 30:60 N, P₂O₅ kg ha⁻¹ & 20 kg S ha⁻¹ recorded significantly highest seed yield as compared to other fertilizer levels. As regards to net monetary returns and benefit cost ratio, the application of 20:40 N, P₂O₅ kg ha⁻¹ & 20 kg S ha⁻¹ was found profitable as compared to other treatments.

| | | |
|------------------------|---|---|
| Title | - | Response of biofertilizers on the performance of hybrid sunflower (<i>Helianthus annuus</i> L.) in <i>kharif</i>season |
| Researcher | - | Khandekar, Sanjay Dattu |
| Research Guide | - | Ghotmukale, A.K. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 17111 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810033729 |
| Abstract | - | |

The field investigation entitled " **Response of biofertilizers on the performance of hybrid sunflower (*Helianthus annuus* L.) in *kharif*season** ", was conducted at Experimental farm, Oilseeds Research Station, Latur during *kharif* season 2016-2017.

The experimental field was leveled and well drained. The soil was clayey in texture, low in nitrogen (188.8 kg ha⁻¹), medium in phosphorus (14.82 kg ha⁻¹), higher in available potash (588.72 kg ha⁻¹) and alkaline in reaction. The environmental conditions prevailed during experimental period was favourable for normal growth and maturity of sunflower crop.

The experiment was laid out in randomized block design with 3 replications and 9 treatments which included T₁ (Control), T₂ (75% N), T₃ (100% N), T₄ (75% N + *Azospirillum*seed treatment), T₅ (75% N + *Azotobacter*seed treatment), T₆ (75% N + *Azospirillum* + *Azotobacter*seed treatment), T₇ (100% N + *Azospirillum*seed treatment), T₈ (100% N + *Azotobacter*seed treatment) and T₉ (100% N + *Azospirillum* + *Azotobacter*seed treatment).

Application of 100% N + *Azospirillum* + *Azotobacter* recorded significantly superior for growth characters viz. higher plant height, leaf area, number of functional leaves, stem girth, dry mater and for yield characters like number of filed seeds, seed yield, stalk yield and oil yield over rest of the treatments.

| | | |
|------------------------|---|---|
| Title | - | Influence of integrated nutrient management on growth and yield of sunflower (<i>Helianthus annuus</i> L.) |
| Researcher | - | Dambale, Ashok Sambhaji |
| Research Guide | - | Ghotmukale, A.K. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 17115 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810033805 |
| Abstract | - | |

The field investigation entitled “**Studies on Influence of integrated nutrient management on growth and yield of sunflower**” (*Helianthus annuus* L.) Was conducted at Experimental farm, Oilseeds Research Station, Latur during *khari* season 2016-2017.

The experimental field was leveled and well drained. The soil was clayey in texture, low in nitrogen (124.77 kg/ha), and medium in phosphorus (9.45 kg/ha) and rich in potassium (428.03 kg/ha) and alkaline in reaction. The environmental conditions prevailed during experimental period were favorable for normal growth and development of sunflower crop.

The experiment was laid out in a Randomized Block Design with 9 treatments replicated thrice. The treatments were T₁- 100 % RDF + SR @ 5 t/ha, T₂- 100 % RDF + FYM @ 5 t/ha, T₃- 100 % RDF + SR @ 2.5 t/ha + FYM @ 2.5 t/ha, T₄- 75 % RDF + SR @ 5 t/ha, T₅- 75 % RDF + FYM @ 5 t/ha, T₆- 75 % RDF + SR @ 2.5 t/ha + FYM @ 2.5 t/ha, T₇- SR @ 5 t/ha, T₈- FYM @ 5 t/ha and T₉- SR @ 2.5 t/ha + FYM @ 2.5 t/ha.

The gross and net plot size of each experimental unit was 5.4 m x 4.5 m and 4.2 m x 3.9 m, respectively. FYM was applied before sowing as per treatments. Sowing was done by dibbling method on 23th July 2016 as per treatment at spacing of 60 x 30 cm. The recommended cultural practices and plant protection measures were undertaken. The recommended dose of fertilizer 90:45:45 NPK kg ha⁻¹ was applied as per treatment half dose of nitrogen along with full dose of phosphorus; potassium as a basal dose and remaining half dose of nitrogen was applied

at 30 DAS. The recommended dose of fertilizer was applied as per treatments through Urea and Single Super Phosphate. The crop was harvested on 20th October 2016.

Application of 100% RDF + FYM @ 5t/ha (T₂) recorded significantly higher growth, yield and quality contributing characters followed by application of 100% RDF+SR @ 2.5 t/ha+ FYM @ 2.5 t/ha (T₃).

| | |
|------------------------|---|
| Title | - Effect of nitrogen and zinc on growth, yield and uptake of Pearl millet (Pennisetumglaucum L.) |
| Researcher | - Arshewar, Sunil Potanna |
| Research Guide | - Karanjikar, P.N. |
| Department | - Agronomy |
| Subject | - Agronomy |
| Degree | - M.Sc |
| Thesis No. | - 17124 |
| Krishikosh link | - http://krishikosh.egranth.ac.in/handle/1/5810033840 |
| Abstract | - |

The field investigation entitled “**Effect of nitrogen and zinc on growth, yield and uptake of Pearl millet (PennisetumglaucumL.)**” was conducted at Experimental Farm, Agronomy Section, College of Agriculture, Latur. The experimental field was leveled and well drained.). The soil was medium and black in colour with good drainage. The soil was clayey loam in nature and slightly alkaline (7.8) in reaction, low in nitrogen(118.86 kg ha⁻¹), medium in available phosphorus and rich in available potassium(485.89 kg ha⁻¹). The environmental conditions were favorably congenial for normal growth and maturity of pearl millet crop.

The experiment was laid out in Factorial Randomized Block Design with two factors and replicated thrice. Whereas first factor comprises levels of nitrogen viz. 0 (control), 45, 60 and 75 kg N ha⁻¹ and second factor levels of zinc viz. 05, 10 and 15 kg Z ha⁻¹. The experimental site having gross and net plot size was 5.4 x 4.5 m² and 4.5 x 3.6m² respectively. The recommended dose of fertilizer was applied at time sowing (60:30:30NPK kg ha⁻¹ where N applied as per treatments). The sowing was done on 22nd June 2016 by dibbling and harvested on 1st oct 2016. All the cultural practices were followed as per package of practices. The yield data

for grain and straw yield for all plots were collected at the end of experimentation. Processed seed sample were digested and N was determined by micro kjeldahal method as advocated by Piper (1966). Nitrogen content was calculated by multiplying N content by the factor 6.25.

The application of nitrogen @ 75 kg N ha⁻¹ recorded significantly higher growth and yield attributes, gross monetary return, net monetary return and B: C ratio over the rest of the levels of nitrogen. Whereas NMR was remained at par with 60 kg N ha⁻¹. The application of zinc @ 15 kg Z ha⁻¹ produced significantly higher growth and yield attributes, gross monetary return, net monetary return and B: C ratio over the rest of the levels of zinc. Whereas, NMR was remained at par with 10 kg Z ha⁻¹.

| | | |
|------------------------|---|---|
| Title | - | Effect of tillage and land configuration practices on growth and yield of rainfed soybean glycine max (l.) merill) |
| Researcher | - | Dhale, ShilpaYashwant |
| Research Guide | - | Gore, A.K. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 17127 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810033869 |
| Abstract | - | |

An Agronomic investigation “Effect of tillage and land configuration practices on growth and yield of rainfed soybean”(Glycine max (L.) Merill)” will be carried out at Experimental farm, Department of Agronomy, VasantNaikMarathwadaKrishiVidyapeeth, Parbhani during *Khari*f2016. The experiment was planned in context of vagaries of monsoon particularly frequent dry spells and alarming signals about soil fertility to at least see the effect of various treatments and to suggest overcome measures for above problems. The experiment was conducted which consisted of three treatments of tillage practices as main plots and four treatments of land configurations as sub plots constituting twelve treatment combinations which were replicated thrice in split plot design. The three tillage practices of T₁ (Conventional tillage), T₂ (Rotary tillage) and T₃ (Sub soiling tillage) were tested with four land configurations i.e. L₁ (Broad bed furrow), L₂ (Flat bed), L₃ (Ridges & furrow) and L₄ (Opening of furrow) in the investigation. The gross and net plot sizes were 6.0 m x 10.0 m and 4.5 m x 8.0 m, respectively. The crop was sown as per treatments with recommended spacing of 30 cm x 7.5 cm for BBF and 45 cm x 5 cm for FB, RF, OF.

The growth parameters were influenced by various treatments of tillage practices. The growth parameters like plant height, number of functional leaves plant⁻¹, leaf area plant⁻¹, number of branches plant⁻¹, total dry matter accumulation plant⁻¹ were significantly higher in tillage practices of sub soiling tillage (T₃) followed by conventional tillage (T₁) and rotary tillage (T₂). Similar results were obtained in case of yield attributes, like number of pods plant⁻¹, number of seeds plant⁻¹, weight of seed plant⁻¹, weight of pods plant⁻¹ and seed weight were

significantly higher in plants raised on sub soiling tillage (T_3). The sub soiling tillage (T_3) of planting recorded higher seed (kg ha^{-1}), straw (kg ha^{-1}) and biological yields (kg ha^{-1}) over conventional tillage (T_1) and rotary tillage (T_2). Adoption of sub soiling tillage sub soiling tillage (T_3) gave higher gross monetary returns, net monetary returns and benefit: cost ratio.

The growth parameters were influenced by various land configurations. Broad bed furrow (L_1) and ridges & furrows (L_3) recorded highest plant height, maximum number of functional leaves plant^{-1} , leaf area plant^{-1} , number of branches plant^{-1} and total dry matter accumulation plant^{-1} . All the yield attributes like number of pods plant^{-1} , number of seeds plant^{-1} , weight of pods plant^{-1} , seed weight and weight of seed plant^{-1} over flat bed (L_2) and opening of furrow (L_4) The Broad bed furrow (L_1) was found significantly superior in respect of seed (kg ha^{-1}), straw (kg ha^{-1}), biological yields over rest of the treatments except that it was at par with ridges & furrow (L_3). Broad bed furrow (L_1), recorded higher GMR, NMR, benefit: cost ratio and RWUE.

The interaction effects between tillage practices and land configurations significantly influenced the growth and yield of soybean and recorded significantly higher soybean seed yield, GMR, NMR, and RWUE over rest of the treatment combinations. Thus to achieve higher soybean yield and higher NMR with maximum RWUE the soybean may be planted on sub soiling tillage and broad bed furrow.

Title - **Integrated weed management in niger**

Researcher - Reddy, Ashok Kumar S

Research Guide - Suryawanshi, V.P.

Department - Agronomy

Subject - Agronomy

Degree - M.Sc

Thesis No. - 17132

Krishikosh link - <http://krishikosh.egranth.ac.in/handle/1/5810033875>

Abstract -

The field investigation entitled '**Integrated weed management in niger**' was carried out during *khari*f2016 at Department of Agronomy, College of Agriculture, Latur. The soil was clayey in texture, low in available nitrogen (240.6 kg ha^{-1}), medium in available phosphorus (21.81 kg ha^{-1}), very high in available potassium (619 kg ha^{-1}) and slightly alkaline in reaction with p^{H} 8.3. The experiment was laid out in randomized block design with three replications and variety PNS-6 as a test crop along with nine treatments, *viz.* **T**₁ – Pendimethalin @ 0.75 kg a.i./ha as pre-emergence spray, **T**₂- Pendimethalin @ 0.75 kg a.i./ha as pre-emergence spray + One hoeing at 25 DAS , **T**₃- - Pendimethalin @ $0.75 \text{ kg a.i. ha}^{-1}$ as pre-emergence spray + One hoeing at 25 DAS + One hand weeding at 40 DAS, **T**₄- Quazilfop ethyl 5% EC @ $37.5 \text{ g. a.i ha}^{-1}$ at 15–20 DAS + One hoeing at 25 -30 DAS, **T**₅ - Propquizofop 10% EC @ $62 \text{ g. a.i ha}^{-1}$ at 15–20 DAS + One hoeing at 25–30 DAS, **T**₆-Fenoxoprop ethyl 9.3%EC @ $37.5 \text{ g. a.i ha}^{-1}$ at 15–20 DAS + One hoeing at 25–30 DAS, **T**₇- Farmer's practice (One hoeing at 30 DAS + one hand weeding at 40 DAS), **T**₈- Weed free (Three hand weeding's at 15, 30 and 40 DAS) and **T**₉ - Weedy check. The gross and net plot size of each experimental unit was $5.4 \text{ m} \times 4.2 \text{ m}$ and $4.5 \text{ m} \times 3.6 \text{ m}$, respectively. Sowing was done on 29th June, 2016 by dibbling method. The recommended cultural practices and plant protection measures were taken.

Among different chemical weedicides the application of Quazilfop ethyl 5% EC @ $37.5 \text{ g. a.i ha}^{-1}$ at 15–20 DAS + One hoeing at 25 -30 DAS (**T**₄) recorded significantly higher growth, yield contributing characters and yield of niger.

| | | |
|------------------------|---|---|
| Title | - | Effect of planting pattern and fertilizer levels on growth and yield of niger |
| Researcher | - | Anil Kumar, B.R. |
| Research Guide | - | Suryawanshi, V.P. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 17133 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810033876 |
| Abstract | - | |

The experiment was conducted during kharif season of the year 2016 at Experimental Farm, Agronomy Section, College of Agriculture, Latur, to study the effect of planting pattern and fertilizer level on growth and yield of niger. The experimental plot was clayey in texture, low in available nitrogen ($220.54 \text{ kg ha}^{-1}$), low in available phosphorus (22.62 kg ha^{-1}) and high in available potassium ($480.32 \text{ kg ha}^{-1}$). The soil was moderately alkaline in reaction (8.2pH).

The experiment was laid out in a Factorial Randomized Block Design with 9 treatment combinations consisting of three planting pattern treatments *viz.* and Flat bed planting (T_1), Paired row planting (T_2) and Paired row planting + opening of furrow at 30 DAS (T_3) and three fertilizer levels *viz.* 75% RDF (R_1), 100% RDF (F_2), 125% RDF (F_3) replicated three times. The gross plot size of each experimental unit was 4.5m x 4.8 m and net plot size was 3.9/4.5 m x 4.2 m respectively. Sowing was done by dibbling method on 23rd June 2016. The fertilizers are applied as per treatments before sowing. The recommended cultural practices and plant protection measures were under taken as per recommendation.

Among three planting pattern treatment of niger, Paired row + opening of furrow at 30 DAS (T_3) recorded significantly higher growth and yield attributes, yield gross monetary return, net monetary return and B : C ratio over the treatment of flat bed planting and at par with paired row planting.

The application of 125% RDF (F_3) recorded higher growth and yield attributes, yield, net monetary return and B : C ratio, which was significantly superior over 75% RDF and found at par with 100% RDF.

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|------------------------|---|--|
| Title | - | Response of summer groundnut (<i>arachis hypogea</i> L.) to different date of sowing under various land configuration |
| Researcher | - | Pachpor, AkshayShashilrao |
| Research Guide | - | Gokhale, D.N. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 17148 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810033998 |
| Abstract | - | |

The field investigation entitled “Response of summer groundnut (*Arachishypogaea* L.) to different date of sowing under various land configuration.” was conducted at Department of Agronomy, VasanttraoNaikMarathwadaKrishiVidyapeeth, Parbhani, Maharashtra during the *summer* season of 2016. The different objectives of the experiment was to identify suitable sowing date of groundnut and to assess the effect of various land configuration on growth and yield of summer groundnut.

The experimental field was leveled and well drain. The soil was medium black, clayey in texture, alkaline in reaction, low in available nitrogen, medium in phosphorous and rich in potash. The experiment was laid out in a Split plot design with 12 treatment combinations, comprised of three land configurations and four dates of sowing. The main plots treatments were *viz.* L₁- BBF, L₂- Ridges and Furrow and L₃- Flat bed and sowing dates were 26th Jan., 05th Feb., 15th Feb. and 25th Feb. respectively. Each experimental unit was replicated three times. The plot size 10.0 m x 5.5 m. Sowing was done by dibbling at spacing of 30 cm x 10 cm. The recommended dose of fertilizer (25:50:00 kg NPK ha⁻¹) was applied at the time of sowing through urea and DAP.

The result of the experiment revealed that land configuration with BBF method recorded significantly higher growth and yield *viz.*, plant height (cm), number of branches, total dry matter (g), number of gynophores, number of pods per plant, dry pod kg ha⁻¹, haulm yield kg ha⁻¹, biological yield kg ha⁻¹, followed by Ridges and Furrow. Among the dates of sowing 2nd sowing date found significantly superior over other sowing dates in most growth parameters but found at

par with 3rd sowing date in some cases. Higher economical benefit obtained by sowing crop at 5th Feb. i.e. 2nd sowing date . Similarly higher economical benefits were recorded on BBF method among the other method (i.e. Ridges & Furrow and Flat Bed).

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|------------------------|---|---|
| Title | - | Effect of growth regulators on growth and yield of hirsutum cotton under high density planting system |
| Researcher | - | Patil, Mahesh Navnath |
| Research Guide | - | Jadhav, A.S. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 17207 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810034164 |
| Abstract | - | |

The field investigation entitled “ EFFECT OF GROWTH REGULATORS ON GROWTH AND YIELD OF *hirsutum* COTTON UNDER HIGH DENSITY PLANTING SYSTEM” was conducted at experimental farm, Cotton Research Scheme, VNMKV, Parbhani. The experimental field was leveled and well drained. The soil was black cotton, low in nitrogen, medium in phosphorus and high in potassium with alkaline in reaction. The environmental conditions prevailed during experimental period was favorable for normal growth and maturity of cotton crop.

The experiment was laid out in a randomized block design with seven treatments and 3 replications. Sowing was done on 29th June, 2016 by dibbling the seeds at spacing 60 cm x 15 cm. The recommended cultural practices and plant protection measures were taken. The recommended dose of fertilizer (80:40:40 kg NPK ha⁻¹) was applied at the time of sowing through DAP, Urea, SSP and MOP.

Practice of detopping at 75 DAS (T₅) recorded significantly highest seed cotton yield 1214 kg ha⁻¹ and highest biological yield 4165 kg ha⁻¹ and found at par with T₃ and T₆. Also significantly highest net monetary returns Rs. 37201 ha⁻¹ and B: C ratio 2.10 were recorded in T₅ (Detopping at 75 DAS) which was found at par with T₃ (MC @ 250 ppm at 75 DAS) and T₆ (Detopping at 75 DAS) over rest of the treatments..

On the basis of above findings it may be inferred that for getting maximum seed cotton yield, net returns and B: C ratio, adoption of detopping at 75 DAS in cotton crop (T₅) under high density planting system.

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|------------------------|---|---|
| Title | - | Effect of different weedicides on weed control in cotton+soybean intercropping system |
| Researcher | - | Jadhav, Anil Punjahari |
| Research Guide | - | Jadhav, A.S. |
| Department | - | Agronomy |
| Subject | - | Agronomy |
| Degree | - | M.Sc |
| Thesis No. | - | 17210 |
| Krishikosh link | - | http://krishikosh.egranth.ac.in/handle/1/5810034171 |
| Abstract | - | |

The field investigation entitled “**Effect of different weedicides on weed control in Cotton+soybean intercropping system**” was conducted at Cotton Research Scheme Farm, VNMKV, Parbhani. The experimental field was leveled and well drained. The soil was clayey in texture, low in nitrogen, medium in phosphorus and alkaline in reaction.

The experiment was laid out in a Randomized block design with seven treatments in three replicates. Sowing was done on 19th June, 2015 by dibbling the seeds at spacing 120 cm x 45 cm. The recommended cultural practices and plant protection measures were taken. The recommended dose of fertilizer (120:60:60 kg NPK ha⁻¹) was applied. The crop was harvested on 31st January, 2015. Application of PE-Oxyflourfen 23.5% EC @ 0.1kg/ha or PE- Pendimethalin 30 % EC @0.75 kg/ha fb.hand weeding and hoeing at 6 WAS found most effective for controlling weeds in cotton+soybean intercropping. No phytotoxic effect of any herbicide on cotton+soybean was observed. Based on seed cotton equivalent yield, net monetary return, B:C ratio the weed control treatment, PE-Oxyflourfen 23.5% EC @ 0.1kg/ha fb. hand weeding and hoeing at 6 WAS was found most effective followed by the PE- Pendimethalin 30 % EC @0.75 kg/ha fb. hand weeding and hoeing at 6 WAS in cotton+soybean intercropping.