| No. | Rice variety                          | Microorg.   | Aims  | Significant findings   | Reported<br>from | References                              |
|-----|---------------------------------------|---|---|--|------------------|---|
| 1   | Rice variety OM<br>1490               | <i>Trichoderma</i> sp.  | Studied the influence of<br>composted rice straw<br>treated by <i>Trichoderma</i> sp.<br>on rice yield, rice soil<br>fertility and economic<br>effective.                                 | Under application of composted<br>paddy straw by <i>Trichoderma</i> spp.<br>conjunction with 70%, partly<br>contributed in reducing 30% of<br>inorganic fertilizer cost, increased<br>grain yield, benefit cost ratio and<br>improve soil fertility.   | Vietnam          | Son <i>et al.</i> (2013)                |
| 2   | Paddy seeds,<br>G98-135               | <i>Trichoderma<br/>harzianum</i> and<br><i>Trichoderma</i><br><i>viride</i> | Studied the <i>T. harzianum</i><br>and <i>T. viride</i> as biocontrol<br>agents to control rice<br>disease of brown spot,<br>investigating the<br>effectiveness of the control<br>agents. | <i>T. harzanium</i> and <i>T. viride</i> were potential biological control agents. Finding also concluded that there were significant differences between <i>T. harzanium</i> and <i>T. viride</i> in controlling brown spot disease in rice plants.   | South<br>America | Gomathinayagam<br><i>et al</i> . (2009) |
| 3   | Malaysian<br>variety MRQ74<br>of rice | <i>Trichoderma<br/>asperellum</i>   | To Increase the<br>germination and growth<br>rates of rice seedlings as<br>well as improving their<br>vigour and chlorophyll<br>content.  | The findings showed that inoculation<br>of <i>Trichoderma</i> significantly<br>enhanced the macronutrient uptake<br>in rice plants. The ability of<br><i>Trichoderma</i> to modulate rice plants<br>N, P and K uptake was presumably<br>due to its capacity to produce<br>cellulolytic enzymes that can degrade<br>cellulose in soils and subsequently<br>release organic N, P and K in the rice<br>rhizosphere. | Malaysia         | Doni <i>et al</i> . (2017)              |

| No. | Rice variety                | Microorg.   | Aims   | Significant findings  | Reported<br>from | References                      |
|-----|-----------------------------|---|--|---|------------------|---------------------------------|
| 4   | Local rice<br>variety       | <i>Trichoderma</i><br>spp.                                | The aim of the study was to<br>evaluated the effectiveness<br>of indigenous <i>Trichoderma</i><br>species against <i>Rhizoctonia</i><br><i>solani</i> .  | This study showed that soil from tidal<br>swamp lands contains <i>Trichoderma</i><br>spp. which was able to inhibit<br><i>Rhizoctonia solani</i> causing decreased<br>of rice production and increased plant<br>resistance to disease, especially<br>basal stem roots diseases and wilt<br>disease. <i>Trichoderma</i> also played an<br>important role as decomposer which<br>also able to provide plant nutrient. | Indonesia        | Suparno <i>et al.</i><br>(2016) |
| 5   | Local upland<br>rice Bakala | <i>Trichoderma</i> sp.<br>Rhizobacteria<br>and Mycorrhiza | The objectives of the<br>experiment were to study<br>the resistance of rice plants<br>to disease, rice yield and to<br>reduce the chemical<br>fertilizer use for upland<br>rice.   | Prepared consortium (with <i>Trichoderma</i> spp.) significantly reduced the infection of blast and brown spot diseases, during the vegetative and generative phases of upland rice crop.   | Indonesia        | Taufik <i>et al.</i><br>(2016)  |
| 6   | Rice variety<br>MRQ74       | <i>Trichoderma</i><br>spp.                                | In this study, the<br>effectiveness of seven<br>isolates of <i>Trichoderma</i><br>spp. to promote growth and<br>increase physiological<br>performance in rice were<br>evaluated using completely<br>randomized design under<br>greenhouse condition. | The results showed that rice plants<br>inoculated with different <i>Trichoderma</i><br>spp. significantly increased rice<br>growth components.  | Malaysia         | Doni <i>et al.</i><br>(2014c)   |

| No. | Rice variety                                       | Microorg.                             | Aims   | Significant findings  | Reported<br>from | References                  |
|-----|--|---------------------------------------|--|---|------------------|-----------------------------|
| 7   | <i>Oryza sativa</i> L.<br>(PSB rc 34<br>varieties) | <i>Trichoderma<br/>pseudokoningii</i> | This study was conducted<br>to investigate the possible<br>mechanism by which soil<br>application of Trichoderma<br>enhances growth of tomato<br>under semi-controlled<br>condition, and to verify<br>whether the earlier<br>observed<br>beneficial effect on<br>vegetables and rice<br>seedlings can also be<br>demonstrated in lowland<br>farmer's rice field. | The sufficient population of fungus ( <i>Trichoderma</i> ) in the soil promoted growth and increased rice and vegetable yield even with minimal fertilizer application. It is also an effective biological control agent against soil-borne fungal pathogens.   | Philippines      | Cuevas (2006)               |
| 8   | Rice ( <i>Oryza<br/>sativa</i> L.) var.<br>Kernel  | Trichoderma<br>harzianum<br>(Th-6)    | To evaluate the role of<br><i>Trichoderma harzianum</i><br>(Th-6) in mitigating the<br>consequences of salinity<br>stress on crop plants, seeds<br>of rice was coated with<br><i>Trichoderma</i> before sowing<br>and salt treatment.  | It can be concluded that application<br>of <i>Trichoderma harzianum</i> enhances<br>salt tolerance of rice through higher<br>antioxidant activities and high proline<br>content. Treatment with <i>Trichoderma</i><br><i>harzianum</i> not only enhanced some<br>physiological parameters but also<br>lowered the H <sub>2</sub> O <sub>2</sub> concentration<br>reducing the damaging effect of<br>(Reactive oxygen species) ROS<br>within plants. | Pakistan         | Yasmeen and<br>Zamin (2017) |

| No. | Rice variety          | Microorg.  | Aims   | Significant findings   | Reported<br>from  | References                      |
|-----|-----------------------|--|--|--|-------------------|---------------------------------|
| 9   | Rice variety<br>MR219 | <i>Trichoderma</i><br>spp. and<br><i>Bacillus substilis</i>            | The specific goal of this<br>study was to obtain<br><i>Trichoderma</i> isolates from<br>soil and to test their<br>efficacy as biocontrol<br>agents against<br><i>Magnaporthe grisea</i> .  | This study shows that the <i>Trichoderma</i> strains were effective in inhibiting <i>M. grisea</i> . Isolate T2 was the most effective and produced higher levels of inhibition of disease incidence and severity when used as dual inoculum with <i>B. substilis</i> UKM1.  | Malaysia          | Ali and Nadarajah<br>(2014)     |
| 10  | BRRI dhan28           | <i>Trichoderma<br/>harzanium</i>                                       | By using <i>Trichoderma</i> and<br>fungicide on seedling<br>establishment and yield<br>performance of dry direct<br>seeded <i>Boro</i> rice.   | <i>Trichoderma</i> application alone or<br>application of <i>Trichoderma</i> followed<br>by spraying of sulphur fungicide at 20<br>DAS gave similar yield in dry direct<br>seeded Boro rice. Therefore,<br>osmopriming of seed with 3% Zn<br>SO4 solution followed by seed<br>treatment with <i>Trichoderma</i><br>inoculum could be used for improving<br>seedling establishment and increase<br>grain yield of dry direct seeded Boro<br>rice. | Bangladesh        | Rahman <i>et al</i> .<br>(2015) |
| 11  | Rice var. KD.         | <i>Pseudomonas</i><br><i>fluorescens</i> and<br><i>Trichoderma</i> sp. | The objective of this study<br>was to check the combined<br>effect of local strains of <i>P.</i><br><i>fluorescens</i> and<br><i>Trichoderma</i> spp. on crop<br>growth and control of Blast<br>of rice besides screening<br>various biocontrol<br>mechanisms. | Results indicated the effectiveness of<br>combined application of <i>P</i> .<br><i>fluorescens</i> B 24 and <i>T. koningiopsis</i><br>T 162 for plant growth promotion and<br>control of Blast of rice and therefore<br>can be integrated for managing Blast<br>of rice.   | Manipur,<br>India | Subhalakshmi<br>and Devi (2017) |

| No. | Rice variety                           | Microorg.  | Aims  | Significant findings   | Reported<br>from      | References                                  |
|-----|--|--|---|--|-----------------------|---|
| 12  | Rice variety<br>G98-135                | <i>Trichoderma<br/>harzianum</i> and<br><i>T. viride</i>                   | The objective of this study<br>was to control rice disease<br>of brown spot by using <i>T.</i><br><i>harzianum</i> and <i>T. viride</i> as<br>biocontrol agents.  | Findings concluded that both <i>T. harzanium</i> and <i>T. viride</i> were potential biological control agents and there were some significant differences between <i>T. harzanium</i> and <i>T. viride</i> in controlling brown spot disease in rice plants.  | South<br>America      | Gomathinay-<br>agam <i>et al.</i><br>(2012) |
| 13  | CO-43 variety<br>of Paddy plant.       | <i>Trichoderma</i><br>species.   | Study was described the<br>efficacy of different isolates<br>of <i>T.viride</i> , <i>T. virens</i> , <i>T.</i><br><i>harzianum</i> and <i>T.</i><br><i>reesei</i> against <i>Ustilaginoidea</i><br><i>virens</i> by dual culture<br>method under <i>in vitro</i><br>conditions. | Results indicated that all the isolates<br>of <i>Trichoderma</i> species showed<br>antagonistic activity. However,<br>among them, isolate of <i>T. viride</i><br>showed maximum antagonistic<br>potential against <i>U. virens</i> after 9<br>days and 12 days of incubation<br>period.              | Tamil-<br>Nadu, India | Kannahi <i>et al</i> .,<br>(2016)           |
| 14  | Rice cultivar<br>Pusa basmati-<br>1121 | <i>Trichoderma</i><br>spp. and<br><i>Pseudomonas</i><br><i>fluorescens</i> | The main aim was to show<br>the effects of bio control<br>agents and botanicals<br>against the blast disease of<br>rice.  | Results concluded that the <i>P. fluorescens</i> inhibit the blast as compared to treated and untreated control. When <i>T. viride</i> is best bio-control, which was followed by T. harzianum botanicals such as neem oil and neem oil + neem, leaf extract also inhibit the blast disease of rice. | Allahabad,<br>India   | Kumar <i>et al</i> .<br>(2017)              |

| No. | Rice variety                  | Microorg.                                  | Aims  | Significant findings   | Reported<br>from        | References                      |
|-----|-------------------------------|--|---|--|-------------------------|---------------------------------|
| 15  | GJS04-217.                    | <i>Trichoderma</i><br>spp.                 | The aim of this study was<br>to evaluate the phosphate<br>solubilization potential of<br>the <i>Trichoderma</i> spp.<br>isolates found in the<br>commercial product<br><i>Trichoplus</i> JCO.                 | The most efficient strains were UFT-<br>Tr., UFTTr. Euc and UFT-Tr. TSM.<br>Furthermore, these strains of<br><i>Trichoderma</i> significantly increased<br>the biomass parameters and P<br>nutrition of rice grown under<br>greenhouse conditions, suggesting<br>its potential applicability in the<br>improvement of the crop.  | Brazil                  | Chagas <i>et al.</i><br>(2015)  |
| 16  | Rice variety<br>(PB-1121)     | Bio-agent<br>( <i>Trichoderma</i><br>spp.) | In present investigation<br>organic amendment, bio-<br>agent ( <i>Trichoderma</i> spp.)<br>and carbofuran were used<br>to evaluate their<br>effectiveness in the<br>management of rice root<br>knot nematode. | Result obtained in this investigation<br>indicates that there is possibility of<br>use of botanicals, organic<br>amendments and bio-agents alone<br>and in combination for the<br>management of nematode in rice<br>crop.  | Meerut<br>(U.P.), India | Kumar <i>et al</i> .<br>(2017)  |
| 17  | Rice cultivar<br>BRS Tropical | <i>Trichoderma</i><br><i>asperellum</i>    | The aim of this study was<br>to control sheath blight<br>disease of rice by using<br><i>Trichoderma asperellum</i> in<br>tropical lowland.  | Results showed that all treatments<br>reduced sheath blight progression<br>rate. In the randomized block<br>experiment <i>T. asperellum</i> reduced<br>disease severity and increased grain<br>weight and yield. In the split-plot<br>design experiment, the mixture of<br>the four <i>T. asperellum</i> isolates grain<br>reduced disease severity and also<br>increased grain weight and yield. The<br>result was concluded that for the first<br>time that a mixed isolates of <i>T.</i><br><i>asperellum</i> was efficient in reducing<br>disease severity and increasing yield<br>and grain weight. | Brazil                  | França <i>et al</i> .<br>(2015) |

Table S1. Application of *Trichoderma* spp. as plant growth promoter in rice cultivation. Debnath *et al.* (2020) Biotecnología Vegetal 20(1): 1-16

| No. | Rice variety                                   | Microorg.   | Aims   | Significant findings   | Reported<br>from    | References                      |
|-----|--|---|--|--|---------------------|---------------------------------|
| 18  | Rice ( <i>Oryza<br/>sativa</i> .L) cv.<br>Neda | <i>Trichoderma</i><br>spp.  | To evaluated the potential<br>of indigenous <i>Trichoderma</i><br>strains against <i>R. solani</i><br>AG1-IA <i>in vitro</i> , and against<br>sheath blight disease in the<br>glasshouse, in order to find<br>biocontrol isolates for<br>application in the field. | <i>T. harzianum</i> AS12-2 was the most effective <i>Trichoderma</i> strain with great potential to control sheath blight of rice in the field.                                      | Iran                | Naeimi <i>et al</i> .<br>(2010) |
| 19  | Rice variety<br>PSB Rc18.                      | Biofertilizers<br>such as<br><i>Azospirillum,</i><br><i>Trichoderma,</i> or<br>unidentified<br><i>Rhizobacteria</i> | This study was evaluated<br>the effect of biofertilizers in<br>irrigated rice and their<br>effects on grain yield at<br>different fertilizer rates.  | The results showed significant yield increases for all products tested in some seasons but the most consistent results were achieved by the <i>Azospirillum</i> based biofertilizer. | Philippines         | Banayo <i>et al</i> .<br>(2012) |
| 20  | Natural<br>Jhingora rice                       | <i>Trichoderma</i> sp.  | Study was undertaken to<br>evaluated to identify<br>various factors that may<br>contributed to biocontrol of<br>sheath blight of rice in<br>transplanted rice by the<br>used of Trichoderma spp.   | The results indicated that the higher rates of <i>T. harzianum</i> effective in reducing disease severity and increasing grain yield over control.                                   | Pantnagar,<br>India | Khan and Sinha<br>(2007)        |

| No. | Rice variety   | Microorg.                        | Aims  | Significant findings   | Reported<br>from     | References                      |
|-----|--|----------------------------------|---|--|----------------------|---------------------------------|
| 21  | Paddy<br>seedlings   | <i>Trichoderma</i> sp.           | The aim of this study was<br>to conduct the activation of<br>rice plant growth against<br><i>Rhizoctonia solani</i> using<br><i>Pseudomonas fluorescens,</i><br><i>Trichoderma</i> and salicylic<br>acid. | Findings revealed that when plants<br>treated with biocontrol agents alone<br>showed moderate growth. Likewise,<br>(vesicular arbuscular mycorrhizal)<br>VAM alone treated plants showed<br>very good result whereas<br>combination of VAM and salicylic acid<br>did not showed considerable growth<br>response. Biocontrol agents<br><i>Trichoderma</i> and <i>P. fluorescens</i> when<br>applied along with salicylic acid<br>showed appraisable increase in the<br>biometric parameters in rice against<br><i>R. solani</i> and decrease the<br>percentage of rate of infection<br>compared with control and<br>treatments. | Tamil Nadu,<br>India | Anitha and Das<br>(2011)        |
| 22  | Three aromatic<br>rice (Sugandh<br>Dhan-17, Pusa<br>Basmati-1,<br>Kalanamak<br>3131) | <i>Trichoderma<br/>harzianum</i> | The aim of their study was<br>to determine the dose-<br>dependent response of<br><i>Trichoderma harzianum</i> in<br>improving drought<br>tolerance in rice genotypes.                                     | Resulted that <i>T. harzianum</i> and rice<br>plant interaction improves drought<br>tolerance. Different doses of<br><i>Trichoderma</i> resulted in significantly<br>increased in plant height before and<br>after drought stress.   | Pantnagar,<br>India  | Pandey <i>et al</i> .<br>(2016) |

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| No. | Rice variety   | Microorg.                        | Aims   | Significant findings   | Reported<br>from      | References                      |
|-----|--|----------------------------------|--|--|-----------------------|---------------------------------|
| 23  | Rice seeds ( <i>O. sativa</i> L.) of<br>accession<br>Kalanamak<br>3131 | <i>Trichoderma<br/>harzianum</i> | Investigated the growth of <i>T. harzianum</i> under a range of moisture regimes and to determine the effect of root dip treatment of rice plants with selected drought tolerant <i>Trichoderma</i> isolates on physiological and biochemical responses under different degrees of drought stress was studied. | This research work observed that the direct effect of <i>Trichoderma</i> colonization was promoted the root growth, regardless of water status, which caused delay in the drought responses of rice plants.  | Uttarakhand<br>,India | Shukla <i>et al</i> .<br>(2012) |
| 24  | Rice variety<br>JGL-1798   | <i>Trichoderma<br/>harzianum</i> | The goal of the study was<br>to determine the effect of<br>rice straw integration with<br>inorganic fertilizer and FYM<br>on soil nutrient<br>management for<br>sustainable production of<br>rice in different seasons of<br>the year.   | The findings of the study showed that<br>the application of the combination<br>treatments helped in the balance<br>maintaining the organic and<br>inorganic nutrients in soil and hence<br>the increased rice productivity. The<br>present study also showed that rice<br>straw could be efficiently exploited<br>for conservation of soil nutrients<br>under rice ecosystem through proper<br>decomposing techniques,<br>simultaneously enhancing soil<br>microorganisms beneficial for plant<br>growth and productivity. | India                 | Sannathimmappa<br>et al. (2015) |

| No. | Rice variety  | Microorg.                        | Aims  | Significant findings   | Reported<br>from | References                    |
|-----|---|----------------------------------|---|--|------------------|-------------------------------|
| 25  | Rice variety IR<br>64   | <i>Trichoderma</i> sp.           | To determine the effect of<br>continuous application of<br>organic fertilizer and<br>inorganic fertilizers alone or<br>in combination on rice yield<br>and their effects to<br>microbial communities in<br>rice soil condition. | Results emphasized that the used of <i>Trichoderma</i> as a biofertilizer, which is helped in increasing grain yields, association of higher microbial colonization apart of these also reduced sheath blight disease of rice.   | Vietnam          | Man <i>et al</i> . (1999)     |
| 26  | Breeder seed<br>of the rice<br>varieties<br>(including<br>Sahbhagi Dhan<br>and Swarna-<br>Sub1) | <i>Trichoderma<br/>harzianum</i> | The experiment was<br>conducted to evaluated the<br>potentiality of various<br>microbial formulations for<br>enhanced the performance<br>of stress tolerant rice<br>varieties under rain fed<br>area.                           | The application of <i>Trichoderma</i><br><i>harzianum</i> strain S2 along with IRRI<br>improved best management<br>practices (BMP) was most effective<br>for enhancing the yield and yield<br>attributes of stress tolerant rice<br>varieties. Although the sole<br>application of IRRI improved BMP<br>was also effective in improving the<br>performance of rice varieties, and<br>also further enhanced the yield and<br>yield parameters as well as enhanced<br>the productivity of rice in rain fed<br>area also. | Bihar, India     | Zaidi <i>et al.</i><br>(2018) |

| No. | Rice variety                 | Microorg.                     | Aims   | Significant findings   | Reported<br>from | References                    |
|-----|------------------------------|-------------------------------|--|--|------------------|-------------------------------|
| 27  | Rice cultivars<br>IR64.      | <i>Trichoderma</i> sp.        | To determine the effect of<br>decomposed rice straw at<br>different times on rice<br>yields understanding their<br>effects on growth of rice<br>plant, rice yield, to<br>microbial communities, ETS<br>activities and total protein<br>in rice soil. | The application of decomposed rice<br>straw at different times (1,2,3,4<br>week after treating (WAT) and<br>combined with 50% NPK fertilizer<br>increased rice yield over control. As a<br>results of these treatments were also<br>found to be higher in microbial<br>population; Electron transport<br>system (ETS) activities and total<br>protein in soil as compared to alone<br>application of NPK fertilizers.                              | Vietnam          | Man and Ha<br>(2006)          |
| 28  | Rice seeds<br>variety MRQ74. | <i>Trichoderma</i><br>spp.    | The work was carried out to<br>evaluated the effect s of<br><i>Trichoderma</i> spp. on rice<br>( <i>Oryza sativa</i> L.) seed<br>germination and vigour.   | The results showed that all isolates of <i>Trichoderma</i> spp. significantly increased rice seedling growth, germination rate, vigour index and speed of germination with <i>Trichoderma</i> sp., SL2 showing the greatest increase in all the four parameters. The results of the study adds to the further understanding of the role of beneficial fungi in improving rice resistance to stress, yield and quality through seed in vigouration. | Malaysia         | Doni <i>et al.</i><br>(2014b) |
| 29  | Swarna (MTU<br>7029).        | <i>Trichoderma<br/>viride</i> | To managed the sheath<br>blight disease of rice<br>through biocontrol agents.  | <i>Trichoderma viride</i> was the most<br>effective treatment against sheath<br>blight disease of rice. it will also<br>promote plant vigour and thus<br>increasing the yield of the rice crop.  | Odisha,<br>India | Pal <i>et al</i> . (2015)     |

| No. | Rice variety                                  | Microorg.                  | Aims  | Significant findings   | Reported<br>from         | References                                 |
|-----|---|----------------------------|---|--|--------------------------|--|
| 30  | Rice (var. MTU<br>7029)                       | <i>Trichoderma</i><br>spp. | This study was designed to<br>investigate the efficacy of<br>the biocontrol isolates on<br>growth promotion and<br>ability in lowering the metal<br>uptake by rice plant with<br>two <i>Trichoderma</i> isolates. | The plant treated with <i>Trichoderma</i><br>on the other hand gained higher<br>biomass which might be correlated<br>with lower cadmium concentration in<br>plants. It was observed that MT-4<br>treated plants contained lower<br>cadmium coupled with higher<br>biomass as compared to UBT-18.         | West<br>Bengal,<br>India | Nongmaithem <i>et</i><br><i>al.</i> (2017) |
| 31  | Rice variety<br>MRQ74.                        | <i>Trichoderma</i><br>spp. | To examined the<br>physiological regulator<br>potential of <i>Trichoderma</i><br>spp. to enhanced rice<br>transpiration performance.  | Observation revealed that <i>Trichoderma</i> spp. has potentiality to enhance the growth of rice plant through transpirational processes. The results of the study were added to the advancement of the understanding as to the role of <i>Trichoderma</i> spp. in improving rice physiological process. | Malaysia                 | Doni <i>et al</i> .<br>(2014d)             |
| 32  | Rice varieties<br>Karuna and<br>Sahabhagidhan | <i>Trichoderma</i><br>spp. | The goal of this study was<br>to assess <i>Trichoderma</i><br>strains isolated from tree<br>barks as potential<br>biocontrol agents and<br>biofertilizers for direct<br>seeded rice.                              | <i>T. erinaceum</i> improved the germination rate of rice and enhanced vigour. It was also recorded better crop growth and highest yield both under biotic and abiotic stresses and in addition of these isolates helped both the varieties to accumulate more nutrients to the soil.                    | Odisha,<br>India         | Swain <i>et al.</i><br>(2018)              |

| No. | Rice variety            | Microorg.                   | Aims  | Significant findings   | Reported<br>from    | References                               |
|-----|-------------------------|-----------------------------|---|--|---------------------|--|
| 33  | Rice variety<br>Jyothi. | Trichoderma<br>harzianum    | This study was conducted<br>to know the efficacy of bio<br>agents for the management<br>of rice root-knot nematode<br>under field condition.  | It was found that all the treatments<br>were significantly superior over<br>untreated check with respect to plant<br>growth parameters (plant height,<br>root length, grain yield etc.) and<br>nematode population.  | Karnataka,<br>India | Narasimhamurthy<br><i>et al</i> . (2017) |
| 34  | Rice variety IR-<br>50. | <i>Trichoderma</i> species. | The study was carried out<br>to evaluated <i>Trichoderma</i><br>parents and fast growing <i>T.</i><br><i>fusant</i> strains in dual plate<br>assays for their<br>antagonistic potential<br>against different fungi<br>which causes different<br>disease like, wilt of tomato,<br>sheath blight of rice, brown<br>spot in rice, leaf spot in<br>sorghum and damping-off<br>of cucumber diseases<br>respectively. | <i>T. fusant</i> strains ThSF3, TvSF5 and<br>HF9 as well as <i>T. harzianum</i> , <i>T. viride</i><br>parental strains significantly<br>enhanced root and shoot growth of<br>both plants, when compared with<br>untreated plants. In addition to<br>control sheath blight of rice and wilt<br>of tomato .These strain also inhibit<br>the fungal mycelia growth. | Chennai,<br>India   | Balasubramanian<br><i>et al.</i> (2014)  |

| No. | Rice variety  | Microorg.                  | Aims   | Significant findings  | Reported<br>from           | References                     |
|-----|---|----------------------------|--|---|----------------------------|--------------------------------|
| 35  | Rice cv. Pant<br>Dhan-4.  | Trichoderma<br>harzianum.  | The study was carried out<br>to investigate the effect of<br>zinc on the effectiveness of<br><i>T.harzianum</i> in managing<br>sheath blight, and yield of<br>rice under glasshouse<br>conditions. | The bio-agent ( <i>T. harzianum</i> )<br>significantly reduced the disease<br>severity and incidence of sheath<br>blight. Maximum reduction in disease<br>severity (52.66%) and incidence<br>(26.66%) was recorded when the<br>zinc applied as foliar application in<br>bio-agent treated pots. it was also<br>found the application of bio-agent<br>significantly increased grain yield.<br>Maximum increase in grain was<br>recorded when zinc was applied in<br>the soil followed by foliar application<br>of bio-agent. | India                      | Khan and Singh<br>(2015)       |
| 36  | Four rice<br>varieties<br>(Swarna,<br>Swarna Sub-1,<br>IR-64, DRR-42) | <i>Trichoderma</i><br>spp. | The objective of the study<br>was to determine the effect<br>of hydrogel and<br><i>Trichoderma</i> on root growth<br>and water productivity in<br>rice varieties.                                  | <i>Trichoderma</i> and hydrogel both has<br>shown the ability of enhancing, root<br>development and water productivity<br>and effective in improving soil<br>moisture availability and thus<br>increased plant establishment. It was<br>concluded, the hydrogel and<br><i>Trichoderma</i> both resulted positively<br>with the rice crop.   | Uttar<br>Pradesh,<br>India | Kurrey <i>et al.</i><br>(2018) |

| No. | Rice variety                  | Microorg.                | Aims  | Significant findings  | Reported<br>from    | References                          |
|-----|-------------------------------|--------------------------|---|---|---------------------|-------------------------------------|
| 37  | Rice cultivar<br>`Kali kamod' | Trichoderma<br>harzianum | This study was conducted<br>to evaluate <i>in vitro</i> and <i>in</i><br><i>vivo</i> biocontrol potential of<br>the combined application of<br><i>T. harzianum</i> strain Th3<br>and <i>Pseudomonas</i><br><i>fluorescens</i> strain RRb11,<br>and the fungicide<br>carbendazim against the<br>rice blast (RB) pathogen,<br>Magnaporthe oryzae, and<br>the bacterial leaf blight<br>(BLB) Pathogen,<br><i>Xanthomonas oryzae</i> pv.<br>oryzae. | Out of the six combined application<br>interactions for both the diseases<br>only one interaction ( <i>T. harzianum</i><br>Th3 and <i>P. fluorescens</i> RRb11) was<br>synergistic against RB, which<br>suggested that Synergism is a rare<br>event in combined use of BCAs.  | Rajasthan,<br>India | Jambhulkar <i>et al</i> .<br>(2018) |
| 38  | Rice variety BU<br>dhan 1.    | Trichoderma<br>harzianum | To assessed the role of two<br>biofertilizers on rice yield to<br>substitute and supplement<br>the inorganic fertilizer and<br>to examine probable<br>physiological impact of<br>these biofertilizers on rice<br>plant.   | <i>Trichoderma</i> enriched treatments<br>were found to provide significant<br>increase in N uptake and enhance the<br>yield of rice with better physiological<br>attributes even with low inorganic<br>fertilizer application. The yield and<br>other performances were similar with<br>recommended dose of fertilizer with<br>application of 25% less inorganic<br>fertilizers. | United<br>Kingdom   | Khan (2018)                         |

| No. | Rice variety                  | Microorg.                        | Aims   | Significant findings  | Reported<br>from     | References                          |
|-----|-------------------------------|----------------------------------|--|---|----------------------|-------------------------------------|
| 39  | Rice variety<br>NLR-34449.    | <i>Trichoderma</i> species.      | To evaluate the efficacy of<br><i>Trichoderma</i> spp. against<br><i>Rhizoctonia solani</i> under<br>glasshouse conditions.  | Among the three potential <i>Trichoderma</i> spp. TN3 was found highly effective against sheath blight pathogen, <i>R. solani</i> under <i>in vitro</i> conditions and it was also found that it has most effective in reducing disease incidence and increasing grain yield.             | Tirupati,<br>India   | Prasad and<br>Kumar (2011)          |
| 40  | Rice cv. NARDI<br>108         | Trichoderma<br>viride            | To examine the influence of <i>P. fluorescens</i> and <i>T. viride</i> combination on the crop growth and yield in rice.   | There was no negative effect when<br>the two biocontrol agents were<br>applied together. They exhibited<br>synergism in promoting crop growth,<br>grain and straw yields of rice besides<br>controlling the sheath blight disease.  | Chennai,<br>India    | Mathivanan <i>et al</i> .<br>(2005) |
| 41  | Rice<br>(Kalanamak-<br>3131). | <i>Trichoderma<br/>harzianum</i> | To examined and compared<br>the proline,<br>malondealdehyde and<br>phenol accumulation in<br><i>Trichoderma</i> -treated and<br>untreated rice seedlings<br>grown under different<br>degrees of salt stress in<br>order to exploit the salinity<br>tolerant <i>Trichoderma</i><br>strains in relation to salt<br>stress tolerance in rice. | Results indicated the potential of<br>used salinity tolerant <i>Trichoderma</i><br>isolates through seed biopriming for<br>reducing the deteriorating effects of<br>salinity, with Th-14 gave the most<br>consistent effect under the present<br>experimental material and<br>conditions. | Uttarakhand<br>India | Rawat <i>et al.</i><br>(2012)       |

| No. | Rice variety                                     | Microorg.                  | Aims   | Significant findings  | Reported<br>from    | References                    |
|-----|--|----------------------------|--|---|---------------------|-------------------------------|
| 42  | Rice variety<br>MRQ74                            | <i>Trichoderma</i><br>spp. | To examine the effect of <i>Trichoderma</i> species on the rice growth physiological response.   | It revealed that <i>Trichoderma</i> spp.<br>have the potential to enhance rice<br>physiological processes and growth.<br>In this respect, the present<br>experiment proved that <i>Trichoderma</i><br>sp. SL2 was the best strain compared<br>to six others strains.  | Malaysia            | Doni <i>et al.</i><br>(2014a) |
| 43  | Rice variety<br>'Pusa Sugandh<br>5' (Pusa 2511). | <i>Trichoderma viride</i>  | The research was focused<br>towards enhancing the<br>quality of grains and<br>improving plant<br>productivity, especially with<br>regard to micronutrient<br>enrichment in SRI and<br>conventional practices,<br>through the application of<br>microbial inoculants. | Findings illustrated that<br>cyanobacterial formulations,<br>particularly in consortia or biofilm<br>modes, can be promising<br>bioinoculants for micronutrient<br>enrichment of the rice crop under<br>both methods of rice cultivation,<br>leading to improvement of rice<br>quality and decreased rice production<br>costs, with savings of 50% in N<br>application (in these trials as urea).<br>SRI cultivation methods appear to be<br>contributing to better nutrient access<br>and/or greater nutrient uptake by the<br>rice plants, as evidenced by higher<br>biometrical parameters and activity<br>of enzymes. | New Delhi,<br>India | Adak <i>et al</i> .<br>(2016) |

Table S1. Application of *Trichoderma* spp. as plant growth promoter in rice cultivation. Debnath *et al.* (2020) Biotecnología Vegetal 20(1): 1-16

| No. | Rice variety               | Microorg.                  | Aims  | Significant findings   | Reported<br>from         | References                      |
|-----|----------------------------|----------------------------|---|--|--------------------------|---------------------------------|
| 44  | Rice variety<br>Pusa 1121. | <i>Trichoderma</i><br>spp. | The experiment was<br>conducted to evaluate<br>growth promotion of<br>transplanted rice by fungal<br>and bacterial bioagents<br>effective against brown leaf<br>spot of rice. | Findings revealed that potential fungal and bacterial bioagents effective against brown leaf spot disease of rice, exhibited plant growth promoting activities and resulted, 21.69 to 23.97% reducing the disease severity and 34.43 to 40.99 % increase in grain yield over untreated check, even if there is no disease. | Allahabad<br>(UP), India | Kumar <i>et al.</i><br>(2016)   |
| 45  | Rice variety<br>MTU -7029. | <i>Trichoderma</i> sp.     | To managed Brown spot<br>disease of rice by using<br>safer fungicides and some<br>bioagents.  | The research documented that the use of biogents for management of brown spot of rice was not so effective than the traditional application of fungicides although <i>in vitro</i> experiment some bioagents showed some promise in controlling the pathogen of brown spot of rice.  | West<br>Bengal,<br>India | Sarkar <i>et al</i> .<br>(2014) |