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Full Length Research Paper

Macrofungal diversity in the forest litter of Nadia District, West Bengal, India

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Litter decomposing macrofungi (LDM) and ectomycorrhiza (ECM) play vital roles in maintenance of forest ecosystem. Since these soil-litter dwelling fungi produce lignolytic enzymes, they have been proved useful in soil bioremediation. However, literature of these groups is limited and therefore it is important to record and identify them. This study reports the diversity of litter growing macrofungi in three *sal* (*Shorea robusta* C.F. Gaertn.) dominated small forests, that is, Bethuadahari Wildlife Sanctuary (BWS), Ranaghat Forest (RF) and Zafarnagar Forest (ZF) of Nadia, West Bengal India. During the study period (2013 and 2014) 10,253 carpophores, belonging to 37 macrofungal species were sampled and 17 edible, 14 inedible and 4 poisonous species were identified based on previous records. *Podoscypha elegans* (G. Mey.) Pat. was recorded in India for the first time. Only 7 ECM (~18.91%) and 30 saprophytic (~81.08%) species were recorded. The differences of diversity pattern in the three forests varied significantly. Shannon and Brillouin indices were highest in BWS suggesting the most diverse fungal community in terms of α diversity whereas; β and Taxonomic diversity studies suggested that RF was the most heterogeneous forest among the sampled forests.

Key words: Brillouin, diversity, ectomycorrhiza, litter decomposing macrofungi, Shannon.

INTRODUCTION

India is a mega-diversity nation having a forest cover of 697,898 km² occupying 21.23% of the land area (State of Forest Report, 2011-2012) and is endowed with rich fungal flora (Manoharachary et al., 2005). Fungi are one of the most under-studied and under-protected groups (Minter, 2011) and thus, need special attention.

Saprotrophic decomposer fungi, mutualistic mycorrhizal fungi and parasitic fungi are the main functional groups which inhabit the forest litter (Simard and Austin, 2010). Some fungi of the first group and ectomycorrhiza (ECM) produce macroscopic carpophores and are referred to as macrofungi.

Litter decomposing macrofungi (LDM) colonize the forest litter and play a major role in litter decomposition (Osono, 2015) while ECM, is considered essential for the growth and health of forest tree species (Courty et al., 2010). Unfortunately, record of these groups is limited. Both ECM and LDM play vital roles in forest nutrition cycle (Cairney and Meharg, 2002). LDMs assume significance because a number of attempts have been made by different workers to exploit their lignolytic enzymes arsenal for bioremediation (Anastasi et al., 2013). The bioremediation property of both LDMs (Baldrian and Šnajdr, 2006; Liers et al., 2013) and ECM (Casieri et al., has been documented. Decontamination of 2010) pollutants from soil, water etc by the use of microorganisms is denoted as bioremediation (Rhodes, 2012) and

this process is thought to be highly advantageous in recent years over other conventional processes (Ali, 2010). The forest area in West Bengal is around 11,879 km² occupying 13.38% land area and Nadia accounts for merely 0.30% (12 km²) of this (State Forest Report, West Bengal 2011-12). Forests of Nadia are tropical moist deciduous broad leafed ones dominated by *Shorea robusta* C.F. Gaertn. (Dipterocarpaceae). The forest cover of the district is very low and is patchy in nature. Such a condition prevails in all other districts of tropical moist climate of West Bengal (Maldah, Murshidabad, Barddhaman, Hugli, Haora, Eastern parts of Bankura, West and East Medinipur and the Northern parts of North and South 24-Parganas).

With this in view, the current study intended to record the occurrence of this important but less studied group of macrofungi in three forests of Nadia District of West Bengal, India. Detailed survey were undertaken to also study the α , β and taxonomic diversity of the LDM species. This type of diversity study with LDM is the first of its kind in this area.

MATERIALS AND METHODS

Study areas

In the three forests the dominant tree is S. robusta (Dipterocarpaceae) along with other species like Swietenia

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Author(s) agree that this article remains permanently open access under the terms of the <u>Creative Commons Attribution</u> <u>License 4.0 International License</u> mahagoni (Meliaceae), Tectona grandis (Lamiaceae), Terminalia arjuna (Combretaceae), Mesua ferrea, Diospyros blancoi (Ebenaceae), and Saraca asoca (Fabaceae). The tree density differed in the three forests, BWS (~67 ha) being the densest among them. BWS is a protected forest while RF (~34 ha) and ZF (~29 ha) are not protected. The distance between BWS and ZF is ~52 km while between BWS and RF is ~56.5 km.

Sampling, identification and diversity analysis

Forest areas were surveyed at intervals of 7 days from January 2013 till December 2014 and identified based on morphoanatomical characterization and literature (Butler and Bisby, 1960; Arora, 1986) studies. *P. elegans* was further identified based on sequencing of 18S rDNA and NCBI blast. The sequence was published in NCBI genebank. Sampling was carried out in fixed random plots of 25 x 25 m² marked as B1 to B10 in BWS (that is, 10 plots), R1 to R7 in RF and Z1 to Z7 in ZF (that is, 7 plots each in RF and ZF). The total number of different species and individuals were recorded. Frequency of occurrence (F) was calculated after Tapwal et al., (2013) as follows:

 $Frequency(\%) = \frac{\text{Number of sites in which the species is present}}{\text{Total number of sites}} \times 100$

Based on frequency percentage (F) the fungal species were classified in 4 categories as (1) Very Low occurring (F value =1-20), (2) Low occurring (F value =21-40), (3) Moderately occurring (F value =41-60) and (4) High occurring (F value =61-100).

All diversity analyses were done by PAST-3.11 software (Hammer et al., 2001). The different α -diversity indices namely Taxa S, Number of Individuals, Shannon (H) and Brillouin were calculated for each plot selecting percentile type bootstrap of 9999 replicates. The mean of Shannon (H) and Brillouin indices for each forest were calculated. Individual based rarefaction curve was constructed from the pooled data over two years. Whittaker β diversity (β_W) was calculated from the presence-absence data. Taxonomic distinctness and taxonomic diversity (Clarke and Warwick, 1998) with pooled 95% confidence (conditional method) were calculated.

RESULTS

Collection and identification

Altogether 5754, 2556 and 1943 numbers of carpophores were surveyed from BWS, RF and ZF respectively and 37 species were recognized (Table 1; Supplementary File 1) and classified into 18 genera of 12 basidiomycetous families. Two species of *Agaricus* and one species each of *Marasmius, Coprinus, Agrocybe* and *Podoscypha* could not be identified due to lack of literature. *P. elegans* was recorded for the first time in India. The identity of the species was further confirmed by 18S rDNA sequencing and blast analysis and the sequence was published in NCBI GenBank (Accession number: KP966113.1). The species was found growing on both wood litter and on soil-litter in BWS and RF during June to August.

28 fungal species belonging to 12 fungal families were recorded in BWS (Table 1), among which Agaricaceae represented the largest family. In RF, 21 species were recorded belonging to13 genera and 10 families while in ZF a total of 13 species were recorded among 10 genera and 6 families.

17 edible, 14 inedible and 4 poisonous (Table 1) species were recognized and only 7 species, previously reported as ECM, were recorded of which 6 namely *Agaricus sylvaticus, Marasmius oreades, Laccaria lacata, Lycoperdon pusillum, Boletus aestivalis* and *B. fallax* were present in BWS while 3, viz. *A. sylvaticus, Geastrum triplex* and *Boletus aestivalis* were recorded from RF and none was recorded from ZF.

Agaricaceae was the most dominant fungal family in terms of number of species (Figure 1). Five genera and 18 spp. of Agaricaceae were found in the three forests of which the maximum (14 spp.) were documented in BWS, followed by RF (10 spp.) and ZF (8 spp.). The genus *Agaricus* showed maximum of 11species (Table 1), of which 8, 6 and 3 were present in BWS, RF and ZF respectively. Among the other families, Marasmiaceae

(*Marasmius siccus, Marasmius oreades and Marasmius* sp.) and Podoscyphaceae (*Phaps elegans, Phaps petaloides and Podoscypha* sp.) were the second most abundant having three species each.

Comparative frequency of different species in three forests

Based on frequency percentage (F) (Table 1), the frequency of the fungal species was found considerably different among forests.

BWS. 4 very low occurring In SDD. (A. porphyrocephalus, A. campestris, C. comatus and L. pusillum) 9 low occurring spp. (A. xanthodermus, C. molybdites, L. atrodisca, Coprinus sp., Agrocybe sp., H. capnoides, L.tigrinus, M. maculata and P. elegans), 7 moderately occurring species (A. bernardii, M. procera, M. siccus, M. oreades, V. taylori, L. lacata and B. fallax) and 8 high occurring species (A. sylvaticus, A. bisporus, A. amicosus, A. silvicola, M. mastoidea, L. felina, L. caerulescens, and B. aestivalis) were recorded. In RF, L. leucothites, V.taylori and G. triplex comprised the very low occurring group, Agaricus sp. 1, Agaricus sp. 2, L. atrodisca, Marasmius sp. and H. capnoides comprised the low occurring group. 9 moderately occurring (A. bernardii, A. campestris, M. mastoidea, L. caerulescens, L. tigrinus, M. maculate, P. elegans, P. petaloides and B. aestivalis) and 4 high frequency species (A. sylvaticus, A. semotus, M. siccus and C. comatus) were also found in RF. In ZF the low occurring species were A. xanthodermus, M. procera, L. leucothites, P. pellitus and Podoscypha sp. 1 while the moderately occurring species were A. bisporus, A. silvicola, M. mastoidea, L. atrodisca, C. comatus and L. tigrinus and the high occurring species comprised of C. molybdites and M. siccus and no very low frequency species was recorded. Only 5 species (M. mastoidea, L. atrodisca, M. siccus, C. comatus and L. tigrinus) were recorded in all three forests, but, their frequency was different.

The different forests contributed different numbers of fungal taxa. Among the total, 9 species such as *A. porphyrocephalus, A. amicosus, L. felina, M. oreades, Coprinus* sp., *Agrocybe* sp., *Laccaria lacata, L. pusillum and B. fallax* were exclusive to BWS. Similarly 6 species (*A. semotus, Agaricus* sp. 1, *Agaricus* sp. 2, *Marasmius* sp., *G. triplex* and *P. petaloides*) and 2 species (*P. pellitus* and *Podoscypha* sp.) were limited to RF and ZF respectively. BWS and RF shared 9 species, while 5 species were shared by BWS and ZF (Table 1). Only one species, that is, *L. leucothites* was common in RF and ZF and 5 species were common in all the three forests. BWS contributed maximum fungal taxa singly. Percentage contribution of each forest in terms of total fungal species is presented in Figure 2.

Study of α-diversity

The different diversity indices such as Taxa S, Number of Individuals, Shannon (H) and Brillouin were calculated (Supplementary File 2). Maximum Taxa-S was recorded in B-2 and B6 (18 spp.) and minimum in Z-4 (5 spp.).

Plot wise Shannon (Figure 3) ranged from 1.81 (B-8) to 2.67 (B-10) in BWS, 1.49 (R-7) to 2.38 (R-2) in RF and 1.22 (Z-4) to 1.97 (Z-2) in ZF. The lowest and highest Shannon values among all 24 plots were recorded at Z-4 (in ZF) and B-10 (in BWS) respectively. The mean Shannon (Figure 4) for the three forests was 2.07, 1.92 and 1.56 in BWS, RF and ZF respectively. Plot-wise Brillouin (Figure 3), ranged from 1.77 (B-8) to 2.58 (B-10) in BWS, 1.44 (R-7) to 2.31 (R-2) in RF and 1.19 (Z-4) to 1.89 (Z-2) in ZF. The mean Brillouin (Figure 4) were 1.98, 1.82 and 1.47 in BWS, RF and ZF respectively. Comparative Mean Shannon and Brillouin (Figure 4) values were higher in BWS followed by RF and ZF.

 Table 1. Fungal species, their functional role and comparative frequency in three forests.

		Functional		Frequency			
Species	Family	role	Edibility -	BWS	RF	ZF	
Agaricus sylvaticus Schaeff.	Agaricaceae	ECM	Ed	Н	Н	NA	
Agaricus bisporus (J.E. Lange) Imbach	Agaricaceae	LDM	Ed	Н	NA	Μ	
Agaricus xanthodermus Genev.	Agaricaceae	LDM	Poi	L	NA	L	
Agaricus porphyrocephalus F.H. Møller	Agaricaceae	LDM	Ined	VL	NA	NA	
Agaricus bernardii (Quél.) Sacc.	Agaricaceae	LDM	Ed	Μ	М	NA	
Agaricus campestris L.	Agaricaceae	LDM	Ed	VL	М	NA	
Agaricus amicosus Kerrigan	Agaricaceae	LDM	Ed	Н	NA	NA	
Agaricus semotus Fr.	Agaricaceae	LDM	Ed	NA	Н	NA	
Agaricus silvicola (Vittad.) Peck	Agaricaceae	LDM	Ed	Н	NA	Μ	
<i>Agaricus</i> sp. 1	Agaricaceae	LDM	NA	NA	L	NA	
<i>Agaricus</i> sp. 2	Agaricaceae	LDM	NA	NA	L	NA	
Macrolepiota mastoidea (Fr.) Singer	Agaricaceae	LDM	Ed	Н	М	Μ	
Macrolepiota procera (Scop.) Singer	Agaricaceae	LDM	Ed	Μ	NA	L	
Leucoagaricus leucothites (Vittad.) Wasser	Agaricaceae	LDM	Ed	NA	VL	L	
Chlorophyllum molybdites (G. Mey.) Massee	Agaricaceae	LDM	Poi	L	NA	Н	
Lepiota felina (Pers.) P. Karst.	Agaricaceae	LDM	Ined	Н	NA	NA	
Lepiota caerulescens Peck	Agaricaceae	LDM	Ined	Н	М	NA	
Lepiota atrodisca Zeller	Agaricaceae	LDM	Ined	L	L	Μ	
Marasmius siccus (Schwein.) Fr.	Marasmiaceae	LDM	Ined	Μ	Н	Н	
Marasmius oreades (Bolton) Fr.	Marasmiaceae	ECM	Ined	Μ	NA	NA	
Marasmius sp.	Marasmiaceae	LDM	Ined	NA	L	NA	
Pluteus pellitus (Pers.) P. Kumm.	Pluteaceae	LDM	Ed	NA	NA	L	
Volvariella taylori (Berk. & Broome) Singer	Pluteaceae	LDM	Ed	Μ	VL	NA	
Coprinus comatus (O.F. Müll.) Pers.	Coprinaceae	LDM	Ed	VL	Н	Μ	
Coprinus sp.	Coprinaceae	LDM	NA	L	NA	NA	
Agrocybe sp.	Strophariaceae	LDM	Ined/Poi	L	NA	NA	
Hypholoma capnoides (Fr.) P. Kumm.	Strophariaceae	LDM	Poi	L	L	NA	
Laccaria lacata (Scop.) Cooke	Hydnangiaceae	ECM	Ed	Μ	NA	NA	
<i>Lentinus tigrinu</i> s (Bull.) Fr.	Polyporaceae	LDM	Ined	L	М	Μ	
Mycena maculata P. Karst.	Mycenaceae	LDM	Ined	L	М	NA	
Lycoperdon pusillum Batsch	Lycoperdaceae	ECM	Ed	VL	NA	NA	
Geastrum triplex Jungh.	Geastraceae	ECM	Ined	NA	VL	NA	
Podoscypha elegans (G. Mey.) Pat.	Podoscyphaceae	LDM	Ined	L	М	NA	
Podoscypha petaloides (Berk.) Boidin	Podoscyphaceae	LDM	Ined	NA	Μ	NA	
Podoscypha sp.	Podoscyphaceae	LDM	Ined	NA	NA	L	
Boletus aestivalis (Paulet) Fr.	Boletaceae	ECM	Ed	Н	Μ	NA	
Boletus fallax Kluzák	Boletaceae	ECM	Ed	М	NA	NA	

Ed = Edible; Ined = Inedible; Poi = Poisonous; H = High frequency; M = Moderate frequency; L = Low frequency; VL = Very low frequency and NA = Not applicable.



Figure 1. Number of different fungal species belonging to different families.

Rarefaction

The individual based rarefaction curve (Figure 5;

Supplementary File 3) showed highest species richness in BWS. Since, the curve line of ZF lies significantly lower than RF, species richness was lowest



Figure 2. Percent contribution of each forest and combination of forests to the total collected fungal taxa.



Figure 3. Shannon and Brillouin index values showing spatial distribution of fungal species in the 24 plots of the 3 forests.



Figure 4. Mean Shannon and Brillouin values in three forests.

in ZF. At 101 sample size, 22.32, 18.84 and 12.68 specimens may be recorded in BWS, RF and ZF respectively.

β diversity

Whittaker (β_{W}) results showed (Table 2) that species



Figure 5. Individual rarefaction curve (95% conditional).

Table 2. Whittaker β -diversity index.

	BWS	RF	ZF	
Whittaker (βW)	0.73913	1.0704	0.93617	

Table 3. Taxonomic diversity and taxonomic distinctness in three forests.

Diversity and		Forests	
distinctness	BWS	RF	ZF
Diversity	2.509	2.689	2.372
Lower limit	2.537	2.522	2.510
Upper limit	2.574	2.591	2.598
Distinctness	2.821	3.038	2.964
Lower limit	2.853	2.841	2.835
Upper limit	2.882	2.895	2.899

composition differed in the three forests and RF had the highest β_W (1.07) followed by ZF (0.93) and BWS (0.73). Thus, BWS showed more uniform and less heterogenous species composition while in RF the heterogeneity was the maximum and in ZF heterogeneity was medium.

Taxonomic diversity (Δ) and taxonomic distinctness (Δ^*)

Results of Δ showed (Table 3) that the diversity values were 2.50, 2.68 and 2.37 in BWS, RF and ZF respectively and maximum diversity was recorded in RF followed by BWS and ZF. The Δ^* values (Table 3) for BWS, RF and ZF were 2.82, 3.03 and 2.96 respectively in an order of RF>ZF>BWS. Thus, in ZF the diversity (Δ) among the taxa was low, but the distinctness (Δ^*) was higher.

DISCUSSION

Myco-vegetation in the litter layer of forests of Nadia

The transient nature of the carpophores makes fungal sampling challenging and to minimize the sampling error, pooled data was analyzed for overall presentation of fungal diversity in this study. Collections were done between May to October (2013-14) and no carpophores were found during December to April indicating that the pre-Monsoon, Monsoon and the cooler post-Monsoon periods (prior to winter) were favourable for fungal study in this region. The carpophores sprouted for varying periods from 1 to 5 months (Supplementary File 1).

There was also month-wise variation in the availability of LDMs (Figure 6) and 17, 23, 27, 25, 10 and 5 species were recorded during the months of May to October respectively. Maximum species were available during July (mid- Monsoon). The average rainfall recorded in the district of Nadia is 188.20, 955.00 and 118.40 mm in the pre-Monsoon, Monsoon and post-Monsoon periods respectively (Annual Flood Report, 2014).

In this Gangetic plain of Nadia summer (April-May) is associated with nor'westers (a natural phenomenon locally known as *Kal-Boishakhi*). The carpophores sprout in shady, moist forest litter after such 2 to 3 spells of rain. Seventeen macrofungi were found growing in May in the three forests. With the onset of the Monsoon (mid-June to mid-September), the number of macrofungi increased. At the end of monsoon (September) excessive wetness of the forest floor resulted in slight reduction in their appearance October coincides with the post monsoon season and macrofungi became significantly lower during the period.

Spatial distribution of agaric fungi in forest floor is common and affected by biotic factors like host resources, interspecific interactions etc. (Yamashita and Hijii, 2006) while ECM distribution is further affected by under soil



Figure 6. Total number of mushrooms recorded during different months of study (May to October 2013 to 2014).

root distribution (Matsuda and Hijii, 1998) and litter availability (Dahlberg et al., 1997). A similar spatial carpophore distribution was evidenced in the present study varying in between the different plots and also among the three forests.

Dipterocarp dominates the lowlands of South-East Asian forests (Slik et al., 2009) and they form ECM association (Brundrett et al., 1996). Such dipterocarp forests exist in the Indian sub-continent. The ECM constituents of such forests are unknown (Brearly, 2012) though ECM is essential for better health of such forests (Courty et al., 2010). However, their role in the tropical ecosystem is unclear (Brearley, 2012).

In the present study the percentage of ECM species was ~18.91% while in case of BWS the maximum ECM was recorded (~21.42%) followed by RF (~14.28%) and no ECM was recorded in ZF during the study. However, the presence of ECM in ZF cannot be ruled out since: (1) The undersoil diversity of ECM has been reported to be higher than that of the topsoil (Henkel et al., 2012).

Comparative study with other forest ecosystem

Comparison of fungal flora with other regions having similar or different geographical and climatic conditions is important for better understanding of myco-vegetation. Macrofungal diversity, including all groups, has previously been studied in West Bengal in different ecosystems. Dutta et al. (2013) recorded 62 species in 46 genera from the Sundarbans while Pradhan et al. (2016) reported 98 macrofungi (72 genera) including saprophytes, parasites and ECM, from Eastern Himalayas (Darjeeling). In their study 58.16% (a total of 57 species) were saprotrophs comprising of only one species of *Agaricus*. Only three species from the Sundarbans and five species from the Eastern Himalayas were common with the present study.

In similar studies in Assam, Gogoi and Prakash, (2015) reported 138 gilled mushrooms from wood and litter, belonging to 48 genera in 23 families. Baral et al. (2015) reported 115 macrofungi with Polyporaceae being the largest family from *sal* forests in central Nepal. Osono (2015) compared LDM diversity in subtropical, cool temperate and subalpine forests in Japan and recorded 35, 32, and 18 species respectively. Thus, the lower number of macrofungi in this study is due to the stress given on only LDMs. All other functional groups of forest fungi were not taken into account.

Agaricus comprised the dominant genera in the forests of Nadia, while Russula was dominant genera in both

Darjeeling ecosystems of Eastern Himalayas and Assam. However, Usha and Janardhana (2014) found *Agaricus* to be the dominant genera in Parts of Western Ghats in Karnataka and reported 8 agaric species; while 11 species was recorded in this study.

Diversity pattern of fungi in the present study

Among the different α -diversity indices, Shannon increases as the richness and evenness of a community increases and it is common biodiversity index. However, Pielou (1966) suggested that Shannon must be applied when randomized samples are drawn from a community where the number of species is known. Since, the total number of macrofungi was not known Brillouin was used as it is more applicable where the composition of the community is not known (Pielou, 1975). Thus, Brillouin values were more interpretative as a measure of adiversity and accordingly ranked the three forests as BWS>RF>ZF. BWS, being a protected land had lesser anthropogenic effect and also the forest being relatively dense, nurtured maximum number of macro-fungal species.

Since, in ecological analysis the number of species accumulates when sample size increases and thus, it is important to extrapolate the correlation between the number of species and sample size. Individual based rarefaction curve is a suitable way to express this relationship and in the present study at 101 sample size, 22.3299, 18.8454 and 12.6899 specimens may be recorded in BWS, RF and ZF respectively. Since, the rarefied sample (Figure 5) for the three forests was curved asymptotically parallel to the X axis no new species could be recorded as the curves reached their respective asymptotes.

Beta diversity (Whittaker, 1960) measures the differences in the composition of species between more than one local assemblages. For a given level of regional species richness, as there is an increase in beta diversity it is associated with the difference in individual localities more markedly from one another (Koleff et al., 2003). Thus, it may be applied to evaluate the extent to which two or more forests differ in terms of their species composition. In this study, Whittaker β (β_W) was calculated for each forest area from the presence-absence data. Beta measures change when there are differences between the species composition among the sites and it becomes zero when the species composition among sites does not change. Though, BWS showed

maximum α -diversity, in terms of β -diversity it was least heterogeneous while, in RF the heterogeneity was the maximum and in ZF heterogeneity was medium.

The present study indicated that having high α value does not ensure that the community should also have a high β value. We found BWS having highest α but lowest β values while RF had a medium α but highest β values indicating that both the components were selfdetermining in nature. The independence of β and α diversity is a much debated topic (Jost, 2007; Baselga, 2010; Jost, 2010) and the statistical independence of the two components is not essential as well as expected and, rather, is a basic pragmatic question in biodiversity (Jost, 2010). The independence largely depends on the nature of ecosystem under study as well as on the experimental procedure. Independence noted in this study may be the outcome of both or either of these factors. Thus, the small forests of Nadia accommodate a considerable number of LDM and ECM. Occurrence of P. elegans was a new addition to Indian fungal flora as it was recorded for the first time in two subtropical moist deciduous forests (BWS and RF) of India. Low and moderate frequencies of occurrence of the species were recorded in BWS and RF respectively. The study presents the inventory of fungal diversity in the region and provides baseline information of LDMs and ECMs for further research in this field. Such fungi, being litter and soil growing and having lignolytic enzymes similar to white rot fungi, have an advantage over the latter for better adaptability in soil and should therefore be assessed for their role in soil-bioremediation (Baldrian and Snajdr, 2006; Liers et al., 2013; Osono, 2015). Hence identifying and studying the diversity of the LDM is of prime importance and further studies are required.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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Supplementary File 1. Seriation model of month-wise availability of mycoflora in the district of Nadia.

	B1	Lower	Upper	B2	Lower	Upper	B3	Lower	Upper	B4	Lower	Upper	B5	Lower
Taxa_S	15	15	15	18	17	18	14	14	14	12	12	12	15	15
Individuals	498	498	498	782	782	782	669	669	669	281	281	281	405	405
Shannon_H	2.002	1.885	2.088	2.065	1.979	2.128	2.037	1.947	2.106	2.043	1.923	2.118	2.098	1.982
Brillouin	1.94	1.825	2.025	2.017	1.934	2.079	1.99	1.902	2.059	1.96	1.845	2.033	2.024	1.91
	Upper	B6	Lower	Upper	B7	Lower	Upper	B8	Lower	Upper	B9	Lower	Upper	B10
Taxa_S	15	18	18	18	15	15	15	14	14	14	17	17	17	23
Individuals	405	595	595	595	617	617	617	791	791	791	546	546	546	570
Shannon_H	2.19	2.415	2.325	2.481	1.981	1.874	2.063	1.817	1.725	1.891	2.228	2.112	2.314	2.67
Brillouin	2.115	2.348	2.26	2.413	1.928	1.822	2.009	1.778	1.687	1.85	2.16	2.046	2.245	2.584
	Lower	Upper	R1	Lower	Upper	R2	Lower	Upper	R3	Lower	Upper	R4	Lower	Upper
Taxa_S	23	23	10	10	10	14	14	14	11	11	11	8	8	8
Individuals	570	570	315	315	315	402	402	402	491	491	491	344	344	344
Shannon_H	2.571	2.727	1.905	1.78	1.992	2.389	2.308	2.432	2.115	2.036	2.168	1.659	1.542	1.744
Brillouin	2.488	2.64	1.838	1.715	1.924	2.314	2.235	2.355	2.063	1.985	2.116	1.609	1.494	1.694
	R5	Lower	Upper	R6	Lower	Upper	R7	Lower	Upper	Z1	Lower	Upper	Z2	Lower
Taxa_S	10	10	10	9	9	9	9	9	9	6	6	6	8	8
Individuals	274	274	274	292	292	292	438	438	438	135	135	135	206	206
Shannon_H	2.066	1.978	2.118	2.038	1.955	2.085	1.492	1.371	1.593	1.765	1.693	1.78	1.971	1.885
Brillouin	1.992	1.906	2.042	1.971	1.89	2.018	1.448	1.328	1.548	1.68	1.611	1.695	1.891	1.808
	Upper	Z3	Lower	Upper	Z4	Lower	Upper	Z5	Lower	Upper	Z6	Lower	Upper	Z7
Taxa_S	8	8	8	8	5	5	5	7	7	7	6	6	6	7
Individuals	206	340	340	340	365	365	365	301	301	301	365	365	365	231
Shannon_H	2.012	1.705	1.61	1.773	1.227	1.139	1.297	1.538	1.426	1.623	1.283	1.172	1.378	1.65
Brillouin	1.932	1.655	1.563	1.723	1.199	1.112	1.268	1.49	1.38	1.574	1.248	1.139	1.342	1.591
	Lower	Upper												
Taxa_S	7	7												
Individuals	231	231												
Shannon_H	1.548	1.721												
Brillouin	1.491	1.66												

Supplementary File 2. Plot wise values of different diversity indices calculated in the study.

Supplementary File 3. Individual rarefaction.

$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Sample size	BWS	Std. err 1s	RF	Std. err 1s	ZF	Std. err 1s
11 7.2087 1.365 7.2022 1.3073 5.11242 1.231 21 1.10504 1.2265 10.7078 1.5844 8.37414 1.34866 31 1.5.016 1.22031 14.7023 16.1751 10.8255 1.77551 51 1.7.5848 1.22031 1.6.009 11.2005 0.19828 71 20.0192 1.88004 1.7.5118 1.40669 1.2.2055 0.01182 61 2.0525 1.7.16648 1.84284 1.25177 2.0.70866 91 2.1.66632 1.9.1349 1.1.73681 12.2777 0.615844 101 2.2.382 1.66662 19.7496 1.07211 2.8754 0.36453 111 2.2.482 1.66662 19.7496 0.02744 12.2316 0.40477 124 4.013 1.4075 2.0.02761 12.2463 0.22623 111 2.44101 1.40632 2.0.6656 0.6274 12.2463 0.22633 124 4.4141	1	1	0	1	0	1	0
21 11.0504 1.7276 13.5841 8.37411 1.28813 41 15.9188 1.92031 14.7023 16.1764 10.8288 1.7581 51 17.5844 1.9213 15.0604 1.46399 1.9001 0.92652 61 1.9.95 1.8804 17.5114 1.46399 1.9001 0.92652 71 22.0192 1.8604 17.5118 1.46399 1.2017 0.61564 81 20.9254 1.8149 18.6476 1.32277 0.24222 0.70685 91 2.16853 1.76625 18.4494 1.13577 1.26899 0.37145 111 22.8522 1.66862 19.578 1.0211 2.8744 0.46276 121 23.5592 1.61085 19.578 1.0211 2.8744 0.4047 131 23.5744 1.3664 20.1326 0.8734 12.9078 0.3483 141 24.4197 1.4366 19.7468 0.77637 12.9972 0.4633 151 25.4398 1.31867 20.3266 0.7213 12.9484 <t< td=""><td>11</td><td>7.29087</td><td>1.355</td><td>7.20272</td><td>1.3073</td><td>5.91242</td><td>1.2531</td></t<>	11	7.29087	1.355	7.20272	1.3073	5.91242	1.2531
31 13.0011 1.9776 13.0504 1.64376 9.06633 1.17651 51 17.5644 1.92183 15.0091 1.55684 11.4633 1.14685 61 1.8.92 1.8.8004 17.5118 1.40069 12.2055 0.81182 81 20.9254 1.8.4028 1.2.0171 12.26776 0.61684 101 22.8082 1.66682 19.1349 1.13381 12.7717 0.40077 121 22.3322 1.66682 19.376 1.02211 12.8754 0.3483 131 23.7749 1.57059 19.573 1.02211 12.8754 0.3483 141 24.1897 1.5246 19.7466 0.3743 12.9916 0.22825 151 24.4619 1.49032 19.8985 0.92374 12.9916 0.22825 151 24.4619 1.49032 13.8986 0.22374 12.9916 0.40077 151 24.4619 1.35664 20.3282 0.75763 12.9792 0.16833 <td>21</td> <td>11.0504</td> <td>1.72959</td> <td>10.7078</td> <td>1.58441</td> <td>8.37411</td> <td>1.34996</td>	21	11.0504	1.72959	10.7078	1.58441	8.37411	1.34996
41 15,9168 1,22031 14,7023 15,1751 10,8258 1,17514 51 17,5544 1,4205 1,89788 16,6154 1,4309 11,9001 0,22652 71 20,0192 1,86004 17,5114 1,46399 12,0201 0,0116 61 20,954 1,8448 16,0576 1,33277 12,4222 0,70065 011 22,5399 1,7648 18,445 1,13557 12,6899 0,53145 111 22,872 1,6605 19,3756 1,07611 12,8744 0,3463 121 23,5392 1,61605 19,3756 0,027143 12,9078 0,22823 151 24,474 1,4376 20,0231 0,87874 12,9493 0,22825 161 24,748 1,4376 20,0231 0,87874 12,9493 0,22825 171 25,055 1,28848 20,3586 0,7213 12,972 0,14362 201 25,655 1,3684 20,2244 0,75677 12,972 0,14362 211 25,655 1,36867 20,3638	31	13.8011	1.87176	13.0504	1.64316	9.86853	1.28813
51 17,5648 1.2,713 15,5664 11.4633 1.04285 71 20,0192 1.86004 17,5118 1.40669 12,2055 0.81182 81 20,9254 1.81494 1.05776 1.32227 12,4220 0.70605 91 21,6653 1.76628 18,4428 1.26171 12,5776 0.61544 101 22,3282 1.66682 19,1349 1.13381 12,7717 0.46275 121 22,3352 1.616662 19,3766 0.0711 12,8754 0.3445 141 24,1397 1.52645 19,7496 0.97374 12,9318 0.22823 151 24,44919 1.48032 19,8965 0.92374 12,9318 0.22823 151 24,44919 1.33946 20,1328 0.83619 12,9912 0.16333 161 24,7483 1.33647 20,322 0.75763 12,9792 0.16333 171 25,6308 1.21740 20,593 0.6577 12,992 0.12381 211 25,7949 1.24639 20,4508 0.6877 <td< td=""><td>41</td><td>15.9168</td><td>1.92031</td><td>14.7023</td><td>1.61761</td><td>10.8258</td><td>1.17551</td></td<>	41	15.9168	1.92031	14.7023	1.61761	10.8258	1.17551
61 13.925 1.98785 16.6154 1.48399 11.9001 0.2562 81 20.0524 1.84489 18.0676 1.33227 12.4222 0.70065 91 21.6553 1.76028 18.4054 1.19557 12.4222 0.70065 91 22.8539 1.76028 18.4454 1.133277 0.42257 121 22.3592 1.61605 19.3756 1.07611 12.8315 0.40077 131 22.7749 1.57055 19.5778 1.02211 2.8345 0.3743 12.9078 0.22828 151 24.4619 1.43076 20.0231 0.87874 12.9439 0.22865 161 24.748 1.4376 20.0234 0.75677 12.972 0.14032 171 25.625 1.28188 20.3458 0.7213 12.972 0.14032 201 25.625 1.28188 20.3598 0.62284 12.9945 0.90786 221 25.949 1.2713 20.9838 0.62284	51	17.5848	1.92183	15.9091	1.55684	11.4633	1.04985
71 20.0192 1.8004 17.118 1.40689 12.2085 0.81482 81 20.0214 1.81491 18.0576 1.3327 1.2422 0.70005 91 21.6853 1.76628 18.4628 1.26171 12.5776 0.61564 111 22.3282 1.66682 19.1349 1.33811 12.2717 0.46275 121 23.3522 1.61605 19.3766 1.07141 12.2815 0.40047 131 23.7749 1.57059 19.576 1.02714 12.2078 0.3963 161 24.74619 1.48032 19.8065 0.022774 12.2072 0.18633 161 25.6365 1.39646 20.1228 0.73763 12.9772 0.18633 191 25.6365 1.31867 20.3122 0.75763 12.9846 0.12811 211 25.7489 1.24539 20.4563 0.62231 12.9845 0.10773 221 25.439 1.21714 20.5663 0.62631 12.9846 <td>61</td> <td>18.925</td> <td>1.89788</td> <td>16.8154</td> <td>1.48309</td> <td>11.9001</td> <td>0.92652</td>	61	18.925	1.89788	16.8154	1.48309	11.9001	0.92652
81 20.8254 1.81489 1.80576 1.33227 12.4222 0.70805 101 22.8296 1.71648 18.4454 1.19557 12.6899 0.53415 111 22.8296 1.71648 18.4454 1.19557 12.6774 0.46775 121 23.3592 1.61805 19.3766 1.07611 12.8375 0.40047 131 23.47619 1.82655 19.7406 0.87741 12.8463 0.22833 151 24.4619 1.43576 20.0231 0.87674 12.8463 0.22853 151 24.4619 1.43576 20.0231 0.87674 12.8453 0.22853 151 24.4619 1.43576 20.3122 0.75763 12.9722 0.16633 121 25.5749 1.24593 20.4508 0.62713 12.8464 0.12871 221 25.6494 1.24593 20.4508 0.65281 1.29972 0.14352 221 25.6493 1.64704 20.6593 0.29973 0.	71	20.0192	1.86004	17.5118	1.40669	12.2055	0.81182
91 21.6853 1.76628 18.4028 1.26171 12.7776 0.61664 101 22.2862 1.66682 19.1349 1.13361 12.7717 0.46275 121 23.552 1.61605 19.3766 1.0711 12.2315 0.40047 131 23.7749 1.57059 19.576 1.02211 12.4754 0.24963 141 24.4319 1.48032 19.8965 0.22374 12.2016 0.22835 161 24.744 1.4376 20.0231 0.37774 12.4033 0.22835 161 25.6325 1.58642 20.2480 0.78763 12.8792 0.16833 191 25.6399 1.21815 20.4588 0.6539 12.2872 0.14832 221 25.949 1.2173 20.4588 0.6539 12.2872 0.07838 231 26.0584 1.11705 20.6468 0.65675 12.2846 0.10738 241 25.7949 1.21818 20.45683 0.62231 12.9856 <td>81</td> <td>20.9254</td> <td>1.81489</td> <td>18.0576</td> <td>1.33227</td> <td>12.4222</td> <td>0.70805</td>	81	20.9254	1.81489	18.0576	1.33227	12.4222	0.70805
101 22.229 1,71648 1.13657 12.6899 0.63415 121 23.3592 1.61805 19.3756 1.07611 12.8315 0.40047 131 23.7749 1.57059 19.576 1.07211 12.4754 0.3463 141 24.1397 1.52465 19.7466 0.27743 12.24074 0.29628 151 24.4619 1.4376 20.0221 0.07744 12.3403 0.22825 171 25.0034 1.39646 20.2284 0.797597 12.2972 0.16633 191 25.6255 1.26182 2.33680 0.7213 12.8464 0.13281 211 25.7949 1.24639 20.4508 0.66675 12.8685 0.14352 221 25.6491 1.21704 20.5693 0.66917 12.8685 0.1673 221 25.6491 1.21704 20.5693 0.66275 12.8685 0.1673 221 25.6467 1.06713 20.7571 12.8985 0.02787	91	21.6853	1.76628	18.4928	1.26171	12.5776	0.61564
111 22.882 1.68682 19.1349 1.13381 12.777 0.46275 121 23.352 1.67059 19.576 1.02211 12.815 0.40047 131 24.37749 1.57059 19.576 1.02211 12.815 0.3463 141 24.1371 1.2.664 19.7466 0.5774 12.8316 0.22853 151 24.4619 1.48032 19.8965 0.92374 12.8316 0.22853 171 25.004 1.35664 20.1284 0.7575 1.2.972 0.16833 191 25.329 1.36684 20.2264 0.7575 1.2.972 0.16452 201 25.6255 1.28188 20.3658 0.7213 12.9445 0.16678 221 25.549 1.21213 20.5633 0.62282 12.9957 0.07338 241 25.24455 1.06714 2.0563 0.62579 1.06738 251 26.4455 1.06614 20.6964 0.59958 0.03764 <	101	22.3299	1.71648	18.8454	1.19557	12.6899	0.53415
121 23.3592 1.61805 19.3756 1.07611 12.8375 0.40647 131 23.749 1.52465 19.7466 0.07743 12.9078 0.29828 151 24.4619 1.48032 19.8665 0.92374 12.8316 0.22833 151 24.4619 1.43674 2.0231 0.87674 12.4438 0.12227 171 25.0034 1.39646 20.1328 0.03619 12.9624 0.19827 181 25.4255 1.26188 20.3688 0.77763 12.9624 0.19827 201 25.6255 1.26188 20.3658 0.72713 12.9644 0.12871 211 25.7949 1.24639 20.4508 0.68676 12.9953 0.06641 221 25.4388 1.17904 20.5953 0.62261 12.9953 0.06641 251 26.3388 1.1161 20.4648 0.36444 12.9995 0.0576 261 26.6352 1.06713 20.7677 0.45668 12.9996 0.0374 281 26.6352 1.06775 20.7677	111	22.882	1.66682	19.1349	1.13381	12.7717	0.46275
131 23.7749 157089 19.578 1.02211 12.8754 0.3463 151 24.4619 1.48032 19.8965 0.92374 12.9316 0.25853 161 24.740 1.43076 20.021 0.87874 12.9433 0.22225 171 25.0034 1.38646 20.1328 0.83619 12.9624 0.19272 181 25.325 1.36667 20.322 0.77653 12.9792 0.16633 201 25.6255 1.26168 20.3658 0.7713 12.9864 0.12381 211 25.949 1.21213 20.6983 0.6639 12.9917 0.07938 241 26.0286 1.1161 20.6444 0.56444 12.9964 0.05073 281 26.338 1.0175 20.777 0.46366 12.9964 0.0374 291 26.738 1.02011 20.7419 0.44709 12.9964 0.0374 291 26.738 1.02017 20.7677 0.46366 12.9969	121	23.3592	1.61805	19.3756	1.07611	12.8315	0.40047
141 24.1397 1.52465 19.7466 0.97143 12.9078 0.25853 151 24.478 1.4376 20.0231 0.87874 12.9484 0.22225 171 25.0034 1.39646 20.0234 0.87874 12.9424 0.16533 191 25.5235 1.36664 20.2284 0.75763 12.972 0.16533 201 25.525 1.28188 20.3568 0.7213 12.9846 0.13281 211 25.7349 1.24639 20.4508 0.6639 12.9815 0.05208 2231 26.0699 1.17904 20.5593 0.66231 12.9973 0.07384 251 26.3368 1.1161 20.6449 0.56444 12.9974 0.05078 261 26.4455 1.06614 20.6491 0.44709 12.9984 0.0237 271 26.5457 1.05713 20.7677 0.46388 12.9989 0.0324 281 26.5675 0.944965 20.8116 0.42012 2.94946 </td <td>131</td> <td>23.7749</td> <td>1.57059</td> <td>19.578</td> <td>1.02211</td> <td>12.8754</td> <td>0.3463</td>	131	23.7749	1.57059	19.578	1.02211	12.8754	0.3463
151 24.4619 1.48032 19.8965 0.2374 12.9316 0.25633 161 25.3054 1.33646 20.1328 0.83619 12.9824 0.18272 181 25.3325 1.36647 20.122 0.77673 12.9724 0.16633 191 25.6205 1.24188 20.3658 0.7713 12.9864 0.16272 211 25.7949 1.24213 20.5633 0.6539 12.9917 0.09708 221 25.949 1.21213 20.5633 0.6539 12.9915 0.09708 241 26.2636 1.14705 20.6046 0.59282 12.9985 0.06841 251 26.3686 1.14705 20.6414 0.56741 12.9986 0.03764 251 26.3682 1.02011 20.7111 0.51184 12.9986 0.03764 251 26.5482 1.02011 20.7677 0.45388 12.9898 0.0324 261 26.3632 1.02075 2.7779 0.44538 12.9898 <td>141</td> <td>24.1397</td> <td>1.52465</td> <td>19.7496</td> <td>0.97143</td> <td>12.9078</td> <td>0.29928</td>	141	24.1397	1.52465	19.7496	0.97143	12.9078	0.29928
161 24.748 1.4376 20.0231 0.87874 12.9834 0.2225 171 25.0025 1.38684 20.2284 0.79587 12.9792 0.16833 191 25.6285 1.28188 20.3858 0.7213 12.9946 0.12381 211 25.6285 1.28188 20.3858 0.7213 12.9946 0.12381 221 25.6499 1.21713 20.5083 0.6639 12.9965 0.06708 221 25.6499 1.17904 20.5693 0.66282 12.9963 0.068614 261 26.4565 1.08614 20.6449 0.56444 12.9963 0.066841 261 26.4545 1.08614 20.641 12.9968 0.0374 271 26.5457 1.06713 20.7677 0.46378 12.9969 0.0324 271 26.7238 1.00755 20.7677 0.44376 12.9969 0.0277 311 26.8765 0.94965 20.847 0.38064 12.9999 0.0177	151	24.4619	1.48032	19.8965	0.92374	12.9316	0.25853
171 25.0034 1.33646 20.1328 0.83619 12.8624 0.14272 181 25.4389 1.31667 20.3122 0.75673 12.972 0.16633 201 25.6255 1.28188 20.3858 0.7213 12.9468 0.12381 211 25.949 1.24639 20.4508 0.66261 12.9985 0.07938 221 25.949 1.24704 20.5693 0.6529 12.9937 0.07938 241 26.2166 1.14705 20.6449 0.56444 12.9965 0.05895 261 26.4455 1.06614 20.641 0.56444 12.9981 0.03764 261 26.6332 1.07971 2.07677 0.46368 12.9982 0.0327 261 26.633 0.97531 20.7677 0.46368 12.9982 0.0326 261 26.6446 0.92474 20.8022 2.9989 0.0324 301 26.603 0.97531 20.7908 0.44138 12.9999 0.0206	161	24.748	1.4376	20.0231	0.87874	12.9493	0.22325
181 25.2325 1.35664 20.2284 0.75673 12.9792 0.14352 201 25.6255 1.28188 20.3858 0.7213 12.9846 0.12381 211 25.7949 1.2213 20.6083 0.66576 12.9845 0.00920 221 25.949 1.2213 20.6093 0.65291 12.9915 0.00920 231 25.0898 1.17304 20.5933 0.65221 12.9933 0.06981 251 25.3368 1.1161 20.6449 0.55444 12.9974 0.06576 271 26.6382 1.02911 20.7111 0.51764 12.9986 0.03764 291 26.7238 1.00175 20.7677 0.46368 12.9989 0.0324 301 26.6382 1.02911 20.7677 0.46368 12.9984 0.0226 311 28.6436 0.92765 20.447 20.8302 0.3284 321 28.9448 0.92774 20.8996 0.22986 0.22987	171	25.0034	1.39646	20.1328	0.83619	12.9624	0.19272
191 25.4389 1.31667 20.3122 0.75763 12.3792 0.14382 201 25.6255 1.28188 20.3866 0.7213 12.9846 0.12381 211 25.7449 1.24639 20.4508 0.6539 12.9915 0.02208 221 25.949 1.1704 20.5693 0.6529 12.9937 0.07938 241 25.2186 1.114705 20.6446 0.55242 1.29373 0.06691 261 26.4455 1.08614 20.641 0.55741 12.9974 0.05078 271 26.5457 1.06713 20.7131 0.51164 12.9986 0.03744 291 26.7238 1.00175 20.7677 0.46368 12.9998 0.02787 311 26.8755 0.94965 20.8116 0.42012 12.9998 0.0172 311 27.0084 0.90055 20.847 0.38054 12.9997 0.0177 341 27.0675 0.87706 20.862 0.36213 12.9999 <td>181</td> <td>25.2325</td> <td>1.35684</td> <td>20.2284</td> <td>0.79587</td> <td>12.972</td> <td>0.16633</td>	181	25.2325	1.35684	20.2284	0.79587	12.972	0.16633
201 25.6255 1.28188 20.3858 0.7213 1.28485 0.10678 211 25.949 1.21213 20.5083 0.6539 1.29915 0.09208 231 26.0898 1.17904 20.5593 0.62261 1.29937 0.07938 241 26.2186 1.14705 20.6046 0.55924 1.2.9953 0.06891 251 26.3568 1.0171 20.6181 0.53741 12.9974 0.03577 271 26.5457 1.05713 20.7419 0.48708 12.9986 0.03764 291 26.7238 1.00175 20.7677 0.46368 12.9996 0.02767 311 26.803 0.97531 20.7908 0.44138 12.9994 0.02387 321 26.9448 0.92744 20.8126 0.36213 12.9998 0.0172 341 27.0672 0.8706 20.4876 0.34273 12.9998 0.01325 351 27.1741 0.83205 20.8478 0.32737 12.9999<	191	25.4389	1.31867	20.3122	0.75763	12.9792	0.14352
211 25.7849 1.24639 20.4508 0.68576 12.9855 0.06208 231 26.0898 1.17904 20.5593 0.65291 12.9953 0.06241 241 26.186 1.14705 20.6046 0.58282 12.9953 0.06641 251 26.4355 1.06614 20.681 0.53744 12.9974 0.05078 271 26.6487 1.05713 20.7131 0.48709 12.9986 0.03764 281 26.6382 1.02801 20.7677 0.46368 12.9986 0.02377 301 26.603 0.97531 20.7077 0.46368 12.9999 0.002767 311 26.6755 0.94466 20.8116 0.42012 12.9994 0.0175 321 27.0044 0.90055 20.847 0.30564 12.9996 0.0206 331 27.0075 0.87706 20.867 0.29877 12.9998 0.01152 351 27.127 0.85423 20.8676 0.34459 12.9999 </td <td>201</td> <td>25.6255</td> <td>1.28188</td> <td>20.3858</td> <td>0.7213</td> <td>12.9846</td> <td>0.12381</td>	201	25.6255	1.28188	20.3858	0.7213	12.9846	0.12381
221 25.949 1.21213 20.5083 0.6539 12.9916 0.02208 231 26.0898 1.14705 20.6046 0.5922 12.9853 0.06841 251 26.3368 1.1161 20.6449 0.56444 12.9956 0.05895 271 26.5457 1.05713 20.7131 0.51164 12.9981 0.04373 261 26.6263 1.02011 20.7131 0.46366 12.9984 0.0324 301 26.803 0.97531 20.7098 0.44138 12.9992 0.02787 311 26.8765 0.94965 20.816 0.42012 12.9994 0.02397 321 26.9448 0.92474 20.802 0.36213 12.9998 0.0162 331 27.0075 0.87766 20.862 0.46213 12.9999 0.0117 341 27.0675 0.87766 20.862 0.36213 12.9999 0.01305 351 27.1227 0.81049 20.8988 0.31133 12.9999	211	25.7949	1.24639	20.4508	0.68676	12.9885	0.10678
221 26.088 1.17904 20.553 0.62261 12.9937 0.07938 241 26.2186 1.14705 20.6046 0.59282 12.9937 0.06841 251 26.3368 1.1161 20.6449 0.56444 12.9965 0.06078 261 26.4455 1.06713 20.7131 0.51164 12.9986 0.03744 281 26.6382 1.02901 20.7419 0.48709 12.9986 0.03744 291 26.7238 1.0075 20.7677 0.46368 12.9998 0.02397 301 26.803 0.9731 20.7098 0.44138 12.9994 0.02397 311 26.8764 0.99065 20.847 0.38064 12.9998 0.0175 331 27.0084 0.92075 20.876 0.34459 12.9998 0.01152 351 27.1227 0.86423 20.8676 0.34459 12.9999 0.01162 371 27.222 0.81049 20.8988 0.31193 12.9999	221	25.949	1.21213	20.5083	0.6539	12.9915	0.09208
241 26.2186 1.14705 20.6046 0.58282 12.9983 0.06841 251 26.3455 1.06614 20.681 0.53741 12.9981 0.04373 271 26.6457 1.05713 20.7131 0.51164 12.9981 0.03764 281 26.7238 1.00175 20.7677 0.46368 12.9989 0.0324 301 26.803 0.97531 20.7080 0.44138 12.9992 0.02377 311 26.8765 0.94965 20.8116 0.42012 12.9994 0.0205 321 26.9448 0.92474 20.8302 0.39986 12.9997 0.0177 341 27.0675 0.87706 20.862 0.32451 12.9998 0.0152 351 27.1741 0.83205 20.8878 0.32787 12.9999 0.0012 371 27.222 0.81049 20.8978 0.32787 12.9999 0.00863 381 27.302 0.76914 20.9257 12.9999 0.00863	231	26.0898	1.17904	20.5593	0.62261	12.9937	0.07938
251 26.3668 1.1161 20.6449 0.56444 12.9964 0.05678 261 26.4455 1.08614 20.681 0.53741 12.9974 0.05078 271 26.5457 1.02911 20.7131 0.48709 12.9986 0.03764 281 26.6382 1.02901 20.7471 0.46368 12.9986 0.0324 301 28.803 0.97531 20.7908 0.44138 12.9994 0.02397 311 26.8765 0.94965 20.8116 0.42012 12.9994 0.0206 331 27.0084 0.92055 20.847 0.38054 12.9999 0.0162 351 27.1721 0.85423 20.876 0.34459 12.9999 0.0112 361 27.7741 0.83025 20.8678 0.32767 12.9999 0.00623 361 27.1741 0.83025 20.8678 0.32767 12.9999 0.00623 361 27.672 0.78914 20.9176 0.239675 12.9999 <td>241</td> <td>26.2186</td> <td>1.14705</td> <td>20.6046</td> <td>0.59282</td> <td>12.9953</td> <td>0.06841</td>	241	26.2186	1.14705	20.6046	0.59282	12.9953	0.06841
281 28.4455 1.08614 20.881 0.53741 12.9974 0.06078 271 26.5457 1.05713 20.7131 0.51164 12.9986 0.0374 281 26.6382 1.02901 20.7419 0.48709 12.9986 0.0374 301 26.803 0.97531 20.7677 0.46368 12.9999 0.0237 311 26.8765 0.94965 20.8116 0.42012 12.9994 0.02397 321 26.9448 0.92474 20.802 0.39966 12.9998 0.0177 341 27.0675 0.87706 20.862 0.36213 12.9998 0.0152 351 27.127 0.85423 20.8756 0.34767 12.9999 0.0096 361 27.1741 0.83205 20.9087 0.29675 12.9999 0.0096 371 27.222 0.81049 20.9988 0.31193 12.9999 0.0096 381 27.855 0.73003 20.9537 0.29999 0.00823	251	26.3368	1.1161	20.6449	0.56444	12.9965	0.05895
271 26.5457 1.05713 20.7131 0.51164 12.9981 0.04373 281 26.5382 1.02091 20.7419 0.48709 12.9986 0.03764 291 26.7238 1.00175 20.7677 0.46368 12.9982 0.0324 301 26.803 0.97531 20.7908 0.44138 12.9992 0.02397 321 26.9448 0.92474 20.8302 0.38966 12.9996 0.0177 341 27.0675 0.87706 20.8672 0.36054 12.9998 0.0152 351 27.1227 0.85423 20.8776 0.34459 12.9998 0.01305 361 27.1741 0.83205 20.8878 0.32767 12.9999 0.0096 371 27.2222 0.78914 20.9967 0.28675 12.9999 0.00623 381 27.3072 0.78914 20.9257 0.2649 13 0.00676 401 27.3466 0.74931 20.9256 0.23689 13 0.00676 411 27.3655 0.73003 20.9356 0.24869	261	26.4455	1.08614	20.681	0.53741	12.9974	0.05078
281 26.6382 1.02901 20.7419 0.48709 12.9986 0.03744 291 26.7238 1.00175 20.7677 0.46368 12.9989 0.0324 311 26.803 0.97531 20.7978 0.44138 12.9994 0.02387 321 26.8448 0.92474 20.802 0.39966 12.9994 0.0206 331 27.0084 0.90055 20.847 0.38054 12.9997 0.0177 341 27.0675 0.87706 20.862 0.32767 12.9998 0.01305 361 27.1741 0.82055 20.8878 0.32767 12.9999 0.0096 371 27.2222 0.81049 20.8988 0.31193 12.9999 0.0096 361 27.1741 0.82055 20.9075 12.9999 0.0096 361 27.302 0.76914 20.9176 0.28228 13 0.00705 401 27.3855 0.73003 20.933 0.25534 13 0.00377	271	26.5457	1.05713	20.7131	0.51164	12.9981	0.04373
291 26.7238 1.00175 20.7677 0.46368 12.9992 0.02787 311 26.803 0.97531 20.7908 0.44138 12.9994 0.02397 321 26.9448 0.92474 20.8302 0.39986 12.9994 0.02397 331 27.0084 0.90055 20.847 0.38054 12.9998 0.0177 341 27.0675 0.87706 20.862 0.36213 12.9998 0.0135 351 27.1227 0.84233 20.8756 0.34459 12.9999 0.0196 361 27.1741 0.83205 20.8978 0.32767 12.9999 0.0096 361 27.2222 0.76914 20.9176 0.2828 13 0.00705 401 27.3486 0.74931 20.9257 0.26849 13 0.00603 411 27.3485 0.73003 20.933 0.25534 13 0.00322 451 27.6720 0.76914 20.9956 0.24282 13 0.0037	281	26.6382	1.02901	20.7419	0.48709	12.9986	0.03764
301 26.803 0.97531 20.7908 0.44138 12.9994 0.02397 311 26.8765 0.94965 20.8116 0.42012 12.9994 0.02397 321 26.9448 0.92474 20.8302 0.39986 12.9996 0.0206 331 27.0084 0.90055 20.847 0.38054 12.9998 0.01305 351 27.1227 0.85423 20.8756 0.34459 12.9998 0.01305 361 27.1741 0.83205 20.8878 0.32767 12.9999 0.0096 381 27.2672 0.78952 20.9087 0.29675 12.9999 0.00863 411 27.3855 0.73003 20.933 0.25534 13 0.00603 421 27.4201 0.71127 20.9395 0.24282 13 0.00377 441 27.4331 0.65797 20.9568 0.21952 13 0.00275 451 27.5387 0.64114 20.9599 0.19837 13 0.	291	26.7238	1.00175	20.7677	0.46368	12.9989	0.0324
311 26.8765 0.94965 20.8116 0.42012 12.9994 0.02397 321 26.9448 0.92474 20.802 0.39966 12.9996 0.0206 331 27.0084 0.90055 20.847 0.38054 12.9998 0.0177 341 27.0675 0.87706 20.862 0.3213 12.9998 0.01305 351 27.1227 0.85423 20.8756 0.34459 12.9999 0.0096 361 27.7222 0.81049 20.8988 0.31133 12.9999 0.00963 381 27.2672 0.78952 20.9087 0.29675 12.9999 0.00823 391 27.3092 0.76914 20.9176 0.28228 13 0.000715 401 27.3486 0.74931 20.9257 0.26849 13 0.000216 421 27.4201 0.71127 20.9395 0.24282 13 0.00377 441 27.4537 0.64114 20.9456 0.23669 13 0.	301	26.803	0.97531	20.7908	0.44138	12.9992	0.02787
321 26 9448 0.20244 20.8302 0.39986 12.9996 0.0206 331 27.0084 0.90055 20.847 0.38054 12.9997 0.0177 341 27.0675 0.87706 20.862 0.36213 12.9998 0.0152 351 27.1227 0.85423 20.8756 0.34459 12.9999 0.0112 361 27.1741 0.83205 20.8878 0.32767 12.9999 0.0096 381 27.2672 0.78952 20.9087 0.29675 12.9999 0.00823 391 27.3092 0.76914 20.9176 0.28228 13 0.00705 401 27.3486 0.73303 20.933 0.25534 13 0.00377 411 27.4201 0.71127 20.9395 0.24282 13 0.00377 441 27.4311 0.67525 20.9508 0.21952 13 0.00322 451 27.5118 0.65797 20.9556 0.20869 13 0.00174 461 27.5879 0.60833 20.9674 0.17918 3	311	26.8765	0.94965	20.8116	0.42012	12.9994	0.02397
331 27,0084 0.90055 20.847 0.38054 12.9997 0.0177 341 27,0675 0.87706 20.8622 0.36213 12.9998 0.0152 351 27,1727 0.85423 20.8776 0.32459 12.9999 0.01305 361 27,1741 0.83205 20.8878 0.32177 12.9999 0.0096 381 27,2222 0.81049 20.8988 0.31193 12.9999 0.00963 391 27.3092 0.76914 20.9176 0.28675 12.9999 0.000516 401 27.3486 0.74931 20.9257 0.26849 13 0.000516 411 27.4526 0.69301 20.9454 0.23089 13 0.00322 451 27.5118 0.67525 20.90508 0.21852 13 0.00324 451 27.5187 0.64114 20.9599 0.19837 13 0.00224 451 27.564 0.62477 20.9658 0.20669 13 0.00	321	26.9448	0.92474	20.8302	0.39986	12.9996	0.0206
341 27.0675 0.87706 20.862 0.36433 12.9998 0.0152 351 27.1227 0.85423 20.8756 0.34459 12.9998 0.01305 361 27.1741 0.83205 20.8878 0.32787 12.9999 0.0112 371 27.2222 0.81049 20.8988 0.31193 12.9999 0.008623 391 27.3092 0.76914 20.9176 0.28228 13 0.00705 401 27.3486 0.74931 20.9257 0.26849 13 0.00603 411 27.3855 0.73003 20.933 0.2534 13 0.00377 441 27.4526 0.69301 20.9454 0.23089 13 0.00322 451 27.5118 0.67525 20.9508 0.21952 13 0.00275 461 27.5877 0.6683 20.9674 0.17918 13 0.00174 471 27.5679 0.60883 20.9674 0.17918 13 0.00123	331	27.0084	0.90055	20.847	0.38054	12.9997	0.0177
351 27,1227 0.85423 20.8756 0.34499 12.9998 0.01305 361 27,1741 0.83205 20.8878 0.32787 12.9999 0.0086 381 27,2672 0.78952 20.9087 0.29675 12.9999 0.00823 391 27,3092 0.76914 20.9176 0.28228 13 0.00705 401 27,3486 0.74931 20.9257 0.26849 13 0.00603 411 27,3555 0.73003 20.933 0.25534 13 0.00377 441 27,4526 0.69301 20.9454 0.23089 13 0.00322 451 27,518 0.65797 20.9556 0.20869 13 0.00275 461 27,5847 0.64114 20.9599 0.19837 13 0.00234 471 27,564 0.62477 20.9556 0.20869 13 0.0017 481 27,5879 0.60883 20.9674 0.17026 13 0.00144	341	27.0675	0.87706	20.862	0.36213	12.9998	0.0152
361 27,1741 0.83205 20.878 0.3277 12.9999 0.0112 371 27.2222 0.81049 20.8988 0.31193 12.9999 0.00862 381 27.2672 0.78952 20.9087 0.29675 12.9999 0.00823 391 27.3092 0.76914 20.9176 0.28228 13 0.00705 401 27.3486 0.74931 20.9257 0.2849 13 0.00603 411 27.3855 0.73003 20.9335 0.24282 13 0.00411 431 27.4526 0.69301 20.9454 0.23089 13 0.00322 451 27.5118 0.66797 20.9556 0.20869 13 0.00275 461 27.587 0.64114 20.9599 0.19837 13 0.00234 471 27.564 0.62477 20.9639 0.18854 13 0.0017 481 27.5879 0.6083 20.9755 0.16176 13 0.00144	351	27.1227	0.85423	20.8756	0.34459	12.9998	0.01305
371 27.222 0.81049 20.8988 0.31193 12.9999 0.0086 381 27.2672 0.78952 20.9087 0.28275 12.9999 0.00823 401 27.3486 0.74931 20.9257 0.28649 13 0.00705 401 27.3486 0.74931 20.9257 0.26849 13 0.00603 411 27.3486 0.71127 20.9395 0.24282 13 0.00377 431 27.4526 0.69301 20.9454 0.23089 13 0.00322 451 27.5187 0.64114 20.9556 0.29897 13 0.00275 461 27.5387 0.64114 20.9599 0.18854 13 0.0017 481 27.5879 0.60833 20.9674 0.17918 13 0.00144 501 27.6103 0.59331 20.9785 0.16176 13 0.00144 501 27.6513 0.56349 20.9785 0.16176 13 0.00144 501 27.6701 0.54917 20.9806 0.13862 13 <t< td=""><td>361</td><td>27.1741</td><td>0.83205</td><td>20.8878</td><td>0.32787</td><td>12.9999</td><td>0.0112</td></t<>	361	27.1741	0.83205	20.8878	0.32787	12.9999	0.0112
381 27.2672 0.78952 20.9087 0.29675 12.9999 0.00823 391 27.3092 0.76914 20.9176 0.28228 13 0.00705 401 27.3486 0.73931 20.9257 0.26849 13 0.00603 411 27.3855 0.73003 20.933 0.25534 13 0.00411 421 27.4201 0.71127 20.9395 0.24282 13 0.00377 441 27.4831 0.67525 20.9506 0.21952 13 0.00234 451 27.5118 0.65797 20.9556 0.20869 13 0.00234 471 27.564 0.62477 20.9639 0.18854 13 0.0017 491 27.6103 0.59331 20.9766 0.17026 13 0.00144 501 27.6314 0.5782 20.9735 0.16176 13 0.00143 511 27.6701 0.54917 20.9761 0.15367 13 0	371	27.2222	0.81049	20.8988	0.31193	12.9999	0.0096
381 27.3092 0.76914 20.9176 0.28228 13 0.00705 401 27.3486 0.74931 20.9257 0.26849 13 0.00603 411 27.3855 0.73003 20.933 0.25534 13 0.00516 421 27.4201 0.71127 20.9395 0.24282 13 0.00377 441 27.4526 0.69301 20.9454 0.23089 13 0.00322 451 27.5118 0.65797 20.9556 0.20869 13 0.00275 461 27.5387 0.64114 20.9599 0.19837 13 0.00274 471 27.564 0.62477 20.9639 0.18854 13 0.00174 481 27.5879 0.60883 20.9674 0.17918 13 0.00144 501 27.6513 0.59331 20.9766 0.17026 13 0.00144 501 27.6513 0.56349 20.9761 0.15367 13 0.00144 521 27.6701 0.54917 20.9865 0.14596 13 0	381	27.2672	0.78952	20.9087	0.29675	12.9999	0.00823
401 27,3486 0.74931 20.9257 0.26849 13 0.00603 411 27,3855 0.73003 20.933 0.25534 13 0.00411 421 27,4201 0.71127 20.9395 0.24282 13 0.00377 441 27,4526 0.69301 20.9454 0.23089 13 0.00377 441 27,4831 0.67525 20.9508 0.21952 13 0.00224 451 27,5118 0.62477 20.9659 0.19837 13 0.00234 471 27,5879 0.60883 20.9674 0.17918 13 0.0017 481 27.6510 0.59331 20.9706 0.17026 13 0.00144 501 27.6514 0.59331 20.9755 0.16176 13 0.00123 511 27.6571 0.56349 20.9785 0.14596 13 0.00123 521 27.6701 0.54917 20.9785 0.14596 13 0 531 27.7202 0.50841 20.9885 0.14684 13 0 </td <td>391</td> <td>27.3092</td> <td>0.76914</td> <td>20.9176</td> <td>0.28228</td> <td>13</td> <td>0.00705</td>	391	27.3092	0.76914	20.9176	0.28228	13	0.00705
411 27.3855 0.73003 20.933 0.25534 13 0.00516 421 27.4201 0.71127 20.9395 0.24282 13 0.00377 431 27.4526 0.69301 20.9454 0.23089 13 0.00377 441 27.4831 0.67525 20.9556 0.21952 13 0.00322 451 27.5118 0.66177 20.9556 0.20869 13 0.00234 471 27.564 0.62477 20.9639 0.19837 13 0.00199 481 27.5879 0.60833 20.9674 0.17918 13 0.00144 501 27.6314 0.5782 20.9735 0.16176 13 0.00144 501 27.6513 0.56349 20.9761 0.15367 13 0.00123 511 27.6678 0.53522 20.9806 0.13662 13 0 551 27.7202 0.50841 20.9872 0.13163 13 0 551 27.7202 0.50841 20.9872 0.11264 13 0	401	27.3486	0.74931	20.9257	0.26849	13	0.00603
421 27.4201 0.71127 20.9395 0.24282 13 0.00441 431 27.4526 0.69301 20.9454 0.23089 13 0.00377 441 27.4831 0.67525 20.9508 0.21952 13 0.00322 451 27.5118 0.65797 20.9556 0.20869 13 0.00234 471 27.564 0.62477 20.9639 0.18854 13 0.00149 481 27.5879 0.60883 20.9674 0.17918 13 0.0017 491 27.6131 0.59331 20.9735 0.16176 13 0.00144 501 27.6513 0.56349 20.9735 0.16176 13 0.00123 511 27.6571 0.56349 20.9761 0.15367 13 0.00124 521 27.6701 0.54917 20.9785 0.14596 13 0 531 27.6878 0.53522 20.9806 0.13862 13 0 541 27.7491 0.48297 20.9872 0.13163 13 0	411	27.3855	0.73003	20.933	0.25534	13	0.00516
431 27.4526 0.69301 20.9454 0.23089 13 0.00377 441 27.4831 0.67525 20.9508 0.21952 13 0.00322 451 27.5118 0.66797 20.9556 0.20869 13 0.00275 461 27.5387 0.64114 20.9599 0.18837 13 0.00234 471 27.564 0.62477 20.9639 0.18854 13 0.0017 481 27.5879 0.60883 20.9674 0.17918 13 0.0014 501 27.6134 0.5782 20.9735 0.16176 13 0.00144 501 27.6513 0.56349 20.9755 0.14596 13 0 511 27.6513 0.53522 20.9806 0.13862 13 0 521 27.671 0.54917 20.9825 0.13163 13 0 551 27.7045 0.52164 20.9827 0.11261 13 0 561 27.751 0.49552 20.9887 0.11464 13 0 <td< td=""><td>421</td><td>27.4201</td><td>0.71127</td><td>20.9395</td><td>0.24282</td><td>13</td><td>0.00441</td></td<>	421	27.4201	0.71127	20.9395	0.24282	13	0.00441
441 27.4831 0.67525 20.9508 0.21952 13 0.00322 451 27.5118 0.65797 20.9556 0.20869 13 0.00275 461 27.5387 0.64114 20.9599 0.19837 13 0.00234 471 27.564 0.62477 20.9639 0.18854 13 0.00199 481 27.5879 0.60883 20.9674 0.17918 13 0.00144 501 27.6314 0.5782 20.9735 0.16176 13 0.00123 511 27.6513 0.56349 20.9785 0.14596 13 0 521 27.6701 0.54917 20.9785 0.14596 13 0 531 27.6878 0.53522 20.9806 0.13862 13 0 541 27.7202 0.50841 20.9872 0.11261 13 0 551 27.751 0.49552 20.9858 0.11864 13 0 561 27.7623 0.47075 20.9858 0.10687 13 0 57	431	27.4526	0.69301	20.9454	0.23089	13	0.00377
45127.51180.6579720.95560.20869130.0027546127.53870.6411420.95990.19837130.0023447127.5640.6247720.96390.18854130.0019948127.58790.6088320.96740.17918130.001749127.61030.5933120.97060.17026130.0014450127.63140.578220.97350.16176130.0012351127.67010.5491720.97850.1459613052127.67010.5491720.97850.1459613053127.68780.5352220.98060.1386213055127.70450.5216420.98250.1316313055127.73510.4955220.98720.1126113056127.73510.4955220.98850.1068713057127.74910.4829720.98720.1126113058127.76230.4707520.98850.1068713059127.77860.4472420.99070.096213061127.80840.4249320.99250.0865313062127.80840.4359420.99320.0820513063127.81840.414220.99390.0777813064127.82790.4037420.99390.07372130 <td>441</td> <td>27.4831</td> <td>0.67525</td> <td>20.9508</td> <td>0.21952</td> <td>13</td> <td>0.00322</td>	441	27.4831	0.67525	20.9508	0.21952	13	0.00322
46127.53870.6411420.95990.19837130.0023447127.5640.6247720.96390.18854130.0019948127.58790.6088320.96740.17918130.001749127.61030.5933120.97060.17026130.0014450127.63140.578220.97350.16176130.0014351127.65130.5634920.97610.15367130.001452127.67010.5491720.97850.1459613053127.68780.5352220.98060.1386213054127.70450.5216420.98250.1316313055127.72020.5084120.98430.1249813056127.73510.4955220.98580.1186413057127.74910.4829720.98720.1126113058127.76230.4707520.98850.1068713059127.77480.4359420.99070.096213060127.8670.4472420.99070.096213061127.9780.4359420.99160.0912413062127.80840.4249320.99250.8665313063127.81840.414220.99390.0777813065127.83680.3336620.99450.07372130 </td <td>451</td> <td>27.5118</td> <td>0.65797</td> <td>20.9556</td> <td>0.20869</td> <td>13</td> <td>0.00275</td>	451	27.5118	0.65797	20.9556	0.20869	13	0.00275
47127.5640.6247720.96390.18854130.0019948127.58790.6088320.96740.17918130.001749127.61030.5933120.97060.17026130.0014450127.63140.578220.97350.16176130.0012351127.65130.5634920.97610.15367130.0010452127.67010.5491720.97850.1459613053127.68780.5352220.98060.1386213054127.70450.5216420.98250.1316313055127.72020.5084120.98430.1249813056127.73510.4955220.98580.1186413057127.74910.4829720.98720.1126113058127.76230.4707520.98520.1068713059127.77480.4359420.99070.096213060127.78670.4472420.99070.096213061127.9780.4359420.99160.0912413062127.80840.4249320.99250.0865313063127.81840.414220.99320.0820513064127.82790.4037420.99390.0777813065127.84530.3836520.99450.07372130<	461	27.5387	0.64114	20.9599	0.19837	13	0.00234
481 27.5879 0.60883 20.9674 0.17918 13 0.0017 491 27.6103 0.59331 20.9706 0.17026 13 0.00144 501 27.6314 0.5782 20.9735 0.16176 13 0.00123 511 27.6513 0.56349 20.9761 0.15367 13 0.00104 521 27.6701 0.54917 20.9785 0.14596 13 0 531 27.6878 0.53522 20.9806 0.13862 13 0 541 27.7045 0.52164 20.9825 0.13163 13 0 551 27.7202 0.50841 20.9843 0.12498 13 0 561 27.7351 0.49552 20.9858 0.11864 13 0 571 27.7491 0.48297 20.9872 0.11261 13 0 581 27.7623 0.47075 20.9885 0.10687 13 0 601 27.7867 0.44724 20.9907 0.0962 13 0 611	471	27.564	0.62477	20.9639	0.18854	13	0.00199
49127.61030.5933120.97060.17026130.0014450127.63140.578220.97350.16176130.0012351127.65130.5634920.97610.15367130.0010452127.67010.5491720.97850.1459613053127.68780.5352220.98060.1386213054127.70450.5216420.98250.1316313055127.72020.5084120.98430.1249813056127.73510.4955220.98720.1126113057127.74910.4829720.98720.1126113058127.76230.4707520.98550.1068713059127.77480.4359420.99070.096213060127.78670.4472420.99070.096213061127.80840.4249320.99250.0865313062127.80840.414220.99320.0820513064127.82790.4037420.99390.0777813065127.8680.3935620.99450.0737213066127.84530.3836320.99510.0698613067127.85330.3736620.99560.06619130	481	27.5879	0.60883	20.9674	0.17918	13	0.0017
50127.63140.578220.97350.16176130.0012351127.65130.5634920.97610.15367130.0010452127.67010.5491720.97850.1459613053127.68780.5352220.98060.1386213054127.70450.5216420.98250.1316313055127.72020.5084120.98430.1249813056127.73510.4955220.98580.1186413057127.74910.4829720.98720.1126113058127.76230.4707520.98850.1068713059127.77480.4588420.99970.101413060127.78670.4472420.99070.096213061127.80840.4249320.99160.0912413063127.81840.414220.99320.0865313064127.82790.4037420.99390.0777813065127.84530.3836320.99450.0737213065127.84530.3836320.99510.0698613067127.85330.3739620.99560.06619130	491	27.6103	0.59331	20.9706	0.17026	13	0.00144
51127.65130.5634920.97610.15367130.0010452127.67010.5491720.97850.1459613053127.68780.5352220.98060.1386213054127.70450.5216420.98250.1316313055127.72020.5084120.98430.1249813056127.73510.4955220.98580.1186413057127.74910.4829720.98720.1126113058127.76230.4707520.98850.1068713059127.77480.4588420.99970.101413060127.78670.4472420.99070.096213061127.79780.4359420.99160.0912413062127.80840.4249320.99250.0865313063127.81840.414220.99390.0777813064127.8680.3935620.99450.0737213065127.83680.3935620.99510.0698613066127.8530.3836320.99510.06986130	501	27.6314	0.5782	20.9735	0.16176	13	0.00123
521 27.6701 0.54917 20.9785 0.14596 13 0 531 27.6878 0.53522 20.9806 0.13862 13 0 541 27.7045 0.52164 20.9825 0.13163 13 0 551 27.7202 0.50841 20.9843 0.12498 13 0 561 27.7351 0.49552 20.9858 0.11864 13 0 571 27.7491 0.48297 20.9872 0.11261 13 0 581 27.7623 0.47075 20.9872 0.10687 13 0 591 27.7748 0.48297 0.9987 0.1014 13 0 601 27.7867 0.44724 20.9907 0.0962 13 0 611 27.7867 0.44724 20.9907 0.0962 13 0 621 27.8084 0.42493 20.9925 0.08653 13 0 631 27.8184 0.4142 20.9932 0.08205 13 0 641 27.8368 <t< td=""><td>511</td><td>27.6513</td><td>0.56349</td><td>20.9761</td><td>0.15367</td><td>13</td><td>0.00104</td></t<>	511	27.6513	0.56349	20.9761	0.15367	13	0.00104
531 27.6878 0.53522 20.9806 0.13862 13 0 541 27.7045 0.52164 20.9825 0.13163 13 0 551 27.7202 0.50841 20.9843 0.12498 13 0 561 27.7351 0.49552 20.9858 0.11864 13 0 571 27.7491 0.48297 20.9872 0.11261 13 0 581 27.7623 0.47075 20.9872 0.10687 13 0 591 27.7748 0.45884 20.9907 0.1014 13 0 601 27.7867 0.44724 20.9907 0.0962 13 0 611 27.7978 0.43594 20.9916 0.09124 13 0 621 27.8084 0.42493 20.9925 0.08653 13 0 631 27.8184 0.4142 20.9932 0.08205 13 0 641 27.8279 0.40374 20.9939 0.07778 13 0 651 27.8368	521	27.6701	0.54917	20.9785	0.14596	13	0
541 27.7045 0.52164 20.9825 0.13163 13 0 551 27.7202 0.50841 20.9843 0.12498 13 0 561 27.7351 0.49552 20.9858 0.11864 13 0 571 27.7491 0.48297 20.9872 0.11261 13 0 581 27.7623 0.47075 20.9885 0.10687 13 0 591 27.7748 0.45884 20.9897 0.1014 13 0 601 27.7867 0.44724 20.9907 0.0962 13 0 611 27.7978 0.43594 20.9916 0.09124 13 0 621 27.8084 0.42493 20.9925 0.08653 13 0 631 27.8184 0.4142 20.9939 0.07778 13 0 641 27.8279 0.40374 20.9939 0.07778 13 0 651 27.8368 0.39356 20.9945 0.07372 13 0 661 27.8453	531	27.6878	0.53522	20.9806	0.13862	13	0
551 27.7202 0.50841 20.9843 0.12498 13 0 561 27.7351 0.49552 20.9858 0.11864 13 0 571 27.7491 0.48297 20.9872 0.11261 13 0 581 27.7623 0.47075 20.9885 0.10687 13 0 591 27.7748 0.45884 20.9907 0.1014 13 0 601 27.7867 0.44724 20.9907 0.0962 13 0 611 27.7978 0.43594 20.9916 0.09124 13 0 621 27.8084 0.42493 20.9925 0.08653 13 0 631 27.8184 0.4142 20.9932 0.08205 13 0 641 27.8279 0.40374 20.9939 0.07778 13 0 651 27.8368 0.39356 20.9945 0.07372 13 0 661 27.8453 0.38363 20.9951 0.06986 13 0 661 27.8533	541	27.7045	0.52164	20.9825	0.13163	13	0
561 27.7351 0.49552 20.9858 0.11864 13 0 571 27.7491 0.48297 20.9872 0.11261 13 0 581 27.7623 0.47075 20.9885 0.10687 13 0 591 27.7748 0.45884 20.9897 0.1014 13 0 601 27.7867 0.44724 20.9907 0.0962 13 0 611 27.7978 0.43594 20.9916 0.09124 13 0 621 27.8084 0.42493 20.9925 0.08653 13 0 631 27.8184 0.4142 20.9932 0.08205 13 0 641 27.8279 0.40374 20.9939 0.07778 13 0 651 27.8368 0.39356 20.9945 0.07372 13 0 661 27.8453 0.38363 20.9951 0.06986 13 0 671 27.8533 0.37396 20.9956 0.06619 13 0 <td>551</td> <td>27.7202</td> <td>0.50841</td> <td>20.9843</td> <td>0.12498</td> <td>13</td> <td>0</td>	551	27.7202	0.50841	20.9843	0.12498	13	0
57127.74910.4829720.98720.1126113058127.76230.4707520.98850.1068713059127.77480.4588420.98970.101413060127.78670.4472420.99070.096213061127.79780.4359420.99160.0912413062127.80840.4249320.99250.0865313063127.81840.414220.99320.0820513064127.82790.4037420.99390.0777813065127.8680.3935620.99450.0737213066127.84530.3836320.99510.0698613067127.85330.3739620.99560.06619130	561	27.7351	0.49552	20.9858	0.11864	13	0
581 27.7623 0.47075 20.9885 0.10687 13 0 591 27.7748 0.45884 20.9897 0.1014 13 0 601 27.7867 0.44724 20.9907 0.0962 13 0 611 27.7978 0.43594 20.9916 0.09124 13 0 621 27.8084 0.42493 20.9925 0.08653 13 0 631 27.8184 0.4142 20.9932 0.08205 13 0 641 27.8279 0.40374 20.9939 0.07778 13 0 651 27.8368 0.39356 20.9945 0.07372 13 0 661 27.8453 0.38363 20.9951 0.06986 13 0 661 27.8453 0.37396 20.9956 0.06619 13 0	5/1	27.7491	0.48297	20.9872	0.11261	13	U
591 27.7748 0.45884 20.9897 0.1014 13 0 601 27.7867 0.44724 20.9907 0.0962 13 0 611 27.7978 0.43594 20.9916 0.09124 13 0 621 27.8084 0.42493 20.9925 0.08653 13 0 631 27.8184 0.4142 20.9932 0.08205 13 0 641 27.8279 0.40374 20.9939 0.07778 13 0 651 27.8368 0.39356 20.9945 0.07372 13 0 661 27.8453 0.38363 20.9951 0.06986 13 0 661 27.8533 0.37396 20.9956 0.06619 13 0	581	27.7623	0.47075	20.9885	0.10687	13	U
b01 27.7867 0.44724 20.9907 0.0962 13 0 611 27.7978 0.43594 20.9916 0.09124 13 0 621 27.8084 0.42493 20.9925 0.08653 13 0 631 27.8184 0.4142 20.9932 0.08205 13 0 641 27.8279 0.40374 20.9939 0.07778 13 0 651 27.8368 0.39356 20.9945 0.07372 13 0 661 27.8453 0.38363 20.9951 0.06986 13 0 671 27.8533 0.37396 20.9956 0.06619 13 0	591	21.1148	0.45884	20.9897	0.1014	13	0
611 27.7978 0.43594 20.9916 0.09124 13 0 621 27.8084 0.42493 20.9925 0.08653 13 0 631 27.8184 0.4142 20.9932 0.08205 13 0 641 27.8279 0.40374 20.9939 0.07778 13 0 651 27.8368 0.39356 20.9945 0.07372 13 0 661 27.8453 0.38363 20.9951 0.06986 13 0 671 27.8533 0.37396 20.9956 0.06619 13 0	601	27.7867	0.44724	20.9907	0.0962	13	U
b21 27.8084 0.42493 20.9925 0.08653 13 0 631 27.8184 0.4142 20.9932 0.08205 13 0 641 27.8279 0.40374 20.9939 0.07778 13 0 651 27.8368 0.39356 20.9945 0.07372 13 0 661 27.8453 0.38363 20.9951 0.06986 13 0 671 27.8533 0.37396 20.9956 0.06619 13 0	611	27.7978	0.43594	20.9916	0.09124	13	0
031 27.8184 0.4142 20.9932 0.08205 13 0 641 27.8279 0.40374 20.9939 0.07778 13 0 651 27.8368 0.39356 20.9945 0.07372 13 0 661 27.8453 0.38363 20.9951 0.06986 13 0 671 27.8533 0.37396 20.9956 0.06619 13 0	621	27.8084	0.42493	20.9925	0.08653	13	U
641 27.8279 0.40374 20.9939 0.07778 13 0 651 27.8368 0.39356 20.9945 0.07372 13 0 661 27.8453 0.38363 20.9951 0.06986 13 0 671 27.8533 0.37396 20.9956 0.06619 13 0	631	27.8184	0.4142	20.9932	0.08205	13	U
001 27.8000 0.39300 20.9945 0.07372 13 0 661 27.8453 0.38363 20.9951 0.06986 13 0 671 27.8533 0.37396 20.9956 0.06619 13 0	641	21.8219	0.40374	20.9939	0.07770	13	U
671 27.8533 0.37396 20.9956 0.06619 13 0	160	21.0300 27.0452	0.39350	20.9940	0.0/3/2	13	0
11 ANNAL 11 ANNA	671	21.0400 27 8522	0.30303	20.9901	0.00900	13	0

681	27.8608	0.36454	20.9961	0.0627	13	0
601	27 868	0 35535	20 9965	0.05938	13	0
701	27.000	0.00000	20.0000	0.05500	10	0
701	27.8748	0.3464	20.9968	0.05622	13	0
711	27.8812	0.33767	20.9972	0.05322	13	0
721	27.8873	0.32917	20.9975	0.05037	13	0
731	27.8931	0.32088	20.9977	0.04766	13	0
741	27,8986	0.3128	20,998	0.04509	13	0
751	27.0028	0.20402	20.0002	0.04265	12	0
751	27.3030	0.00495	20.9902	0.04200	10	0
761	27.9087	0.29725	20.9984	0.04032	13	0
771	27.9133	0.28977	20.9985	0.03812	13	0
781	27.9178	0.28247	20.9987	0.03603	13	0
791	27.9219	0.27536	20.9988	0.03404	13	0
801	27 9259	0 26842	20 999	0.03215	13	0
011	27.0200	0.26012	20.000	0.02026	10	0
011	27.9297	0.20100	20.9991	0.03036	13	0
821	27.9333	0.25507	20.9992	0.02867	13	0
831	27.9366	0.24865	20.9993	0.02706	13	0
841	27.9399	0.24238	20.9993	0.02553	13	0
851	27,9429	0.23627	20,9994	0.02408	13	0
861	27 9/58	0.23032	20 0005	0.02271	13	0
074	27.3400	0.20002	20.3335	0.02271	10	0
871	27.9486	0.22451	20.9995	0.02141	13	0
881	27.9512	0.21885	20.9996	0.02018	13	0
891	27.9536	0.21332	20.9996	0.01901	13	0
901	27.956	0.20794	20.9997	0.01791	13	0
911	27 9582	0 20269	20 9997	0.01686	13	0
021	27.0602	0.10757	20.0007	0.01597	12	0
921	27.9003	0.19757	20.9997	0.01307	13	0
931	27.9623	0.19257	20.9998	0.01493	13	0
941	27.9642	0.1877	20.9998	0.01405	13	0
951	27.966	0.18295	20.9998	0.01321	13	0
961	27.9678	0.17832	20,9998	0.01242	13	0
971	27 9694	0 1738	20 9999	0.01167	13	0
001	27.0004	0.1604	20.0000	0.01006	10	0
901	27.9709	0.1694	20.9999	0.01096	13	0
991	27.9724	0.1651	20.9999	0.01029	13	0
1001	27.9738	0.16091	20.9999	0.00966	13	0
1011	27.9751	0.15683	20.9999	0.00907	13	0
1021	27.9764	0.15284	20.9999	0.00851	13	0
1031	27 9776	0.1/895	20.0000	0.00797	13	0
1001	27.3770	0.14035	20.3333	0.007.07	10	0
1041	27.9787	0.14516	20.9999	0.00747	13	0
1051	27.9798	0.14147	21	0.007	13	0
1061	27.9808	0.13786	21	0.00656	13	0
1071	27.9818	0.13434	21	0.00614	13	0
1081	27,9827	0.13091	21	0.00575	13	0
1001	27.0836	0 12757	21	0.00537	13	0
1091	27.3030	0.12757	21	0.00507	10	0
1101	27.9844	0.1243	21	0.00503	13	0
1111	27.9852	0.12112	21	0.0047	13	0
1121	27.986	0.11802	21	0.00439	13	0
1131	27.9867	0.11499	21	0.0041	13	0
1141	27.9874	0.11204	21	0.00382	13	0
1151	27 088	0 10916	21	0.00357	13	0
1101	27.300	0.10010	21	0.00007	10	0
1101	27.9000	0.10035	21	0.00333	13	0
1171	27.9892	0.10361	21	0.0031	13	0
1181	27.9898	0.10094	21	0.00289	13	0
1191	27.9903	0.09833	21	0.00269	13	0
1201	27.9908	0.09579	21	0.0025	13	0
1211	27 0013	0.00331	21	0.00233	13	0
1211	27.3313	0.03001	21	0.00233	10	0
1221	27.9917	0.0909	21	0.00217	13	0
1231	27.9921	0.08854	21	0.00201	13	0
1241	27.9925	0.08624	21	0.00187	13	0
1251	27.9929	0.084	21	0.00173	13	0
1261	27.9933	0.08181	21	0.00161	13	0
1271	27 9936	0 07968	21	0 00140	13	0
1004	21.3300	0.07300	<u>~</u> 1	0.00140	10	0
1281	27.994	0.0776	21	0.00138	13	U
1291	27.9943	0.07557	21	0.00128	13	0
1301	27.9946	0.07359	21	0.00119	13	0
1311	27.9949	0.07167	21	0.0011	13	0
1321	27,9951	0.06979	21	0.00101	13	0
1221	27 005/	0 06705	_ · 21	0	12	0
1001	21.3304	0.00730	<u>~</u> 1	0	10	0
1341	21.9900	0.00016	21	U	13	U
1351	27.9958	0.06442	21	0	13	0
1361	27.9961	0.06272	21	0	13	0

4074	07.0000	0.00400	04		10	
1371	27.9963	0.06106	21	0	13	0
1381	27.9965	0.05945	21	0	13	0
1391	27.9966	0.05787	21	0	13	0
1401	27.9968	0.05633	21	0	13	0
1411	27 997	0 05484	21	0	13	0
1/21	27 0071	0.05338	21	0	13	0
1421	27.3371	0.05550	21	0	10	0
1431	27.9973	0.05195	21	0	13	0
1441	27.9974	0.05056	21	0	13	0
1451	27.9976	0.04921	21	0	13	0
1461	27.9977	0.04789	21	0	13	0
1471	27.9978	0.04661	21	0	13	0
1481	27.9979	0.04535	21	0	13	0
1491	27 9981	0.04413	21	0	13	0
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1501	27.9902	0.04294	21	0	13	0
1511	27.9983	0.04178	21	0	13	0
1521	27.9983	0.04065	21	0	13	0
1531	27.9984	0.03955	21	0	13	0
1541	27.9985	0.03847	21	0	13	0
1551	27.9986	0.03743	21	0	13	0
1561	27,9987	0.03641	21	0	13	0
1571	27 0087	0.035/11	21	0	13	0
1571	27.3307	0.03341	21	0	10	0
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1591	27.9989	0.0335	21	0	13	0
1601	27.9989	0.03258	21	0	13	0
1611	27.999	0.03168	21	0	13	0
1621	27.9991	0.03081	21	0	13	0
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1641	27.9992	0.02913	21	0	13	0
1651	27.9992	0.02832	21	0	13	0
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1671	27 9993	0.02677	21	0	13	0
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1001	27.9993	0.02002	21	0	13	0
1691	27.9994	0.02529	21	0	13	0
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1711	27.9994	0.0239	21	0	13	0
1721	27.9995	0.02322	21	0	13	0
1731	27.9995	0.02257	21	0	13	0
1741	27.9995	0.02193	21	0	13	0
1751	27.9995	0.02131	21	0	13	0
1761	27,9996	0.02071	21	0	13	0
1771	27 9996	0.02012	21	0	13	0
1701	27.0006	0.02012	21	0	10	0
1701	27.9990	0.01955	21	0	13	0
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1841	27.9997	0.01642	21	0	13	0
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1871	27 9998	0.01503	21	0	13	0
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1001	27.9990	0.0140	21	0	13	0
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1911	27.9998	0.01335	21	0	13	0
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1931	27.9998	0.01258	21	0	13	0
1941	27.9999	0.01221	21	0		
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1961	27.9999	0.0115	21	0		
1971	27.9999	0.01116	21	0		
1981	27,9999	0.01083	21	0		
1001	27 9999	0.0105	21	0 0		
2001	27 0000	0.01010	21	0		
2001	27 0000	0.01019	21	0		
2011	21.3333	0.00300	<u>د</u> ا	0		
2021	27.9999	0.00959	21	U		
2031	27.9999	0.0093	21	0		
2041	27.9999	0.00902	21	0		
2051	27.9999	0.00875	21	0		

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2061	27 0000	0.00949	21	0	
2001	27.9999	0.00040	21	0	
2071	27.9999	0.00822	21	0	
2081	27.9999	0.00797	21	0	
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2291	28	0.00409	21	U	
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