Documentation of angiospermic plants of Puthia Upazila of Rajshahi and their important medicinal values

Sonia Khatun, Lima Khatun, Monira Akter Ame, Shamima Afroj Sumona and AHM Mahbubur Rahman *

Plant Taxonomy Laboratory, Department of Botany, Faculty of Biological Sciences, University of Rajshahi, Bangladesh.

GSC Biological and Pharmaceutical Sciences, 2022, 19(02), 258–281

Publication history: Received on 13 April 2022; revised on 17 May 2022; accepted on 20 May 2022

Article DOI: https://doi.org/10.30574/gscbps.2022.19.2.0189

Abstract

Diversity of angiosperms of Puthia Upazila of Rajshahi district, Bangladesh conducted during October 2019 to December 2021. A total of 194 species belonging to 162 genera under 72 families were recorded. Habit analysis shows that herbs, shrubs, climbers and trees are represented by 76, 37, 26 and 55 species, respectively. Amaranthaceae, Asteraceae, Apocynaceae, Caesalpiniaceae, Convolvulaceae, Cucurbitaceae, Euphorbiaceae, Fabaceae, Moraceae, Malvaceae, Mimosaceae, Myrtaceae, Poaceae, Rutaceae, and Solanaceae are the dominant families with high species diversity. 148 medicinal plants have been documented with their uses for the cure of more than 200 diseases, and some of these are asthma, cough, cold, chicken pox, constipation, dysentery, diarrhea, diabetes, eczema, fever, headache, heart disease, itches, jaundice, menstrual disease, paralysis, piles, skin diseases, snake bite, sex problems, toothache, vomiting, worm, wound and others. Scientific names, local names, habits, families, medicinal uses and part(s) used are provided for each species.

Keywords: Diversity; Angiosperms; Medicinal Uses; Puthia; Rajshahi; Bangladesh

1. Introduction

Angiosperm is any of the more than 300,000 species of flowering plants (division Anthophyta), the kingdom Plantae's largest and most varied group. Angiosperms account for approximately 80% of all currently known green plants. The ovule (egg) is fertilized and develops into a seed in an enclosed hollow ovary in angiosperms, which are vascular seed plants. The ovary is normally encased in a flower, which is the portion of the angiospermous plant that houses the male or female reproductive organs, or both. Fruits are made from the angiosperous plant's mature floral organs.

Different habits of angiosperm found in the study area:

- **Tree**: Trees are plants that grow to be tall, large, and powerful. They have a lengthy lifespan. During a few months, some of them bloom brightly. Others are the ones who provide fruit. There are many trees that have leaves all year. During the winter, several plants drop their leaves. *Ficus benghalensis* and *Mangifera indica* are two of the trees that grow in this area.
- **Shrub**: Shrubs are smaller than trees. They can be bushy, with a lot of small, woody branches. *Hibiscus rosasinensis, Justicia gendarusa*, and other shrubs are some examples.
- **Herb**: Herbs are typically small plants with soft stems. They usually do not live for a long time. Herbs provide us with a lot of our vegetables. *Cynodon dactylon* and *Oryza sativa* are two common herbs.
• Climber: The stems of some plants are brittle. They are unable to stand on their own. For support, they must cling to a stick or a wall. Climbers, such as *Cuscuta reflexa*, are examples of these plants. Other plants with flimsy stems scurry across the ground. Creepers, such as *Epipremnum aureum*, are what they’re called.

Angiosperms are vascular plants that produce seeds. Flowers with ovules enclosed in an ovary are their reproductive structures. Angiosperms can be found in a wide variety of environments, from forests and grasslands to seashores and deserts. Trees, herbs, submerged aquatics, bulbs, and epiphytes are just a few of the life forms found in angiosperms. Orchids, Compositae (daisies), and Legumes are the three largest plant families (beans). Flowering plants, also known as angiosperms, number around 352,000 species. Around 245–202 million years ago, flowering plants split from gymnosperms, and the first flowering plants were discovered around 160 million years ago. During the Lower Cretaceous, they diversified greatly and became widespread around 120 million years ago, but they only replaced conifers as the dominant trees around 60–100 million years ago [15].

Angiospermic flora was carried out in Bangladesh by [2-5], [8-14], [16-17] and [20-62]. The aim of the present research was to explore and assesses the diversity and medicinal uses of angiosperms in Puthia Upazila of Rajshahi, Bangladesh.

2. Material and methods

2.1. Study area

Puthia upazila is situated at 24°22′30″N and 88°51′0″E. The Puthia upazila lies about for 34 Kilometers East of Rajshahi city. It is situated in the East side from Rajshahi city in the line of Dhaka- Rajshahi highway road, in the South of Bagmara upazila, North of Bagha upazila and west side of Natore district (Natore sadar) [63].

![Figure 1 Map of the study area](image)

2.2. Methodology

The research is based on fresh materials collected during thirty one field visits to Puthia Upazila of Rajshahi, Bangladesh from October 2019 to December 2021 to cover the seasonal variations. The visits covered all types of habitats, particular river bank; char land area, slope, village grove, fruit gardens, fallow lands, crop fields, roadsides of the study area. Plant parts with either flowers or fruits were collected using traditional herbarium techniques to make voucher specimens for documentation.

2.3. Identification

Collected angiosperms were identified with the help of various literatures [1], [6] and [19]. For the current name and up-to-date nomenclature [1], [7] and [18] were also consulted.
3. Results

Between October 2019 and December 2021, an assessment of angiosperm variety was done at the Puthia upazila of Rajshahi district, Bangladesh. A total of 194 species were discovered, divided into 162 genera and 72 families. Magnoliopsida (Dicotyledones) has 169 species distributed among 139 genera and 64 families, while Liliopsida (Monocotyledones) has 25 species distributed across 23 genera and 8 families. Fabaceae is the largest family in Magnoliopsida, with 11 species, whereas Poaceae is the largest family in Liliopsida, with 8 species. Herbs, shrubs, climbers, and trees are all represented by 76, 37, 26, and 55 species, respectively, according to habitat study (Table 1). The prominent families with great species diversity are Amaranthaceae, Asteraceae, Apocynaceae, Caesalpiniaceae, Convolvulaceae, Cucurbitaceae, Euphorbiaceae, Fabaceae, Moraceae, Malvaceae, Mimosaceae, Myrtaceae, Poaceae, Rutaceae, and Solanaceae. Botanical name, local name, habit, habitat, flowering and fruiting time, occurrence status, voucher number, and family were provided for each species (Table 2; Figure 3). Herbs account for 76 (39.17 percent) of the 194 species found here, while trees account for 55 (28.35 percent), shrubs for 37 (19.07 percent), and climbers for 26 (13.40 percent) (Figure 2). Out of 194 species, 27 % was wild and 73% was planted species (Figure 4).

The distribution of angiosperm species within the families differs. There are 11 species in the Fabaceae family. There are 10 species in each of the Solanaceae and Cucurbitaceae families. There are 8 species in each of the Moraceae and Poaceae families. There are seven species in each of the Amaranthaceae, Apocynaceae and Asteraceae family. There are five species in each of the Myrtaceae and Rutaceae families. There are four species in each of the Araceae and Arecaceae, Brassicaceae, Convolvulaceae, Lamiaceae and Verbenaceae families. There are 3 species in each of the Acanthaceae, Anacardiaceae, Caesalpiniaceae, Combretaceae, Euphorbiaceae, Lauraceae, Liliaceae, Lythraceae, Malvaceae, Meliaceae, Nyctaginaceae and Rubiaceae families. There are 2 species in each of the Annonaceae, Apiaceae, Mimosaceae, Oleaceae, Oxalidaceae, Polygonaceae, Portulacaceae, Rosaceae, Sapotaceae, Vitaceae and Zingiberaceae families. 32 families had a single species in each.

Table 1 Showing the families of the plant species recorded

| SL. No. | Family name       | No. of the Herb species | No. of the Shrub species | No. of the Climber species | No. of the Tree species |
|---------|-------------------|-------------------------|--------------------------|----------------------------|------------------------|
| 1       | Acanthaceae       | 1                       | 2                        | -                          | -                      |
| 2       | Amaranthaceae     | 6                       | 1                        | -                          | -                      |
| 3       | Anacardiaceae     | -                       | -                        | -                          | 3                      |
| 4       | Annonaceae        | -                       | -                        | -                          | 2                      |
| 5       | Apiaceae          | 2                       | -                        | -                          | -                      |
| 6       | Apocynaceae       | 3                       | 3                        | -                          | 1                      |
| 7       | Araceae           | 3                       | -                        | 1                          | -                      |
| 8       | Areceae           | -                       | -                        | -                          | 4                      |
| 9       | Asclepiadaceae    | -                       | 1                        | -                          | -                      |
| 10      | Asphodelaceae     | 1                       | -                        | -                          | -                      |
| 11      | Asteraceae        | 5                       | 1                        | 1                          | -                      |
| 12      | Balsaminaceae     | 1                       | -                        | -                          | -                      |
| 13      | Basellaceae       | -                       | -                        | 1                          | -                      |
| 14      | Bombacaceae       | -                       | -                        | -                          | 1                      |
| 15      | Boraginaceae      | 1                       | -                        | -                          | -                      |
| 16      | Brassicaceae      | 4                       | -                        | -                          | -                      |
| 17      | Caesalpiniaceae   | -                       | -                        | -                          | 2                      |
| 18      | Cannaceae         | 1                       | -                        | -                          | -                      |
| 19      | Caricaceae        | -                       | -                        | -                          | 1                      |
| 20 | Chenopodiaceae  | 1 | - | - | - |
| 21 | Combretaceae    | - | - | - | 3 |
| 22 | Commelinaceae   | 1 | - | - | - |
| 23 | Convolvulaceae  | - | 1 | 3 | - |
| 24 | Crassulaceae    | 1 | - | - | - |
| 25 | Cucurbitaceae   | - | - | 10 | - |
| 26 | Cuscutaceae     | - | - | 1 | - |
| 27 | Cyperaceae      | 1 | - | - | - |
| 28 | Dilleniaceae    | - | - | - | 1 |
| 29 | Ebenaceae       | - | - | - | 1 |
| 30 | Elaeocarpaceae  | - | - | - | 1 |
| 31 | Euphorbiaceae   | 2 | 1 | - | - |
| 32 | Fabaceae        | 4 | 4 | 2 | 2 |
| 33 | Lamiaceae       | 4 | - | - | - |
| 34 | Lauraceae       | - | 1 | - | 2 |
| 35 | Liliaceae       | 2 | - | 1 | - |
| 36 | Lythraceae      | 1 | 1 | - | 1 |
| 37 | Malvaceae       | 2 | 1 | - | - |
| 38 | Meliaceae       | - | - | - | 3 |
| 39 | Menispermaceae  | - | - | 1 | - |
| 40 | Mimosaceae      | 1 | - | - | 1 |
| 41 | Molluginaceae   | 1 | - | - | - |
| 42 | Moraceae        | - | - | - | 8 |
| 43 | Moringaceae     | - | - | - | 1 |
| 44 | Musaceae        | - | 1 | - | - |
| 45 | Myrtaceae       | - | - | - | 5 |
| 46 | Nelumbonaceae   | 1 | - | 2 | - |
| 47 | Nyctaginaceae   | 1 | - | - | - |
| 48 | Nymphaeaceae    | 1 | - | - | - |
| 49 | Oleaceae        | - | 2 | - | - |
| 50 | Oxalidaceae     | 1 | - | - | 1 |
| 51 | Papaveraceae    | 1 | - | - | - |
| 52 | Pedaliaceae     | 1 | - | - | - |
| 53 | Piperaceae      | - | - | 1 | - |
| 54 | Plantaginaceae  | 1 | - | - | - |
| 55 | Poaceae         | 4 | 4 | - | - |
| 56 | Polygonaceae    | 2 | - | - | - |
| 57 | Pontederiaceae  | 2 | - | - | - |
| SL No. | Botanical Name           | Local Name | Family    | Habit | Relative Occurrence | Plant Population | Phenology | Voucher No. |
|--------|--------------------------|------------|-----------|-------|---------------------|------------------|-----------|-------------|
| 1      | *Ammannia coccinea*      | Bon morich | Lythraceae| H     | W                   | CN               | Jul-Dec   | M. 98       |
| 2      | *Abelmoschus esculentus* | Dherosh    | Malvaceae | H     | P                   | VC               | Feb-Aug   | M. 99       |
| 3      | *Abroma augustum*        | Ulat kambal| Sterculiaceae | T     | P                   | VC               | Jun-Dec   | M. 100      |
| 4      | *Acacia auriculiformis*  | Akashmoni  | Fabaceae  | T     | P                   | VC               | TY        | M. 101      |
| 5      | *Manilkara zapota*       | Shofeda    | Sapotaceae | T     | P                   | R                | TY        | M. 102      |
| 6      | *Aegle marmelos*         | Bel        | Rutaceae  | T     | P                   | VC               | Apr-Dec   | M. 103      |
| 7      | *Ageratum conyzoides*    | Dochunti   | Asteraceae | H     | W                   | VC               | TY        | M. 104      |
| 8      | *Albizia procera*        | Koroigas   | Mimosaceae | T     | P                   | VC               | May-Jan   | M. 105      |
| 9      | *Allium cepa*            | Piyaj      | Liliaceae | H     | P                   | VC               | Feb-Jun   | M. 106      |
| 10     | *Allium sativum*         | Rosun      | Liliaceae | H     | P                   | VC               | Feb-Apr   | M. 107      |
| 11     | *Alstonia scholaris*     | Chatim     | Apocynaceae | T     | P                   | R                | Nov-May   | M. 108      |
| 12     | *Alternanthera sessilis*  | Chanshi    | Amaranthaceae | H     | W                   | VC               | TY        | M. 109      |
| 13     | *Amaranthus dubius*      | Daata      | Amaranthaceae | S     | P                   | VC               | Feb-Oct   | M. 110      |

Table 2 Assessment of Angiosperm Taxa at Puthia Upazila of Rajshahi District, Bangladesh
| No. | Common Name                          | Scientific Name            | Family       | Phenology | Floret | Fruit | Phase | M.   |
|-----|-------------------------------------|-----------------------------|--------------|-----------|--------|-------|-------|------|
| 14  | Amaranthus spinosus                 | Kantanotey                  | Amaranthaceae | H         | W      | VC    | TY    | M. 111 |
| 15  | Amaranthus tricolor                 | Lalshak                     | Amaranthaceae | H         | P      | VC    | TY    | M. 112 |
| 16  | Amaranthus viridis                  | Shaknotey                   | Amaranthaceae | H         | W      | VC    | TY    | M. 113 |
| 17  | Annona squamosa                     | Aata                        | Annonaceae    | T         | P      | VC    | Mar-Dec | M. 114 |
| 18  | Anthocephalus chinensis             | Kodom                       | Rubiaceae     | T         | P      | CN    | July-Nov | M. 115 |
| 19  | Aphanamixis polystachya             | Pitraaj                     | Meliaceae     | T         | P      | VC    | Feb-May | M. 116 |
| 20  | Arachis hypogaea                    | Chinabdam                   | Fabaceae      | H         | P      | R     | Mar-Dec | M. 117 |
| 21  | Areca catechu                       | Shupari                      | Arecaceae     | T         | P      | VC    | TY    | M. 118 |
| 22  | Argemone mexicana                   | Sheyalkata                  | Papaveraceae  | H         | W      | CN    | Feb-Jun | M. 119 |
| 23  | Artocarpus heterophyllus            | Kathal                      | Moraceae      | T         | P      | VC    | Apr-Jul | M. 120 |
| 24  | Artocarpus lacucha                  | Dewa                        | Moraceae      | T         | P      | R     | Apr-Jun | M. 121 |
| 25  | Asparagus racemosus                 | Shotomuli                   | Liliaceae     | H         | W      | R     | Nov-Mar | M. 122 |
| 26  | Averrhoa carambola                  | Kamranga                     | Oxalidaceae   | T         | P      | CN    | Sep-Mar | M. 123 |
| 27  | Azadirachta indica                  | Nim                         | Meliaceae     | T         | P      | VC    | Mar-Jul | M. 124 |
| 28  | Aloe vera                           | Ghritatkumari               | Asphodelaceae | H         | P      | CN    | Mar-May | M. 125 |
| 29  | Andrographis paniculata             | Kalomegh                    | Acanthaceae   | H         | P      | R     | Oct-Dec | M. 126 |
| 30  | Alocasia macrorrhizos               | Mankochu                    | Araceae       | H         | P      | VC    | TY    | M. 127 |
| 31  | Asclepias curassavica               | Morichaful                  | Apocynaceae   | H         | P      | R     | TY    | M. 128 |
| 32  | Allamanda cathartica                | Alkananda                   | Apocynaceae   | S         | P      | R     | Mar-Jan | M. 129 |
| 33  | Brassica napus                      | Shorisha                     | Brassicaceae  | H         | P      | VC    | Mar-Juy | M. 130 |
| 34  | Brassica oleracea var botrytis      | Fulkopy                     | Brassicaceae  | H         | P      | VC    | Feb-Jun | M. 131 |
| 35  | Brassica oleracea var capitata      | Patacopy                    | Brassicaceae  | H         | P      | VC    | Dec-Mar | M. 132 |
| 36  | Bryophyllum pinnatum                | Pathorkuchi                 | Crassulaceae  | H         | P      | VC    | TY    | M. 133 |
| 37  | Bambusa arundinacea                 | Bash                        | Poaceae       | S         | P      | VC    | TY    | M. 134 |
| 38  | Basella alba                        | Puishak                     | Basellaceae   | C         | P      | VC    | Nov-Mar | M. 135 |
| 39  | Benincasa hispida                   | Chalkumra                   | Cucurbitaceae | C         | P      | VC    | May-Nov | M. 136 |
| 40  | Bougainvillea spectabilis           | Baganbilash                 | Nyctaginaceae | C         | P      | R     | WS     | M. 137 |
| 41  | Bombax ceiba                        | Shimul                      | Bombacaceae   | T         | P      | CN    | Feb-Apr | M. 138 |
| No. | Species Name                | Common Name        | Family          | Season | Growing Period | Maturity |
|-----|-----------------------------|--------------------|-----------------|--------|----------------|----------|
| 42  | Borassus flabellifer        | Tal                | Arecaaceae      | T      | P              | VC       | Jun-Aug | M. 139 |
| 43  | Cajanus cajan               | Arhor daal         | Fabaceae        | S      | P              | CN       | Dec-Apr | M. 140 |
| 44  | Canna indica                | Klobotis           | Cannaceae       | H      | P              | R        | TY      | M. 141 |
| 45  | Calotropis gigantea         | Akondo             | Asclepiadaceae  | S      | W              | CN       | SS      | M. 142 |
| 46  | Capsicum frutescens         | Morice             | Solanaceae      | H      | P              | CN       | TY      | M. 143 |
| 47  | Carissa carandas            | Koromsha           | Apocynaceae     | H      | P              | R        | Mar-Junn| M. 144 |
| 48  | Carrica papaya              | Pepe               | Caricaceae      | T      | P              | VC       | TY      | M. 145 |
| 49  | Catharanthus roseus         | Noyontara          | Apocynaceae     | H      | P              | VC       | TY      | M. 146 |
| 50  | Celosia cristata            | Morogful           | Amaranthaceae   | H      | P              | R        | TY      | M. 147 |
| 51  | Centella asiatica           | Thankuni           | Apiaceae        | H      | W              | VC       | TY      | M. 148 |
| 52  | Cestrum nocturnum           | Hasnahena          | Solanaceae      | S      | P              | CN       | TY      | M. 149 |
| 53  | Chenopodium album           | Bothua             | Chenopodiaceae  | H      | P              | VC       | Dec-Mar | M. 150 |
| 54  | Chrysanthamum coronarium    | Chandromollika     | Asteraceae      | S      | P              | R        | Dec-Mar | M. 151 |
| 55  | Cinnamomum tamala           | Tejpata            | Lauraceae       | T      | P              | R        | Feb-Oct | M. 152 |
| 56  | Cinnamomum verum            | Darchini           | Lauraceae       | T      | P              | VR       | Jan-Mar | M. 153 |
| 57  | Citrus aurantifolia         | Lebu               | Rutaceae        | T      | P              | VC       | Mar-Sep | M. 154 |
| 58  | Citrus grandis              | Jambura            | Rutaceae        | T      | P              | CN       | Feb-Nov | M. 155 |
| 59  | Clerodendrum inerme         | Bamuhati           | Verbenaceae     | H      | W              | CN       | NK      | M. 156 |
| 60  | Croton bonplandianus        | Bontulshi          | Euphorbiaceae   | H      | P              | VC       | TY      | M. 157 |
| 61  | Clerodendrum viscosum       | Vat                | Verbenaceae     | S      | W              | VC       | Jan-Jul | M. 158 |
| 62  | Clitoria tanacetan          | Oporajita          | Fabaceae        | H      | P              | R        | Jan-Mar | M. 159 |
| 63  | Coccinia cordifolia         | Telakucha          | Cucurbitaceae   | C      | W              | VC       | Mar-Dec | M. 160 |
| 64  | Cocos nucifera              | Narikel            | Areaceae        | T      | P              | VC       | Mar-Jul | M. 161 |
| 65  | Colocasia esculenta         | Kochu              | Araceae         | H      | P              | VC       | TY      | M. 162 |
| 66  | Commelina benghalensis      | Kanshira           | Commelinaeace   | H      | W              | VC       | Apr-Nov | M. 163 |
| 67  | Corchorus capsularis        | Pat                | Tiliaceae       | S      | P              | VC       | May-Aug | M. 164 |
| 68  | Coriandrum sativum          | Dhonepata          | Apiaceae        | H      | P              | VC       | Dec-Feb | M. 165 |
| 69  | Cucumis sativus             | Sosha              | Cucurbitaceae   | C      | P              | CN       | Apr-Oct | M. 166 |
| 70  | Cucurbita maxima            | Mishtikumra        | Cucurbitaceae   | C      | P              | CN       | Mar-Oct | M. 167 |
| 71  | Curcuma longa               | Holud              | Zingiberaceae   | H      | P              | CN       | Mar-Feb | M. 168 |
| 72  | Cuscuta reflexa             | Shornolota         | Cuscuteaceae    | C      | W              | CN       | Aug-Mar | M. 169 |
| No. | Scientific Name           | Common Name       | Family       | Habit | Spacing | Type   | Start Date | End Date | Mark | Country |
|-----|---------------------------|-------------------|--------------|-------|---------|--------|------------|----------|------|---------|
| 73  | Cyperus rotundus          | Muthaghash        | Cyperaceae   | H     | W       | VC     | Mar-Oct    |          |      |         |
| 74  | Cynodon dactylon          | Durba             | Poaceae      | H     | P       | VC     | TY         | M. 170   |      |         |
| 75  | Dalbergia sissoo          | Sishu             | Fabaceae     | T     | P       | CN     | Mar-Jun    | M. 172   |      |         |
| 76  | Datura metel              | Dhutura           | Solanaceae   | S     | W       | CN     | Jan-Dec    | M. 173   |      |         |
| 77  | Delonix regia             | Krishnochura      | Caesalpiniaceae | T  | P       | CN     | Apr-Sep    | M. 174   |      |         |
| 78  | Dillenia indica           | Chalta            | Dilleniaceae | T     | P       | VR     | May-Feb    | M. 175   |      |         |
| 79  | Diospyros malabarica      | Gaab              | Ebenaceae    | T     | P       | CN     | May-Aug    | M. 176   |      |         |
| 80  | Eclipta alba              | Kalokesh          | Asteraceae   | H     | W       | CN     | TY         | M. 177   |      |         |
| 81  | Elaeocarpus robustus      | Jolpai            | Elaeocarpaceae | T  | P       | CN     | Mar-Dec    | M. 178   |      |         |
| 82  | Epipremnum aureum         | Moneyplant        | Araceae      | C     | P       | VC     | TY         | M. 179   |      |         |
| 83  | Eichhornia crassipes      | Kochuripana       | Pontederiaceae | H | P       | VC     | TY         | M. 180   |      |         |
| 84  | Erythrina variegata       | Mather            | Fabaceae     | S     | W       | CN     | Feb-May    | M. 181   |      |         |
| 85  | Eucalyptus citrodora      | Ukaliptas         | Myrtaceae    | T     | P       | VC     | TY         | M. 182   |      |         |
| 86  | Euphoria hirta            | Dudhiya           | Euphorbiaceae | H | W       | VC     | TY         | M. 183   |      |         |
| 87  | Ficus benghalensis        | Botgach           | Moraceae     | T     | P       | CN     | May-Aug    | M. 184   |      |         |
| 88  | Ficus hispida             | Khoksha dumur     | Moraceae     | T     | W       | VC     | Apr-Sep    | M. 185   |      |         |
| 89  | Ficus racemosa            | Dumur             | Moraceae     | T     | P       | VC     | Apr-Sep    | M. 186   |      |         |
| 90  | Ficus religiosa           | Pakur             | Moraceae     | T     | P       | CN     | Jul-Nov    | M. 187   |      |         |
| 91  | Gardenia jasminoides      | Gondhoraj         | Rubiaceae    | S     | P       | R      | Mar-Jul    | M. 188   |      |         |
| 92  | Glinus oppositifolius     | Gima shak         | Molluginaceae | H | W       | CN     | TY         | M. 189   |      |         |
| 93  | Gomphrena globosa         | Botam ful         | Amaranthaceae | H | P       | R      | TY         | M. 190   |      |         |
| 94  | Heliotropium indicum      | Hatishur          | Boraginaceae | H     | W       | VC     | TY         | M. 191   |      |         |
| 95  | Hibiscus rosa-sinensis    | Joba              | Malvaceae    | S     | P       | VC     | Jan-Dec    | M. 192   |      |         |
| 96  | Impatiens balsamina       | Dopati            | Balsaminaceae | H | P       | R      | Mar-Oct    | M. 193   |      |         |
| 97  | Imperata cylindrica       | Ullu              | Poaceae      | H     | W       | CN     | TY         | M. 194   |      |         |
| 98  | Ipomoea alba              | Dudh kolmi        | Convolvulaceae | C | W       | CN     | TY         | M. 1    |      |         |
| 99  | Ipomoea aquatica          | Kalmishak         | Convolvulaceae | C | P       | CN     | Jan-Dec    | M. 2    |      |         |
| 100 | Ipomoea batatas           | Mistialu          | Convolvulaceae | C | P       | CN     | TY         | M. 3    |      |         |
| 101 | Isachne globosa           | Jhirjhiri ghash   | Poaceae      | H     | W       | VC     | TY         | M. 4    |      |         |
| 102 | Ixora coccinia            | Rongon            | Rubiaceae    | S     | P       | CN     | TY         | M. 5    |      |         |
| 103 | Ipomoea fistulosa         | Dholkolmi         | Convolvulaceae | S | W       | CN     | TY         | M. 6    |      |         |
| No. | Scientific Name                        | Common Name | Family     | Seasonality | Months  |
|-----|---------------------------------------|-------------|------------|-------------|---------|
| 104 | Jasminum grandiflorum                 | Jui         | Oleaceae   | S W R       | Jun-Nov |
| 105 | Justicia adhatoda                    | Basok       | Acanthaceae| S W CN TY   | M. 8    |
| 106 | Justicia gendarusa                   | Jogotodon   | Acanthaceae| S P CN Dec-May | M. 9   |
| 107 | Lablab purpureus                     | Shim        | Fabaceae   | C P VC Nov-Mar | M. 10  |
| 108 | Lageria sicararia                    | Lau         | Cucurbitaceae| C P CN Feb-May | M. 11  |
| 109 | Lagerstroemia speciosa               | Jarul       | Lythraceae | T P R       | Apr-Aug |
| 110 | Lannea coromandelica                 | Jiga        | Anacardiaceae| T P CN Apr-Dec | M. 13  |
| 111 | Lawsonia inermis                     | Mehedi      | Lythraceae | S P CN Jun-Dec | M. 14  |
| 112 | Leonurus sibiricus                   | Roktodron   | Lamiaceae  | H W CN TY   | M. 15   |
| 113 | Leucas aspera                        | Setodron    | Lamiaceae  | H W R TY    | M. 16   |
| 114 | Limonia acidissima                   | Kodbel      | Rutaceae   | T P CN Feb-Dec | M. 17  |
| 115 | Litchi chinensis                     | Lichu       | Sapindaceae| T P VC Apr-Jun | M. 18  |
| 116 | Litsea monopetala                    | Pepolti     | Lauraceae  | S W R Mar-Nov | M. 19  |
| 117 | Luffa acutangula                     | Jhinga      | Cucurbitaceae| C P R Apr-Oct | M. 20  |
| 118 | Luffa cylindrica                     | Dhundol     | Cucurbitaceae| C P VC Jun-Nov | M. 21  |
| 119 | Lycopersicon esculentum              | Tometo      | Solanaceae | H P VC Mar-Dec | M. 22  |
| 120 | Mangifera indica                     | Aam         | Anacardiaceae| T P VC Jan-Jun | M. 23  |
| 121 | Mentha arvensis                      | Pudina pata | Lamiaceae  | H P CN Jul-Sep | M. 24  |
| 122 | Mimosa pudica                        | Lojjaboti   | Mimosaceae | H W CN Sep-Dec | M. 25  |
| 123 | Mimusops elengi                      | Bokul       | Sapotaceae | T P CN Mar-Jun | M. 26  |
| 124 | Mirabilis jalapa                     | Sondhamaloti| Nyctaginaceae| H P CN Mar-Nov | M. 27  |
| 125 | Mikania cordata                      | Ashamlota   | Asteraceae | C P VC TY   | M. 28   |
| 126 | Momordica charantia                  | Korolla     | Cucurbitaceae| C P CN Jul-Nov | M. 29  |
| 127 | Monochoria hastata                   | Barunkha    | Pontederiaceae| H W CN TY   | M. 30   |
| 128 | Moringa oleifera                     | Sojna       | Moringaceae| T P CN Jan-Aug | M. 31  |
| 129 | Morus indica                         | Tut         | Moraceae   | T P CN May-Jun | M. 32  |
| 130 | Murraya paniculata                   | Kamini      | Rutaceae   | S P R Mar-Jan | M. 33   |
| 131 | Musa sapientum                       | Kola        | Musaceae   | S P VC TY   | M. 34   |
| 132 | Nerium indicum                       | Korobi      | Apocynaceae| S P R Jan-Jul | M. 35  |
| 133 | Nelumbo nucifera                     | Poddo       | Nelumbonaceae| H P R Jun-Oct | M. 36  |
| 134 | Nicotiana plumbaginifolia            | Bontamak    | Solanaceae | H W R Mar-Dec | M. 37  |
| 135 | Nyctanthes arbor-tristis             | Sheuli      | Oleaceae   | S P CN Nov-Feb | M. 38  |
| 136 | Nymphphaea nouchali                  | Shapla      | Nymphaeaceae| H P CN Jun-Oct | M. 39  |
| No.  | Species Name           | Local Name | Family      | Season     | Flowering/Arrival | M. |
|------|------------------------|------------|-------------|------------|-------------------|----|
| 137  | Ocimum sanctum         | Tulshi     | Lamiaceae   | H          | P                 | CN | Jun-Feb | M. 40 |
| 138  | Oryza sativa           | Dhan       | Poaceae     | H          | P                 | VC | Jul-Oct | M. 41 |
| 139  | Oxalis corniculata     | Amrul      | Oxalidaceae | H          | W                 | CN | Sep-May | M. 42 |
| 140  | Parthenium hysterophorus | Parthenium | Asteraceae  | H          | W                 | CN | TY      | M. 43 |
| 141  | Phoenix sylvestris     | Khejur     | Arecaceae   | T          | P                 | VC | Dec-Jul | M. 44 |
| 142  | Phyllanthus reticulatus | Chitki    | Euphorbiaceae | S          | W                 | CN | Mar-Oct | M. 45 |
| 143  | Physalis minima        | Kopalfotka | Solanaceae  | H          | W                 | CN | WS      | M. 46 |
| 144  | Piper betel            | Paan       | Piperaceae  | C          | P                 | VC | Dec-May | M. 47 |
| 145  | Pisonia aculeata       | Baghachra  | Nyctaginaceae | C          | W                 | R  | TY      | M. 48 |
| 146  | Polyalthia longifolia  | Debdaru    | Annonaceae  | T          | P                 | CN | Mar-Oct | M. 49 |
| 147  | Polygonum hydropiper   | Panimorich  | Polygonaceae | H          | W                 | CN | TY      | M. 50 |
| 148  | Polygonum orientale    | Boropanimorich | Polygonaceae | H          | W                 | R  | TY      | M. 51 |
| 149  | Portulaca oleracea     | Nonta shak | Portulacaceae | H          | W                 | CN | May-Aug | M. 52 |
| 150  | Portulaca medosinensis | Timeful    | Portulacaceae | H          | P                 | CN | May-Aug | M. 53 |
| 151  | Psidium guajava        | Peyara     | Myrtaceae   | T          | P                 | VC | SRS     | M. 54 |
| 152  | Punica granatum        | Dalim      | Punicaceae  | H          | P                 | CN | Jan-Dec | M. 55 |
| 153  | Pyrus communis         | Nashpati   | Rosaceae    | S          | P                 | VR | Jul-Sep | M. 56 |
| 154  | Raphanus sativus       | Mulashak   | Brassicaceae | H          | P                 | VC | Jan-May | M. 57 |
| 155  | Rosa centifolia        | Golap      | Rosaceae    | S          | P                 | CN | May-Jul | M. 58 |
| 156  | Saccharum officinarum  | Aakh       | Poaceae     | S          | P                 | CN | TY      | M. 59 |
| 157  | Saccharum spontaneum   | Kash       | Poaceae     | S          | P                 | CN | Jun-Aug | M. 60 |
| 158  | Scorparia dulcis       | Bondhone   | Plantaginaceae | H          | W                 | CN | TY      | M. 61 |
| 159  | Senna sophera          | Kolkasunda | Fabaceae    | H          | W                 | VC | Apr-Aug | M. 62 |
| 160  | Senna alata            | Dadmardan  | Fabaceae    | S          | P                 | R  | Oct-Dec | M. 63 |
| 161  | Sesbania canabina      | Dhonche    | Fabaceae    | S          | P                 | CN | Mar-Aug | M. 64 |
| 162  | Sida cordifolia        | Berela     | Malvaceae   | H          | W                 | VC | Sep-Dec | M. 65 |
| 163  | Sesamum indicum        | Til        | Pedaliaceae | H          | P                 | CN | Feb-Oct | M. 66 |
| 164  | Solanum melongena      | Begun      | Solanaceae  | S          | P                 | VC | Oct-Mar | M. 67 |
| 165  | Solanum nigrum         | Titbegun   | Solanaceae  | S          | W                 | R  | Jan-Dec | M. 68 |
| 166  | Solanum torvum         | Bihuti     | Solanaceae  | S          | W                 | CN | Jan-Dec | M. 69 |
| 167  | Solanum tuberosum      | Golu      | Solanaceae  | H          | P                 | CN | Oct-Feb | M. 70 |
| 168  | Spondius pinnata       | Aamra      | Anacardiaceae | T          | P                 | VC | Feb-Aug | M. 71 |
| 169  | Stephania japonica     | Aknadi     | Menispermaceae | C          | W                 | R  | Jan-Dec | M. 72 |
Different plant parts of different spp. are used as medicine for treating various diseases like abscess, asthma, abortion, cough, cold, small pox, hernia, boils, earache, fever, fracture of bone, headache, heart disease, itches, jaundice, menstrual disease, paralysis, piles, skin diseases, snake bite, toothache, vomiting, worm, wound, and others (Table 3).

We also observed that 52% of the respondents were females, and 48% were males. The respondents knew 127 genera and 64 families of plants. Of the people we surveyed, 88.2% knew at least one medicinal plant, and 11.8% mentioned at least 10 different medicinal plants. The average number of medicinal plants known by the residents was 5.6.

In the study region, 87.6% of the respondents used their own plants as medicine. The most common medicinal plants used were *Mangifera indica* L. (Fam. Anacardiaceae) known as *Boroi* and *Tetrasperma eburneum* (Fam. Meliaceae) known as *Mehogoni*. The most important medicinal plants at the study area were *Gonocarpus robustus* (Fam. Moraceae), *Sesbania grandiflora* (Fam. Fabaceae), *Symphytum officinale* (Fam. Boraginaceae), *Gordonia lasianthus* (Fam. Mimosaceae), *Aegle marmelos* L. (Fam. Rutaceae), *Syzygium cumini* L. (Fam. Myrtaceae), *Ziziphus mauritiana* Lam. (Fam. Rhamnaceae), *Trichosanthes dioica* (Fam. Cucurbitaceae), *Vitis vinifera* (Fam. Vitaceae), and *Zingiber officinarum* (Fam. Zingiberaceae).

Contemporary medicines are not known to the community. On the one hand, these people are beyond the reach of contemporary medicines, and on the other hand, the market price of the majority of accessible drugs is exorbitant. As a result, they use these medicinal plants as medicine.

As Table 1 shows, the leaves are most commonly used (58.9%), followed by the stem (21.9%), petiole (14.1%), bark of stem (2.1%), and root. There are scientific names, local names, families, medicinal uses and parts of these medicinal plants. However, we have not presented them here as these are presented in Table 2.

The importance of medicinal plants is very high in the people's daily life, and it is a common belief among the community. If the plant's parts are not available, the people try to substitute it. As Table 1 shows, the leaves are most commonly used (58.9%), followed by the stem (21.9%), petiole (14.1%), bark of stem (2.1%), and root.

| Common Name | Scientific Name | Family | Plant Part | Frequency | Season | Uses |
|-------------|-----------------|--------|------------|-----------|--------|------|
| *Boroi*     | *Mangifera indica* | Anacardiaceae | Leaves | 58.9% | All year | Fever, cold, cough, snake bite, toothache, vomiting, worm, wound, and others |
| *Mehogoni* | *Sesbania grandiflora* | Fabaceae | Leaves | 21.9% | All year | Fever, cold, cough, snake bite, toothache, vomiting, worm, wound, and others |
| *Gordonia lasianthus* | *Gordonia lasianthus* | Mimosaceae | Leaves | 14.1% | All year | Fever, cold, cough, snake bite, toothache, vomiting, worm, wound, and others |
| *Aegle marmelos* | *Aegle marmelos* | Rutaceae | Leaves | 2.1% | All year | Fever, cold, cough, snake bite, toothache, vomiting, worm, wound, and others |
| *Syzygium cumini* | *Syzygium cumini* | Myrtaceae | Leaves | 58.9% | All year | Fever, cold, cough, snake bite, toothache, vomiting, worm, wound, and others |
| *Ziziphus mauritiana* | *Ziziphus mauritiana* | Rhamnaceae | Leaves | 21.9% | All year | Fever, cold, cough, snake bite, toothache, vomiting, worm, wound, and others |

3.1 Medicinally important Plants

The important medicinal plants at upazila Puthia of Rajshahi district were carried out. A total of 148 medicinal plant species belonging to 127 genera and 64 families were collected and recorded for their use in 200 ailments. The majority of the residents in the study region are poor and illiterate. On the one hand, these people are beyond the reach of contemporary medicines, and on the other hand, the market price of the majority of accessible drugs is exorbitant. As a result, they use these medicinal plants as medicine.
employed for each species. The study also recommended that the current information on local people's therapeutic use of plants could be utilized in future botanical and pharmacological research to find new medication sources.

Table 3 List of medicinal plants and their use in different ailments by the local people at Puthia of Rajshahi, Bangladesh

| SL. No. | Scientific Name               | Family          | Parts used | Medicinal use                                                                 |
|---------|-------------------------------|-----------------|------------|-------------------------------------------------------------------------------|
| 1       | Abelmoschus esculentus        | Malvaceae       | Root       | Externally, the juice of the roots is used to treat cuts, wounds, and boils.  |
| 2       | Ageratum conyzoides           | Asteraceae      | Leaves and stems | Anti-asthmatic and headache-relieving properties are found in the leaves and stems of this plant. |
| 3       | Allium cepa                   | Liliaceae       | Bulb       | Bulb is a type of bulb that has been used to treat diabetes and is said to lower blood sugar levels. |
| 4       | Allium sativum                | Liliaceae       | Bulb       | Fever, diabetes, and intestinal worms are among the ailments that garlic cloves are used to treat. |
| 5       | Andrographis paniculata       | Acanthaceae     | Whole Plant | Plant extracts are used to treat snake bites, bug bites, diabetes, dysentery, fever, and malaria, among other ailments. |
| 6       | Alternanthera sessilis         | Amaranthaceae   | Whole Plant | To check blood vomiting.                                                      |
| 7       | Amaranthus spinosus           | Amaranthaceae   | Whole Plant | Burning sensations, hallucination, leprosy, piles, bronchitis, and leucorrhoea are all treated with this plant. |
| 8       | Amaranthus viridis            | Amaranthaceae   | Whole Plant | Fever, pain, asthma, diabetes, dysentery.                                     |
| 9       | Ammannia coccinea             | Lythraceae      | Leaves     | Externally, the leaves are used to treat ringworm and parasitic skin infections. |
| 10      | Arachis hypogaea              | Fabaceae        | Seeds      | Anti-inflammatory, aphrodisiac.                                               |
| 11      | Argemone Mexicana             | Papaveraceae    | Leaves     | The leaves, in combination with black pepper, are used to treat diabetes.      |
| 12      | Asclepias curassavica         | Apocynaceae     | Whole plant | Ringworm, skin ulcers, dysentery, used as an eyewash for infected eyes.        |
| 13      | Aloe vera                     | Asphodelaceae   | Leaves     | Used to treat weakness.                                                       |
| 14      | Alocasia macrorrhizos         | Araceae         | Stem       | The sap of the stem is used to treat earache or boils in the ear. Applied externally, it is used to treat cuts. |
| 15      | Allamanda cathartica          | Apocynaceae     | Whole plant | Liver tumors, jaundice, malaria.                                               |
| 16      | Asparagus racemosus           | Liliaceae       | Roots      | Gastric ulcers, indigestion.                                                  |
| 17      | Abroma augustum               | Sterculiaceae   | Whole plant | Absence of menstrual periods, which causes abdominal pain and pain in the pelvic region, is treated with this medication. |
| 18      | Acacia auriculiformis         | Fabaceae        | Whole plant | To treat rheumatism, sore eyes, aches, allergies, itching, and rashes.         |
| 19      | Manilkara zapota              | Sapotaceae      | Fruit      | Fruit is eaten as a remedy for indigestion and diarrhoea.                     |
| 20      | Aegle marmelos                | Rutaceae        | Leaves     | Memory power is improved by frying leaves in butter.                          |
| 21      | Albizia procera               | Mimosaceae      | Bark       | Bark decoction can be used to treat pregnancy issues and stomach aches.       |
| No. | Scientific Name | Family      | Part Used | Uses                                                                 |
|-----|----------------|-------------|-----------|----------------------------------------------------------------------|
| 22  | *Alstonia scholaris* | Apocynaceae | Bark, root | Bark is used to treat rheumatism and skin diseases, and the root juice is taken with milk to treat leprosy. |
| 23  | *Annona squamosa* | Annonaceae  | Leaves    | The leaves are used to treat cancerous tumors as a vermicide.        |
| 24  | *Ancephalus chinensis* | Rubiaceae  | Leaves    | Diabetes can be cured by eating the leaves. In mouth gargle, an extract of the leaves is used. |
| 25  | *Aphananxis polystachya* | Meliaceae  | Bark      | Spleen and liver diseases, tumors, and abdominal complaints are all treated with the bark. |
| 26  | *Artocarpus heterophyllus* | Moraceae  | Leaves    | To promote suppuration, the plant's latex is applied externally to glandular swelling and abscesses. The young leaves are used to treat skin conditions. |
| 27  | *Artocarpus lacucha* | Moraceae   | Fruits    | Hair loss is reduced and hair growth is stimulated by extract from the fruit. |
| 28  | *Averrhoa carabola* | Oxalidaceae | Fruit, leaves, flowers, seed | The fruit is used to treat fevers, the leaves to treat rheumatism, the flowers to treat coughs, and the seed to treat asthma, colic, and jaundice. |
| 29  | *Azadirachta indica* | Meliaceae  | Leaves    | Chicken pox can be treated with a paste made from leaves. Our bodies are kept free of irritation by boiling water with leaves. Insects aren't attracted to rice with leaves. |
| 30  | *Bryophyllum pinnatum* | Crassulaceae | Leaves    | Blood dysentery is treated with leaf juice.                          |
| 31  | *Bambusa Arundinacea* | poecceae  | shoots    | By inducing uterine contractions, shoots are used to help with labor and placenta expulsion. |
| 32  | *Benincasa hispida* | Cucurbitaceae | Fruit    | Fruits are used in cases of jaundice, fever, and menstrual disorders. |
| 33  | *Bombax ceiba* | Bombacaceae | Leave, root, bark | Cholera, fractures, toothaches, coughs, urinary problems, influenza, and snake bites are among the conditions for which young root, gum, leaves, shoots, and bark are used. |
| 34  | *Capsicum frutescens* | Solanaceae  | Fruits    | Fruit is commonly applied to the skin for arthritis pain and swelling. |
| 35  | *Catharanthus roseus* | Apocynaceae | Whole plant | The plant is used to treat cancer and diabetes; the root paste is used to treat septic wounds; the root decoction is used to treat fever; and the leaves are used to treat menorrhagia. |
| 36  | *Celosia cristata* | Amaranthaceae | Whole plant | Plants are cooling and alexiteric, making them useful in the treatment of dysentery and strangury. The flowers are astringent and are used to treat diarrhoea and heavy menstrual periods. |
| 37  | *Centella asiatica* | Apiaceae   | Leaves    | To treat dysentery and improve memory, leaf extract is taken orally. |
| 38  | *Carissa carandas* | Apocynaceae | Fruit    | The fruit has been used for diabetes.                                |
| 39  | *Canna indica* | Cannaceae  | Root      | Amenorrhoea and gonorrhoea are treated with root.                    |
| 40  | *Clerodendrum inerme* | Verbenaceae | Leaves    | Fever, cough, skin rashes, and boils are all treated with the leaves. |
| 41  | *Clitoria ternatea* | Fabaceae   | Root      | The root is beneficial for corneal ulcers, leucoderma, and burning sensations. |
| No. | Species                          | Family         | Part(s)     | Uses                                                                 |
|-----|----------------------------------|----------------|-------------|----------------------------------------------------------------------|
| 42  | Commelina benghalensis           | Commelinaceae  | Whole plant | A paste made from the plant that can be used to treat burns.          |
| 43  | Coriandrum sativum               | Apiaceae       | Leaves      | Diabetes, hyperlipidemia, liver disease, and cancer are all treated with leaves as a herbal medicine. |
| 44  | Croton bonplandianus             | Euphorbiaceae  | Leaves      | High blood pressure can be managed with the help of leaves.           |
| 45  | Curcuma longa                    | Zingiberaceae  | Rhizome     | Scabies is treated with a rhizome paste.                             |
| 46  | Cynodon dactylon                 | Poaceae        | Whole plant | To stop bleeding, fresh juice is applied to cuts and wounds.         |
| 47  | Cyperus rotundus                 | Cyperaceae     | Tuber       | Decoction of the tuber is used in fever.                             |
| 48  | Calotropis gigantea              | Asclepiadaceae | Stem        | Dysentery, spleen complaints, convulsions, lumbago, scabies, ringworm, and pneumonia are all treated with stem bark. |
| 49  | Chrysanthamum coronarium         | Asteraceae     | Flowers     | Flowers have been used to treat a variety of ailments, including chest pain, high blood pressure, diabetes, and headaches. |
| 50  | Cajanus cajan                    | Fabaceae       | Leaf, seeds, stem | Gingivitis, stomatitis, and a toothbrush are all treated with the leaf, seeds, and young stems. |
| 51  | Corchorus capsularis             | Tiliaceae      | Root, leaves | The root has antipyretic and antidiarrheal properties, while the leaves are used to treat diabetes. |
| 52  | Clerodendrum viscosum            | Verbenaceae    | Leaves and roots | Asthma, tumors, and certain skin diseases are all treated with leaves and roots. |
| 53  | Coccinia cordifolia              | Cucurbitaceae  | Roots, leaves and fruits | diabetes, ulcers, stomach ache, skin disease, jaundice, diabetes, wound healing, ulcers, stomach ache, skin disease |
| 54  | Cucumis sativus                  | Cucurbitaceae  | Fruit       | Internally, the fresh fruit is used to treat blemished skin and heat rash. |
| 55  | Cucurbita maxima                 | Cucurbitaceae  | Seed        | Seed oil extracts are used to lower blood pressure and slow the progression of gastric and breast cancers. |
| 56  | Cuscuta reflexa                  | Cuscutaceae    | Stem        | Stem juice used in head to prevent hair fall                        |
| 57  | Carica papaya                    | Caricaceae     | Fruits      | Fruits can help avoid having a heart attack or stroke. When a patient with dengue fever was given a papaya juice extract, their platelet count and white blood cell count returned to normal within 24 hours. |
| 58  | Cinnamomum tamala                | Lauraceae      | Bark and leaves | The bark powder is used as toothpowder to treat dental caries, gingivitis, cough, and asthma. |
| 59  | Cinnamomum verum                 | Lauraceae      | Bark        | The bark powder is used to treat dental caries, gingivitis, cough, and asthma. |
| 60  | Citrus aurantifolia              | Rutaceae       | Fruit       | Juice is a stomachic, antiscorbutic, refrigerant, and antiseptic appetizer. It relieves vomiting and relieves skin irritation. |
| 61  | Citrus grandis                   | Rutaceae       | Fruit       | The fruit is beneficial in the treatment of influenza, cough, catarrh, and asthma. |
| 62  | Datura metel                     | Solanaceae     | Fruits      | Its fruit juice is applied to the scalp to treat dandruff and hair loss. |
| No. | Species                  | Family     | Part         | Use                                                                 |
|-----|--------------------------|------------|--------------|----------------------------------------------------------------------|
| 63  | Dalbergia sissoo         | Fabaceae   | Leaves      | In the acute stage of gonorrhoea, a decoction of the leaves is beneficial. |
| 64  | Dillenia indica          | Dilleniaceae | Fruit, bark  | Oral thrush and offensive odor in the mouth are treated with a decoction of the bark. To clean the scalp hair, the pulp of the fruit is mixed with water. |
| 65  | Diospyros malabarica     | Ebenaceae  | Fruit       | Diarrhoea and dysentery can be treated with ripe fruit.               |
| 66  | Eclipta alba             | Asteraceae | Whole plant  | Hair loss and graying are both treated with the entire plant.        |
| 67  | Euphorbia hirta          | Euphorbiaceae | Whole plant | Fresh milk latex is used to treat bronchial asthma, kidney stones, the common cold, and skin conditions. |
| 68  | Eichhornia crassipes     | Pontederiaceae | Flowers    | The flowers are used to treat the horses' skin.                   |
| 69  | Erythrina variegata      | Fabaceae   | Leaves      | Leaves are used to disperse venereal buboes and to relieve joint pain. |
| 70  | Elaeocarpus robustus     | Elaeocarpaceae | Leaves     | Rheumatoid arthritis is treated with leaves.                      |
| 71  | Ficus benghalensis       | Moraceae   | Leaves      | Leaves are good for ulcers.                                       |
| 72  | Ficus racemosa           | Moraceae   | Fruits      | The fruits are astringent, stomachic, and carminative, and are used to treat menorrhagia, haemoptysis, bronchitis, dry cough, and kidney and spleen diseases. |
| 73  | Ficus hispida            | Moraceae   | Whole plant | All parts of the plant are cooling, astringent to the bowels, and antidysenteric, and can be used to treat ulcers, biliousness, psoriasis, anemia, piles, jaundice, and nose and mouth haemorrhage. Diabetic patients are advised to eat fruits. |
| 74  | Glinus oppositifolius    | Molluginaceae | Whole plant | Colds and headaches are treated with the leaves. The juice is used to treat itch and other skin conditions. |
| 75  | Gomphrena globasa        | Amaranthaceae | Whole plant | Its flowers are decocted and drunk to treat asthma, bronchitis, and lucorrhoea. |
| 76  | Gardenia jasminoides     | Rubiaceae  | Fruits      | Swelling (inflammation), liver disorders, and diabetes are all treated with the fruits. |
| 77  | Heliotropium indicum     | Boraginaceae | Leaves     | Wounds, skin ulcers, and furuncles are treated with the juice extracted from the pounded leaves of the plants. |
| 78  | Hibiscus rosa-sinensis   | Malvaceae  | Flower      | Cooling and astringent, the flower buds relieve body burning, urinary discharges, seminal weakness, and piles. |
| 79  | Ipomoea fistulosa        | Convolvulaceae | Whole plant | Whole plant is used jaundice, fever, bronchitis.                     |
| 80  | Ipomoea aquatic          | Convolvulaceae | Shoot     | The young shoot is used for diabetes and fever.                      |
| 81  | Ipomoea batatus          | Convolvulaceae | Root       | Root is aphrodisiac and laxative, and it can help with strep throat and diarrhoea. |
| 82  | Ipomoea aquatica         | Convolvulaceae | Shoot     | The young shoot is used for diabetes and fever.                      |
| No. | Species | Family       | Part Used | Medical Uses                                                                                                                                 |
|-----|---------|--------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------|
| 83  | Ipomoea alba | Convolvulaceae | Whole plant | Filariasis is treated with whole herbs that are used to treat snakebite leaves.                                                               |
| 84  | Justicia adhatoda | Acanthaceae | Leaves, roots, flowers, and bark | Coughs, colds, and asthma have all been treated with the leaves, roots, flowers, and bark of this plant.                            |
| 85  | Jasminum grandiflorum | Oleaceae | Root | The plant’s root would be cooked with goat’s milk and sugar to relieve pain from urinary retention and kidney stone removal. |
| 86  | Justicia gendarusa | Acanthaceae | Leaves | Internally, a tea made from the leaves is used to treat head pains and paralysis.                                                          |
| 87  | Lagenaria siceraria | Cucurbitaceae | Fruits | In the treatment of ulcerpiles hypertension, fruits are used. Rheumatism is treated with its pulp, which is boiled in oil.                     |
| 88  | Leonurus sibiricus | Lamiaceae | Whole plant | Painful and excessive menstruation, post-partum bleeding, oedema, kidney complaints, kidney stones, eczema, and abscesses are all treated with this plant. |
| 89  | Leucas aspera | Lamiaceae | Leaves | Leaves are used in chronic rheumatism.                                                                                                       |
| 90  | Lycopersicon esculentum | Lamiaceae | Fruits | Breast, bladder, cervix, colon, and rectum cancers, as well as stomach, lung, ovaries, pancreas, and prostate cancers, are all treated with fruit. Diabetes, heart and blood vessel disease (cardiovascular disease), cataracts, and asthma are all treated with it. |
| 91  | Litsea monopetala | Lauraceae | Leaves | The leaves are used to treat arthritis as a topical medicine.                                                                                   |
| 92  | Lawsonia inermis | Lythraceae | Bark | Jaundice, leprosy, and obstinate skin diseases are all treated with bark.                                                                      |
| 93  | Luffa acutangula | Cucurbitaceae | Leaves | Splenitis, haemorrhoids, ringworms, and leprosy are treated with pounded leaves.                                                               |
| 94  | Luffa cylindrica | Cucurbitaceae | Fruits | Biliousness, spleen diseases, leprosy, piles, fever, and bronchitis are all treated with fruits.                                                 |
| 95  | Lablab purpureus | Fabaceae | Seeds | Seeds have stomachic, tonic, antispasmodic, and anti-inflammatory properties.                                                                    |
| 96  | Litchi chinensis | Sapindaceae | Fruit | Cough, stomach ulcers, diabetes, testicular swelling, epigastric and neuralgic pains are all treated with this drug.                             |
| 97  | Lannea coromandelica | Anacardiaceae | Leaves, bark, stem and gum | Lannea coromandelica's leaves, bark, stem, and gum are commonly used to treat a variety of ailments. Fever, dysentery, ulcers, inflammations, impotency, wounds, and a variety of other ailments are treated with it as folk medicine. |
| 98  | Limonia acidissima | Rutaceae | Fruit | Fever, dysentery, ulcers, inflammations, impotency, wounds, and a variety of other ailments are all treated with it as folk medicine.          |
| 99  | Mimosa pudica | Mimosaceae | Root | Used as an antidote for snake and scorpion bites.                                                                                             |
| 100 | Musa sapientum | Musaceae | Flowers | Flowers are used to treat bronchitis, dysentery, and ulcers.                                                                                  |
| No. | Species                | Family          | Part          | Uses                                                                                                   |
|-----|------------------------|-----------------|---------------|-------------------------------------------------------------------------------------------------------|
| 101 | *Mikania cordata*      | Asteraceae      | Leaves        | To stop bleeding and promote healing, fresh leaves are pounded and applied to lacerations.            |
| 102 | *Momordica charantia*  | Cucurbitaceae   | Fruits and leaves | The fruits and leaves are used to treat jaundice and other liver diseases, as well as ulcers and burns. |
| 103 | *Mangifera indica*     | Anacardiaceae   | Leaves        | Fever and toothache are treated with a decoction of the leaves.                                       |
| 104 | *Moringa oleifera*     | Moringaceae     | Seed          | The seed is used for abdominal tumors.                                                                |
| 105 | *Mimusops elengi*      | Sapotaceae      | Flowers       | Flowers are used as an expectorant, as well as to treat liver problems and asthma.                     |
| 106 | *Nelumbo nucifera*     | Nelumbonaceae   | Whole plant   | Diarrhoea, insomnia, fever, body heat imbalance, and gastritis are all treated with the whole plant as a herbal medicine. |
| 107 | *Nymphaea nouchali*    | Nymphaeaceae    | Rhizomes      | Powdered rhizomes are used to treat piles, dysentery, and dyspepsia.                                   |
| 108 | *Nyctanthes arbor-tristis* | Oleaceae     | Fruit, flower | Dried fruits are taken orally to relieve cough; a decoction of dried flowers is mixed with jaggery and given to females as an antifertility agent. |
| 109 | *Nerium indicum*       | Apocynaceae     | Root          | Externally, root and root bark are applied as a paste to cancer.                                       |
| 110 | *Ocimum sanctum*       | Lamiaceae       | Leaves        | Leaves are used in coughs, colds.                                                                     |
| 111 | *Oxalis corniculata*   | Oxalidaceae     | Whole plant   | Juice of the plant cures piles.                                                                       |
| 112 | *Physalis minima*      | Solanaceae      | Whole plant   | Herb paste is said to be used to treat ear problems.                                                   |
| 113 | *Polygonum hydropiper* | Polygonaceae    | Leaves and seeds | The leaves and seeds are used in a traditional cancer treatment.                                       |
| 114 | *Portulaca oleracea*   | Portulacaceae   | Whole plant   | Cardio-vascular diseases, dysuria, hematuria, gonorrhoea, dysentery, sore nipples, and mouth ulcers are all treated with it. |
| 115 | *Punica granatum*      | Punicaceae      | Leaves, stem  | Insomnia can be relieved by the leaves, and abdominal pain can be relieved by the young stem.          |
| 116 | *Piper betel*          | Piperaceae      | Leaves        | Carminative, stomachic, stimulant, astringent, and antiseptic properties of the leaves are used to treat indigestion, constipation, congestion, coughs, and asthma. |
| 117 | *Polyalthia longifolia*| Annonaceae      | Bark          | Fever, skin diseases, hypertension, and helminthiasis are all treated with bark.                       |
| 118 | *Psidium guajava*      | Myrtaceae       | Root          | Diarrhoea and dysentery are treated with a root paste mixed with water.                                |
| 119 | *Raphanus sativus*     | Brassicaceae    | Seed          | Constipation is treated with dried ripe seed.                                                          |
| 120 | *Senna sophera*        | Fabaceae        | Root          | The roots are used to make a decoction that is drunk to relieve painful menstruation and given to children to stimulate their nervous system. |
| 121 | *Sida cordifolia*      | Malvaceae       | Leaves        | Fevers and delirium can be treated with a tea made from the leaves.                                     |
| 122 | *Senna alata*          | Fabaceae        | Whole plant   | Typhoid, diabetes, malaria, and asthma have all been treated with the plant in the past.                |
| No. | Species                  | Family      | Part Used       | Uses                                                                                                                                 |
|-----|--------------------------|-------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------|
| 123 | Solanum nigrum          | Solanaceae  | Whole plant     | The plant’s juice is used to treat ulcers and other skin conditions. Its root juice is used to treat asthma and whooping cough.         |
| 124 | Solanum melongena       | Solanaceae  | Whole plant     | Diabetes, cholera, bronchitis, dysuria, dysentery, otitis, toothache, skin infections, and asthenia are all treated with a decoction of the plant as powder or ash. |
| 125 | Solanum torvum          | Solanaceae  | Whole plant     | Fevers, coughs, asthma, chest ailments, sore throats, rheumatism, dyspnoea, stomach aches, and gonorrhoea are all treated with the plant’s juice. |
| 126 | Saccharum officinarum   | Poaceae     | Stem            | In Indian sub-continent plant juice is commonly used to treat jaundice.                                                              |
| 127 | Spondias pinnata        | Anacardiaceae| Bark            | The bark is used to treat sore joints, as a refrigerant, and as a tonic antiseptic.                                                  |
| 128 | Streblus asper          | Moraceae    | Leaves          | Leaves are used as a galactagogue and to treat urinary inflammation.                                                                 |
| 129 | Swietenia mahagoni      | Meliaceae   | Seed            | Seed is used to reduce diabetes.                                                                                                     |
| 130 | Syzygium cumini         | Myrtaceae   | Leaves, fruits  | Dermopathies, constipation, leucorrhoea, and diabetes are treated with the leaves, while pharyngitis is treated with the fruits.    |
| 131 | Syzygium jambos         | Myrtaceae   | Leaves, seeds, bark | The leaves are decocted and used as a diuretic as a treatment for rheumatism and sore eyes. The seeds are used to cure diarrhoea, dysentery, diabetes, and cataracts. A bark decoction can be used to treat asthma and bronchitis. |
| 132 | Stephania japonica      | Menispermaceae | Whole plant, leaves, root | Skin illnesses, asthma, cough, and renal disorders are treated with the juice of the whole plant. Fever, diarrhea, and snake bites are treated using the roots. |
| 133 | Tagetes patula          | Asteraceae  | Leaves          | Leaves are used for healing cuts and wounds.                                                                                          |
| 134 | Typhonium trilobatum    | Araceae     | Petiole          | Poisonous insect bite.                                                                                                               |
| 135 | Trapa bispinosa         | Trapaceae   | Fruits and seed | The powder of the fruits and seed is used as a nutritional supplement to treat muscle weakness.                                     |
| 136 | Tabernaemontana divaricata | Apocynaceae | Whole plant     | Plant is used for skin disorders like psoriasis, eczema, dermatitis, acne.                                                           |
| 137 | Trichosanthes arguina   | Cucurbitaceae | Fruits         | Fruits are utilised in treating blood pressure.                                                                                       |
| 138 | Trichosanthes dioica    | Cucurbitaceae | Leaves and fruits | Leaves and fruits find mention for treating alcoholism and jaundice.                                                                 |
| 139 | Tamarindus indica       | Caesalpiniaceae | Pulp of the ripe fruit | Pulp of the ripe fruit is a household remedy for fever, dyspepsia, gastritis, dysentery and diarrhoea                                  |
| 140 | Tectona grandis         | Verbenaceae  | Flowers         | Flowers are useful in bronchitis, biliousness, urinary discharges.                                                                  |
| 141 | Terminalia arjuna       | Combretaceae | Bark            | Bark powder protects the heart due to its cardioprotective property.                                                                 |
| 142 | Terminalia chebula      | Combretaceae | Fruit           | Fruit powder proves to be very useful for hair loss                                                                                   |
| 143 | Vitex negundo           | Verbenaceae  | Leaves          | Leaves are mostly used for the treatment of eye diseases.                                                                           |
|   | Species       | Family  | Part Used          | Uses                                                                 |
|---|---------------|---------|--------------------|----------------------------------------------------------------------|
| 144| *Vitis trifolia* | Vitaceae| Whole plant       | Whole plant is used as diuretic, in tumors, neuralgia and splenopathy. |
| 145| *Vigna sinensis* | Fabaceae| Seeds             | Seeds are appetizer, prescribed in liver complaints with jaundice.     |
| 146| *Vitis vinifera* | Vitaceae| Fruits            | Fruits were used for the treatment of constipation, cancer, cholera, smallpox, nausea, skin and eye infections as well as kidney and liver diseases. |
| 147| *Xanthium indicum* | Asteraceae| Whole plant      | The plant has been used to treat a variety of ailments, including arthritis, nasal problems, and cancer prevention. |
| 148| *Zingiber officinale* | Zingiberaceae| Rhizome          | The rhizome of the plant has been used in the treatment of colds, asthma, and bronchitis. |

**Figure 2** Habit diversity of the recorded species

**Figure 3** Percentage (%) of status of occurrence
Figure 4 Percentage (%) of Wild and Planted plant species

Figure 5 Number of plant parts used for medicinal purpose showed in pie chart

4. Discussion

A tentative inventory of angiosperm flora was undertaken at the Puthia upazila of Rajshahi district, Bangladesh, from October 2019 to December 2021. A total of 194 species were discovered, divided into 162 genera and 72 families (Table 1) the data gathered is comparable to the findings of other Bangladeshi investigations. In the Khagrachhari district, 243 species were found, divided into 195 genera and 95 families [10]. In Lawachara National Park, 374 species were identified, divided into 264 genera and 84 families [61]. In the Runctia Sal Forest, 153 species were found, divided into 120 genera and 52 families [58]. In Habiganj district, there are 245 species belonging to 183 genera and 72 families [64]. In Rajshahi district, 425 species from 321 genera and 108 families have been identified [32]. The Bangladesh Police Academy in Rajshahi has a total of 302 species belonging to 243 genera and 84 families [46]. There is no published information on the diversity of angiosperm plant species at Puthia upazila of Rajshahi, Bangladesh.
5. Conclusion

The present paper focused on diversity of angiosperms growing throughout the Puthia upazila of Rajshahi was documented. A total of 194 species under 162 genera and 72 families were recorded. Habit analysis shows that herbs, shrubs, climbers and trees are represented by 76, 37, 26 and 55 species, respectively. Out of the recorded species, 148 medicinal plant species belonging to 127 genera and 64 families were collected and recorded for their use in 200 ailments. It was concluded that overutilization, over the collection, overexploitation, habitat degradation, overharvesting, deforestation, population explosion and overgrazing are the conspicuous biotic stresses which severely threatened the flora in the area which affect the population sustainability on crust of the earth.

Compliance with ethical standards

Acknowledgments

The authors are grateful to the local people in Puthia upazila of Rajshahi, Bangladesh for their co-operation and help during the research work. The authors are also grateful to the Ministry of Science and Technology (MoST), Government of the Peoples Republic of Bangladesh for financial support to complete this research work.

Disclosure of conflict of interest

The authors declare that there are no conflicts of interests.

References

[1] Ahmed ZU, Begum ZNT, Hassan MA, Khondker M, Kabir SMH, Ahmad M, Ahmed ATA, Rahman AKA, Haque EU(Eds). Encyclopedia of Flora and Fauna of Bangladesh. Vols. 6-10. Asiatic Society of Bangladesh, Dhaka. 2008-2009.
[2] Ara T, Khokan EH, Rahman AHMM. Taxonomic Studies on the Family Solanaceae in the Rajshahi University Campus. Journal of Biodiversity and Environmental Sciences. 2011; 4(1): 29-34.
[3] Bakar S, Faria LA, Rani R, Rahman AHMM. Diversity of vascular weeds species in six selected crop fields of Chuadanga district, Bangladesh. Species. 2021; 22(69): 36-42.
[4] Debnath A, Rahman AHMM. A Checklist of Angiosperm Taxa at the Village Pandit Para under Palash Upazila of Narsingdi District, Bangladesh with Special Importance to Medicinal Plants. Species. 2017; 18(58): 23-41.
[5] Easmin MF, Faria LA, Rani R, Rahman AHMM. Asteraceae: A Taxonomically and Medicinally Important Sunflower Family. American International Journal of Biology and Life Sciences. 2021; 3(1): 1-17.
[6] Hooker JD. Flora of British India. Vols. 1-7. Publisher: L. Reeve and Co. Ltd. London, 1877.
[7] Huq AM. Plant Names of Bangladesh. Publisher: Bangladesh National Herbarium, BARC, Dhaka, Bangladesh. 1986.
[8] Islam M, Rahman AHMM. A Preliminary Taxonomic Account of the Family Araceae in Rajshahi District of Bangladesh. Discovery. 2017; 53(253): 30-48.
[9] Islam MJ, Rahman AHMM. An Assessment of the family Asteraceae at Shadullapur Upazila of Gaibandha District, Bangladesh with Particular Reference to Medicinal Plants. Journal of Progressive Research in Biology, 2016; 2(2): 108-118.
[10] Islam MR, Uddin MZ, Hassan MA. An Assessment of the Angiosperm Flora of Ramgarh Upazilla of Khagrachhari District, Bangladesh. J. Plant Taxon. 2009; 16(2): 115-140.
[11] Ismail M, Rahman AHMM. Taxonomic Study and Traditional Medicinal Practices on Important Angiosperm Plant Species in and around Rajshahi Metropolitan City. International Journal of Botany Studies. 2016; 1(3): 33-39.
[12] Keya MA, Rahman AHMM. Angiosperm Diversity at the Village Sabgram of Bogra, Bangladesh with Emphasis on Medicinal Plants. American Journal of Plant Biology. 2017; 2(1): 25-34.
[13] Khatun MA, Rahman AHMM. Angiosperm Weeds Diversity and Medicinal Uses in Seven Selected Maize Fields at Puthia Upazila of Rajshahi District, Bangladesh. Plant Environment Development. 2018; 7(1): 1-9.
[14] Kona S, Rahman AHMM. An Assessment of Angiosperm Diversity at Mahadebpur Upazila of Naogaon District, Bangladesh. International Journal of Advanced Research. 2015; 3(10): 1067-1086.

[15] Lindley J. Introduction to the Natural System of Botany. Longman. London, UK. 1830.

[16] Nahar J, Rahman AHMM. Floristic Diversity of Naogaon Sadar, Bangladesh with Special Reference to Medicinal Plants. Discovery. 2016; 52(252): 2352-2368.

[17] Nahar J, Rahman AHMM. Study of Angiosperm Plant Species at Sadar Upazila of Naogaon District, Bangladesh. Discovery. 2016; 52(250): 1963-1978.

[18] Pasha MK, Uddin SB. Dictionary of Plant Names of Bangladesh (Vascular Plants). Janokalyan Prokashani. Chittagong, Dhaka, Bangladesh. 2013.

[19] Prain D. Bengal Plants. Vols. 1-2. Botanical Survey of India. Calcutta, India. 1903.

[20] Rahman AHMM, Khatun MA. Leafy Vegetables in Chapai Nawabganj District of Bangladesh Focusing on Medicinal Value. Bangladesh Journal of Plant Taxonomy. 2020; 27(2): 359-375.

[21] Rahman AHMM, Akter M. Taxonomy and Medicinal Uses of Euphorbiaceae (Spurge) Family of Rajshahi, Bangladesh. Research in Plant Sciences. 2013; 1(3): 74-80.

[22] Rahman AHMM, Debnath A. Angiosperm Diversity of Pandit Para Village under Palash Upazila of Narsingdi District, Bangladesh. Frontiers of Biological & Life Sciences. 2014; 2(4): 98-105.

[23] Rahman AHMM, Gulshana MIA. Taxonomy and Medicinal Uses on Amaranthaceae Family of Rajshahi, Bangladesh. Applied Ecology and Environmental Sciences. 2014; 2(2): 54-59.

[24] Rahman AHMM, Jamila M. An Assessment of Angiosperm Taxa at the village Jamtala under sadar Upazila of Chapai Nawabganj District, Bangladesh. Research & Reviews: Journal of Botanical Sciences. 2015; 4(4): 13-22

[25] Rahman AHMM, Jamila M. Angiosperm Diversity at Jamtala Village of Chapai Nawabganj District, Bangladesh with Emphasis on Medicinal Plants. Research in Plant Sciences. 2016; 4(1): 1-9.

[26] Rahman AHMM, Keya MA. Assessment of Angiosperm Flora at the Village Sabgram under Sadar Upazila of Bogra District, Bangladesh. International Journal of Advanced Research. 2014; 2(11): 443-458.

[27] Rahman AHMM, Mahfuza A. Taxonomy and Traditional Medicinal Uses of Apocynaceae (Dogbane) Family of Rajshahi District, Bangladesh. Research & Reviews: Journal of Botanical Sciences. 2015; 4(4): 1-12.

[28] Rahman AHMM, Mamun MAA. Investigation and Taxonomic Studies on the family Fabaceae (Weeds) at Rajshahi University Campus. Species. 2017; 18(58): 42-56.

[29] Rahman AHMM, Parvin MIA. Taxonomic Studies on the family Fabaceae (Weeds) at Rajshahi University Campus. Plant. 2015; 3(3): 20-25.

[30] Rahman AHMM, Rahman MM. An Enumeration of Angiosperm weeds in the Paddy field of Rajshahi, Bangladesh with emphasis on medicinal Plants. Journal of Applied Science And Research. 2014; 2(2): 36-42.

[31] Rahman AHMM, Rojonigondha. Taxonomy and Traditional Medicine Practices on Malvaceae (Mallow Family) of Rajshahi, Bangladesh. Open Journal of Botany. 2014; 1(2): 19-24.

[32] Rahman AHMM. Angiospermic flora of Rajshahi district, Bangladesh. American Journal of Life Sciences. 2013; 1(3): 105-112.

[33] Rahman AHMM. Graveyards angiosperm diversity of Rajshahi city, Bangladesh with emphasis on medicinal plants. American Journal of Life Sciences. 2013; 1(3): 98-104.

[34] Rahman AHMM. A Checklist of Common Angiosperm Weeds of Rajshahi District, Bangladesh. International Journal of Agricultural and Soil Science. 2013; 1(1): 1-6.

[35] Rahman AHMM. Assessment of Angiosperm Weeds of Rajshahi, Bangladesh with emphasis on medicinal plants. Research in Plant Sciences. 2013; 1(3): 62-67.

[36] Rahman AHMM. Study of Species Diversity on Cucurbitaceae family at Rajshahi Division, Bangladesh. Journal of Plant Sciences. 2013; 1(2): 18-21.

[37] Rahman AHMM. Systematic studies on Asteraceae in the northern region of Bangladesh. American Journal of Life Sciences. 2013; 1(4): 155-164.
Rahman AHMM. Systematic studies on Cucurbitaceae family at Rajshahi division, Bangladesh. Plant. 2013; 1(2): 10-15.

Rahman AHMM. Annotated List in the Graveyards Trees of Rajshahi City, Bangladesh. Discovery. 2017; 53(254): 107-116.

Rahman AHMM. A Preliminary Assessment of Angiospermic Flora in and around Rajshahi metropolitan city, Bangladesh. Applied Ecology and Enviromental Sciences. 2021; 9(4): 440-449.

Rahman AHMM, Afzana MW, Islam AKMR. Taxonomy and Medicinal Uses on Acanthaceae Family of Rajshahi, Bangladesh. Journal of Applied Science And Research. 2014; 2(1): 82-93.

Rahman AHMM, Akter S, Rani R, Islam AKMR. Taxonomic Study of Leafy Vegetables at Santahar Pouroshova of District Bogra, Bangladesh with Emphasis on Medicinal Plants. International Journal of Advanced Research. 2015; 3(5): 1019-1036.

Rahman AHMM, Alam MS, Nesa MN, Islam AKMR, Rahman MM. Study of Species Diversity on the family Asteraceae (Compositae) of the Rajshahi Division. Research Journal of Agriculture and Biological Sciences. 2008; 4(6): 794-797.

Rahman AHMM, Alam MS, Khan SK, Ahmed F, Islam AKMR, Rahman MM. Taxonomic Studies on the family Asteraceae (Compositae) of the Rajshahi Division. Research Journal of Agriculture and Biological Sciences. 2008; 4(2): 134-140.

Rahman AHMM, Anisuzzaman M, Ahmed F, Zaman ATMN, Islam AKMR. A Floristic Study in the Graveyards of Rajshahi City. Research Journal of Agriculture and Biological Sciences. 2007; 3(6): 670-675.

Rahman AHMM, Ferdous Z, Islam AKMR. A Preliminary Assessment of Angiosperm Flora of Bangladesh Police Academy. Research in Plant Sciences. 2014. 2(1):9-15.

Rahman AHMM, Ferdows Z, Nitu SK, Islam AKMR. Herbaceous Plant Species in and around Rajshahi Metropolitan City, Bangladesh. International Journal of Advanced Research. 2015; 3(5): 1002-1018.

Rahman AHMM, Hossain MM, Islam AKMR. Taxonomy and Medicinal Uses of Angiosperm weeds in the wheat field of Rajshahi, Bangladesh. Frontiers of Biological and Life Sciences. 2014; 2(1):8-11.

Rahman AHMM, Islam AKMR, Naderuzzaman ATM. Studies on the herbaceous plant species in the graveyard areas of Rajshahi city. Plant Environment Development. 2007; 1(1): 57-60.

Rahman AHMM, Islam AKMR, Naderuzzaman ATM, Hossain MD, Afza R. Studies on the Aquatic Angiosperms of the Rajshahi University Campus. Research Journal of Agriculture and Biological Sciences. 2007; 3(5): 474-480.

Rahman AHMM, Sultana Z, Rani R, Islam AKMR. Taxonomic Studies of the Family Commelinaceae at Rajshahi, Bangladesh. International Journal of Advanced Research. 2015; 3(5): 978-989.

Roy TR, Rahman AHMM. Inventory of Angiosperm Diversity in Ishwardi Pouroshova of Pabna District, Bangladesh. Discovery Science. 2018; 14: 9-22.

Roy TR, Sultana RS, Rahman AHMM. Taxonomic study and Medicinal Uses of Verbenaceae Family of Rajshahi District, Bangladesh. Journal of Preegressive Research in Biology. 2016; 3(1): 160-172.

Sarker AK, Rahman AHMM. A Preliminary Checklist of Angiosperm Flora at Katakhali Pouroshova of Rajshahi, Bangladesh. Discovery. 2016; 52(251): 2127-2140.

Sarker P, Rahman AHMM. Angiosperms in Gobindaganj Upazila of Gaibandha District, Bangladesh. Bangladesh Journal of Plant Taxonomy. 2019; 26(2): 285-298.

Sarker U, Rahman AHMM. Diversity of Weed Species in Mustard Fields of Manda Upazila of Naogaon District, Bangladesh. Species. 2017; 18(59): 133-145.

Sultana R, Rahman AHMM. Convolvulaceae: A Taxonomically and Medicinally Important Morning Glory Family. International Journal of Botany Studies. 2016; 1(3): 47-52.

Tutul E, Uddin MZ, Rahman MO, Hassan MA. Angiospermic Flora of Runctia Sal Forest, Bangladesh. II. Magnoliopsida (Dicots). Bangladesh J. Plant Taxon., 2010. 17(1): 33-54.

Uddin K, Rahman AHMM, Islam AKMR. Taxonomy and Traditional Medicine Practices of Polygonaceae (Smartweed) Family at Rajshahi, Bangladesh. International Journal of Advanced Research., 2014; 2(11): 459-469.
[60] Uddin MZ, Alam MF, Rahman MA, Hassan MA. Diversity in Angiosperm Flora of Teknaf Wildlife Sanctuary, Bangladesh. Bangladesh Journal Plant Taxonomy. 2013; 20(2): 145-162.

[61] Uddin MZ, Hassan MA. Angiosperm Diversity of Lawachara National Park (Bangladesh): A Preliminary Assessment. Bangladesh J. Plant Taxon., 2010; 17(1): 9-22.

[62] Zahra F, Rahman AHMM. Documentation of Angiosperm Weed Flora in and around Rajshahi Metropolitan City, Bangladesh. Discovery Agriculture. 2018; 4: 33-46.

[63] Bangladesh Population Census (BPC). Bangladesh Bureau of Statistics; Cultural survey report of Gobindhaganj Upazila 2007.

[64] Arefin MK, Rahman MM, Uddin MZ, Hassan MA. Angiosperm Flora of Satchari National Park, Habiganj, Bangladesh. Bangladesh J. Plant Taxon. 2011; 18(2): 117--140.