Furthermore, we compared the results of the proposed EffiMob-Net model with the existing state-of-the-art models. Most existing studies used pretrained models individually, although some studies combined DL with conventional ML methods. Existing studies' approaches adopted different architecture designs, implementation strategies, and dataset sizes, but the attempts used CNN and pretrained models for the same tasks of detecting and classifying tomato leaf diseases (discussed in detail in the related work section). Moreover, for comparison purposes, we discussed only those models that achieved the highest accuracy results in the existing studies rather than all proposed models. Table S1 shows the comparison of the proposed hybrid EffiMob-Net model with the models that achieved the highest accuracy rates in existing studies. For example, [2] used a plant village dataset containing 11 classes of tomato leaf disease for training the DL model and achieved the highest accuracy rate of the proposed lightweight CBAM attention module-based ResNet20, with 99.69%. [4] utilized 1152 images from a plant village dataset and concluded that the highest accuracy results achieved by DLMLR reached 97% for 6 classes. A 10-class plant village dataset was used by [5] to diagnose tomato leaf disease, which showed that SE-ResNet50 was the best performing model, achieving 96.81% accuracy. In addition, 17,500 images including 10 classes from a plant village dataset was utilized by [47] to train the CNN model and reached the highest accuracy rate of 91.2%. A study conducted by [8] utilized 18,161 images distributed among 10 classes from the same dataset and yielded 99.89% accuracy. The high-performance model MobileNetv3 Large with Adagrad optimizer proposed by [21] achieved 99.81% accuracy when applied to a dataset comprising 10 classes of tomato leaf diseases. Table S1 presents detailed comparisons of the proposed hybrid EffiMob-Net with other state-of-the-art methodologies of the previous work. This is worth mentioning that these finding (Table S1) should only be utilized as a guide because the approaches and measures used to evaluate these methods differ, making a precise comparison difficult.

Table S1. Comparison of proposed hybrid EffiMob-Net model with existing models.

Ref. #	Dataset	No. of Images	Method(s)	No. of classes	Accuracy (%)
[2]	Plant village and collected	19,510	Lightweight CBAM attention module-based ResNet20	11	99.69
[4]	Plant village	1152	DL + ML (multinomial LR)	6	97
[5]	Plant village	4585	SE-ResNet50	10	96.81
[47]	Plant village	17,500	CNN	10	91.2
[8]	Plant village	18,161	EfficientNet-B4 with segmentation	10	99.89
[21]	Plant village	16,004	MobileNetv3 Large with Adagrad optimizer	10	99.81
[22]	TEBD	---	CNN	2	98.10

[23]	TEBD (IARI)	600	Optimized Vgg16	2	99
[25]	Plant village and Mendeley	19,372	Xception with Adam optimizer	11	99
[13]	Plant village	18,160	ResNet34	10	97.7
[26]	Plant village and synthetic images	---	DenseNet121	5, 7, 10	99.51, 98.65, 97.11
[11]	Plant village and private	23,716	DenseNet121	24	95.31
[27]	Plant village	---	Vgg16	10, 2	99, 100
[19]	---	1000	CNN-SVM	8	92.6
[30]	Plant village	13,262	AlexNet	6	97.49
[31]	Plant village	14,828	CNN	9	99.18
[9]	Plant health	5,550	ResNet	9	97.28
[32]	Plant village	9,000	CNN	6	99.84
Proposed	**Plant village**	**32,535**	**EffiMob-Net**	**11**	**99.92**

Although accurate comparison with existing methods is difficult due to differences in architectures, parameters, and datasets used, the results of Table S1 demonstrate high performance of the proposed hybrid EffiMob-Net with a classification error of only 0.08%, which is negligible.