DESCRIPTIVE ANALYSES ON THE NEW BIOTYPES OF WEEDY RICES IN SELANGOR NORTH-WEST PROJECT, MALAYSIA

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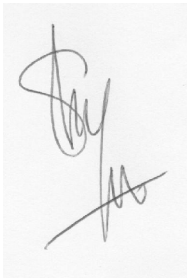
DECLARATION

بسم الله الرحمن الرحيم

In the name of Allah, the Most Gracious, the Most Merciful.

I hereby declare that all the work in this thesis is the results of my own data, effort and observation and all references sited have been acknowledged herewith. I also affirm that this thesis has never been submitted for any other degree somewhere else.



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In memories;

MISPAN BIN ABU

SALMAH BINTI SALIM

AL-FATIHAH

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TITLE: DESCRIPTIVE ANALYSES ON THE NEW BIOTYPES OF WEEDY RICES IN SELANGOR NORTH-WEST PROJECT, MALAYSIA

ABSTRACT

Weedy rice (*Oryza sativa* . L) is a big threat in rice industry all over the world an also in Malaysia. The infestation of weedy rice caused a big loss to production and yield to the rice farmers. Study in Selangor North West Project for three consecutive seasons in 2006 to 2008 has found a new variety or biotype of weedy rice which has infested rice granaries here. In general, weedy rice is taller than any cultivated rice and it is very to be identified. However, this new biotype of weedy rice (NBWR) stands as tall as any cultivated rice namely MR220 and MR219. As such these NBWR accessions stand among equals morphologically *vis-à-vis* the commercial varieties of rice *i.e.* MR220, MR219 and MR232. Spatial distribution analysis through quantitative index, Variance to mean ratio and Lloyd patchiness index, has found that most NBWR accessions were distributed in clump or cluster and only some of them were distributed randomly. From this Fig., Acc 8 has the highest population and was most dominant accession while Sawah Sempadan was the worst farm block infested by NBWR compared to other farms. Descriptive analysis has observed that NBWR accessions have close morphological traits and really mimic the cultivated rice *viz.* MR220, MR219 and MR84. Multivariate analysis has resulted some characters and traits which can be used to differentiate between MR220 and NBWR accessions. Results show that qualitative characters such as panicle type and pericarp colour can be most important characters to differentiate these plants. Seed germination and growth pattern test have found NBWR was easy to germinate in control environment. However, a few factors seem to disturb the germination. NBWR seeds cannot be germinated in high temperature over 40^{o}C and low temperature below 20^{o}C; soil depth below 5cm and water level below 7cm. On the other hand light does not affect the

germination. Competition between NBWR and cultivated rice *var.* MR220 has found the relationship between these two plants. Results found that MR220 did not affected by the existence of NBWR but not to NBWR. NBWR was affected quite badly in any density regime. This has concluded that the existence of NBWR will not give any problem in rice field. Path analysis has found the relationship between rice density and weed density in affecting the yield components. High density in weed and rice can affect the yield components for both MR220 and NBWR. However, the difference in yield components will not give any obvious impact to the fecundity of rice and weed.

TAJUK: ANALISIS DISKRIPTIF KE ATAS BIOTIP BARU PADI ANGIN DI PROJEK BARAT LAUT SELANGOR, MALAYSIA.

ABSTRAK

Padi angin (*Oryza sativa* L.) merupakan satu ancaman yang amat besar di dalam industri padi seluruh dunia dan tidak ketinggalan juga di Malaysia. Serangan padi angin ini menyebabkan kerugian yang amat besar kepada petani. Kajian di Projek Barat Laut selangor untuk tiga musim berturut-turut pada 2006 hingga 2008 mendapati ada satu varieti atau biotaip baru padi angin yang menyerang kawasan tanaman padi di sini. Secara am, padi angin mempunyai ketinggian jauh melebihi padi biasa dan mudah untuk dikenal pasti namun varieti baru ini tumbuh sama tinggi dengan padi tanaman seperti varieti MR220 dan MR219. Ini menimbulkan satu fenomena bahawa padi angin kini "*berdiri sama tinggi dan duduk sama rendah"* dengan mana-mana varieti padi komersil seperti MR220, MR219 dan MR232. Kajian taburan melalui indeks kuantitatif, nisbah varien kepada purata dan indeks kerawakan Lloyd mendapati kebanyakan varieti baru padi angin ini (NBWR) adalah tertabur secara berkelompok dan sebahagian kecil adalah secara rawak. Daripada jumlah ini, Acc 8 merupakan NBWR yang paling banyak dan dominan di sini manakala Sawah Sempadan merupakan kawasan yang paling teruk di serang oleh NBWR berbanding kawasan tanaman lain. Kajian deskripsi mendapati bahawa NBWR mempunyai morfologi yang amat mirip berbanding padi biasa. Sebanyak 16 assesi telah dikenal pasti dan kesemuanya amat sukar dibezakan berbanding padi biasa. Analisis multivariate mendapati beberapa ciri bagi padi yang dapat dijadikan sebagai panduan bagi membezakan antara padi angin dan padi biasa. Keputusan mendapati, ciri-ciri kualitatif seperti bentuk panikel dan warna perikap menjadi ciri penting dalam perbandingan kedua pokok ini. Kajian percambahan biji benih dan corak pertumbuhan NBWR pula mendapati bahawa benih NBWR amat mudah bercambah dalam keadaan biasa. Walau bagaimanpun beberapa

faktor telah dikenalpasti dapat membantutkan percambahan biji benih. Percambahan NBWR tertanggu dengan perubahan suhu yang melebihi 40^{o}C dan kurang daripada 20 ^{o}C; kedalaman tanah melebihi 5cm dan kedalaman air lebih daripada 7cm. Namun begitu, cahaya tidak menjadi faktor percambahan kepada NBWR. Persaingan di antara NBWR dan padi biasa *var.* MR220 mendapati ada saling kaitan antara satu sama lain jika diletakkan bersama. Walau bagaimanapun, padi MR220 didapati tidak terjejas di dalam persaingan ini jika dibandingkan dengan padi angin NBWR. Dalam apa jua keadaan kepadatan, NBWR di dapati amat terkesan dengan kehadiran MR220. Ini menyimpulkan bahawa kehadiran NBWR di dalam tanaman sepatutnya tidak memberi sebarang masalah dalam penghasilan hasil tanaman.Ujikaji Path analisis mendapati saling kaitan antara kepadatan padi dan rumpai mempengaruhi hasil tanaman. Kepadatan yang tinggi dalam kehadiran kedua-dua padi dan rumpai menjejaskan komponen hasil bagi kedua-dua tanaman. Walau bagaimanapun, perubahan komponen-komponen hasil ini tidak memberi impak yang tinggi kepada komponen kesuburan.