RICOWAS

"Samar da Ingantaccen Tsarin Nomar Shinkafa a Afirka ta Yamma"

(Benin, Burkina Faso, Cote d'Ivoire, Gambia, Ghana, Guinea Conakry, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo).

KUNDIN JADAWALIN HORARWA DA ILAMANTARWA

BAYAR DA HORO GA MANOMA A GAME DA ALKINTA KASAR NOMA DA KUMA RUWA (SLWM)

………….Inganta sahihiyar tsarin nomar shinkafa daidai da juyin yanayi

Ban ruwa da rashin ban ruwa loto-loto

Nuwamba, 2024

GABATARWA

Fiƙirar da ke tattare da Ɗorewa

- **Ɗorewa** na nufin irin yadda akan iya fuskantar buƙatun da ake da su a yanzu ba tare da yin sakacin tsumayar muradun abubuwan da za faru a nan gaba ba Hakan wata kariya ce daga taɓarɓarewar kyakkyawar yanayi domin samar da daidaito ga muhalli.
- Juriya kan daƙile taɓarɓarewar albarkatun Ƙasa, domin ci gaba da amfana da shi na tsawon lokaci.
- **Albarkatun Ƙasa:** Waɗannan su ne albarkatun kasa waɗanda ba ƙoƙarin ɗan'adam ne ya samar da su ba. Waɗannan albarkatun sun hada da ƙasa da ruwa da iska.
- A fannin Noma, 'Ɗorewa', ita ce, ƙwazon kariya da haɓɓaka gonaki na tsawon lokaci ta hanyar ɗabbaƙa yin amfani da dabarun inganta gonaki da ƙasar shuka.

Dauwamammiyar Hanyar Alkinta Ƙasar Noma da kuma Ban Ruwa (SLWM):

- **Alkinta ƙasar noma da kuma ban ruwa** wasu sabbin dabarun noma ne da ke da Muradin inganta muhalli da ruwa tare da kuma wasu albarkatun domin cim ma buƙatun ɗan'adam kan tabbatar da ƙarko na tsawon lokaci muhalli, tsirrai da kuma ingancin rayuwa.
- Muhimmancin ɗabbaka tsarin ayyukan noma na SLWM su ne kamar haka: -
  - Kariya ga gonakin da ke fuskantar barazana;
  - Hanawa tare da rage lalacewar gonaki;
  - Maido da kuzarin ƙasar gonar da ta lalace;
  - Magance zaizayewar ƙasa;
  - Inganta tattalin dausayin noma;
  - Alkinta takin gida na ƙasar gona;
  - Ingantawa tare da haɓɓaka kyawun ƙasar gona;
  - Ci gaba da alkinta cuɗanyar tasirin amfanar ƙasa da ruwa ga shuka;
  - Tattali tare da alkinta ƙeƙasassun gonaki (misali: ajiyar ruwan damina; farfaɗo da inda yashi ya mamaye da kuma farfaɗo ƙeƙasasshiyar ƙasa)
  - Inganta ƙasar da ke ɗauke da sinadarin gishiri a inda ake gudanar da nomar rani.
- Ɗabbaka tsarin SLWM, na da muhimmanci wajen tabbatar da ingancin amfanin gona tare da tabbatar da juriyar tsarin habbaka amfanin gona.

Gudanar da Nomar Shinkafa

- Akwai sanannun tsare-tsare guda uku na gudanar da nomar shinkafa
  i. Tsarin noman shinkafa da ruwan damina a kwari: Tsarin noma a yankin kwari mai kwazazzabo wanda ya dogara bisa ruwan sama a matsayin hanyar samar da ruwa ga abin da aka shuka.
  ii. Tsarin noman shinkafa da ruwan damina a tudu: Dabara ce ta nomar shinkafa a yankin da ke da dausayi daidai gwargwado tun daga farkon kwazazzabo har zuwa ƙarshen inda ya gangare.
  iii. Tsarin noman rani da ake yin banruwa wa shinkafa: Tsari ne na noma a inda ake da wadatattun kayayyakin yin banruwa, haka kuma, wannan na iya kasantuwa ne tun daga manyan gonaki har zuwa ƙanana waɗanda a kan yi ban ruwa da injuna ko yin amfani da ruwa mai gudana.
- Cikas da ake fuskanta a tsare-tsaren nomar shinkafa
  i. Adadi da kuma lokacin gudanar da banruwa.
  ii. Zaizayar ƙasa.
  iii. Ƙarancin ingancin ƙasan noma.
  iv. Fari da kuma ambaliya lokaci bayan lokaci.
  v. Tsadar kayayyakin noma.
  vi. Ciyayi da kuma yadda za a magance su.
  vii. Yawan asarar abin da aka girbe
  viii. Yawaitar jidali da suka danganci ambaliyar ruwa, ƙwari da cututtuka da kuma fari.
  ix. Ƙasar gona mai ɗauke da gishiri.
  x. Wuri mai ɗauke da sinadarin guba.

Fig. 1. Tsarin noman shinkafa na kwari

Fig. 2. Tsarin noman shinkafa na tudu.

Fig. 3. Tsarin noman shinkafa na ban ruwada rani

GUDANAR DA TSARE-TSARE MASU ƊOREWA DON INGANTA GONAKI DA KUMA AMFANI DA RUWA.

Fasali 1: Magance zaizayar ƙasa – Tsarin Yin Huɗa

- A harkar noma, zaizayar ƙasa na nufin yadda ruwan sama da yawan aikata kasan noma kan zagwanyar da ƙasar noman.
- Shirye-shirye a lokacin gudanar lokacin sharan gona da ayyukan noma da suka danganci huɗa da kaftu har ma da magance ciyayi ta hanyar amfani da ƙarfi kan bayar da gudummuwa wajen zaizayewar ƙasa.
- Mummunan tasirin da zaizayar ƙasa kan haifar sun haɗa da asaran sinadaran da ke cikin ƙasa, daƙushe ƙarkon da ƙasa ke da shi wajen iya riƙe ruwa tare da salwantar da sinadarin takin gargajiyar da ke cikin wannan ƙasa.
- Akan iya magance zaizayar ƙasa ta hanyar yin amfani da waɗannan ingantattun tsare-tsare masu ɗorewa kamar haka:
  - Sauye-sauyen abin da ake nomawa.
  - Shuka mai katange kasa da bata kariya daga zazzayar kasa. ,
  - Shuke-shuke mabambanta a kunya guda,
  - Samar da kududdufin da zai taskace ruwa,
  - Tsattsara madatsa ko ginshiƙai,
  - Yin huɗa a kekkewaye,
- . A tsarin ayyukan SRI akan iya daƙile zaizayar ƙasa ta wasu hanyoyi kamar haka: -
  - Ingantaccen gudanar da kaftu a gonaki, da haro da kuma kunyayyaki.
  - Giggina ginshiƙai ko komaye.
  - Amfani da takin gargajiya.
  - Yin ciron ciyayi a kan lokaci.

Fig. 4. Soil erosion in upland rice ecology

Fig 5. Soil erosion in lowland rice ecology

Fig. 6. Kaftun gona ta yin amfani da fartanya ko garma.

Fig, 7. Kaftun gona ta yin amfani da shanun noma

Fig. 8. Cakuda kasa ta yin amfani da shanun noma.

Fig. 9. Kaftun gona ta yin amfani da power tiller

Fig. 10. Daidaita kasa da rufe kwari ko daidaita tudu.

Fig. 11. Gina kwami domin tara ruwa ko rage ruwa idan yayi yawa

Fasali Na 2. Inganta Ƙasan Noma ta yin Amfani da Takin Gargajiya.

❖ Takin gida da takin gargajiya:

- Takin gargajiya nau'i ne na sinadarin da ke samuwa daga juji da tsirrai da kuma kashin dabbobi da akan zuba wa ƙasa domin inganta kyau da kuma yawan amfanin gona.
- Cakuɗuwar abubuwa da suka rube wadanda ke da nasaba da tsire tsire ko daga dabbobi da kuma juji. Akan yi amfani da su wa shuka sannan da kuma ƙasar noma domin habbaka ingancinsu.
- Takin gargajiya na samuwa ne daga kashin shanu da kashin tumaki da kashin kaji da kuma ruɓaɓɓun ganyayyaki da itatuwa.
- Fa'idar takin gargajiya wa amfanin gona sun haɗa da waɗannan.
  - Samar da sinadarin saka girma wa shuka.
  - Ƙara yawan adadin takin gargajiya wa ƙasar noma.
  - Daɗa inganta ƙarko da kuma fasalin ƙasar noma.
  - Inganta shiga da fitan ruwa a ƙasar noma.
  - Iinganta ƙarkon riƙe ruwa na ƙasar noma.
  - Ƙarfafa yawan halittun da ke cikin ƙasar noma.

❖ Takin da aka samu daga tsirrai da kuma shuka da zai inganta kasan noma.

  - Sinadarai daga tsirrai da kuma itatuwa ya kanzama taki a cikin ƙasa domin inganta ta kasar noma.
  - Samar da takin gargajiya muhimmiyar dabara ce ta inganta ƙasa, wadda hakan ne ginshiƙin aikin noma mai ɗorewa.

❖ Yin amfani da takin kashin dabbobi da, juji da kuma wasu ƙwari, su ne ginshiƙan ayyukan SRI da CRRP

- A zuba takin gargajiya kimanin ton biyar zuwa ton ashirin (5 – 20 tons) a kowace hecta ɗaya, hakan shi ne daidai da sinadarin takin gargajiya da shuka ke nema.
  - A zuba takin gargajiya tun kafin a yi huɗa domin samun damar bizne takin a cikin ƙasa.
  - Takin gargajiya na da ƙarancin sinadarin Nitrogen.
  - Akan yi amfani da takin zamani NPK ko Urea ne kawai idan bukatan haka ya taso.
  - Ana iya saka ingantaccen takin UREA a cikin makwanni uku zuwa huɗu bayan an yi shuka.

Fig 1. Sinadarin Nitrogen da ke cikin Takin Gargajiya

Fertilizer	Urea	Poultry Manure	Cattle Manure	Compost
% N	46%	2%	1%	0.50%
100 kg N	217 kg	5000 kg or 5 ton	10,000 kg or 10 ton	20,000 kg or 20 ton

Fig. 2. Amintaccen tsarin zuba wa shinkfa takin gargajiya da kuma takin UREA a cikin wa'adin girmanta

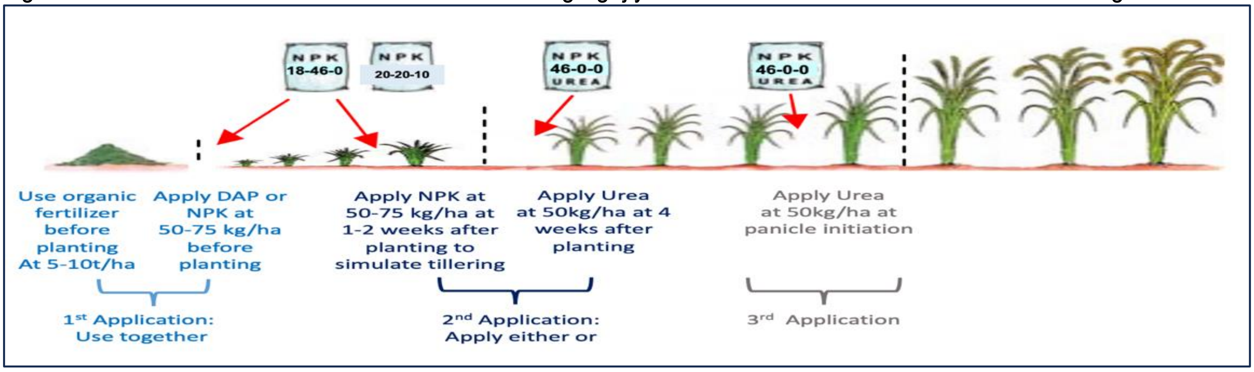


Fig. 14. Takin gida ta hanyar rubar da ganyayaki da itatuwa .

Fig 15. Takin gida daga shanu da sauran dabbobi

Fasali Na 3. Tsarin musanyar shuka, gwamutsa shuka da kuma ƙirƙirar sabbin dabaru

- Musanyar shuka na nufin yadda akan iya shuka abubuwa mabambanta a cikin gona guda amma a lokaci daban-daban domin daƙile taɓarɓarewar sinadaran ƙasar noma.
- Sauyin Dabaru: Wannan na nufin irin yadda akan ƙaurace wa tsarin noma amfanin gonar da babu wata gwaggwaɓar riba da kuma kauce wa tsarin noma mare inganci domin a koma ga nomar amfanin gona mai inganci da kuma gwaggwaɓar riba.
- Gudanar da tsarin musanyar shuka kan iya kasancewa kowane ɗaya daga cikin waɗannan: -
    - Shukar da ke da zuzzurfan jijiyoyi ta biye shukan da bai da jiyoyyi mai tsawo a cikin ƙasa.
    - Yin noman hatsi, ya maye noman dangin wake da gyada da dangoginsu
    - Shuka mai farfaɗo da sinadari ya maye gurbin wadda kan naƙasar da sinadarian kasa.
    - Shuka mai cin gajeren zango ya maye gurbin mai cin dogon zango.
    - Shukar da kan iya jure wa cututtuka da ake samu a cikin kasa su maye gurbin masu saurin kamuwa da cututtukan.
    - Shukar da kan iya jure wa ciyayi ya maye gurbin wadda ba ta da irin wannan juriyar.
    - Shukar da ba ta tsananin buƙatuwar ruwa da aiki mai yawa ta maye gurbin shukar da ke da tsananin buƙatuwar ruwa da kuma aiki mai gajiyarwa.
- Tsarin ayyukan ƙirƙirar sabbin dabarun shuke-shuke kan iya kasancewa kamar haka: -
    - Guje wa amfanin gonar da babu daraja zuwa ga mai daraja.
    - Guje wa amfanin gonar da ke da buƙatar ruwa zuwa ga wanda ba ta kai dayan ba
    - Guje wa shuka masu ƙwaya ɗaiɗai zuwa ga waɗanda kan zuba 'ya'ya masu yawa.
    - Guje wa noma kawai zuwa ga noma haɗe da kiwo.
    - Guje wa samar da amfanin gona kawai zuwa ga alkintawa domin samar da ƙarin daraja.
- Musanyar shuka tare da ƙirƙirar sabbin dabaru na da wasu fa'idoji kamar haka: -
    - Taƙaita zaizayar ƙasa.
    - Inganta taki da kuma haɓɓaka amfanin gona.
    - Magance ciyayi, ƙwari da kuma cututtuka.
    - Samar da rarar kayan aiki kamar taki.
    - Kiyaye cakuɗuwar sinadarin masu guba a cikin kasa
    - Cikakkiyar damar cin gajiyar sinadarin inganta shuka da kuma dausayi

Fig. 16 Misalin musayar shuka a lokai zuwa lokaci

Fig. 17. Musanyar shuka ta hanyar shuka nauin shuka dabam dabam.

Fasali Na 4. Sahihiyar Hanyar Magance Matsalar Ciyayi

- ❖ Kula da ciyayi ta kasance ɗaya daga cikin babban barazanar da tsarin nomar shinkafa mai inganci ke fuskanta.
- ❖ Ciyayi kan yi kankankan da shuka wajen zuƙar sinadaran kasa da ruwa da hasken rana da kuma fili wanda hakan kan dakushe yawan amfanin gona.
- ❖ Fahimtar ainihin irin matsalar ciyawa kan taimaka wa manoma wajen iya tantance matakan magancewa.
- ❖ Akwai matakai da dama masu magance ciyayi haka: -
    - **Rigakafi:** Wannan ya jiɓanci daƙile jijiyoyin ciyayi daga kunno kai da kuma hana wasu sabbin ciyayin tsirowa.
    - **Al'ada:** Ƙirƙirar sahihiyar musayar shuka da kuma samar da sabbin dabaru.
    - Hannu da kuma Injin: gaggauta ciron ciyayi da hannu ko kuma da injina irin su fatanya mai gare-gare.
    - Shirye-shiryen magance ciyayi sun haɗa da wasu jerin kintsattsun shiri na lokaci-lokaci da aka gindaya domin hallaka dukkan ciyayi tun daga jijiyoyinsu.
    - Haka nan, ingantaccen tsarin rigakafin ciyawa kan rage addabar shuka da takan yi matuƙa, har wa yau, cim ma nasarar samun amfanin noma na da buƙatar amintaccen ingantaccen tsarin magance ciyayi ta yadda za su kasance babu ta yadda za su iya kasancewa barazana ga samun gwaggwaɓar riba.
- ❖ Kula da ciyayi bisa tsarin SRI/CRRP
    - Tsarin SRI kan ƙarfafa yin amfani da hannu da kuma inji wajen yin ciro tare da yin hani ga yin amfani da feshin magungunan kashe ciyayi.
    - Da yaushe kuma ta yaya akan yi amfani da injin cire ciyayi?
        - A yi amfani da injin nome ciyawa cikin kwanaki goma (10) bayan yin dashe
        - A maimaita hakan bayan kowace kwana bakwai zuwa goma (7-10), za a ci gaba da hakan a ƙalla sau huɗu har zuwa lokacin da yabanya za ta mamaye ko'ina.
        - Yi amfani da injin ciro a kowace kusurwa da zarar an gudanar da banruwa.
        - Kada a bar ruwa ya guje bayan an gudanar da ciro don samar da daidaiton sinadarin inganta shuka a gonar.
    - Fa'idojin yin amfani da injin ciron ciyayi
        - Tarkato ciyayi da bine su a cikin kasa.
        - Samar da kafa, domin kasa ta sha iska.
        - Hakan kan zaburar da girmar shuka.
        - Ci gaba da rarraba ruwa ya bazu a ko'ina a cikin gonar.
        - Hana samun tudu da kwari a gona.
        - Sinadarin inganta shuka daga cikin ƙasa da kuma takin gargajiya kan yalwatu wa jijiyoyin amfanin gona.

Fig. 18. Ciron ciyawa da hannu a gonar shinkafa.

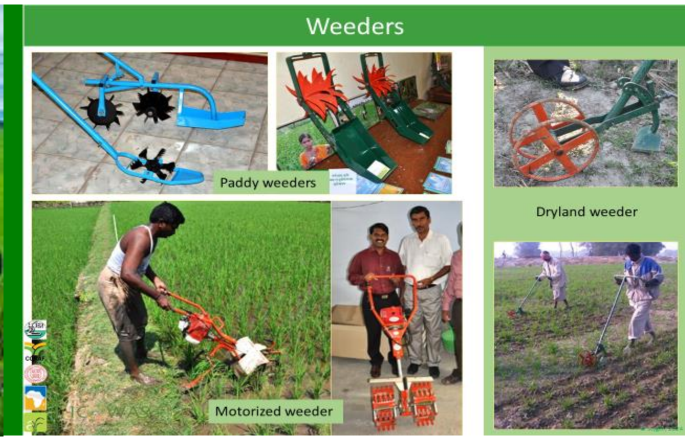


Fig. 19. Ciron ciyawa ta yin amfani da injin yanke ciyawa

Fasali Na 5. Sahihiyar Tsarin Alkinta Ruwa

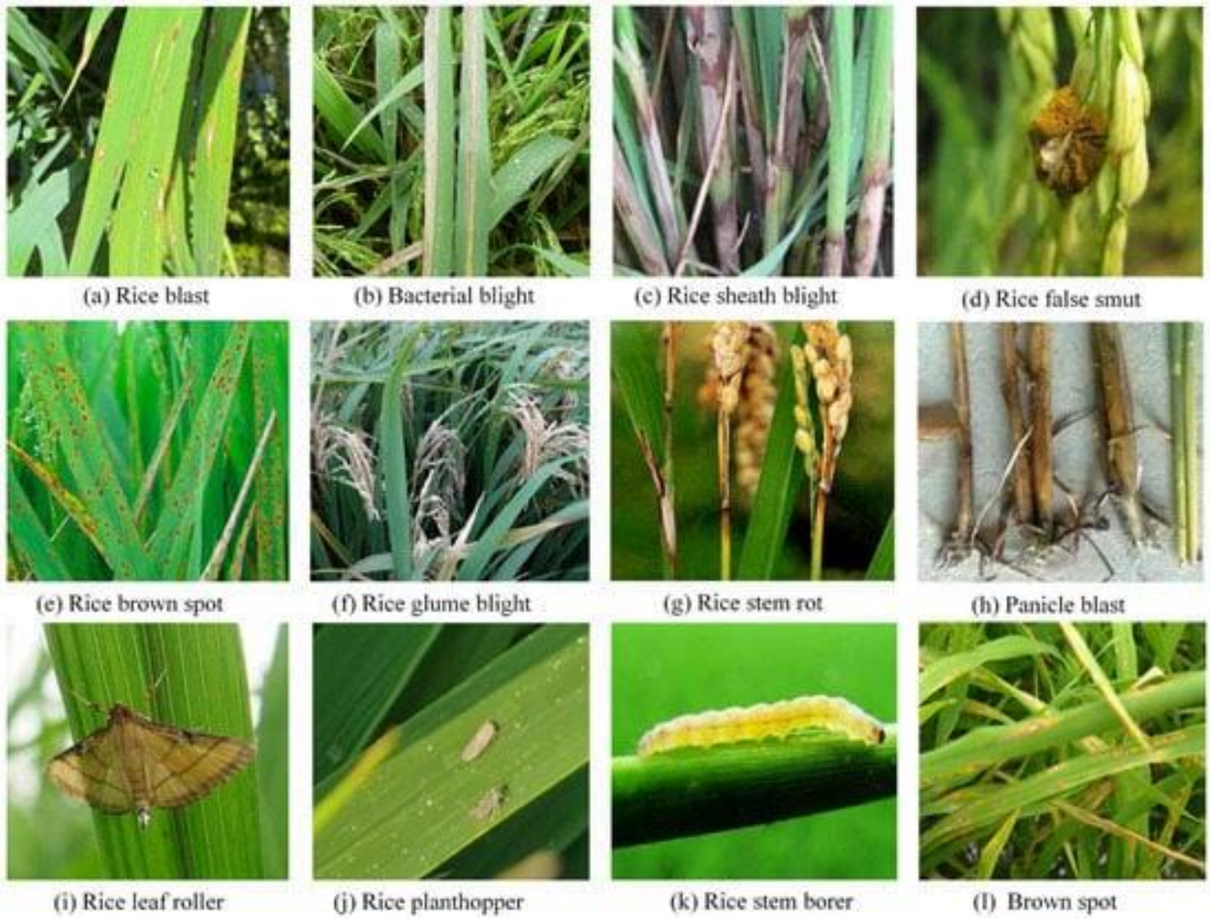
- **Tsarin Nomar Shinkafar Rani**
  - Akwai lokuta guda huɗu (4) na ban ruwa a gonaki a tsarin noman shinkafa da rani.
    1. **Bayan Dashe:** A tabbatar da gona na cikin dausayi, makwannin biyun farko bayan an yi dashe.
    2. **Locakin Ganyayyaki ko Yabanya**: A yi anfani da tsarin **Jiƙawa da Busarwa (AWD)**
       - ✓ A yi ban ruwa na kimanin santimita ɗaya zuwa biyu ko fiye da haka.
       - ✓ Sai a bar gona har sai ya bushe ta yadda za a riƙa ganin inda ƙasar ta fara tsattsage.
       - ✓ A sake yin ban ruwa a gona tare da tabbatar da gonar ta koshi da ruwa, sai kuma a jira gona ta bushe har sai kasa ta fara tsattsagewa.
       - ✓ A ci gaba da maimaita wannan tsarin har suka ta girma
    3. **Lokacin Fure:** A riƙa yin banruwa sosai kuma akai-akai a daidai lokacin da shinkafar ta fara ffitar da furanni da kuma ɗurar ciki
    4. **Lokacin Nuna:** Makwanni biyu kafin a yi girbi: Gonar ta kasance a bushe a lokacin da shinkafar ta isa yankewa.
- **Tsarin Nomar Shinkafa a Kwari**
  - A samar da magudanar ruwa sabili da ambaliya ruwa da kan iya zuwa lokaci bayan lokaci (yawanci ambaliyan kan zo ne cikin tsakiya zuwa ƙarshen lokacin da shinkafar ke dauka kafin a yanke).
  - Ba a cika samun ambaliyar ruwa ba a yayin shuka ko dashe.
  - Ya da kyau a gina komi-komi domin tare ruwa, ya kan taimaka wajen samar da tsirar shuka cikin inganci.
  - Idan ana samu barazanar yawan ruwa, sai a ƙokarta yin shuka da wurwuri.
- **Tsarin Nomar Shinkafa a Tudu**
  5. Ana yi a Muhallan da ke fuskantar barazanar fari
  6. Baje gona tare da samar da gona marar tudu da kwari kan taimaka wajen hana zaizayar ƙasa tare da iya killace ruwa a gonar.
  7. Takin gargajiya kan taimaka wajen killace danshi tare da sinadaran kasa.
  8. Shigar ruwa kasa zuwa ga jiyoyi zai inganta zai inganta karkon shuka.
  9. Ƙananan madatsai na ruwa da kuma gulbi a kusa da gona kan taimaka wajen killace ruwan da za a yi banruwa.

Fig.20. Samun dawwamamar kasar noma ta yin amfani da tsarin jika gona da bata dama to bushe.

Fasali Na 6. Maganace Ƙwari, Tsutsotsi da kuma Cututtuka

- Tsarin SRI na inganta gonaki masu jure wa ƙwari da kuma cututtukan shinkafa.
- Shuke-shuken SRI na ɗauke da kauraran jijiyoyi, manya-manyan rassa da ganyayyaki masu ƙarfi, don haka, sukan iya jure wa kowace irin cuta da kuma ƙwari matuƙa.
- Mafi akasari, ƙwari da kuma cututtuka kan ta'azzara ne a cikin yanayi mai ɗumi ko danshi.
- Gonakin SRI na ɗauke da kyakkyawan yanayi dausayi a sakamakon samar da wadatacciyar tazara a tsakanin shukoki tare da dashen tushen shinkafa guda ɗaya rak a cikin kowane gurbi.

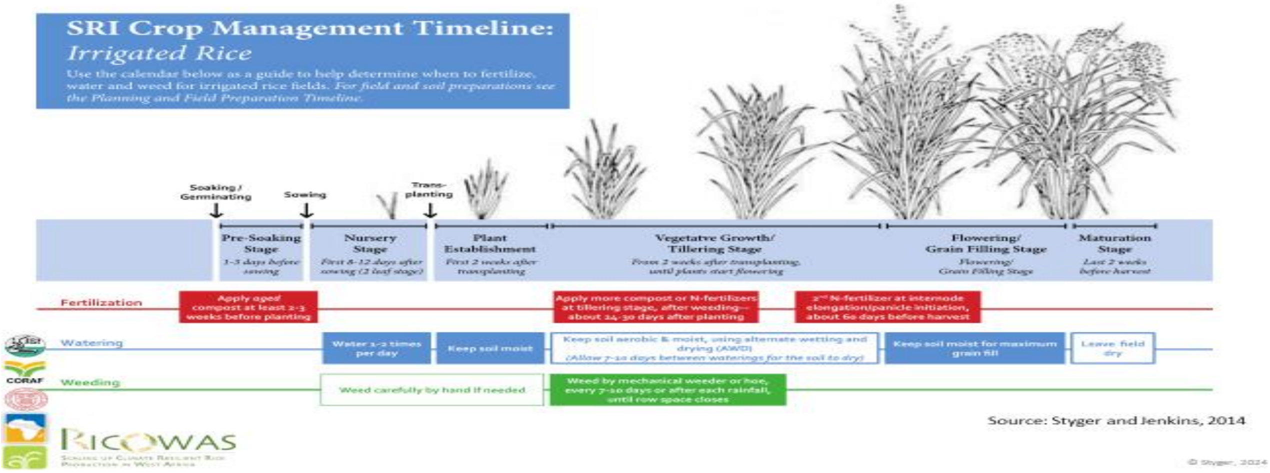
- ❖ Bayar da wadatacciyar tazara wa shuka kan samar da damar da iska za ta iya rarratsawa ta ko'ina a cikin gonar
- ❖ Fa'idojin dabarun ƙirƙirar sauyin shuka na SRI sun haɗa da, tsirrai masu juriya ga yanayi, ingantaccen magudanar ruwa, walwalar wadatacciyar iska sannan da kuma shuka lafiyayye kuma tsaftataccen irin da kan daƙushe tasirin ƙwari da kuma cututtuka.
- ❖ An amince da yin amfani da sinadarin gargajiya da aka matse daga tsirai wajen kashe ƙwari da kuma magance cututtuka.



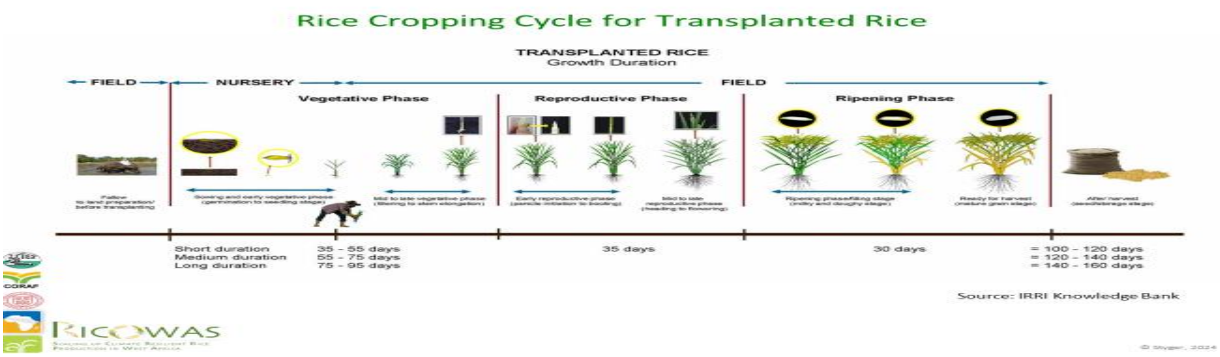
Fasali Na 7. Gamayyar Tsarin Magance Ƙwari (IPM)

- ❖ IPM ta tattaro tsare-tsare da ban da ban don rage magance shuke daga kwari da cututtukan shinkafa.
- ❖ Akwai matakai guda huɗu na tsarin gamayyar magance ƙwari a gonakin shinkafa.
  - Tsara shirin ko-ta-kwana
  - Kula tare da tantance irin nau'in ƙwarin da cututtuka na shuka.
  - Rigakafi domin ba da kariya daga kwari da cututtuka
  - Magancewa ta hanyar anfani da hanyoyi mabanban ta.
- ❖ Binciko alamun nau'in cututtukan ko kuma ƙwarin da ke cikin gonar shinkafar domin ka yi ta farmakar su har zuwa lokacin girbi/yanka.
- ❖ Da zarar manoni ya iya gano wata alama ta cuta ko kuma wani nau'i na ƙwari, idan ɓarnar da ƙwarin kan yi ta fi ƙarfin shirin ko-ta-kwanar da ka yi, to, ka feshe gonar da amintaccen sinadarin kashe ƙwarin ko na kashe cututtukan.
- ❖ An fi so a yi amfani da sinadarin maganin feshi na gargajiya.
- ❖ Ana iya dabarar yin amfani da raga ko kuma wani dodon gona domin bayar da kariya wa shuka da kan iya tsoratar da tsuntsaye, za a iya yin hakan ne tun daga makwanni na 12 zuwa na 16 daga ranar da aka yi dashe.

<u>**Jadawalin SRI Na Lokutan Alkinta Amfanin Gona Wa Nomar Shinkafar Rani**</u>



<u>**Rice Cropping Cycle For Transplanted Rice**</u>



<u>**Rice Cropping Cycle For Direct Seeded Rice**</u>

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