

## АННОТАЦИИ. КЛЮЧЕВЫЕ СЛОВА. БИБЛИОГРАФИЯ

Агроэкологические перспективы развития природного производства. / **Кобец А.С., Харитонов Н.Н., Грицан Ю.И., Жуков А.В.** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 6–10.

Утверждается, что природное сельское хозяйство – это целостная система управления агропроизводством. Использование ее позволяет нивелировать действие природных факторов, что особенно важно в условиях глобальных изменений климата. Доказано, что природное земледелие, в частности отказ от минеральных удобрений и пестицидов, снижает уязвимость аграрных предприятий; затраты на получение продукции в случае неурожая в экстремальных погодных условиях. **Ключевые слова:** природное агропроизводство, изменение климата, потребление энергии, переработка отходов сельского хозяйства.

Качество крупы из зерна спельты и ее связь с содержанием белка / **Г.Н. Господаренко, В.В. Любич, И.О. Полянецкая, Л.Л. Новак, Л.Д. Руденко, В.В. Возиян** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 11–15.

Установлено, что технологические свойства зерна пшеницы спельты зависят от сорта и погодных условий. В том числе содержание белка в зерне спельты меняется от 11,0 к 21,3 % в зависимости от сорта, а общая кулинарная оценка каши с плющеного зерна спельты колеблется в пределах 7,8–9 баллов. Происхождение сорта спельты не влияет на этот показатель. Наивысшая кулинарная оценка каши дает возможность использовать зерно для производства крупяных продуктов. **Ключевые слова:** сорта пшеницы спельты, плющенная крупа, белок, кулинарная оценка.

Агрегатная структура почвы в системе эдафических свойств и её роль в варьировании морфометрических характеристик кукурузы *Zea mays* / **А.В. Жуков, Е.В. Андрусевич, В.О. Сиротина, А.Ю. Покуса** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 16–25. Рассмотрены подходы для статистического оценивания композитных переменных. Агрегатная структура почвы описывается показателями, которые относятся к категории композитных переменных, которые в сумме всегда составляют фиксированное число. В литературе существуют различные варианты базисов ортогональной лог-трансформации данных, но нет экологически обоснованных критериев для их выбора. Предложен метод сравнения матриц результатов трансформа-

ции с матрицами эдафических свойств либо матрицами морфометрических показателей растений. Ординарный и частный тесты Мантеля позволили установить, что варьирование агрегатной структуры почвы является причиной изменчивости морфометрических показателей кукурузы из посевов, находящихся на данной почве.

**Ключевые слова:** композитные переменные, лог-трансформация, агрегатная структура, почвенные свойства.

**Кротик А.С.** Продуктивность смородины черной в зависимости от содержания почвы и удобрения / **А.С. Кротик** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 26–29.

Представлены результаты изучения влияния содержания почвы в междурядьях под чистым паром и залужением, а в прикустарниковых полосах – под чистым паром и мульчированием соломой и пленкой в сочетании с дозами удобрений, рассчитанными на доведение содержания в почве  $N$ ;  $P_2O_5$ ;  $K_2O$  до оптимальных уровней (фон), а также внекорневой подкормкой жидким суспендированным органическим удобрением Риверм в разных концентрациях соответственно 1, 3 и 5 % на урожайность смородины черной 5–7-летнего возраста.

**Ключевые слова:** смородина, почва, мульчирование, удобрение, урожайность.

**Стась М.М.** Гидроэкологическая оценка реки Мокрая Сура – правого притока Днепровского водохранилища / **М.М. Стась, В.И. Колесник, Н.Л. Колесник** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 30–33.

Проведен гидрохимический анализ воды реки Мокрая Сура. Установлено, что по показателям качества вода реки находится под значительной антропогенной нагрузкой. Отмечена высокая минерализация воды, загрязнение органическими соединениями и нефтепродуктами. Микробиологические показатели воды р. Мокрая Сура указывают на высокий уровень загрязнения микроорганизмами. Выявлены резервные возможности водной экосистемы к быстрому самовосстановлению.

**Ключевые слова:** качество воды, гидрохимические показатели, Днепровское водохранилище, р. Мокрая Сура, минерализация.

**Наконечный Р.А.** Реализация принципов физической экономии в органическом земледелии: теория и практика / **Р.А. Наконечный, А.Д. Копытко, И.Н. Сас** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 34–38.

## АННОТАЦИИ. КЛЮЧЕВЫЕ СЛОВА. БИБЛИОГРАФИЯ

Анализируются теоретические и практические аспекты использования разработок украинской школы физической экономики в процессе создания и развития новой сферы аграрного производства – органического земледелия. Предлагается комплексный подход к решению проблемы, который учитывает биологические, физические, социальные и духовные процессы, и направленный на реализацию принципа единства человека и Вселенной.

**Ключевые слова:** физическая экономика, органическое земледелие, природа, энергия Солнца, земля, гумус, растения, Вселенная.

**Кирпа М.Я.** Качество семян кукурузы в условиях подготовки его на типовом кукурузообработывающем заводе / **М.Я. Кирпа, Н.А. Стюрко, Л.М. Бондарь** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 39–43.

Проведен анализ технологии послеуборочной обработки семян кукурузы и материально-технической базы кукурузообработывающего завода; установлено влияние технологических процессов на качество семян гибридов кукурузы и их родительских форм; представлена технико-технологическая схема линии очистка–сортировка, которая будет сохранять и повышать сортовые и посевные качества семян гибридов кукурузы и ее родительских форм.

**Ключевые слова:** качество семян кукурузы, послеуборочная обработка, кукурузообработывающий завод, очистно-сортировочная линия.

**Кривинчук Ю.Н.** Безопасность плодовой продукции в условиях загрязнения тяжелыми металлами / **Ю.Н. Кривинчук** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 44–46.

Изучены пути поступления тяжелых металлов в сельскохозяйственные культуры и факторы, способствующие аккумуляции загрязнителей в растительной продукции. Охарактеризованы закономерности накопления тяжелых металлов различными органами яблони в зависимости от места выращивания и фазы вегетационного периода. Описаны основные агротехнические приемы, которые позволяют снизить подвижность тяжелых металлов в системе “почва–растение” и повысить безопасность продукции растениеводства и садоводства.

**Ключевые слова:** тяжелые металлы, загрязнение, окружающая среда, почва, яблоня, известкование, фиторемедиация, химическое осаждение.

**Кошевский И.И.** Роль регуляторов роста в повышении продуктивности и защитных реакций против болезней растений сои / **И.И. Кошевский, П.А. Аксьонова, В.В. Комисарук** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 47–49.

Приведены результаты изучения влияния регуляторов роста растений и биопрепарата микосан-Н на развитие болезней сои, продуктивность растений и эффективность соево-ризобияльного симбиоза. Доказано, что террастим и регоплант снижают поражение растений септориозом, аскохитозом, пероноспорозом. Применение моддуса в обработке семян сои замедляет развитие болезней в фазе налива бобов. Наибольшие прибавки урожая при использовании PPP получены в вариантах с регоплантом и микосаном.

**Ключевые слова:** регуляторы роста растений, соя, септориоз, аскохитоз, пероноспороз, продуктивность растений, симбиоз, ноудуляция, пораженность растений, развитие болезни.

Влияние элементов механизированной технологии выращивания на производительность биомассы мискантуса / **М.Я. Гументик, В.М. Квак, А.И. Замойский, Е.В. Морозова** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 50–54.

Приведены результаты исследований влияния элементов технологии выращивания биомассы мискантуса для производства твердого биотоплива. Установлены и обоснованы оптимальные сроки посадки, масса ризомов, глубина заделки и густота посадки в условиях западной Лесостепи Украины. Отработаны приемы и элементы механизированной технологии выращивания мискантуса.

**Ключевые слова:** мискантус, сроки посадки, глубина посадки, масса ризом, густота стояния, биомасса.

Инкрустация ячменя озимого препаратами Антистресс и Марс ELBi / **И.И. Ярчук, В.Ю. Божко, В.В. Позняк, К.А. Кравченко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 55–58.

Исследовано влияние препаратов рострегулирующего и криопротекторного действия на выживаемость и урожайность растений ячменя озимого сорта Основа в условиях северной Степи. Установлено положительное влияние инкрустации семян препаратом Антистресс на перезимовку растений ячменя. Использование Марс-ELBi на посевах ячменя озимого в осенний период не эффективно.

## АННОТАЦИИ. КЛЮЧЕВЫЕ СЛОВА. БИБЛИОГРАФИЯ

**Ключевые слова:** ячмень озимый, регулятор роста, криопротектор, инкрустация, выживаемость, урожайность.

**Фещенко В.П.** Экологическая оценка возможностей внедрения технологии no-till на базе ГП "Грозинське" // **В.П. Фещенко, Е.О. Скорбильна** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 59–64.

Рассмотрены показатели запасов почвенной влаги, плотности почвы и урожайности озимой пшеницы при сравнении традиционной и минимизированной технологий обработки. Доказано, что введение технологии No-till уменьшит антропогенную нагрузку на агроэкосистемы, снизит энергозатраты, увеличит урожайность и улучшит экологическую ситуацию.

**Ключевые слова:** технология No-till, запасы почвенной влаги, плотность почвы, плодородие, урожайность, пшеница озимая.

**Сметанин В.Т.** Влияние биотрансформации червями вида *Eisenia foetida* на качество донных отложений / **В.Т. Сметанин, Е.И. Тимчий, С.П. Старишко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 65–68. Исследованы состав и содержание органических веществ донных отложений из водоемов до и после биотрансформации червями вида *Eisenia foetida*, которые подвергались и не подвергались лазерному облучению в различных по времени экспозициях. Утверждается, что такие исследования и дальнейшая селекционная работа перспективны в получении экологически чистых органических удобрений на основе донных отложений с использованием культуры *Eisenia foetida*.

**Ключевые слова:** субстрат, сапропель, биогумус, экспозиция облучения.

**Папка О.С.** Особенности распространения ваточника сирийского в пределах Полтавской области / **О.С. Папка** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 69–72.

Установлено, что ваточник сирийский является злостным засорителем посевов сельскохозяйственных культур в Полтавской области. Группировки его в агроценозах сформировались за счет семян, которые заносятся на поля с необрабатываемых земель, а также с недостаточно очищенными органическими удобрениями. По экологическим свойствам ваточник сирийский является многолетником, корнепаростковым, вегетативноподвижным, геофитом, мезотрофом, мезофитом, мегатермом, сциогелиофитом, энтомофилом, анемохором, рудерантом. Менее конкурент-

носпособная растительность подвергается его механическому влиянию, деградирует или полностью уничтожается.

**Ключевые слова:** ваточник сирийский, расселение, рудеранты, злостный сорняк, специфические условия среды.

**Шкатула Ю.М.** Эффективность симбиотической азотфиксации в агроценозах фасоли / **Ю.М. Шкатула, Л.С. Краєвська** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 73–76.

Изложены результаты изучения влияния факторов предпосевной инокуляции семян фасоли производственными и новыми штаммами клубеньковых бактерий, их активность на процесс формирования симбиотического аппарата. Наиболее высокой азотфиксирующей активностью отмечены штаммы *Rhizobium phaseoli* Ф-16, нитрогеназная активность была на уровне 84,23 нМоль этилена на растение в час. На основе перспективных штаммов могут быть разработаны технологии изготовления биопрепаратов для предпосевной инокуляции семян фасоли.

**Ключевые слова:** фасоль, семена, агроценозы, микроорганизмы, клубеньковые бактерии, симбиотическая активность, урожайность.

**Мельниченко В.И.** Показатели работы трактора Т-150К с дизелем СМД-62 и серийным топливным насосом, универсальным регулятором, отрицательным корректором и ограничителем дымления / **В.И. Мельниченко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 77–83.

Изложены результаты исследований влияния универсального двухрежимно-всережимного регулятора с отрицательным корректором и пневматическим ограничителем дымления на динамические показатели дизеля СМД-62 и трактора Т-150К. Определено влияние опытного регулятора на мощностные, экологические и другие основные показатели трактора на разных характерных режимах работы. **Ключевые слова:** топливный насос, универсальный регулятор, отрицательный корректор, ограничитель дымления, дизель, трактор, дымность отработавших газов.

**Золотовская Е.В.** Теплоизоляция вберегающем земледелии / **Е.В. Золотовская, А.С. Миронов** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 84–87.

Представлены результаты исследований по изучению влияния поверхностной обработки почвы на её плотность. Рассмотрена зависи-

## АННОТАЦИИ. КЛЮЧЕВЫЕ СЛОВА. БИБЛИОГРАФИЯ

мость теплоизоляционного слоя от урожайности культур и способ поверхностного рыхления почвы с одновременным замешиванием растительных остатков, что обеспечивает низкую теплопроводность слоя. Применение теплоизоляционного слоя на поверхности почвы позволит прогнозировать теплофизические процессы в конкретных климатических условиях. В основе этого технологического приёма лежит изменение плотности в верхних слоях почвы. Обоснована методика расчета поверхностной обработки почвы.

**Ключевые слова:** плотность, структура, почва, теплофизические свойства, теплоизоляционный слой, поверхностная обработка.

**Лепеть Е.И.** Дисковый копатель столовых корнеплодов для работы в системе Strip-Till / **Е.И. Лепеть** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 88–90.

Предложена конструкция дискового копача и обоснованы его конструктивные параметры на основе анализа особенностей сбора столовых корнеплодов в условиях полосового земледелия Strip-Till. Разрыхление почвы диском выполняется только в пределах полосы. Аналитически обоснована рациональная ширина обрабатываемых и не обрабатываемых полос. Копатель предназначен для небольших участков.

**Ключевые слова:** Strip-Till, копач, корнеплоды, разрыхление почвы.

Обоснование параметров и режимов работы пневмосепаратора предварительной очистки масличного сырья подсолнечника / **Михайлов Е.В., Задосная Н.А., Теслюк Г.В., Рубцов Н.А.** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 91–95.

Представлены технологическая схема и процесс работы высокопроизводительного пневморешетного сепаратора с замкнутой воздушной системой. Приведены аспекты обоснования параметров и режимов технологического процесса работы пневмосепаратора масличного сырья подсолнечника для перерабатывающей промышленности. Разработана методика установки параметров и режимов его работы.

**Ключевые слова:** Подсолнечник, машина предварительной очистки масличного сырья подсолнечника, параметры, режимы работы.

**Шаврова О.Б.** Основные задачи отображения и моделирования пространства на плоскости / **О.Б. Шаврова, Л.В. Кузьмина** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 96–99.

Рассматривается общая задача геометрического моделирования пространства на плоскости с использованием метода съемки со совпадающими осями для различных проецирующих конгруэнций. Получено уравнение соответствий точечных рядов, образованных проекциями двух точек пространства на плоскости проекций. Уравнения содержат информацию о виде проецирующего аппарата, метрику пространства и проекционной системы. Сформулирован принцип единственности для систем проекций со совпадающими осями, в котором каждому виду проецирования на плоскости проекций соответствуют признаки, присущие только этому виду.

**Ключевые слова:** моделирование, конгруэнция, метрика, центральные проекции, двухсредняя съёмка, принцип единства.

**Чалая О.С.** Влияние экологических факторов на качество продукции свиноводства / **О.С. Чалая** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 100–102.

Приведены данные о совместном и отдельном влиянии токсичных доз Кадмия и Плюмбума на гематологические показатели, химический состав и технологические качества свинины. Исследована эффективность применения экспериментальной добавки при интоксикации свиней тяжелыми металлами.

**Ключевые слова:** свиньи на откорме, Кадмий, Плюмбум, клинические показатели крови, химический состав, технологические качества свинины, экспериментальная добавка.

**Лихач В.Я.** Влияние технологии содержания на воспроизводительные качества свиноматок / **В.Я. Лихач, А.В. Лихач** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 103–107.

Представлены результаты исследований влияния технологии содержания свиноматок при различных методах разведения на их воспроизводительные качества. Установлено, что индивидуальное содержание холостых и супоросных свиноматок в станках способствует увеличению показателя оплодотворяемости на 5,8 % (P>0,95), повышению многоплодия на 0,94 гол., количества поросят при отъеме на 1,42 гол. (P>0,999), живой массы в 30 дней на 0,7 кг по сравнению с животными группового способа содержания.

**Ключевые слова:** технология, способ содержания свиноматок, чистопородное разведение, скрещивание, воспроизводительные качества.



## АННОТАЦИИ. КЛЮЧЕВЫЕ СЛОВА. БИБЛИОГРАФИЯ

**Козырь В.С.** Динамика биохимических показателей крови у бычков импортных пород мясных пород скота при выращивании в условиях Степи Украины / **В.С. Козырь** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 108–111.

Показано, что в онтогенезе количество крови в организме увеличивалось, хотя к 30 месяцам относительное содержание крови и гемоглобина у бычков меньше, чем у новорожденных. Биохимические показатели крови подтвердили, что бычки шаролеизской, герфордской, светлой аквитанской и лимузинской пород хорошо адаптируются к условиям степной зоны Украины и проявляют высокий генетический потенциал продуктивности.

**Ключевые слова:** бычки, гематология, здоровье скота мясных пород.

**Гончарова Е.В.** Потенциальные возможности организма страусов при промышленном выращивании / **Е.В. Гончарова** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 112–114.

Обсуждаются адаптационные особенности при выращивании страусов на промышленной основе в климатических условиях Степи Украины. Раскрываются информация о физиологическом статусе организма страусов в разные периоды онтогенеза, а также особенности состава крови страусов, их производительности и потенциальные возможности организма птицы по сравнению с другими сельскохозяйственными животными.

**Ключевые слова:** страус, адаптационные возможности организма, промышленные условия выращивания.

**Демьяненко В.Е.** Модернизация сельских территориальных общин и финансового механизма обеспечения их развития / **В.Е. Демьяненко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 115–120.

Рассмотрены необходимость и мероприятия, направленные на модернизацию сельских территориальных общин в Украине как ячеек, которые выступают базовым звеном административно-территориального устройства и бюджетной системы страны, ради успешного социально-экономического развития территорий. Определена комплексность трансформационных изменений, включающая цели и способы решения проблем с учетом интересов государства и территориальных общин на основе формирования эффективного местного самоуправления и саморазвития, финансовой самостоятельности.

**Ключевые слова:** территориальные общины, сельское экономическое пространство, самоуправление, саморазвитие, финансовая самостоятельность, самофинансирование.

**Козаченко Д.Н.** Совершенствование технического обеспечения и технологий экспортных перевозок зерновых грузов в Украине / **Д.Н. Козаченко, Р.Г. Коробьева, Р.Ш. Рустамов** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 126–132.

Обсуждаются вопросы экспортных перевозок зерна в морские порты железнодорожным транспортом. Рассмотрен опыт железных дорог США и Российской Федерации в организации экспортных перевозок зерна. Для снижения себестоимости перевозок зерна в Украине предлагается сконцентрировать экспортные грузопотоки на специализированных элеваторах и организовать между ними и морскими портами движение поездов по расписанию.

**Ключевые слова:** перевозка зерна, железнодорожный транспорт, маршрутная отправка, концентрация грузопотоков.

**Васильева Л.Н.** Формирование институциональной среды аграрного сектора / **Л.Н. Васильева, Р.Ю. Олейник** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 121–127.

Уточнено экономическую сущность понятийного аппарата категории “институциональная среда”, которая обозначена как ведущее условие и фактор развития аграрного сектора экономики. Определено влияние неформальных институтов на формирование институциональной среды аграрного сектора. Сформулирован ряд правил согласованного взаимодействия рыночных институтов.

**Ключевые слова:** аграрный сектор, институты, институциональная среда, трансформация.

**Багорка М.О.** Особенности формирования и оценки маркетингового потенциала аграрных предприятий / **М.О. Багорка, И.А. Белоткач** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 132–136.

Утверждается, что успех деятельности любого субъекта в рыночных условиях ведения хозяйства зависит, в первую очередь, от двух факторов: наличия ресурсов и умения руководить ими с наивысшей эффективностью. Подчеркнуто, что на современном этапе развития экономики особую актуальность приобретает вопрос поиска оптимальных путей управления ресурсами предприятий с целью повышения эффективности их хозяйственной

## АННОТАЦИИ. КЛЮЧЕВЫЕ СЛОВА. БИБЛИОГРАФИЯ

деятельности. Рассматриваемая проблема касается такой составляющей предприятий аграрного сектора Украины, как маркетинговый потенциал.

**Ключевые слова:** маркетинг, маркетинговый потенциал, аграрные предприятия, методология оценки, оценочные показатели, факторы среды, служба маркетинга.

**Буряк М.И.** Региональные аспекты развития продуктивных сил сельских территорий в контексте системных реформ / **М.И. Буряк** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 137–142.

Рассмотрены некоторые аспекты развития производительных сил сельских территорий в контексте реформ административно-территориального устройства, власти и местного самоуправления. Уточнена дефиниция “сельские территории” как экономическая сфера и ее региональный экономический комплекс, включающий базовый и средний структурные уровни социально-экономических систем – локальных территориальных общин и районов. Признано необходимым предоставление им легитимного статуса субъектов хозяйствования на основе самоуправления и экономической самодостаточности с опорой на местные бюджеты.

**Ключевые слова:** сельские территории, производительные силы, региональный экономический комплекс, территориальные социально-экономические системы, местное самоуправление, самофинансирование, саморазвитие.

**Неоцифанова Л.С.** Совершенствование управления эффективностью труда на предприятии / **Л.С. Неоцифанова** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2015. – № 4(38). – С. 143–147.

Обоснован механизм формирования эффективности труда на предприятиях, управления ею с целью повышения результативности и конкурентоспособности отечественных предприятий. Исследована взаимосвязь эффективности организации, деятельности предприятий и системы эффективного управления персоналом. Выделены критерии и показатели системы измерения социально-экономической эффективности деятельности предприятия. Приведена классификация факторов влияния на эффективность труда предприятия.

**Ключевые слова:** управление персоналом, эффективность труда, персонал, механизм управления, критерии эффективности, управление эффективностью труда.

## ABSTRACTS. REFERENCES. KEYWORDS

### ***Agricological prospects of nature agriculture development (p. 6–10)***

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Agricultural production is closely dependent on environmental conditions and the environmental situation. The solution of balanced operation is associated with the development of agro-ecosystems or increase efficiency through the restoration of ecological regulatory mechanisms, which is reflected in the concept of restoring the biotic potential of agro-ecosystems. However, the diversity of climatic, soil and landscapes conditions of agriculture is far from equal financial opportunities force you to become convinced about the feasibility of multi-variant development of agricultural enterprises. The solution to this situation can be the using of natural agricultural technologies of managing. Ecological or natural agriculture is an integrated system of management of agricultural production, which improves the condition of agro-ecosystems, biological cycles and soil biological activity. Due to the fact that in natural farming uses only organic materials (compost, vermiculture, biological plant protection products, etc) increases the amount of nutrients and moisture in the soil. Thus, using the system of natural farming give possibility to minimize the influence of natural factors, which is especially important in the context of global climate change. Natural farming reduces the vulnerability of agricultural enterprises. The refusal from the mineral fertilizers and pesticides leads to a significant reduction of costs for production, which reduces the risk of partial crop failure due to extreme weather conditions associated with global climate change. Organic farming can not be economically inefficient, because farmers guided by natural principles, which are low-cost and require low energy consumption, recycling of nutrients, synergistic effects.

**Keywords:** natural farming, climate change, energy consumption, recycling of agricultural wastes.

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### ***Quality spelled grain cereals and its relation to protein (p. 11–15)***

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The article is devoted to studying cereal properties of spelt wheat grain depending on the variety. As a result of studies it is found that technological properties of grain significantly vary depending on spelt variety and weather conditions. The experimental part of the work was carried out in the laboratory of Department of Technology of Storage and Processing of Grain at Uman National University of Horticulture during 2013–2014. Spelt varieties were used obtained by selection from local varieties – Schwabenkorn, NSS 6/01, Frankenkorn, Shvedska 1, Avstraliiska 1 and hybrids obtained by hybridization of Tr. aestivum / Tr. spelta – LPP 3218, LPP 1305, LPP 3132, LPP 3124, LPP 1197, LPP 3435, LPP 1224, LPP 3117, which were grown in the conditions of Right Bank Forest-Steppe of Ukraine. Control (standard) was regionalized spelt variety Zoria of Ukraine in this zone.

## ABSTRACTS. REFERENCES. KEYWORDS

The protein content in spelt grain ranges from 11,0 % to 21,3 % depending on the variety. A very high protein content in spelt grain (over 18,0 %) is in variety Zoria of Ukraine; rather high protein content (16,0–17,9 %) is in varieties Schwabenkorn (17,6 %), NSS 6/01 (17,3 %), Avstraliiska 1 (16,7 %) and LPP 3218 (16,7 %); low protein content (12,0–13,9 %) is in varieties LPP 3435 (13,1 %) and LPP 1224 (13,0 %); very low protein content is in varieties Shvedska 1 (11,0 %) and LPP 3117 (11,5 %); the rest of varieties has this indicator at the level of average – 14,0–15,9 %.

Vitreous consistency of the endosperm has corn of varieties Zoria of Ukraine and Avstraliiska 1, semi vitreous consistency has grain of varieties NSS 6/01, Schwabenkorn, Frankenkorn and lines LPP 3218, LPP 3132, LPP 1305, LPP 1197, LPP 3124, LPP 3435, semi floury consistency has Shvedska 1 and LPP 3117.

Culinary assessment of rolled spelt grains varies significantly depending on the variety. Total culinary assessment of rolled grain porridge of the spelt ranges from 7, 8 to 9 points. Origin of spelt variety does not affect this indicator. The highest culinary assessment (9 points) has porridge obtained from grain of the variety Zoria of Ukraine and LPP 3132 line which makes it possible to use its grain to obtain cereal products. The lowest assessment of the porridge has variety Shvedska 1 and lines LPP 1224, LPP 3117 – 7,8 points. The other varieties have a culinary assessment of the porridge at a level of 8,2–8,4 points. For spelt grain indicator of protein content and grain vitreousness can be used to evaluate the culinary properties of cereals.

**Keywords:** spelt wheat varieties, rolled grain, protein, culinary assessment.

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### Soil aggregate structure in the system of the edaphic properties and their role in Zea mays morphometric characteristics (p. 16–25)

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In article approaches for statistical estimation of composite variables are considered. The soil aggregate structure is described by indicators which concern a category composite variable, i.e. such which in the sum always compound the fixed number (in our case it is 100 %). Mathematical properties of composite variables is essential confine possibility of various types of mathematical actions, including statistical analysis, over the data on soil aggregate structure. For application of statistical and other mathematical methods of analysis of the data of aggregate structure this data should be preliminary transformed. The classical soil structure coefficient is closest on ideology to the transformed variables, but its mathematical form not to the full meets the requirements of the further statistical procedures as is somewhat arbitrary. In the literature there are various variants of bases of orthogonal log-transformation of the data, but there are no ecologically well-founded criteria for their choice. For a choice of the best basis of transformation we offer a method of comparison of transformation results with edaphic properties matrixes or



## ABSTRACTS. REFERENCES. KEYWORDS

matrixes of plants morphometry. The optimum decision represents such basis which gives the best correlation with matrix external in relation to a composite variable of properties. Ordinary and partial Mantel tests have allowed to establish that the variation of aggregation structure is at the bottom of variability morphometric indicators of corn from the sowings which are on given bedrock. In turn correlation of aggregation structure with other edaphic properties is a consequence of their co-ordinated variability owing to unity of soil as is natural-historical body.

**Keywords:** composite variables, log-transformation, aggregation structure, soil properties.

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### **Productivity of currants black depending on maintenance of soil and fertilizer (p. 26–29)**

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The article reviews the findings of the investigation of the impact of 'black' fallow and grassland renovation on the black currant yield. The research data of the impact of complete fallow, straw and film mulching, combined with fertilization (optimization of N, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O in the soil (background) and foliar fertilizing with organic solution Riverm (concentration 1, 3 and 5 %) on the black currant yield is summarized.

The yields of the black currant significantly depended on the agricultural technologies and weather conditions. Weather conditions during the years of the research were contrasting: the arid 2007 is characterized by the increase in air temperature, low rainfalls, air and soil droughts (the period of draught lasted from May to late summer); favorable weather conditions for planting and plant growth were observed in 2008; sedimentation pattern in 2009 is characterized by differential rainfall distribution during the growing season of black currant and slow warming at the beginning of the vegetation period.

In the course of our research it was found out, that significantly greater yield of black currant was observed while row-spacing lies fallow than in case of use the grassland renovation system. Mulching the black currant planting with straw around the bush and lies it fallow is much more

effective in comparison with polyethylene mulching around the bush and lies it "autumn" fallow. The research revealed that, while using the grassland renovation system, the most efficient mulching method was polyethylene mulching around the bush. The use of foliar fertilizing with organic solution Riverm significantly increased the yield of berries. The optimum alternative for black currant planting was straw and film mulching around the bush, combined with fertilization (N<sub>60</sub>, P<sub>90</sub>, K<sub>90</sub> + Riverm (concentration 3 %)).

**Keywords:** currant, soil, mulching, fertilization, yield.

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### **Hydro-ecological estimation of the river Sura – right tributary of the Dnieper reservoir (p. 30–33)**

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The article presents the results of long-term monitoring studies of the right affluent of the

## ABSTRACTS. REFERENCES. KEYWORDS

Dnieper reservoirs. A hydrochemical analysis of water in Mokra Sura river was carried out. It was found that according to quality indicators the water of the river is under significant anthropogenic influence. The high salinity of the water organic compounds and mineral oil contamination was registered. Microbiological indicators of water in Mokra Sura river show a significant level of its contamination by microorganisms. Coliphages index value indicates a hazardous situation in the ecosystem of right tributary of the Dnieper reservoirs.

It is proved that the lack of oxygen in the target area is local and does not cover the whole reservoir. On average levels of dissolved oxygen section of the river belongs to the 1 class of quality. It was found that there is reserve capacity of the aquatic ecosystem in the reservoir, for rapid self-healing. It was determined that the water of the Mokra Sura river relate to the sulfate-hydrocarbonate class, sodium-magnesium group, the second type. Water hardness values exceed hydrochemical standard in 5,6 times. The content of ammonia nitrogen greater than the requirements for water quality of centralized water supply source in 12,2 times and exceeds fishery MPC in 2,4. The arsenic content in the study period was 10 MPC GOST, and did not exceed standards for fishery water bodies. The maximum concentration of oil products exceeds the existing MPC in accordance with GOST and requirements for fishery water bodies, respectively, in 30 and 6 times. Water from the river Mokra Sura can be attributed to the 4 class and assessed as unfit for use.

**Keywords:** water quality, hydro-chemical indicators, Dniпровske reservoir, Mokra Sura river, mineralization.

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### **Implementation of the principles of physical economy in organic farming: theory and practice (p. 34–38)**

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The article reveals theoretical and practical aspects concerning application of experience of Ukrainian school of physical economy in the process of establishment and development of a new branch of agricultural production, i.e. organic arable farming. The authors propose a complex approach to the problem solution, considering biological, physical, social and spiritual processes, directed at fulfillment of the principle of integrity of a human being and the Universe. The scientists aim to highlight impact of the school study on establishment of new worldview fundamentals in comprehension of relations in the system “human being – nature”, directed at security of harmonious coexistence between them. Organic arable farming and principles of physical economy, which it is based on, are considered to make a solid ground to develop system of food safety in Ukraine and the world. Study of physical economy is one of substantial theoretical fundamentals to cover crisis in production of food and other resources, because it is directed not at exhausting consumption of natural resources, but describes ways of their recovery and increase due to intellectual and physical labor of technically equipped people. Organic arable farming have recently demonstrated perfect samples for establishment of a required base in reconstruction of relations “human being – nature”, with consideration of current traditional gnosiological factors and ontological ones, being ignored before. Thus, it is possible to make complete application of ideas of noospheric environment, proposed by one of bright representatives of Ukrainian school of physical economy academician V.I. Vernadskyi.

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**Keywords:** physical economy, organic arable farming, nature, energy of Sun, land, humus, plants, the Universe.

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### **Quality of corn seeds in conditions of preparation to plant a typical corn processing (p. 39–43)**

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The use of high quality seeds is a necessary condition agrotechnological growing corn and increases the yield of this crop. To prepare and obtain high quality seeds of his important post-harvest handling, such as equipment and technology for this. Technologies include several operations and regulations, including the completion of the main ones, ears drying and threshing, cleaning, sorting and grading seed, storage and chemical processing. Regulations operations should consider bio-technological parameters during processing of grain, depending on which quality seeds formed.

In Ukraine, post harvest processing is performed in the system corn seed processing plants and farms are mostly typical technological scheme of seed treatment, from the stage of acceptance ears to storage of finished products.

**The aim of research** was to study the technological parameters and processes postharvest treatment of seeds of maize, study performance characteristics of machinery and equipment, technology analysis of post-harvest handling of maize seeds in terms of corn processing plant. Develop technical and technological scheme of cleaning, sorting line, which will continue and will increase the variety and quality of seeds sown maize hybrids and their parental forms.

**Methodology and research methods.** Research performed at the manufacturing plant corn and mechanized lines in control SIASZ NAAS of Ukraine and Research Farm "Dnepr". In laboratory and field experiments studied the quality of seeds, sowing and harvest its proper-



## ABSTRACTS. REFERENCES. KEYWORDS

ties depending on the technology, techniques and post-harvest handling modes. In experimental-industrial experiments determined the technical and technological parameters of process of drying, cleaning, sorting and calibration, chemical handling and storage of seed corn. They also served to verify and establish industrial economic efficiency of production processes, machines and equipment.

**Conclusions.** Defined technical and technological processes that ensure quality seed under conditions typical corn processing on the manufacturing plant. In operations receiving-dry seed ears formed with high sowing and yielding qualities in the threshing and cleaning ears-sorting its quality deteriorates significantly, the main factors are the deteriorating quality of macro and micro injury seeds. To improve quality requires a reduction to the optimal number of movements and their seeds nori softer mode, reducing the height and speed of falling seeds self-moving pipes and their production of polymeric materials. Equipment involved in these operations, be a matter of priority the modernization and replacement with new one.

In order to improve corn processing plant, we have studied the existing new equipment. With its use of technical and developed new technological scheme of cleaning-capacity sorting line 8 (4) t/h depending on the mode separation. The structure of the new line includes machines and equipment for processing and preservation of high quality seeds, which should keep and improve the variety and quality of seeds sown maize hybrids and their parental forms.

**Keywords:** corn seed, quality, postharvest processing, corn processing plant, cleaning and sorting line.

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### **Safety of fruit products in terms of environmental pollution by heavy metals (p. 44–46)**

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The current state of the environment is characterized by high levels of pollution of almost all its components. A significant part of the total amount of pollutants is heavy metals. They are components of the industrial sewage and emissions, car exhaust, fertilizers and pesticides etc. Accumulating in crops, pollutants get into food. Heavy metals have toxic, mutagenic, teratogenic and carcinogenic effects on living organisms. They can get into plants from the air and from the soil. In different habitat conditions and for different crops, heavy metals have differences in behavior. In some cases they accumulate mainly in the root system and in the other – in the above-ground plant organs. Under certain characteristics of soil heavy metals can form inactive compounds and become unavailable to the plants. To prevent the negative effects of heavy metals on human health we must examine migration and accumulation of heavy metals in the components of the environment and learn basic agronomic measures that prevent them from getting into products of plant growing and gardening. One of the main agricultural practices bind heavy metals is liming to neutralize the acidic soil. Other measures include the enrichment of soil organic matter, sedimentation of heavy metals in the form of insoluble compounds, using the antagonism of heavy and light metals, heavy metals removal with plants (phytomelioration), regulation of water regime of soil, loosening the soil, minimizing the use of fertilizers and pesticides etc.

**Keywords:** heavy metals, pollution, environmental, soil, apple tree, liming, phytoremediation, chemical sedimentation.

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### *The role of growth regulators in increasing the protective reactions against diseases of soybean and productivity (p. 47–49)*

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The results of studies on the effects of plant growth regulators and biological mikosan-N on the development of soybean diseases, plant productivity and effectiveness of soybean-ryzobial symbiosis. In embodiments where used terrastym compared to control plants Septoria lesions decreased by 6,0–23,1% *Ascochyta sojaecola* – in 4,7–37,6 % Downy mildew – in 3,2–20,4 %. Application rehoplanta reduce the destruction of plants Septoria lesions on 3,8–27,4 % *Ascochyta sojaecola* – in 4,1–29,0 % and Downy mildew – in 6,6–28,2 %. Treatment soybean seeds by modus against diseases reduce: Septoria lisions – in 5,8–29,1 %; *Ascochyta sojaecola* – in 3,3–25,6 % and Downy mildew – in 7,8–24,8 %. Seeds of soybean treatment by plant growth regulators positively influenced on the productivity of plants. Thus, compared with the control, a greater quantity of beans from a plant created by 5,5 pieces (Terrastim), 7,7 pc. (Moddus), 19,0 pc. (Regoplant). On variants with treatment of seeds by biological fungicide Mikosan-N, compared with control, the amount of beans increased by 13,2 pc. The weight of seeds per plant depending on the regulators of growth increased on 4,8–7,3 g. Processing of soybean seeds plant growth regulators has led to a large mass of 1000 seeds to 5,1 g (Moddus), 10,8 g (Terrastim), 10,2 g (Regoplant) and 12,9 g (Mikosan-N). The biggest increase of yield in the application of plant growth regulators obtained with use regoplant – 0,35 t/ha, and mikosan – 0,42 t/ha.

**Keywords:** plant growth regulators, soybean, septoria, askahita, downy mildew, plant productive, nodulation, infection of plants, disease.

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### **Effect of elements of powered cultivation technology on miscanthus biomass productivity (p. 50–54)**

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**Object.** Based on generally accepted scientific knowledge and specific agronomic techniques, to carry out researches in Borshchiv, Ternopil region, on the basis of which to establish the factors, which promote to increasing of miscanthus yield. To learn and implement in industries of the efficient manufacturing operations on handling of plants, to establish of scientifically grounded parameters and methods of biomass cultivation, to analyze the climatic and weather conditions. To improve basic techniques and elements of powered miscanthus cultivation technology in western wooded steppes of Ukraine.

**Results.** Planting time and rhizomes planting depth, as well as density of planting and rhizomes mass were investigated. As a result of analysis of variance it was fixed that the determining performance for miscanthus of the first year of vegetation is such factor as the impact of the rhizomes planting time – 24,1 %. A shade less is the impact of the rhizomes planting depth – 1,7 %. The significant effect was established by such factor as the impact of year; it is 61,7 %. Interaction factor: year × planting time is 1,2 %. Other factors impact is 11,3 %. The investigated factors, the planting time and planting depth are essential only in the first year of vegetation. The optimal planting density and mass of the rhizomes were established.

**Conclusions.** The yield of miscanthus biomass is enlarged, due to planting the rhizomes in early terms with the optimal depth of planting, which accounts to 8–10 cm. The impact of such factors as planting time and planting depth on biomass productivity is observed only in the first year of vegetation, in the future the trend stays constant due to the difference in the density of planting (defined by the field germination and wintering). The increas-

ing of rhizomes mass and planting density leads to the enlargement of biomass yield. According to the research results it was established that the optimal crop density is 15–16 thousand pcs./ha and the rhizomes weight is 30–50 g.

**Keywords:** miscanthus, planting time, planting depth, rhizomes mass, density of planting, biomass.

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### **Incrustation of winter barley with agents Antistress and Mars ELBi (p. 55–58)**

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Barley is one of main cultures not only in Ukraine but in the whole world. Barley has very high productivity especially winter barley. But the main disadvantage which keeps it under increasing of planting acreages is its low cold resistance. The main task for us was to investigate possible increasing of winter barley cold resistance using

## ABSTRACTS. REFERENCES. KEYWORDS

agents Antistress and Mars ELBi. These agents were used with semi-dry treatment of Osнова grain. Mars ELBi is a complex agent which combines characteristics of agent Mars-EL and natural bishofite. It prevents from formation of ice crystals, decreases speed of water flow, increases osmotic pressure and increases resistance of plants. Agent Antistress can improve plant capability to extremal weather conditions. This capacity is a result of implication of physiologically active substances. The agent contains Mars-EL, dimethyl sulfoxide, glycerin, phosphorus ( $P_2O_5 \geq 50\%$ ), potassium ( $K_2O \geq 34\%$ ), humic acids. Sprinkling of vegetative plants with dimethyl sulfoxide and sucrose was set as a standard. Experiments approved positive effect of incrustation with Antistress on cold resistance of winter barley in conditions of Northern Steppe. Productivity increases on 0,2 tons per ha when compared to control and figures up to 3,9 tons per ha. Treatment with Mars ELBi enhances plant growth in autumn, but it has a bad influence on cold resistance.

**Keywords:** winter barley, plant growth regulators, cryoprotective agent, incrustation, survivance, productivity.

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### *Environmental assessment opportunities technology implementation No-till at the GC "Hrozynske" (p. 59–64)*

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No-till is a brand-new production system. Implementation of this technology carries out in economy of area of radioactive pollution Governmental Company "Grozynske" by researching indices of the density of soils and reserves of soil moist. In the period of seeding of winter wheat, we found a clear dependence of density of soil on the system of processing it. After traditional technology of processing the seeding layer of density of soil was in limits of 1,06–1,10 g/cm<sup>3</sup>. At no mechanical processing of soil, the average value of this index totaled 1,20 g/cm<sup>3</sup> with insignificant variety, which significantly exceeds this index comparing with the variant of traditional technology. However, the increase of density had no negative impact onto well-timed appearance of young plants. This certifies on efficient level of aeration and that such density of the soil of seeding layer does not create a mechanical obstacle for wheat plants. Natural factors of autumn-winter period always affect agrarian and physical indices of fertility of the soil. The indices of density of soil and reserves of available moist in the period of spring tillering of wheat certify on the following: preserved regularity of increase of density index with a depth at traditional technology of processing soil and its decrease – to zero.

Analyzing the density of arable layer of soil and reserves of moist in the period of harvesting winter wheat, we can highlight the fact that the index of density tends to lowering, and the index of available moist – to the increase.

The conclusion is that if permanently leave residues of plants on the surface of plants and avoid mechanical processing, the physical condition of top layers of soil shall improve. At traditional technology such regularity is not distinguished.

**Keywords:** technology No-till, inventories of soil moisture, soil density, fertility, crop capacity, winter wheat.

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### **Influence of biotransformation worms *Eisenia foetida* on the quality of sediments (p. 65-68)**

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Studying of composition and organic content of sapropel reservoirs at Tsarychans'kyi district, Dnipropetrovsk region before and after biotransformation by worm, species *Eisenia foetida*. The sample of sapropel were biotransformed by the groups of animals whose were not exposed and exposed to laser irradiation in different time displays exposure: from 5 to 30 minutes, the laser type LGN-208B (capacity 1 mW). Age individuals who were exposed to laser action did not reach reproductive maturity. Then, individuals in equal amounts were transferred to the substrate: substrate 1 – sapropel biotransformed, by not irradiated animals; substrate 2 – sapropel biotransformed, by irradiated animals. By the following period of biotransformation, which was four months, determined empirically in all samples sapropel, organic matter in soil – vermicompost and other components, which formed in the substrate after biotransformed.

**Keywords:** substrate, sapropel, biohumus, exposure radiation.

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### **Features of milkweed distribution within the Poltava region (p. 69-72)**

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In work the ecological features of milkweed (*Asclepias syriaca* L.) distribution within the Poltava region have been established. Milkweed has been shown to be dangerous contaminator of agricultural crops within the Poltava region. Assemblages of this weed in agroecosystem were generated at the expense of seeds which it is constantly brought on fields from not treated lands, and also with insufficiently cleared organic fertilizings. For growth milkweed fields which certain time were in agricultural using are especially congenial and is temporary, or for ever, withdrawn from it. On ecological properties of milkweed is perennial, rootspout, vegetation moving, geophyt (wintering points of restoration are underground), mesotroph, mesophyte, megaterm, scyogeliophyt, entomophyl (pollinating descends by means of hexapods), an anemochore, ruderant. Milkweed very quickly extends along highway and soil pathes, occupy-

## ABSTRACTS. REFERENCES. KEYWORDS

ing new areas and geographic ranges. On roadsides of tracks of the report specific conditions of medium are created. Less competitively the capable vegetation which existed before, is submitted to mechanical influence, degrades or is completely destroyed.

**Keywords:** milkweed (*Asclepias syriaca* L.), dispersion, ruderalants.

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### **The efficiency of symbiotic nitrogen fixation in agroecosystems of beans (p. 73–76)**

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The results of studies on the influence factors of pre-inoculated of bean seed of production and new strains of rhizobia, their activity on the formation of symbiotic system.

The accumulation of a large mass of nodules naturally leads to an increase in active symbiotic potential. Observations showed that the inoculation of bean seeds promotes more active formation of active nitrogen-fixing nodules. The highest of nitrogen-fixing activity marked

strains of *Rhizobium phaseoli*, F-16, nitrohenazna activity was at 84,23 nMol ethylene per plant per hour and strain *Rhizobium phaseoli*, 700, respectively 70,26 nMol ethylene per plant per hour. As a result of the studies identified strains of nodule bacteria *Rhizobium phaseoli*, F-16 and *Rhizobium phaseoli*, 700, which are complementary to modern varieties of beans and efficiency of symbiotic nitrogen fixation prevail of reference strains. Thus, the study of symbiotic activity of bean plants, showed that pre-plant biostimulation of legume-rhizobial complex leads to earlier appearance of nodules, their number and weight. These indicators are stored throughout the growing season and are manifested not only in the number and weight of nodules, but and activity in nitrohenazna system. Based on promising strains can be developed manufacturing technology of biological products for pre-inoculated of bean seed.

**Keywords:** beans, seeds, agrocyanosis, microorganisms, bacteria nodules, symbiotic activity, productivity.

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### **Indices of tractor T-150K work with diesel SMD-62 with serial fuel pump, universal regulator, taking-off corrector and smoke pneumatic corrector (p. 72–83)**

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Tasks concerning the fuel economy, machine and tractor units efficiency while performing ag-

## ABSTRACTS. REFERENCES. KEYWORDS

ricultural work and protecting the environment from the negative effects of diesel exhaust gases are relevant.

Indicators of technique work in ordinary operating conditions depend on many factors. The biggest impact is performed by the follows: the technical condition of high pressure fuel pump; design features of the fuel pump; enhancements that improve the work of the pump and the diesel unit in the corresponding modes; the right choice of operation mode when performing a specific operation in these conditions; fuel on which the diesel works and the mixture content using new fuels such as biological fuel.

One way of improving the tractor T-150K performance is input enhancements into the design of the fuel pump regulator ND-22: smoke pneumatic corrector, taking-off corrector, single-regime and multiple-regime regulator or dual-regime and multiple-regime universal regulator. In previous studies, indicated the devices that were used in the construction of the controller separately. In this paper the research results of their joint are shown.

Since transients of diesel with multiple-regime regulators were investigated by many authors regulators and the results of these studies are widely known, the attention was focused on the transients in dual-regime regulation with turned on and turned off taking-off corrector and smoke pneumatic corrector.

It was established that the diesel acceleration SMD-62 with a universal regulator on idling is advisable to move control arm by regulator on full speed by 0,13 sec.

During diesel acceleration under the same conditions, but with turned on taking-off corrector and smoke corrector, maximum opacity of exhaust gases does not exceed 18–20 %, but the duration of acceleration increases by 70–72 %. Fuel consumption for the acceleration period is reduced by 14 % and soot emissions by 90 %. As increasing of diesel acceleration duration on idle isn't essentially irrelevant, then it is necessary to see fit the use of taking-off corrector under these conditions.

It was established that while transport unit acceleration with turn on taking-off corrector and smoke corrector the acceleration duration increases by 16–18 %, but fuel consumption during the acceleration period decreases by 8–10 %, and maximum opacity of exhaust fumes – from 90 to 46 %. These data indicate the benefit of taking-off corrector and smoke corrector using tractor T-150K on transport work.

Taking-off corrector of fuel supply together with smoke corrector influence badly on unit dynamic indices while performing power-consuming field works: duration of acceleration increases by 40–50 %, fuel consumption increases by 30–40 %.

The acceleration is almost impossible in especially difficult cases because of smoke corrector. It is necessary in these cases to turn off taking-off corrector with a special switch.

**Keywords:** fuel pump, multi-purpose control, taking-of corrector, smoke pneumatic corrector, diesel, tractor, exhaust opacity of burnt gases.

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## ABSTRACTS. REFERENCES. KEYWORDS

### *Insulation in conservation agriculture* (p. 84–87)

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The article analyzes one of the urgent problems of the agricultural sector, which is the quality of soil treatment at the lowest possible energy consumption, the creation of energy-saving technologies. Studying the surface treatment of soil, shows that the loosening of the soil surface for easy access of air and water into the soil. The structure of the surface layer decreases as the evaporation of moisture from the surface and from the lower layers of the soil. Therefore, below loosened soil moisture accumulates and accordingly changes the physical properties of the soil.

The results of studies on the effect of surface treatment on its soil density. The dependence of the thermal insulation layer on the crop and the method of loosening the soil surface while kneading plant residues, which provides a low thermal conductivity layer. For the formation of the optimum conditions of thermodynamic processes must create a layer on the surface of the soil about 0,05 m, with a yield of up to 6 t / ha. Application of thermal insulation layer on the soil surface will predict the thermal processes in specific climatic conditions. The basis of this process of reception is the change in density in the upper layers of the soil. The technique for calculating the surface treatment of the soil.

Thus, by applying a surface treatment of the soil, together with plant residues, it can actively influence its thermal properties, manage temperature control and moisture, and reduce or increase the amount of solar radiation accumulated in the respective optimum range of densities of the soil.

**Keywords:** closeness, structure, soil, thermophysical properties, heat-insulation layer, superficial treatment.

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### *Disk digger edible roots work in the Strip-Till system* (p. 88–90)

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The design of the disk digger, and justified his design parameters based on analysis of the features of collecting edible roots in a strip cropping Strip-Till. The peculiarity of the proposed digger is submitted that undermine roots outside the strip and placed in waste where they are easier to select. Loosening the soil disc is performed only within the band, which reduces the amount of soil and rendered resistance to traction. Analytically substantiated rational width of processed and not processed strips. Digger is designed for small areas of 20–25 hectares. Digger can be recommended for all kinds of edible roots.

**Keywords:** Strip-Till, digger, roots, loosen the soil.

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**Validation of parameters and operating modes of sunflower oilseed pneumatic separator (p. 91–195)**

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Technology of post-harvest processing of sunflower seeds is a complex functional system that has many effects on the quality of seeds and depends on their physical and mechanical properties. Timely and effective post-harvest processing improves seed and food quality of the sunflower as well as reduces its losses.

Cleaning of the heap from different impurities is the most important part of the post-harvest processing. Sunflower oilseeds, after they were harvested, are basically a mixture of seeds of the main crop, other oil-bearing crops and various trash of mineral and organic origin. Post-harvest cleaning of sunflower seeds makes it possible to remove coarse, light-weight impurities and weeds that have high moisture content and thereby improve the quality of seed processing.

Despite wide use of the phenomenon of motion of material particles in modern grain-cleaning machines designed for separation of the components of raw materials, the quantitative laws of motion of bodies taking into account ambient air resistance still require further study.

The paper presents the technological scheme and the process of operation of a high-performance pneumatic separator with a closed air system. The aspects of validation of the parameters and operating modes of the oilseed pneumatic separator are set forth. The method of parameters and operating modes setting has been developed.

**Keywords:** sunflower, sunflower oilseed pneumatic separator, parameters, operating modes.

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**The main tasks of imaging and modeling space on a plane (p. 96–99)**

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Considered the general task of geometrical modeling space on a plane, which combines three elements: geometric machine design, space object and its projection.

Survey method used to coincide axis for different design congruences.

Received the equations projectivity point rows formed projections pairs of points in space on the plane projections. Equations containing information about metric space, view design machine and projection system.

Formulated unity principle for systems with projections coincide axis in which each type design plane projections correspond to features unique to this species.

The research results can be used for the development of descriptive geometry, photogrammetry in optically different environments, recognition of geometric images.

**Keywords:** modeling, congruence, metric, central projection, double environments of survey, unity principle.

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### ***Influence of ecological factors on physiological condition of pigs on fattening and quality of their products (p. 100–102)***

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The data on the combined and separate influence of toxic doses of Cadmium and Plumbum on the chemical composition and technological properties of pork have been given in the article. The negative impact of metals – toxicants on the content of dry matter, fat, protein in meat was revealed and the above changes were more essential in the animals that received the increased doses of Cadmium. In addition to that the calorificity and protein-qualitative index was lower in the meat of the animals of the experimental groups as compared to the control ones. The content of dry matter in the muscle tissue of the experimental pigs in group III decreased by 2,1 %, fat and protein – by 0,9 and 1,0 %, respectively. The calorificity of 1 kg meat in the animals in groups III and IV was trustworthy lower by 226,46 and 218,1 kcal, respectively, as compared to the control ones. The content of triptophane also decreased in the meat of the above groups of pigs and that had an impact on the protein-qualitative index, the lowest one was in the animals of the third experimental group and it was 6,41 respectively. Active acidity of the meat in the animals of all groups ranged within 5,22–5,45 that did not exceed the norm, however, in the animals that received higher doses of heavy metals in the ration pH of meat had a bit change towards the neutral medium and the above changes were trustworthy in the meat of the animals of experimental groups II and III.

High cumulative ability of Cadmium and Plumbum was pointed out and that was proved by the significant accumulation of the above metals in the longest muscle of the back. Cadmium was mostly accumulated in the muscular tissue of experimental groups III and IV, Plumbum – in groups II and IV. Due to the use of the experimental additive in the feeding of the pigs in spite of the intoxication by heavy metals the accumulation of the metals-toxicants in the longest muscle of the back decreased, positive changes occurred in the chemical composition of meat, its calorificity, protein-qualitative value and technological properties.

**Keywords:** pigs on fattening, Cadmium, Plumbum, clinical parameters of blood, chemical composition, technological properties of pork, experimental additive.

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### ***The influence of management technology on the reproductive qualities of sows (p. 103–107)***

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The management of mating and pregnant sows on a pig farm is quite a complex process. There are various ways of keeping animals in this technological group: group housing, individual housing, with or without bedding, with or without pasture, with artificial or natural microclimate and etc. Creating a comfortable environment is one of the main components at intensive technologies of breeding pigs. Reproductive quality, except breeding and aggregate genetic inclinations, is determined by the factors according to the content of the pigs biological characteristics. Taking this into consideration, a considerable interest occurs in studying the influence of management technology of pregnant sows on their productivity.

The aim of the research was to study the reproductive qualities of sows by different breeding methods and by different management technologies. Experimental studies were carried out on the farm APC Agricultural firm "MIG-Service-Agro" in Mykolayiv region and on the PJSC "Breed-Stock Plant "Steppe" in Zaporizhya region. For this experiment three breeds of pigs were taken: a interbreed type of Duroc Ukrainian selection "Steppe" (DUSS), a Large White of Foreign selection (LW (FS)) and a Landrace of French selection (L (FS)).

Group of sows were selected on the principle of analogues, with taking into account their age,

## ABSTRACTS. REFERENCES. KEYWORDS

their life weight and origin. For this experience selected sows were divided into two groups, this selection was based on the dependence of the technology content. From the group of mating sows for insemination 20 heads of sows (2 or more farrowing) were selected to determine the performance of failed impregnation and fertility. After determination of gestation, sows on the second day were selected for further studies in the amount of 15 goals in each combination at different types of management. In the experimental group sows were kept under traditional management technology. In the mating period sows were kept in groups for 20 heads. After insemination within 5 days they were kept in individual stalls. Then before the onset of pregnancy and during the entire period of gestation sows were kept in groups for 15 animals in each stall. Within 7 days before the expected date of farrowing sows were transferred to the farrowing room, where they were kept in individual stalls. In the experimental group is mating, conditionally gestating, gestating, deep gestating and lactating sows during the entire period were kept in individual stalls.

The results of this research show us that, the increase of multiple pregnancy by 0,94 heads, number of piglets at weaning to 1,42 head ( $P>0,999$ ), life weight at 30 days of 0,7 kg compared with the animals of a group method of management. Higher reproductive qualities of animals in individual stalls for sows in the gestation period establish that, for fetal growth of piglets were created better conditions, which influence the decrease in embryonic mortality and further led to the increased growth of piglets.

**Keywords:** technology, type of management, breed, purebred breeding, crossbreeding, reproductive qualities.

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### **Dynamics of biochemical indices of blood in bull-calves imported breeds of meat cattle when growing in the steppe zone of Ukraine (p. 108–111)**

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Studied in age aspect and seasonal parameters in blood dynamics. In the process of ontogenesis amount of blood in the body is increased. However, the relative weight of the animals total mass, regardless of its age bull-calves all-breed was almost constant and varied within the range of 5–8 %, although the pattern has been identified that to 30 months relative content of blood and hemoglobin is lower than in newborns. Hematologic indicators changed in parallel with the change in live weight of cattle, but at different speeds and were due to metabolism, fluctuations of the environment: environmental factors, season of the year, the level of feeding and water availability. However, the experiment value remained within the limits of physiological norm and indicate good health and full value of feeding animals.

Biochemical parameters of blood proved that gobies charolais, hereford, light of aquitaine and limousin breeds are well adapted to the conditions of the steppe zone of Ukraine and exhibit a high genetic potential productivity.

Therefore, hematological studies give reason to believe that the gobies studied breeds in the steppe zone of Ukraine it is expedient to raise the DL of 2,5 years of age in order to obtain heavy carcasses and high quality beef for cheap. This would accelerate the development of beef cattle in the country I. thereby, satisfying the needs of the Ukrainian people in the meat. Therefore, hematological studies give reason to believe that the gobies studied breeds in the steppe zone of Ukraine it is expedient to raise the DL of 2,5 years of age in order to obtain heavy carcasses and high quality beef for cheap. This would accelerate the development of beef cattle in the country I. thereby, satisfying the needs of the Ukrainian people in the meat.

**Keywords:** gobies, breed, hematology, healthof cattle meat breeds.

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### **Potencial of organism ostrich under industrial growth (p. 112–114)**

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The presented materials about the study of adaptive characteristics of ostriches during growth on the climatic conditions of the industrial steppes of Ukraine. The article discusses information about the physiological status of the organism ostriches during different periods of ontogenesis. Studied the performance that characterize the potential of an ostrich in comparison with the other animals. The results can be used in predicting the productivity of ostriches, the analysis of the physiological state of the organism.

About development the sector growing of ostriches and the need for the dissemination of acquired practical skills in this direction demonstrates the World Ostrich Association. It is activities include the development of industrial ostrich, the acquisition of scientific and practical experience, the development of standards that provide the infrastructure to support this industry. In Ukraine also there is Ukraine Ostrich Association. The presented indicators reveal characteristics the blood ostriches, productivity and adaptability under the conditions of industrial breeding farms in the steppe zone of Ukraine.

**Keywords:** ostrich, the adaptive capacity of the organism, the industrial growth conditions.

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### **Modernization of rural communities and the financial mechanism to ensure their development (p. 115–120)**

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Studied the socio-economic essence of historical and traditional organizational focus of rural settlement structure of Ukrainian society – the local community. Considered its objective function as an expression of consolidating social and economic interests in close conjunction of the natural rights of the general social responsibilities. The reasons of the decline of the modern development of rural areas due to the rupture of the natural integrity of the basic aspects of life – Agricultural, two separate, agro-industrial and socio-rural areas. The situation was aggravated deep scarcity of local budget that made it impossible to implement infrastructure development. In the context of reforming the administrative system and territorial authorities, local community must be modernized and acquire real capacity as an organ of government of its territorial economic complex. There amalgamation of existing communities through their voluntary association, as was done in most European countries. Oriyentivnymi parameters combined local communities are: population – 9,000 persons; the average number of settlements – 16 units; territory area – 400 square kilometers; Peripheral settlements maximum distance from the center – 20 kilometers. Consequently, instead of the 11,500 local communities will be established 1,500 branches of local government with the expansion of the revenue base of local budgets and transform them into self-sufficient municipalities.

**Keywords:** municipalities, rural economic space, self, self-development, financial self-sufficiency, self-financing.

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### **Improving of technical means and technologies of grain transportation for export in Ukraine (p. 121–127)**

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Grain is one of the main export goods of Ukrainian economy. Over the past ten years, the volume of grain production increased from 38 million tons in 2005 to 63,9 million tons in 2014. Projected volumes of grain production in 2017 amounted to 80 million tons. The main purpose of the additional volume of grain production is export. In these circumstances, an urgent task for Ukraine is to ensuring of delivering of flows grain goods to the sea ports with minimal logistics costs. The experience of railways of United States and Russian Federation on the organization of transportation of export grain was analyzed. Research has shown that improving the efficiency of export traffic in these countries is achieved by the concentration of freight flows in elevators for larger parties shipment to train size. Stimulation of shippers to concentration of grain flows is achieved by reducing the tariffs for the unit and shuttle train deliveries in comparison with the single car delivering. The problems of export grain transportation in Ukraine related to the deterioration of grain hopper cars and low efficiency of their exploitation because of the performance of loading on large number of railway stations. In these circumstances, the purchase of new rolling stock will lead to increasing of the delivering cost. It is proposed to concentrate the export flows of grain on the specialized elevators with high loading capacity. The main station for the concentration of freight flows is identified. It is proposed that the servicing of

elevators must be with unit trains that moving on the schedule. The studies show that by increasing the efficiency of railway rolling stock it is possible the development of infrastructure of elevators and purchase new cars without increasing the cost of transportation.

**Keywords:** grain transportation, railway transport, unit train, concentration of good flows.

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### **Formation institutional environment agricultural sector (p. 128–131)**

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The institutional environment is a set of economic, political, social, legal rules that form the basis for production, exchange and distribution across the national economy, and the main role in the formation of formal rules that constitute its foundation, the state plays. The institutional environment determines the direction and speed of institutional change, and therefore it can be considered a basic condition and factor in the development of the agricultural sector. The reasons for the negative effects of the agrarian reform was prepared in the absence of measures, underestimating the impact of informal institutions – habits traditsiy, considerable inertia of social development, inadequate level of knowledge and legal education. Coordinated interaction of market institutions is achieved by compliance with a specific set of rules: the consistency of the decisions taken by all the institutions representing the legislative and executive authorities, both at national and regional levels; decisions taken by the management should be consistent with the strategic objectives of the operation and development of the regional agricultural sector; problems that are solved in each region, to a large extent must meet state tasks, but it is necessary to take into account local characteristics.

**Keywords:** agricultural sector, institutes, institutional environment, transformation.

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### **Features of forming and estimation of marketing potential of agrarian enterprises (p. 132–136)**

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It becomes firmly established that marketing potential is one of major factors of providing of competitiveness of agrarian industry, which must be realized on internal and external markets by creation of the proper structures of management, systems of research of markets, development and introduction of marketing strategies. The special actuality is acquired by the questions of search of optimum ways of management of agrarian enterprises resources with the purpose of increase of efficiency them economic activity. Forming of marketing potential of agrarian enterprises has certain features. Marketing potential as difficult, multidimensional category needs specific going near its study. Thus, the special actuality for practice of management of enterprise is acquired by the problem of methodological subsoil of organization of processes in relation to research of parameters of marketing potential.

The dynamic external environment of their functioning, which is characterized, influences on forming of marketing potential of agrarian enterprises, in particular, by the permanent changes of political situation in a country, socio-economic environment, tax and finansovo-kreditnoy policy, state of affairs of market.

The timely estimation of marketing potential of enterprise will enable to discover and in time flexibly to react on changing of factors of external environment, compare possible directions of development of enterprise and define most perspective, set copulas between the state of enterprise and possible strategic directions of development, to segment the market of commodities and services, defining the most attractive for an enterprise segments, define the parameters of competitiveness of enterprise and market position in relation to a competitor, to define the alternative set of strategies for every economic unit with the pur-

## ABSTRACTS. REFERENCES. KEYWORDS

pose of acceptance of strategic administrative decisions in relation to a final choice and realization of strategies of development of enterprise. The well adjusted marketing, the task of which is an increase of the personal interest of workers in the effective use of resources and improvement of the state of realization of products, strengthening of material and technical base of enterprises, development of market infrastructure, organization of advertising, must become the main factor of increase of efficiency of production and realization of products of agrarian enterprise.

**Keywords:** marketing, marketing potential, agrarian enterprises, methodology of estimation, evaluation indexes, factors of environment, service of marketing.

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**Regional aspects of development productive forces the rural areas in the context of systemic reforms (p. 137–142)**

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The basic factors curbing development of productive forces in rural areas and their key areas

– agriculture. The possibilities and prospects for overcoming them by means of the reform of administrative system and territorial authorities. It is associated with the formation of a rural economic space of the country the best in area and population communities. They have to act simultaneously basic element of territorial system and budget system.

Imperative revitalization of the productive forces base municipalities, district and regional levels is to provide them through decentralization of power and financial status of legitimate businesses. This will include in their jurisdiction to coordinate and regulate the activities of relevant regional sotsionkonomichnyh systems based on self-development, financial and economic self-sufficiency. The above must be accompanied by the institutionalization of the country, especially the emergence of an effective system of governance and modernization of the financial and economic relations on a series-market principles. Projected as accelerating entrepreneurship, public-private partnerships and strengthening of Ukrainian society adequately to EU countries.

**Keywords:** rural areas, the productive forces, regional economic complex, territorial socio-economic systems, local self-government, self-financing, self-development.

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### **Improvement work at the enterprise (p. 143–147)**

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The article is devoted to theoretical and methodological foundations of the effectiveness. The article gives a definition of management efficiency. Proved the mechanism of formation of efficiency of work of enterprises, the formation of an optimal mechanism for performance management of labour with a view to improve the efficiency and competitiveness of domestic enterprises. Describes the main factors and indicators of labour efficiency, which influence the formation mechanism of performance management of employees' work. We investigated the relationship of organizational effectiveness and functioning of enterprises with an effective system of personnel management. Selected criteria and indicators system to measure the socio-economic efficiency of enterprise activity that will be on the basis of the methodical approach to evaluating the effectiveness of labor. Grounded conceptual positions of control system by efficiency of labor in the enterprise, which is an important tool, when used skillfully which it is possible to increase the efficiency of not only the staff but the organization as a whole. A classification of factors of influence upon efficiency of labor at the enterprises. The study highlighted two related efficiency index of the labour productivity and profitability needed to assess the effectiveness of individual work and the entire enterprise. Investigates the current state of the problem of forming the optimal

mechanism for the performance management of labour in enterprises.

**Keywords:** personnel management, labor efficiency, personnel management mechanism, performance criteria, performance management labour.

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